



Testing Instruments For Paint, Ink and Coating



Biuged Laboratory Instruments (Guangzhou) Co.,Ltd.
— Since 1963 —

ABOUT US

Biuged Laboratory Instruments (GuangZhou) Company Ltd. has been focusing on developing and innovating high-quality and high-precision instruments for 50 years. We are the biggest and most professional manufacturer of testing instruments for paint, coating, ink and printing field in China. All our products are in according with ISO, ASTM, EN standards etc and get CE Certification.

Originally founded in 1963, Biuged have grown to an internationally recognized company with many worldwide customers base which includes the worlds leading paint and coatings manufactures.

We, Biuged has a young, motivate and vibrant team. Our R&D department continually investigates new product design ideas, in conjunction with the major standards committees. In order to supply up to date instrumentation for the Quality Control of coatings, we always apply the advanced contemporary techniques and experience to our new products. Our manufacturing department ensures that all our products are built to the highest quality, every instrument undergoing rigourous calibration and testing before it leaves our premises.

Moreover, Biuged has own independent Calibrate laboratory and more than 40 agents and offices all over the world. We are also the major member of Chinese Standardization Technology Committee of Paint and Pigment.

Produce the highest cost-effective products and offer the most professional service are Biuged mission. Satisfying our customers' needs are our ultimate wishes.



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Factory



Workshop



QC Laboratory



Calibration Laboratory



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CONTENTS

Viscosity

Flow Cups

- 02.....Ford Cups
- 02.....ISO Flow Cups
- 03.....Zahn Cups
- 04.....Japanese Iwata Cup (NK-2 Cup)
- 04.....DIN Flow Cups
- 04.....Stand For Flow Cup
- 05.....Viscosity Inspection Kits

Rotational Viscometer

- 05.....Dial Reading Rotary Viscometer
- 06.....Digital Rotary Viscometer
- 06.....High-temperature Digital Viscometer
- 07.....Intelligent Digital Rotary Viscometer
- 08.....Programmable Digital Viscometer
- 09..... Programmable Digital Viscometer with Temperature control
- 10.....Portable Digital Viscometer
- 10..... Accessories of Viscometer
- 11.....Krebs Stormer Viscometer
- 11.....Intelligent Krebs Stormer Viscometer
- 12.....Standard Oil

Original Coating Performance

- 13.....Fineness of Grind Gauges
- 14.....Laser Particle Size Analyzer
- 15.....Digital Abbe Refractometer
- 16.....Density (Specific Gravity) Cups
- 16.....Pressure Density Cup (Pyknometer)
- 17.....Sagging Tester
- 18.....Leveling Tester
- 18.....Hiding Power Test Board
- 19.....Basic Reflectance Meter
- 19.....Opacity Meter/ Intelligent Reflectometer
- 20.....Minimum Film Forming Tem. (MFFT) Tester
- 21.....Line Drying Time Recorder
- 22.....Intelligent Line Drying Time Recorder
- 23.....Color Assessment Cabinet
- 24.....Iron-cobalt Color Comparison Tester
- 24.....Gardner Color Comparator C illuminant
- 25.....Table pH Meter
- 25.....Pen Portable pH Meter
- 26.....Portable pH Meter
- 27.....Table Conductivity Meter
- 27.....Portable Conductivity Meter
- 28.....Portable pH/Conductivity Meter
- 28.....Standard Solution
- 28.....Karl Fischer Titration Tester
- 29.....Automatic-Intelligence Karl Fischer Titration
- 30.....Flash Point Tester
- 30.....Automatic Interfacial Tension Tester
- 31.....Automatic Distillation Tester

Application

Film Application

- 32.....One-sided Applicator
- 32.....Cube Applicator
- 33.....Two-sided Applicator
- 33.....Four-sided Applicator
- 34.....Four-sided Applicator (Frame-Type)
- 34.....Square Applicator
- 34.....Micrometer adjustable applicators
- 35.....Wire Bar Coaters
- 35.....Formed Rods
- 36.....Drawdown Plate
- 36.....Vacuum Film Applicator Bed
- 37.....Automatic Film Applicator
- 38.....Film Applicator with Holding Device
- 38.....Table Water-curtain spray Cabinet
- 39.....Spray Gun

Film Physical performance

Color

- 40.....Economic Portable Colorimeter
- 42.....Precise Computer Colorimeter
- 44.....Spectrophotometer
- 46.....Digital Whiteness Meter
- 46.....Portable Whiteness Meter

Gloss

- 48.....Economic Glossmeter
- 48.....Basic Glossmeter (60°)
- 49.....Intelligent Glossmeter
- 50.....Multifunction Glossmeter (New)
- 51.....Special Glossmeter
- 51.....Intelligent Double-Geo Haze Glossmeter

Thickness

- 52.....Wet Film Comb Thickness Gauges
- 52.....Rolling Wheel Thickness Gauges
- 53.....Thickness Gauge
- 53.....Economic Dry Film Thickness Gauge
- 54.....Precise Dry Film Thickness Gauge
- 55.....Paint Inspection Gauge (P.I.G)
- 55.....Perme Cup (Water Vapor permeability)
- 56.....Digital Anti-static Resistance Ohmmeter
- 56.....Insulation resistance Meter

Film Mechanical performance

Adhesion

- 57.....Cross Hatch Adhesion Tester
- 58.....Cross Cutting Rule
- 58.....3M Scotch Transparent Tape
- 58.....Digital Pull off Adhesion Tester

Hardness

- 60.....Pencil Hardness Tester
- 60.....Adjustable Pencil Hardness Tester
- 60.....Mitsubishi Pencil
- 61.....Pendulum Hardness Tester
- 62.....Automatic Scratch Tester
- 63.....Mar Resistance Tester
- 64.....Buchholz Indentation Hardness Tester
- 64.....Digital Shore Hardness Meter
- 65.....Hardness Test Pencil

Flexibility

- 65.....Hinge-tpe Cylindrical Mandrel Tester
- 66.....Cylindrical Mandrel Tester
- 66.....Conical Mandrel Tester
- 67.....T-Bend Tester
- 67.....Dupont Impact Tester
- 68.....Impact Tester
- 69.....Digital Cupping Tester
- 69.....Automatic Cupping Tester

Abrasion

- 70.....Wet Abrasion Scrub Tester
- 71.....Multifunction Abrasion Scrub Tester
- 72.....Solvent Rub Resistance Tester
- 73.....Rotational Abrasion Tester
- 74.....Falling Sand Abrasion Tester
- 74.....R.C.A. Paper Abrasion Wear Testers

Tensile Machines

- 75.....Table Electronic Tensile Machine
- 76.....Computer Servo Tensile Machine
- 78.....Universal Material Testing Machine

Special Instruments of ink and printing

- 80.....Falling Rod Viscometer
- 80.....Intelligent Inkometer
- 81.....Printing Proofer
- 81.....Printing Plate
- 82.....Hand Proofer
- 82.....Multi-section Ink Printing Proofer
- 83.....Rub Resistance Tester
- 84.....Digital Emulsification Tester
- 85.....Automatic Drying Tester for Ink
- 85.....Surface Tension Test Pens

Universal Instruments of Laboratory

Disperse/Mill

- 86.....Precise Digital Overhead Stirrer
- 87.....Air Pneumatic Mixer
- 87.....High-speed Dispersing Machine
- 89.....Multifunction High Speed Dispersing Machine
- 90.....Versatile Sand-Milling dispersing-agitator
- 91.....Lab Basket Mill (New)
- 91.....Lab Basket Mill
- 92.....Lab Horizontal Mill
- 93.....Coating Fast Mixer
- 94.....Closed Paint Mixer/Shaker
- 95.....Three roll Mill
- 96.....Muller Laboratory Grinder
- 96.....Homogenizer

Balance

- 97.....Economic Electrical Balance
- 98.....Balance
- 98.....Precise Analytical Balance
- 99.....Precise Analytical Balance
- 99.....Special Balance for Paint
- 100.....Bench Scale
- 100.....Fast Moisture Tester

Oven

- 101.....Precise Oven
- 102.....One-body High-Temperature Oven
- 103.....UV Solidify Machine
- 104.....UV Integrator (UV Radiometer Dosimeter)

Bath

- 104.....Heating Bath
- 105.....Water/Oil Bath
- 106.....Low Temperature Thermostatic Bath

Enviromentals Simulation Equipments

- 107.....Laboratory Freezers
- 108.....ISO Scratching Tool
- 108.....Salt Fog Cabinets
- 110.....Cyclic Corrosion Test (CCT) Cabinets
- 112.....High-Low Temperature With Humidity Chamber
- 115.....UV Light Accelerated Aging Chamber
- 116.....UV Light Accelerated Weathering Tester
- 122.....Bench Xenon Test Chamber
- 123.....Small Xenon Test Chamber
- 124.....Cabinedt Xenon Test Chamber
- 125.....Big Xenon Chamber

Others

- 128.....Surface Roughness Tester
- 129.....Temperature Tracker
- 130.....Professional Thermocouple Thermometer
- 130.....Infrared Thermometer
- 131.....Digital Thermometer and Hygrometer
- 131.....Temperature & Humidity Meter
- 132.....Multifunctional Digital Moisture Meter
- 132.....Spatulas for Paint and Ink Applications
- 134.....Sealing Clamper
- 134.....Digital Calipers/Micrometer
- 134.....Duck Billed Valve

Lab Standard Expendable Items

- 135.....Biuged Brand Test Substrates
- 136.....Biuged-Charts
- 138.....Zirconia Beads
- 139.....Grinding Glass Beads
- 139.....Standard Screen Mesh/Filter Mesh
- 140.....RAL Formula Guide
- 140.....PANTONE Plus Series Formula Guide

Equipments

- 141.....Single-shaft High Speed Disperser
- 142.....Dual-axle High Grinder and Distributor
- 143.....Basket-type Grinder
- 144.....Standards and Relative Instruments
- 146.....How to order

VISCOSITY

In the coatings world, as well as in many other industries, where liquid or non-solid materials are manufactured, emerging fast growing and demanding markets have led to the development of new innovative product ranges.

As a result, many of these products are manufactured today using materials with complex formulations and processes, resulting in greater quality. Due to this, viscosity, amongst the many other important material properties to be considered becomes more complex to control.

To meet this stringent manufacturing requirement and to continually achieve such high performance products, the use of highly accurate testing techniques is absolutely essential in R & D, Production and Quality Control.

Biuged Instruments supplies an extensive range of complementary viscometers, covering many viscosity and consistency testing methods. Featuring leading edge technology and user friendly operation, they are dedicated to various industrial applications.

Flow Cups

The efflux time, measured in seconds, is often sufficient for a relative classification. It is determined using flow cups of various designed. Flow cups, originally designed to perform quick viscosity and consistency evaluations of Newtonian or near Newtonian products, can provide a high degree of accuracy and repeatability depending on the quality of their manufacture.

Flow cups hold a defined volume of liquid which flows through an orifice. Results are expressed as time in seconds for the liquid to flow through the orifice until the first break in the efflux stream occurs.

The reproducibility of this test method depends on:

- ◆ Accuracy of the cup size
- ◆ A constant temperature during the measurement
- ◆ The Newtonian flow of the liquid

Biuged sells out more than 3,000 flow cups every year. In our manufacturing process and quality control procedures guarantee highly accurate flow cups:

- High precision computerized machines are used for production
- Each single cup is checked with test oils (3 different viscosity) in our constant temperature and humidity room
- All flow cups come with calibration certificate.

Procedure:

- ◆ Adjust the sample to measuring temperature, usually 25°C (77°F).
- ◆ Select the cup that will provide readings which are well within the cup range.
- ◆ Make sure that the cup is clean and place it into its support.
- ◆ Make sure that the cup is level.
- ◆ Place a finger under the cup orifice and fill the cup with bubble free test material. The cup is full when the meniscus disappears where the liquid joins the sidewall of the cup. If the cup is overfilled, scrape the excess into the cup well with a spatula or by passing the cover plate across the top of the cup. Note that the finger can be removed from the orifice when the cover plate is in place. Start a timer as the cover plate is removed from the cup.
- ◆ Determine the temperature of the efflux stream. If there is a significant change during the test it should be repeated.
- ◆ Stop the timer at the first break of the efflux stream, one or two inches below the orifice.
- ◆ Repeat the measurement three times, each with a new sample of the same material. Calculate the average value.
- ◆ Record the cup type and number, measured temperature, and efflux time. For best accuracy, average three or more readings.
- ◆ Promptly clean the cup, giving special care to the orifice.



Operating Steps

① Ford Cups

Ford Cups produced by our company are in accordance with International Standard ASTM D1200, D333, D365. For easy measurement of the viscosity of paints, inks, lacquers and other liquids. All Biuged Ford cups are machined anodic oxidation aluminum with removable stainless steel orifice and are guaranteed to be within 2% throughout the recommended range of use.

Main Technical Parameters:

★ Internal Diameter:	50 ± 0.05mm
★ Outer Diameter:	86 ± 0.1mm
★ Internal Orifice Length:	10 ± 0.1mm
★ Production Tolerance:	± 2%



◆ Details of each Ford Cups

Details/Ford cup	Ford Cup (2#)	Ford Cup (3#)	Ford Cup (4#)	Ford Cup (5#)	Hand-Held Ford Cup (4#)
Internal Vertical Height	43 ± 0.1mm	43 ± 0.1mm	43 ± 0.1mm	43 ± 0.1mm	43 ± 0.1mm
Internal Orifice φ (mm)	2.53mm	3.4 mm	4.1 mm	5.2 mm	4.1 mm
External Orifice φ (mm)	5.0 ± 0.5mm	5.5 ± 0.5mm	6.0 ± 0.5mm	7.6 ± 0.5mm	6.0 ± 0.5mm
Centistokes Range	25–120	49–220	70–370	215–1413	70–370
Efflux Time (sec) ± 0.2	40–100	25–105	20–105	20–105	20–105
Ordering Information	BGD 125/2	BGD 125/3	BGD 125/4	BGD 125/5	BGD 125/4P

② ISO Flow Cups

ISO Flow Cups produced by our company are in accordance with International Standard ISO 2431, DIN 53224, EN 535; ASTM D5125 《Paints and varnishes-Determination of flow time by Use of Flow Cups (Fourth edition)》. They are made of high quality aluminum and feature stainless steel nozzle inserts (specification dependent). They are mirror polished & smooth finished for high efflux accuracy and easy maintenance. ISO Flow Cups are applicable to determine the flow time of Newtonian and near Newtonian fluids.



◆ Details of each ISO Cups

Details/ISO cup	ISO-3	ISO-4	ISO-5	ISO-6	ISO-8
Orifice φ (mm)	3.0	4.0	5.0	6.0	8.0
Range (seconds)	25–150	30–100	30–100	30–100	30–100
Range (cSt)	7–42	34–135	91–326	188–684	600–2000
Ordering Information	BGD 128/3	BGD 128/4	BGD 128/5	BGD 128/6	BGD 128/8

Main Technical Parameters:

★ Material:	Anodized Aluminum
★ Weight:	0.38Kg

③ Zahn Cups

Zahn Cups can be used to quickly measure the viscosity of liquids such as Paint, Ink, Varnishes, Syrup and Oil. They are produced according with ASTM D 816, ASTM D 1084, ASM D 4212. The Stainless Steel Cups are molded precisely and the orifices are precision drilled using high-speed CNC drilling.

Each cup has a 12-inch loop handle to allow the cup to be dipped by hand into a liquid container. At the center of this handle is a finger-ring for holding the cup in a vertical position during use. Their orifice diameters are set at the factory for appropriate results with applicable NIST traceable Newtonian oils.

It is done by filling up the volume of Zahn Cup with the required liquid and then placing an index finger over the orifice to stop any flow out of the liquid. A ring at the Zahn Cup handle allows the cup to be hanged perpendicularly (still with the finger stopping any liquid flow out). Prepare a Digital stopwatch and set zero. Immediately start the stopwatch when the finger is released. As soon as there is a first “break” of the flow, stop the stopwatch. The second shown is the time of the liquid flow, which is also the flow viscosity of that liquid.

Every Biuged's Zahn cup has its own coefficient “k”, which is marked on the cup body.

Fact Viscosity = Testing viscosity × K

Main Technical Parameters:

★ Volume of Cup:	44ml
★ Length of Handle:	40 ± 0.1mm
★ Height of Cup:	58 ± 0.1mm
★ Measurement Temperature:	25°C ± 1°C



NOTE:

1. Both the Zahn Cups and the Iwata Cup are based on measuring the Flow of liquid in seconds. Hence, a precision stopwatch is required.

2. The orifice diameter of Zahn cup may be a little different from standard requirements due to some uncontrollable factors during manufacturing process. But we ensure the flow time conforms to standards.

Results should be reported in Zahn-Seconds at a specified temperature for a particular cup. To convert Zahn-Seconds to centistokes, refer to ASTM D 4212, D816, D1084

Centistokes × Specific Gravity = Centipoise

◆ Details of each Zahn Cups

Details/Zahn cup	Zahn Cup 1# (BGD 126/1)	Zahn Cup 2# (BGD 126/2)	Zahn Cup 3# (BGD 126/3)	Zahn Cup 4# (BGD 126/4)	Zahn Cup 5# (BGD 126/5)
Orific ϕ (cm/inches)	1.98/0.08	2.74/0.11	3.76/0.15	4.27/0.17	5.28/0.21
Zahn Range (sec)	33.5–80	20–80	20–75	20–80	20–80
Centistokes Range	5–56	21–231	146–848	222–1110	460–1840
Applications	Very Thin Oil	Thin Oil, Paint Lacquer	Medium Oil Mixed Paint	Viscous Liquid and Mixtures	Very Viscous Mixtures
Ordering Information	BGD 126/1	BGD 126/2	BGD 126/3	BGD 126/4	BGD 126/5



④ Japanese Iwata Cups (NK-2 Cups)

The Iwata cup is based on the Japan method of liquid viscosity measurement. It is used to test sample viscosity which is going to spray by spray gun. The procedure of usage is the same as that of the Zahn Cups.

Main Technical Parameters:

- ★ Volume of Cup: 50ml ± 2ml
- ★ Orifice Diameter: 3.5mm ± 0.1mm
- ★ Cup Material: Nickel-plated brass
- ★ Cup External Diameter: 42.0mm ± 0.2mm
- ★ Cup Internal Diameter: 35.0mm ± 0.2mm
- ★ Suitable Test Range: 10s to 60s
- ★ Ordering Information:

BGD 122---NK-2 Iwata cup.



⑤ DIN Flow Cups

The Biuged DIN and Dip Viscosity Cups are produced with an easily removable orifice. Cup and orifice production tolerance permits replacement of the orifice without loss of acceptable tolerance. In accordance with Deutsche Normen DIN 53211.

It complies with DIN 53211 standard and is applied for low viscosity liquids.

Main Technical Parameters:

- ★ Volume of Cup: 100ml ± 1ml
 - ★ Body is made of anodized aluminum
 - ★ Stainless steel orifice, interior polished
 - ★ Ordering Information:
- BGD 127/2---DIN 2" Flow Cup (Orifice Dia.:2mm)
- BGD 127/4 ---DIN 4" Flow Cup (Orifice Dia.:4mm)
- BGD 127/6 ---DIN 6" Flow Cup (Orifice Dia.:6 mm)
- BGD 127/8 ---DIN 8" Flow Cup (Orifice Dia.:8mm)
- BGD 127/4P---Hand-Held DIN 4" Flow Cup (Orifice Dia.:4mm)
- BGD 1272 ---Din Flow Cup Nozzles



⑥ Stand For Flow Cup

It is important for any flow cup to be level for the flow cup with its sample during testing of sample viscosity. Biuged instruments offers a simple type stand. It is made up of three adjustable aluminum pole, and glass plate with a spirit level.

Ordering information:

- BGD 130 ---Square Stand
- BGD 131 ---Tripod Stand
- BGD 132--- Stainless Steel Stand



BGD 131

BGD 130

BGD 132

⑦ Viscosity Inspection Kits

Biuged offer viscosity inspection kits which can finish viscosity measurement simply. Each kit contains a viscosity flow cup (Ford cup, ISO flow cup or DIN cup), a cronometro, a stand, a container and a strong carrying case.

Ordering information:

BGD 136---Viscosity Inspection Kits



Rotational Viscometers

Depending on the method, from traditional scale readings to scientifically defined geometries, rotational viscometers apply a controlled stress to the material under test using defined operating conditions. The resulting data can be then be plotted as a function of the selected criteria.

We provide extended information, as the product under test is submitted to variable stress conditions, depending on the spindle design.

Units are expressed in P (Poise), or cP (mPa.s), or converted into other scales. i.e. Krebs units or torque.

Single-speed instruments equipped with rotor, ball, or vane spindle such as the Krebs Viscometers, Rotothinner, or Gel Strength Tester are commonly used world wide by numerous industries to instantly evaluate the flow behavior according to conventional scale.

Multi-speed viscometers equipped with different spindle sizes offer flexible investigations and cover a wider range of applications. They operate with variable dynamic stress and shear rates and can also be configured for absolute measurements, when available, depending on the specific spindle geometry.

Biuged has enough experience for measuring different fluids viscosity. We produce many different types viscometers to meet with different fields and different customers requirements. For some of viscometers, users can choose software to analyse sample's viscosity characteristic.

① Dial Reading Rotary Viscometer

Dial Rotary Viscometer is used in measuring viscosity friction and absolute viscosity of liquid. It has four rotors of NO.1-4 which can be chosen to be in accord with viscosity of the liquid and the rotation speed. It is widely used to determine viscosity of various liquid such as oil, paint, plastic, food medicine, adhesive, etc. It is widely applied in the field of petroleum chemistry, medicine, food, light industry, textile industry, scientific research, etc.

Main Technical Parameters:

- ★ Rotors: Four rotors---No.1, No.2, No.3, No.4
- ★ Rotate speed: 6r/min,12r/min,30r/min,60r/min---For BGD 151/1
0.3,0.6,1.5,3,6,12,30,60r/min---For BGD 151/2
- ★ Meter-age error: $\pm 5\%$ (Newtonian fluids)
- ★ Electrical power: 220V/50Hz
- ★ Weight: 7.9Kg
- ★ Dimensions: 410×350×440mm (L×W×H)
- ★ **Ordering Information:**
- BGD 151/1--- Rotary Viscometer: 10-100,000mPa.s (cP)
- BGD 151/2--- Rotary Viscometer: 10-2,000,000mPa.s (cP)



Rotors

② Digital Rotary Viscometer

BGD 152 Digital Rotary Viscometers are a type of intelligent instrument for testing liquid viscosity. They can complete testing work under the computer's procedures and displays results on their LCD display. They use MCS-51 series computer to constantly control the rotate speed and all the testing procedures. This makes them a highly precise instruments. They are widely applied in the field of petri chemistry, medicine, food, light industry, textile industry, scientific research, etc.



Main Technical Parameters:

- ★ Rotors: Four rotors---No.1, No.2, No.3, No.4
- ★ Rotate speed: 6r/min, 12r/min, 30r/min, 60r/min---For BGD 152/1
0.3 r/min, 0.6 r/min, 1.5 r/min, 3r/min, 6r/min, 12r/min, 30r/min, 60r/min---For BGD 152/2
- ★ Meter-age error: $\pm 5\%$ (Newtonian fluids)
- ★ Electrical power: 220V/50Hz
- ★ Weight: 10Kg
- ★ Dimensions: 308 × 300 × 450mm. (L × W × H)
- ★ Others: Digital display directly (rotate speed, the type of rotors, results)
- ★ **Ordering Information:**
BGD 152/1---Digital Rotary Viscometer: 10–100,000mPa.s (cP)
BGD 152/2---Digital Rotary Viscometer: 10–2,000,000mPa.s (cP)

③ High-temperature Digital Viscometer

This high temperature digital viscometer come with a heating device (thermosal) which can heat sample to a appointed temperature. It is used to test hot melt adhesive, asphalt, paraffin and hot polymer.

- ◆ Automatically adjusts the rotating speed, reduces the difficulty of use for the beginners
- ◆ Only needs small amount of sample
- ◆ Heat insulation for the sample in order to reduce the heat loss
- ◆ The operating temperature is controlled that the fluidity is small
- ◆ The rotor plays an role in stirring when it is rotating
- ◆ Optional BGD Gather Software of recording the whole viscosity curve
- ◆ Easy to operate the temperature control

Main Technical Parameters:

- ★ Measurement Range (mPa.s): two ranges for optional (also can be customized) as below:
 - ① For medium viscosity sample: 50–10M(mPa · s/cP)
 - ② For low viscosity sample: 5–1M(mPa · s/cP)
- ★ Rotors : 4 rotors : #21, # 27, #28, #29
- ★ Rotate speed: 0.1~200 RPM (stepless speed)
- ★ Measurement Accuracy: $\pm 1.0\%$ (of the full range)
- ★ Repeatability: 0.5 % (of the full range)
- ★ Thermosal Temperature Range: RT+10°C ~ 250°C (precision 0.1°C)
- ★ Electrical power: 110V&220V/50Hz&60HZ
- ★ **Ordering Information:**
BGD 155/T--- High-temperature Digital Viscometer



④ Intelligent Digital Rotary Viscometer

BGD Series Intelligent Digital Rotary Viscometers utilize a backlit LCD digital, 16 bit micro-computer and a highly accurate stepper motor. The meter is stable and accurate in motion.

The display directly demonstrates the viscosity, rotating speed, rotor number and the maximum viscosity measured for the rotor selected for the current rotating speed. The main controlling board, subsection drive board are all manufactured by adopting the Surface Mount Technology (SMT). The circuit is adopted by the micro processor that is most advanced available. An RS232 port is provided. The layout for printing can be set up by the user. The full range and linearity at points are adjusted by PC interface. Its performance and functions are of the highest standard.

The combination of the different-selected speeds (adjustable variable speed) and the spindle set provides flexibility in operation, complying with numerous requirements of product analysis and industrial quality control standards.



Main Technical Parameters:

Ordering Information Parameters	BGD 155/1	BGD 155/2	BGD 155/3
Measurement Range (mPa.s)	10-600,000 (600K)	10-6,000,000 (6M)	100-80,000,000 (80M)
R.P.M (per min)	1-60	0.1-100	0.1-100
Rotor Amount	No.1, No.2, No.3, No.4 are standard configurations (#0 is optional)		
Measurement Accuracy	± 1.0% (of the full range)		
Repeatability	± 0.5%		
Power Supply	Power Supply Adapter (input 110/220V 50/60Hz, output 15V 1.2A)		
Optioal Accessories	BGD 1601---Low viscosity adapter (the No.0 rotor) BGD 1602---Small sample adapter (come with NO.21、 NO.27、 NO.28、 NO.29) BGD 1603---Mini single color printer BGD 1604---RTD Thermometer BGD 1606---Viscometer data collection and graphing software		

Note:

1. If customer need the small sample adapter, the machine would come with NO.21、 NO.27、 NO.28、 NO.29 rotor (the normal rotors are No. 1, No.2, No 3, No 4) . Please clarify before ordering if extra rotors are required.
2. If selected the small sample adapter, the measurement range would be as below:

BGD 155/1: 10-100,000 (100K) mPa.s

BGD 155/2: 10-1,000,000 (1M) mPa.s

BGD 155/3: 50-10,000,000 (10M) mPa.s

⑤ Programmable Digital Viscometer

This programmable viscometer is the most universal viscometer in the world. It is a great favorite of customers for the high cost-performance. It offers state-of-the-art functions and performances in-line with similar styles of meters and features a backlit LCD digital display, 16 bit micro-computer and a highly accurate stepper motor. The meter is stable and accurate in motion, programmable in design and easy to use.

Other Features:

- ◆ It will give a warning when the torque is out of 10% to 90% of the measuring range.
- ◆ The RTD temperature probe can monitor and measure viscosity and temperature to nearest 0.1°C in real-time. The temperature range of measurement is 0°C to 100°C.
- ◆ Viscosity, shear rate, shear stress, rotary speed, temperature, percent torque, serial number of the spindle and the maximum viscosity can be measured at current rotary speed of selected spindle are displayed directly on the screen.
- ◆ Data can be printed via a RS232 interface with the printing interval set by users according to their own demand. The bidirectional RS232 interface allows communication with computer, programming and data acquisition.
- ◆ Through the optional BGD 1606 Program control and off-line software, customized measurement programs can be downloaded to the instrument for automated and individual operating.
- ◆ The optional rheological characteristic software enable the functions such as computer automated operation, data acquisition and analysis, data storage, historical data comparison.
- ◆ Patch technology is employed in both main control panel and micro-step driver, and the state-of-art micro-processor is incorporated in the circuit design.
- ◆ The full range and linearity of each grade are all calibrated through a PC interface, and the measuring capability and functions of this instrument have achieved the state-of-art performance.
- ◆ AC Adaptor 100V- 240V.



Can test “shear rate” and “shear stress”

Main Technical Parameters:

Ordering Information → Parameters ↓	BGD 156 (DV-I+PRO)	BGD 157 (DV-II+PRO)	BGD 158 (DV-III+PRO)
Measurement Range (mPa.s)	BGD 156/1:1-2M BGD 156/2:100-13M BGD 156/3:200-26M BGD 156/4:800-104M	BGD 157/1:1-6M BGD 157/2:100-40M BGD 157/3:200-80M BGD 157/4:800-320M	BGD 158/1:1-6M BGD 158/2:100-40M BGD 158/3:200-80M BGD 158/4:800-320M
R.P.M (per min)	0.3-100	0.1-200	0.1-250
Rotor Amount	BGD 15★/1 : No.1~4 are standard configurations (#0 is optional) BGD 15★/2、BGD 15★/3、BGD 15★/4: No.2, No.3, No.4, No.5, No.6, No.7 are standard configuratio (No.0 and No.1 are optional)		
Measurement Accuracy	± 1.0% (of the full range)		
Repeatability	± 0.5%		
Power Supply	Power Supply Adapter (input 110/220V; 50 /60Hz; output 15V 1.2A)		
Optioal Accessories	BGD 1601---Low viscosity adapter (the No.0 rotor) BGD 1602---Small sample adapter BGD 1603---Mini single color printer BGD 1604---RTD Thermometer BGD 1608---Viscometer data collection and programmed analyse software		

(M=1million)

⑥ Programmable Digital Viscometer with Temperature Control

These viscometers combine with a temperature control device in a body. Multifunction viscosity measurement system is made of small sample adapter (SSR), cylindrical sample sleeve and SC4 spindle structure, can produce accurate shear rate measurement, sample amount only need 2 to 16 ml. Small sample cylinder handling convenient and easy to clean. Small sample tube and temperature controller close connection, Can be accurately control temperature. Spindle mixing action and a few sample, Can greatly shorten the sample temperature control time.

When test viscosity of sample, precise control of the temperature will help operator to ensure the accuracy of experimental results, Due to the temperature controller using semiconductor and built-in automatic optimization of temperature program control. The temperature control speed is very fast, and heating/cooling speed can be adjusted (precision can arrive $\pm 0.1^{\circ}\text{C}$). Temperature control is controlled by BGD- T software which has a good performance.



Main Technical Parameters:

Ordering Information Parameters	BGD 156/T (DV-I/T)	BGD 157/T (DV-II/T)
Measurement Range (mPa.s)	BGD 156/T1: 10–330K BGD 156/T2: 50–3.3M BGD 156/T3: 100–6.6M BGD 156/T4: 400–26.4M	BGD 157/T1: 10–1M BGD 157/T2: 25–10M BGD 157/T3: 50–20M BGD 157/T4: 800–80M
R.P.M (per min)	0.3–100	0.1–200
Functions	Measure viscosity	Measure viscosity, shear rate, shear stress
Come with Software	BGD 1607 Data collection and graphing software	BGD 1608 Data collection and programmed analyse software
Temp.Control Method	Set single point temperature	Rise temperature by programme
Rotor Amount	Standard: SC4–21#、27#、28#、29# (SC4–14、15、16、18、25、31、34 is optional)	
Sample	2–20ml	
Measurement Accuracy	$\pm 1.0\%$ (of the full range)	
Repeatability	$\pm 0.5\%$	
Temperature Range	0 ~ 150°C (precision $\pm 0.1^{\circ}\text{C}$)	
Power	Input: AC100–240V, 50Hz/60Hz; Output: DC17V 1.2A	
Net Weight	14 Kg	
Machine Overall Size	350 × 250 × 500 (mm)	

⑦ Portable Digital Viscometer

These portable digital viscometers are developed by Biuged after special requests by customers. It adopts brand new design and can be supplied by both AC and DC power (lithium cell battery, can be used continuously for 8 hours). It is easy to operate, just insert the viscometer into sample then begin to test. It can be used to test sample quickly and conveniently on site, in the laboratory and on the factory production line.

- ◆ Controlled by micro-computer, with a friendly operator interface.
- ◆ With full range and every grade linearity correction
- ◆ LCD screen, skidproof handle design and alarm when over range
- ◆ Screen show directly sample temperature, viscosity, rotary speed, percent torque, No.of spindle and the maximum viscosity which can be tested at current rotary speed and spindle.
- ◆ Special structure design ensure extended lifetime.

Main Technical Parameters:

Ordering Information→ Parameters ↓	BGD 160/1 (BGD 161/1)	BGD 160/2 (BGD 161/2)	BGD 160/3 (BGD 161/3)
Measurement Range (mPa.s)	25-150,000	50-300,000	200-1,200,000
R.P.M (per min)	60、100、150、200		
Rotor Amount	Four types: B1、B2、B3、B4		
Measurement Accuracy	±2.0% (full range)		
Repeatability	1.0%		



Accessories of Viscometer

THD Series—Low Temperature Thermostatic Bath (See page 102)

BGD 1600—Standard Oil (500ml, see page 12)

BGD 1601—Low Viscosity Adapter (The 0th rotor and can measure 0.1mPa.s sample)

BGD 1602—Small Sample Adapter (It's specially designed for customers with small samples and requires only a quantity as small as 5~18ml; Sample cup is easily cleaned, installed, removed, and observed; Accurate data of shear rate and shear stress can be obtained for a minute analysis of the fluid characteristics of the sample; One-off sample cups are available)

BGD 1603—Mini Single Color Printer

BGD 1604—RTD Thermometer (-20℃~120℃)

BGD 1605—Thermoses (It has been designed to accurately measure the viscosity of heated oil, paraffin, asphalt emulsions, medicine, high polymer and similar liquid materials at high temperatures. It allows control of a sample's temperature at a range of room temperature ±300℃. It can program the intelligent thermostat and

ensures its temperature fluctuation within 0.1℃. Sample dosage is as small as 10ml, and one-off sample cups are available. Standard type of SC4 spindle can be applied, which is easy to use)

BGD 1606—BGD 156-157-158 Viscometer program control and off-line software (Can download computer control program to viscometer and run it off-line. Suggest use it together with **BGD 1603 Mini Single Color Printer**)

BGD 1607—BGD 155 Viscometer data collection and graphing software (Automated data collection; Resulting in viscometer graph, and recording measuring data each time; Allowing comparison of at most 10 history data; Output Excel documents)

BGD 1608—BGD 156/157/158 Viscometer data collection and programmed analyse software (Automated data collection and testing; Resulting in viscometer graph, and recording measuring data each time; Allowing comparison of at most 10 history data; Output Excel documents; Programmable downloading, Offline working; Analyse datas, draw charts and print)



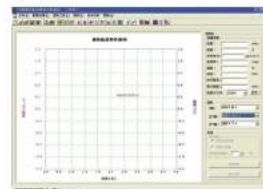
BGD 1601



BGD 1602



BGD 1603



BGD 1607

⑧ Krebs Stormer Viscometer

BGD 184 Stormer Viscometer is used for measuring the viscosity of Newtonian and non-newtonian fluids in accordance with ASTM D562. The viscosity of a non-newtonian material varies depending on the rate of shear, but Krebs Stormer Viscometer can measure the viscosity at a set speed shear rate which provides a consistent standard.

Based on the popular traditional KREBS method, using a weight-driven rotating paddle to sense the paint viscosity at a constant 200 rpm, this modern digital instrument provides automated motor operation, without weights & pulley, allowing accurate direct reading in KU (Krebs units) or g (gram). The conversion between these units is automatically calculated by the microprocessor and displayed on request. Sturdy construction allows for use either in a production environment or in the laboratory.

Features:

- ◆ LED digital display gives the reading in Krebs units or grams.
- ◆ The quick release chuck enables rapid cleaning and changeover of the paddle
- ◆ Self protection function under over-range.
- ◆ Come with Calibration Certificate

Main Technical Parameters:

- ★ Range: 40.2KU ~ 141.0KU (27~5250 cP)
- ★ Accuracy: $\pm 1.0\%$ of full scale range
- ★ Repeatability: $\pm 0.5\%$ of full scale range
- ★ Paddle speed: 200r/min ± 0.5 r/min
- ★ Overall dimensions: 210mm \times 180mm \times 500mm (L \times W \times H)
- ★ Package Size: 560mm \times 450mm \times 280mm
- ★ Package Weight: 9.2 Kg
- ★ **Ordering Information:**
BGD 184---Krebs Stormer Viscometer



⑨ Intelligent Krebs Stormer Viscometer

BGD 186 is the newest Krebs Viscometer which is upgraded from BGD 184. It is used widely for making viscosity measurements on paints/coatings in accordance with ASTM D562. Digital version with constant speed motor rotating at 200 r. p. m can get greater accuracy and repeatability for test results.

Comparing with BGD 184, it has these features as follows:

- ◆ Can show "KU", "cP", "g", "°C" value simultaneously.
- ◆ Designed with calibration function: With standard oil, the end user can complete calibration independently, no need return to manufacture
- ◆ With infrared thermometer sensor to measure sample temperature, more convenient and more precise.
- ◆ Has a big LCD which can show test result clearly
- ◆ Can set test time and show real time
- ◆ With RS 232 communication port, can print test results
- ◆ Self protection function under over-range
- ◆ Come with Calibration Certificate

Main Technical Parameters:

- ★ Range: 40.2KU ~ 141.0KU 27~5250 cP
- ★ Accuracy: $\pm 1.0\%$ of full scale range
- ★ Repeatability: $\pm 0.5\%$ of full scale range
- ★ Paddle speed: 200r/min ± 0.5 r/min
- ★ Overall dimensions: 210mm \times 180mm \times 500mm (L \times W \times H)
- ★ Package Size: 560mm \times 450mm \times 280mm
- ★ Package Weight: 9.2 Kg
- ★ **Ordering Information:**
BGD 186---Intelligent Krebs Stormer Viscometer

Note:

The cP reading from the Krebs Stormer Viscometer is not necessarily agree with cP values measured by other instruments due to:

1. Unique shear rate of the Krebs Stormer Viscometer paddle spindle.
2. Uniqueness of the Krebs unit scale



Standard Oil

BUGED supply a series of different viscosity standard oil which can bring convenience for calibrating your viscometers or flow cups. They are Newton liquid, with a perfect stability, hydrophobic and damp-proof. Good physical inertia and small surface tension. They can be kept and use for a long time, moreover, it is very cheap.

Every bottle standard oil has been calibrated by **SOUTH CHINA NATIONAL CENTER OF METROLOGY**, and comes with a calibration certificate report which calibrates kinetic viscosity (cP value) and kinematic viscosity (cSt value), and has a very high reliability and accuracy.

Ordering Information

Ordering Information	Kinetic Viscosity (cP)	Kinematic Viscosity (mm ² /s)	Suitable for
BGD 1600/1	5	5.4	ISO Flow Cup No.3
BGD 1600/2	50	52.1	Zahn Cup No.1; Ford Cup No.2
BGD 1600/3	100	104.2	Zahn Cup No.2; ISO Flow Cup No.4 Ford Cup No.3; Iwata Cup No.2 (NK-2)
BGD 1600/4	200	208.3	ISO Flow Cup No.5; DIN Flow Cup No.4; Ford Cup No.4
BGD 1600/5	500 (67.2 KU)	520.8	Zahn Cup No.3 and No.4; ISO Flow Cup No.6
BGD 1600/6	1,000 (86.3 KU)	1,052.3	Zahn Cup No.5; Krebs Stormer Viscometer
BGD 1600/7	5,000	5,170.6	Rotary Viscometer
BGD 1600/8	10,000	10,416.7	Rotary Viscometer
BGD 1600/9	30,000	31,039.8	Rotary Viscometer
BGD 1600/10	60,000	62,176.2	Rotary Viscometer
BGD 1600/11	100,000	103,092.8	Rotary Viscometer whose range is over 100,000 cp
BGD 1600/L	67.2 KU	----	Krebs Stormer Viscometer
BGD 1600/M	86.3 KU	----	Krebs Stormer Viscometer
BGD 1600/H	106.6 KU	----	Krebs Stormer Viscometer
BGD 1600/T	121.5 KU	----	Krebs Stormer Viscometer

Notice:

- ① The tested value of below table is tested at 25°C.
- ② For every bottle standard oil, the fact viscosity value should be taken as final by calibration certificate report.
- ③ The period of validity for viscosity value of standard oil is one year, it should be recalibrated every year.



Original Coating Performance

Fineness of Grind Gauges

Many types of solid materials must be ground or milled into finer particles for dispersion in appropriate liquid vehicles. The physical properties of the resulting dispersions, often called “grinds”, depend not only on the actual size of the individual particles, but also on the degree to which they are dispersed.

The Fineness Gauges are used to indicate the fineness of grind or the presence of coarse particles or agglomerates in a dispersion. It does not determine particle size or particle size distribution.

Grind gauges are used in controlling the production, storage, and application of dispersion products produced by milling in the paint, plastic, pigment, printing ink, paper, ceramic, pharmaceutical, food and many other industries.

The Fineness Gauge is a flat steel block in the surface of which are one or two flat-bottomed grooves varying uniformly in depth from a maximum at one end of the block to zero near the other end. Groove depth is graduated on the block according to one or more scales used for measuring particle size.

The degree of dispersion is indicated in Microns or “Hegman”. The Hegman scale ranges from 0 to 8 with numbers increasing as the particle size decreases.

0 Hegman =100 microns particle size

4 Hegman =50 microns particle size

8 Hegman =0 microns particle size

The gauge and its scraper are made of hardened stainless steel and have one or two grooves with a graded slope (dependent on the model chosen), graduated in microns, mils, NS (Hegman), Biuged controls precisely every gauge and ensure it has a tolerance of $\pm 2 \mu\text{m}$ (both of upper plan and nether plan flatness is less than $3 \mu\text{m}$).

It confirms the below standards: **ISO 1524, ASTM D 3333, ASTM D 1210, ASTM D 1316, DIN EN 21524. And all gauges come with Claibration Certificate.**

Procedure

Place a slight excess of sample in the deep end of the groove, and with the straight-edge scraper provided, draw the sample toward the shallow end of the groove. Ratings are in term of the point on the scale where the oversize particles, or furrows made by them, first appear in substantial concentration.



Description	Order Information	Groove Size (L×W)	Ranges	Overall dimension	Graduation	Number of Grooves
Single-Channel Grind Gauge	BGD 241/0	140 × 12.5mm	0–15μm	175 × 50 × 12mm	0.625μm	1
	BGD 241/1	140 × 12.5mm	0–25μm	175 × 50 × 12mm	1.25μm	1
	BGD 241/2	140 × 12.5mm	0–50μm	175 × 50 × 12mm	2.5μm	1
	BGD 241/3	140 × 12.5mm	0–100μm	175 × 50 × 12mm	5μm	1
	BGD 241/4	140 × 12.5mm	0–150μm	175 × 50 × 12mm	7.5μm	1
Double-Channel Grind Gauge	BGD 242/0	140 × 12.5mm	0–15μm	175 × 65 × 12mm	0.625μm	2
	BGD 242/1	140 × 12.5mm	0–25μm	175 × 65 × 12mm	1.25μm	2
	BGD 242/2	140 × 12.5mm	0–50μm	175 × 65 × 12mm	2.5μm	2
	BGD 242/3	140 × 12.5mm	0–100μm	175 × 65 × 12mm	5μm	2
Wide-Channel Grind Gauge	BGD 244/1	140 × 37mm	0–25μm	175 × 65 × 12mm	1.25μm	1
	BGD 244/2	140 × 37mm	0–50μm	175 × 65 × 12mm	2.5μm	1
	BGD 244/3	140 × 37mm	0–100μm	175 × 65 × 12mm	5μm	1

Laser Particle Size Analyzer

BGD 249 Laser Particle Size Analyzer is a new cost-effective laser particle size analyzer designed by Biuged R&D department. It is used to measure the particle size distribution of powder or latex.

Test Principle: Light is an electromagnetic wave. When light meets with particles on its way of traveling, the interaction between light and particles will result in deviations of part of the light, which is called light scattering. The bigger the scattering angle is, the particle size will be smaller, the smaller the scattering angle is, the particle size will be bigger. The particle analyzer instruments will analyze the particle distribution according to this physical character of the light wave.

Features:

Reliable optical platform

- ◆ Use horizontal straight light path layout, no reflecting prism, light path is stable and reliable.
- ◆ Good designability for base, good consistency of light path.
- ◆ Anti-moist ability of laser power module and the stability of electric are better.
- ◆ Modular construction design, maintenance is more convenient.
- ◆ The testing performance for small particles is improved.
- ◆ The all-in-one housing design, it's dust-protected and water-proof.

Schematic diagram of optical path

- ◆ Totally enclosed design of light path system, dust pollution and external light pollution can be prevented.
- ◆ Light path adopts lens back Fourier transform structure.
- ◆ Optical source adopts He-Ne laser emitter which owns better monochromaticity, high coherence, small divergence angle and good stability compared to other laser emitters, we also adopt the patent design of integrated laser emitter which reduces heat distortion of laser tube and external mechanical vibration.
- ◆ For laser emitter, except for traditional detection of output power value, we add the stability test of output power.
- ◆ Smoothing processing technology is used to reduce the impact of power fluctuation to measurement.
- ◆ Constant current limit and filling process of laser tube are used to reduce the flash frequency to the minimum.
- ◆ Backward detector is added, the lower limit of measurement is extended to 0.1micron.
- ◆ Spatial filter is fixed by powerful permanent magnet, the pinhole is not easy to shift under the disturbance of external force, so the stability of the optical path has been greatly improved. Besides, the new designed spatial filter eliminates the laser diffraction ring more effectively, the light background of the instrument is lower, optical energy data is more accurate, it is helpful to improve the testing capability for large particles.
- ◆ Detector array adopts unique scattered light detection around a sphere surface (DAS), the large angle detectors are placed in a spherical surface to get accurate focus of the large angle scattered light.

Advanced data collection and processing technology

- ◆ New designed data collecting board uses 32 bit CPU from famous chip design company-ARM, the CPU has the advantages of high-effective signal processing capacity and low power consumption.
- ◆ Using 8-channel simultaneous sampling to sample 16 bit ADC, the sampling frequency of frame data can reach 1 kHz.
- ◆ Using 64-channel simultaneous sampling technology and sample & hold switch with ultralow leakage current, the full scale accuracy can reach 0.15%.
- ◆ Easy to update the firmware and layout data, more convenient for maintenance and operation
- ◆ Offset function of electric background, it can help to get more accurate optical energy data.

Software Function:

- ◆ SOP standardization operating procedure function, analysis & testing process standardization
- ◆ Multiple distribution models: Rosin-Ramler mode, general mode, enhanced mode, Single mode
- ◆ Two report models: General purpose, statistics
- ◆ Two accumulative directions: small to large, large to small
- ◆ Data input function, and reports can be exported as Word, Excel format or other text format files
- ◆ Multiple reports can be opened at the same time, easy to compare among reports
- ◆ Report items can be set/ selected according to customers' requirements, also can be set as fixed report format.
- ◆ Users can define refractive index parameters by themselves, including real part and imaginary part (correspond to the absorption of sample)
- ◆ Automatic clear of electric background

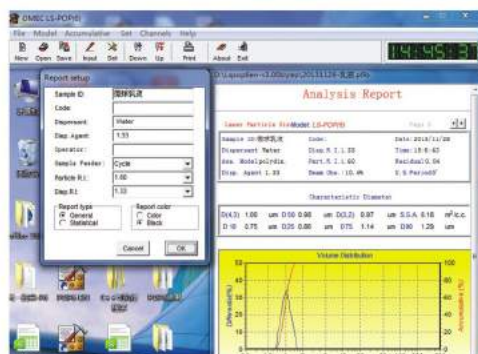
Main Technical Parameters:

- ★ Measuring Range: 0.1 – 750 μm
- ★ Sample Feeding: wet dispersion
- ★ Repeatability: <1% (standard sample D50)
- ★ Scan frequency: 1000kHz (times/second)
- ★ Measurement Duration: 1–2 minutes
- ★ Number of Detectors: 49
- ★ Environmental Requirement: Temperature: 5–35°C; Humidity: <85%
- ★ Report Items: Particle size distribution table & graph, Average diameter, Median diameter, SSA, etc.
- ★ Dimension (L \times W \times H) : 838 \times 265 \times 295mm (mainframe)



★ Ordering Information:

BGD 249--- Laser Particle Size Analyzer



Analysis Software



Circulating Sample Feeding System

Digital Abbe Refractometer

A refractometer measures the extent to which light is bent (i.e. refracted) when it moves from air into a sample and is typically used to determine the index of refraction (aka refractive index or n) of a liquid sample.

The refractive index is a unit-less number, between 1.3000 and 1.7000 for most compounds, and is normally determined to five digit precision.

The refractive index is commonly determined as part of the characterization of liquid samples, in much the same way that melting points are routinely obtained to characterize solid compounds. It is also commonly used to:

- ★ Help identify or confirm the identity of a sample by comparing its refractive index to known values.
- ★ Assess the purity of a sample by comparing its refractive index to the value for the pure substance.
- ★ Determine the concentration of a solute in a solution by comparing the solution's refractive index to a standard curve.

BGD 252 Digital Abbe Refractometer can be used widely in petroleum, chemical, pharmaceutical, sugar refining and food industries, as well as in related colleges, universities and scientific research institutions for measuring the refractive index n_D of transparent or sub-transparent liquid or solid substance. It also can be used to measure the Brix (BX) of the sugar solution, and to correct the effect of temperature on the Brix automatically.

- ◆ Visual aim and LCD display
- ◆ Correct automatically effect of temperature on the Brix.
- ◆ Prism is made of hard glass
- ◆ RS232 interface

Main Technical Parameters:

- | | |
|--|---------------------------|
| ★ Measurement range (refractive index) : 1.3000 – 1.7000 | Concentration 0 – 95% |
| ★ Measurement precision (refractive index) : ± 0.0002 | Concentration $\pm 0.1\%$ |
| ★ Min. reading (refractive index) : 0.0001 | Concentration 0.1% |
| ★ Range of temperature correction : 15°C ~ 45°C | |
| ★ Display scope of temperature : 0 ~ 50°C | |
| ★ Weight of instrument : 10KG | |
| ★ Size : 330mm \times 180mm \times 380mm | |
| ★ Ordering information: BGD 252---Digital Abbe Refractometer | |



Density (Specific Gravity) Cups

The Density of a coating should remain constant from batch to batch. Also known as Density (Specific Gravity) Cups. Specific Gravity Cups are used to determine the specific weight per unit volume of a liquid at a given temperature.

A stainless steel or anodized aluminum precision instrument for determining the specific weight of paints and similar products. A tolerance of 0.1% is guaranteed. Testing is carried out in accordance with ISO at $23 \pm 2^\circ\text{C}$.

This instrument consists of a cylindrical container and cover with a hole for exhaust of excess liquid for any excess Paint (or Ink) to be removed when the cup cover is pressing tightly. By doing so, will also ensure that no air bubbles (or pockets of air) are being trapped.

It is in according with DIN 53217, ISO 2811, BS 3900 A19. And each desity cup comes with Calaibration Certificate.

Order information	Capacity	Unit	Material
BGD 296/1	37cc/ml	Metric	Stainless steel
BGD 296/2	50cc/ml	Metric	Aluminum
BGD 296/3	50cc/ml	Metric	Stainless steel
BGD 296/4	100cc/ml	Metric	Aluminum
BGD 296/5	100cc/ml	Metric	Stainless steel



Procedure

- Weight cleaned density cup empty and record weight
- Temper density cup and test liquid ($20^\circ\text{C} \pm 0.5^\circ\text{C}$; $68^\circ\text{F} \pm 1.0^\circ\text{F}$)
- Fill density cup
- Put cover on without tilting
- Avoid air bubbles
- Remove overflowing liquid carefully with absorbent cloth
- Weight filled density cup
- calculate density

Pressure Density Cup (Pyknometer)

BGD 297 Pressure Density Cup is designed to measure the liquid sample density with the minimum of error. Some paints that tend to pick up significant quantities of air during manufacture. This instrument operates on the principle of compressing the paint to such an extent that included air bubbles are reduced to a negligible volume. It can be used with materials containing up to 10% by volume of included air and is capable of results reproducible to better than $\pm 0.5\%$.

The instrument consists of a hollow cylinder with a plunger in one end and a pressure release cap at the other. Pressure can be applied to the sample of paint by advancing the plunger with the screw provided. Excess paint is forced out of the pressure release cap which is set at a value of 150 p.s.i. The instrument is so made that when the plunger is screwed home the volume of paint enclosed is that of 100ml.

In order to use the cup, the pressure release cap is removed and the plunger withdrawn to the full extent in order to give the cup its maximum capacity for filling. The cup is held vertically with the open end at the top and the paint to be tested is poured in until it is nearly full. The cup is then closed by replacing the pressure release cap.

The paint is now compressed by advancing the plunger. When the pressure in the cup reaches 150 p.s.i. paint is forced out between the cup and the pressure release cap. When the plunger has been advanced to its full extent the paint in the cup is at a pressure of 150 p.s.i. and the volume is the same as 100ml (that of 100 gms. of water at 16.7°C).

If the temperature is other than 16.7°C there will be a small error due to the thermal expansion of the cup, which may be regarded as negligible if the temperature is between 12°C and 20°C. The excess paint is washed away from the top of the cup and the whole instrument dried.

The weight of the paint remaining in the cup is obtained by weighing the cup and its contents and subtracting the tare weight of the cup.

It is made up of stainless steel and easy to clean. It conforms to ISO 2811-4 and BS 3900 A22. And each desity cup comes with Calaibration Certificate.

★ **Ordering information:** BGD 297---Pressure Density Cup

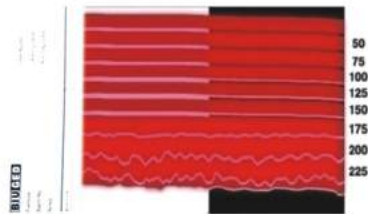


Sagging Tester

BGD 225 Sagging Tester produced by our company is in accordance with the specification of ASTM D4400 and ASTM D 373. They are made of corrosion resistant stainless steel, The width of application is 75mm at 6mm per sagging thickness, the gaps are being separated by a 1mm space as a marking on each sagging for distinctive identifications of each sagging.

They are applicable to determine the relative sag resistance of a series of paints in order to provide the technical parameters for the paint application in site.

Main Technical Parameters:					
★	Difference between adjacent two notches: 25µm				
★	Overall dimension: 120 × 20 × 20mm (L × W × H) Weight: 0.5Kg				
★	Come with Calibration Certificate				
★	Ordering information	BGD 225/1	BGD 225/2	BGD 225/3	BGD 225/4 BGD 225/5
	Range	50-275µm	250-475µm	450-675µm	650-875µm 850-1075µm



Manual:

Drawdown the coatings on a material (glass, test chart or board) using the appropriate sagging Thickness Gauges, then place the coated material at vertical position (90°) to the platform (eg: table) .Allow 10 to 30 minutes (depending on the viscosity) for the coatings to sag under gravity. Check out the coating thickness without the sagging effect and the next coating thickness with the sagging effect. With that information, the recommended coating thickness is between the 2 layers of coatings.

Leveling Tester

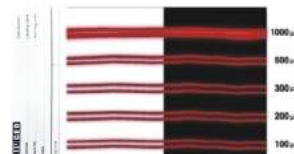
BGD 226 Leveling Tester is designed to determine the relative leveling of liquid coating materials before curing in the laboratory. (Coating materials have to eliminate surface defect during drying). It comply with ASTM D2801-1994 (BGD 226/1) and NYPC (BGD 226/2).

It is made of stainless steel with straight scraper fitted with 5 pairs of notches of increasing depth from 100~1000 μ m (or 250~4000 μ m).

Once the drawdown has been made on a horizontal, firm surface, leave the coating to cure. Once the coating is dry, identify the thickness at which the pair of film stripes merge.

Main Technical Parameters:

- ★ BGD 226/1: for coating thickness 100–200–300–500–1,000 μ m
Overall dimensions: gate type 120 × 20 × 20mm (length by width by height)
- ★ BGD 226/2: for coating thickness 10–20–40–80–160 mils
Overall dimensions: gate type 120 × 20 × 20mm (length by width by height)
- ★ Come with Calibration Certificate
- ★ Weight: 0.3Kg
- ★ Ordering information: BGD 226/1---Leveling Tester (100–1,000 μ m)
BGD 226/2---Leveling Tester (10–160 mils)



Opacity

The terms "contrast ratio", "opacity" and "hiding power" are used interchangeably throughout the coatings industry but on this page, in order to simplify matters, only the term opacity will be used. Opacity is defined as the ability of a coating to prevent the transmission of light. A practical example of this is the case where a yellow wall is painted using a red paint. The greater the opacity the red paint, the more efficient it will be at hiding the underlying yellow colour.

Opacity is defined how a wet film of the test coating is applied to a black and white patterned substrate. After the film has dried, a reflectance meter or a spectrophotometer is used to measure the amount of light reflected from the overcoated black areas of the substrate. This is then expressed as a percentage of the amount of light reflected from the overcoated white areas. This value is the opacity of the film.

A paint which is highly opaque will obscure the black and white areas to an equal extent. In this situation, equal amounts of light will be reflected from the overcoated black and white areas and consequently an opacity value of 100% will be obtained.

① Hiding Power Test Board

Hiding Power Test Board is a glass board which is printed 16 white squares and 16 black squares. Every square size is 25mm × 25mm. It is used to check the hiding power of paints. Operator brush some paint on it surface till can't see white square and black square completely, then weight the used paint and divide the whole area (200cm²), use g/cm² to express this paint hiding power capacity. It is a easy and fast method to test hiding power of paints.

Main Technical Parameters:

- ★ Reflectance of white square: 80 ± 2
- ★ Reflectance of black square: ≤ 1
- ★ Overall dimension: 250mm × 100mm
- ★ Ordering Information:
BGD 299--- Hiding Power Test Board



② Basic Reflectance Meter

BGD 581 Reflectance meter is designed and manufactured according to international standard ISO2814, ISO 3906, ISO 6504, BS 3900 and DIN 55984

Feature:

- ◆ Small and light, real easy to be carried and used.
- ◆ Auto zero calibration.
- ◆ One 1.5V alkaline Battery can be used for almost 60 hours and 10000 readings.
- ◆ Long-term stable light source needs no replacing.

Main Technical Parameters:

- ★ Measure range: 0 ~ 100%
- ★ Measurement condition: 45°/0
- ★ Repeatability: 1.5%
- ★ Power supply: One 1.5V alkaline Battery or rechargeable
- ★ Window Size: 12 × 17mm (ellipse)
- ★ Dimension: 114mm × 32mm × 64mm
- ★ Weight: 300g
- ★ **Ordering Information:**
BGD 581---Basic Reflectance Meter



③ Opacity Meter/ Intelligent Reflectometer

OpaCity Meter is our the newest portable products. It is controlled by microcomputer and has many functions such as measuring data, data storage, dealing with data and searching for data etc.

This meter is used to measure the opacity, or luminous reflectance, of a grey scale. Suitable for the evaluation of a coatings hiding power, or simple shade sorting tasks of metallized films, anodized aluminium or ceramics. It can calculate the contrast ratio (opacity, see page 127) and store it. The operator can call up the date when required. It complies with ISO 2814, ISO 3906, ISO 6504, BS 3900 and DIN 55984.

- ◆ Small and light, easily portable.
- ◆ No need to warm up and can work immediately after powering on
- ◆ Calibrate automatically: judge zero point and calibrate white board automatically
- ◆ With USB interface and software for transmitting data.
- ◆ One 1.5V alkaline Battery can be used for almost 60 hours and 100,000 reading.
- ◆ Long-term stable light source needs no replacing.
- ◆ With simple test mode and Statistics-Mode.
- ◆ Calculate the reflectance value automatically.

Main Technical Parameters:

- ★ Working angle: 45° (irradiate) , 0° (receive) ; CIE Illuminant C
- ★ Range of Measurement: 0-100 units
- ★ Resolution: 0.1%
- ★ Accuracy: ± 1 unit or 1% (full scale)
- ★ Power Supply: One 1.5V alkaline battery or rechargeable
- ★ Window Size: 12 × 17mm (ellipse)
- ★ Size: 114 × 32 × 64mm Weight: 180g
- ★ Testing Environment: 10°C ~ 40°C, relative humidity should not be over 85%.
- ★ **Ordering Information:**
BGD 583---Opacity Meter



Drying Time

When developing a process, it is important to know the exact time it takes for the coating to dry or cure. There are many stages to the coating drying time. Once a coating has been applied, the first stage is that the coating levels off under gravity. Once a coating begins to cure, a thin dry film appears on the surface.

But how to know when a coating is totally dry?

Using the Biuged Drying Time Recorder, the operator can easily identify each of the stages of the drying **process**:

A ball tip is placed into the coating and, using the mathematical formula: $\text{Distance} = \text{Speed} \times \text{Time}$; the Recorder begins to move this ball at a predefined speed. As the coating dries, the trace left in the coating by the ball identifies each stage of the cure.

① Minimum Film Forming Temperature (MFFT) Tester

Description: As the most important component—emulsions for coatings and polymer dispersions for coatings and plastics polymer, its film-forming property has important influence on final products drying property. Thus, knowing its MFT is very necessary.

In a certain temperature, emulsions or polymer dispersions, if the temperature is not high enough, then can't let the polymer particles polymerize. Now, all polymer particles can't get together any more and then form incontinuous and non-transparent white mass; If the temperature is high enough and let the particles get together, then can form continuous and transparent film.

White Point Temperature: The dividing temperature when non-transparent film change to transparent film.

Minimum Film-forming Temperature: The lowest temperature when forming continuous, uniform and no-crack film (Generally speaking, White Point Temperature has several degrees lower than MFFT)

BGD 452 Minimum Film-Forming Temperature (MFFT) Tester is the newest instruments which is developed by Biuged lately, Its main structure is a metal (copper) platen with an electronically imposed temperature gradient. Built in temperature sensors monitor the temperature across the platen, a graph of the gradient is displayed on the touch screen. A cooling source and a heating source are located separately on the two ends of platen to produce different temperature gradient through metal heat conduction theory.

Applicate a continuous and uniform thickness wet film of emulsion or dispersions on the temperature gradient platen, then dry it by dry air, with temperature of platen influence, the water of sample would evaporate and form film. Due to different temperature on the platen, the film-forming position is also different. Find the dividing point between continuous transparent film with white non-transparent film, thus this point which also can be read from touch screen of tester is MFFT.

It is accordance with ISO 2115, ASTM D 2354 standard, and can test minimum film temperature of emulsion polymer easily and accurately.

Features:

- ◆ Initiated in China, High-tech product, combine a lot of patents with independent intellectual property rights.
- ◆ Small size, high precision, intelligent operation, easy to use and maintenance.
- ◆ Color touch screen+ menu operation system, all parameters can be shown in real time
- ◆ High precision digital temperature sensor, ensure the temperature error is less than $\pm 0.1^{\circ}\text{C}$
- ◆ Come with chiller
- ◆ Come with dry air generator which can produce dry dew point air, and can ensure sample can dry completely and test results don't be effected by environment humidity.
- ◆ Removable scale is convenient for operator to read any point temperature on the gradient platen. Operator can move the scale freely, then tester can identify automatically current position and show relevant temperature of this position.
- ◆ Monitor automatically cooling water temperature and flow, tester would stop working automatically once any exceptional conditions.
- ◆ Platen (Temperature gradient) is made of copper with special process, fast heat conduction and strong stability.
- ◆ System reminder operator automatically about the testing progress.
- ◆ Seven work conditions for selection, convenient to measure different film-forming temperature sample.
- ◆ 16 high temperature sensors is distributed on the gradient platen.
- ◆ Come with BGD 203/3 cube applicator which can get the 100 micron continuous and uniform wet film with 22mm width

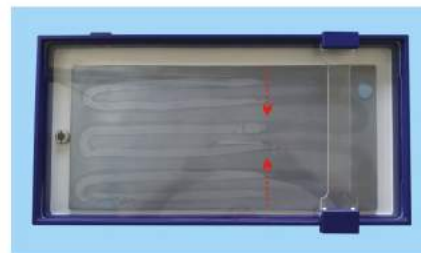
Main Technical Parameters:

- ★ Working temperature range of gradient platen: $-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$
- ★ Number of inspection points of gradient platen: 16 points
- ★ Interval distance of gradient: 20mm
- ★ Test channels: 6 pcs (width is 25mm)
- ★ Gradient platen size: 447mm × 210mm
- ★ Power Supply: 220V/50Hz AC wide voltage
(three-phase supply with good earth)
- ★ Tester Size: 528mm (L) × 430mm (W) × 184mm (H)
- ★ Chiller Size: 460mm (L) × 200mm (W) × 160mm (H)
- ★ Dry Air Generator: 555mm (L) × 255mm (W) × 525mm (H)
- ★ Weight: 86Kg (MFFT Tester+Chiller+Dry Air Generator)
- ★ Ordering information:

BGD 452--- Minimum Film-Forming Temperature Tester



Operation Menu



Film Forming Point



Dry Air Generator



Chiller

② Line Drying Time Recorder

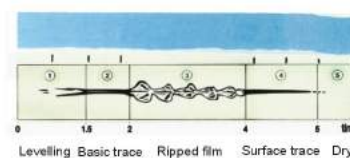
The various stages of drying and curing that occur in films are easy to detect but difficult to define in terms of chemical and physical principles. In order to evaluate them satisfactorily, it is necessary to use instrumentation under controlled conditions.

Biuged offers a versatile drying time recorder to help quantify the various stages of film curing and drying, deliver reproducible results, and guarantee highest efficiency:

This reliable apparatus to test the drying time or gelation behavior of many paints and coatings, applied onto a glass strip of 330mm × 24mm by means of our cube applicator (BGD 203). Hemispherical needles travel on these test tracks, over a selected time: 6, 12, 24 and 48 h.

The drying time stages can be easily assessed with the graduation scale (according to traverse speed configuration) : The total time for every test can be observed from the LCD screen.

1. **Evaporation of solvent:** *deep pear-shaped impression*
2. **Sol-gel transition:** *continuous track*
3. **Surface dry:** *interrupted track*
4. **Final dry time:** *the needle no longer penetrates the film*



Typical Test Result

Main Technical Parameters:

- ★ Simultaneous testing of 6 samples – saves time
- ★ Four different speeds: 6–12–24–48 hrs – for any application
- ★ **Ordering Information:**
 - BGD 261---Line Drying Time Recorder
 - BGD 203---Cube Applicator(see page 33)
 - BGD 2602---Glass Strips(pack of 60)



Procedure

- Coat the glass strip using BGD 203 film applicator (order separately below)
- The drying of the paint starts here. If you prepare multiple panels at different times, note the time when the draw down was made and add it to the time the sample is in the recorder
- Place recorder bridge in starting position and put the strip in place
- Place needles on the sample strip and select the speed by adjusting the speed switch
- Turn the recorder on the unit will automatically switch off at the end of the test
- Evaluate the results (see figure at right)

③ Intelligent Line Drying Time Recorder

This is a powerful and intelligent line drying time recorder which can meet with all different requirements about analyzing different samples' drying performance. It has three individual pairs of tracks (each channel has two working channels). Comparing with BGD 261, BGD 262 Intelligent Line Drying Time Recorder has many features as below:

- ◆ Big size touch screen (5 inch) and shows three channels working parameters at the same time
- ◆ Very easy and convenient to set working parameters
- ◆ Broad and flexible time range: can be set varying from 1 minute up to 48 hours. This makes the BGD Drying Time Recorder suitable for fast drying waterborne coatings as well as very slow drying paints that may need days to dry.
- ◆ Uses photoelectric sensor to accumulate and show real-time position, and can achieve accurate position which precisely corresponds to working time.
- ◆ With motor drive controlling system which has our own intellectual property to ensure high precision location.
- ◆ Each channel has LED indicator light to show this channel is working or not.



Main Technical Parameters:

- ★ Working tracks: 3 pairs individual tracks, each track includes two working channels
- ★ Setting range for working time: 1 minute–48 hours (Each track can be set individually.)
- ★ Overall Size: 600 × 570 × 240mm Weight: 30KG
- ★ **Ordering Information:**
 - BGD 262---Intelligent Line Drying Time Recorder
 - BGD 203---Cube Applicator (see page 33)
 - BGD 2602---Glass Strips (pack of 60)

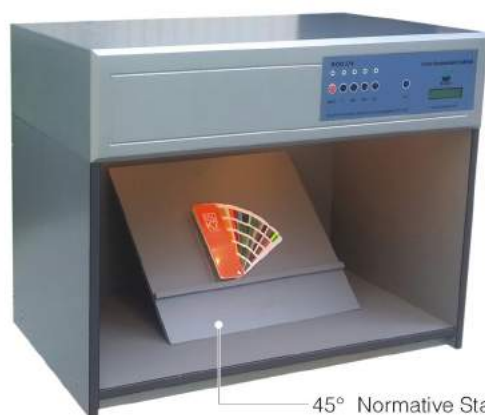
Color Assessment Cabinet

The cabinets supplied the supply of some different lights and are controlled by a microprocessor LCD Screen that shows each Lighting usage Time. Each Button controls the individual set of Lights. The CLR (Clear) button allows the resetting of the Lighting Usage Time to ZERO when new lights are replaced. The ON/OFF Switch button must be switched off during long hours (more than 3 to 4 hours) of non-operation. This is to reduce the possibility of heat-up as well as to increase life span of the electronic ballast. All Lights can be switched on at the same time as according to the user needs. The optional Diffused Glass Panel below the lights ensures the elimination of direct reflection of lights to viewing products. There is no Warm-Up time/Flickering of Lights when there is a constant electrical supply. All electrical components used are of low power consumption and heat generation for energy efficiency in.

The international approved Light Gray Non-Reflective Surface ensures that no light is being reflected from the surface during color matching. So, what you see of your products in our Biuged Color Assessment Cabinets will be as natural as what you view them under the natural color matching conditions. The Non-Reflective Surface has certain degree of roughness not only acts as light absorption when light are illuminated, but it is also scratched-resistance. Many Color-Matching Cabinets do not have this dual ability.

Main Technical Parameters:

- ★ Time running display for each light source.
- ★ Auto conversion between light sources: Different spectrum with same color.
- ★ No need warm-up and no flicker, enable quick and reliable assessment to sample.
- ★ Low power-consumption; No heat emission; Efficient illumination.
- ★ Small size and convenient to use for laboratory or production line.
- ★ Weight: 35Kg
- ★ Dimensions: 710 × 530 × 570 mm



45° Normative Stand
(Optional)

Light source	Description	Number of Light	Power	Color Temperature
D65	International-standard Artificial Daylight	2 pcs	18W	6500K
TL84	Applicable to stores in Europe, Japan and China	2 pcs	18W	4000K
CWF	Cool White Fluorescent	2 pcs	18W	4150K
F/A	Comparison referential light source, Applicable to family/hotel	4 pcs	40W	2700K
UV	Ultraviolet light source	1 pc	20W	Wavelength 365nm
U30	Warm White Fluorescent	2 pcs	18W	3000K

Ordering Information

Light source → Ordering Information ↓	D65	TL84	F/A	UV	CWF	U30
BGD 274	✓	✓	✓	✓		
BGD 275	✓	✓	✓	✓	✓	
BGD 276	✓	✓	✓	✓	✓	✓

Optional accessories: BGD 277—45° Normative Stand (has accurate angles and has the same color as the Color Assessment Cabinet/this makes a non-interference viewing effect).



Biuged instruments also offer some special size (Dimensions: 1310x600x800 mm) color assessment cabinets according to customer's different demand.

Iron-cobalt Color Comparison Tester

It is designed to measure the color of the varnish, thinner and other transparent liquids. Take a certain amount of ferric chloride hydrochloric acid solution, potassium dichromate sulphuric acid solution, and cobalt chlorite hydrochloric acid solution, The above three solutions will be mixed together at a certain percentage in order to get 18 solutions with different colors and densities. Then put them into the tubes and sealed separately.

The visual method is used to assess via the comparison with a series of anvil standard tone scale solution, which is marked with the color gradation number. The result is shown in 1-18.

Main Technical Parameters:

- ★ Colorless glass tube with the internal diameter of $\Phi 10.75 \pm 0.05\text{mm}$, and the height of $114 \pm 1\text{mm}$.
- ★ Color comparison box(self-prepared)
- ★ The test must be taken at the temperature of $23 \pm 2^\circ\text{C}$

★ Ordering Information:

BGD 420---- Iron-cobalt Color Comparison Tester



Gardner Color Comparator with C Illuminant

Colour variations of transparent liquids such as varnishes, solvents, resins, tensides, oils et., may be caused by contamination or impurities, process inconsistencies, or excessive weathering. Therefore reliable and accurate measurements are essential to ensure consistent production standards.

BGD 425 Gardner Color Comparator with C Illuminant is used to test the color of drying fatty oil, varnish, fatty acid, polymerized fatty acids and resin. It complies with ISO 4630 standard.

Main Technical Parameters:

- ★ Working Standard: 18 pcs different standard liquid color which are prepared according with ISO 4630
- ★ Glass tubes: Colorless and transparent with inner diameter is $10.65 \pm 0.025\text{mm}$, exterior diameter is 12.5mm and the length is 114mm
- ★ Illuminant: Its energy of spectra is similar with C light resource of CIE. And the ray come through breadth wise the working standard color and sample
- ★ The environment is neutral color, the two working standard colors and one sample are within eye shot

★ Ordering Information:

BGD 425----Gardner Color Comparator with C Illuminant



pH Meter

Acidity and Alkalinity must be considered when design coating formula! Digital pH Meter can display the pH of sample directly and quickly. Low cost plus high performance offers laboratory quality control for a very economical cost.

It is Ideal for all kinds of water quality, chemical testing in the laboratory and soil/fertilizer testing. Suitable for most ASTM and ISO test procedures. Great for R&D and QC applications in chemical industries and related fields.

① Table pH Meter

Ordering Information → Main Technical Parameters ↓	BGD 284	BGD 285	BGD 286
pH Range	0.00 to 14.00 pH	0.00 to 14.00 pH	0.00 to 14.00 pH
Resolution & Accuracy	± 0.05 pH	± 0.01 pH	± 0.01 pH
mV Range	0 to ± 1400 mV	0 to ± 1999 mV	0 to ± 1999 mV
Temperature Compensation	Manual (0 to 60°C)	Automatic (0 to 100°C)	Manual (0 to 60°C)
Stability	± 0.05pH/3h	± 0.01pH/3h	± 0.01pH/3h
Power	220 ± 22V, AC, 50 ± 1 Hz		



Optional Accessories:

BGD 1171/1----Plastic combination pH electrode (for BGD 284 & 286)

BGD 1171/2----Plastic combination pH electrode (for BGD 285)

BGD 1172/1----Corrosion resistance glass combination pH electrode

② Pen Portable pH Meter

It is designed like a pen and more convenient to use anywhere and anytime!

- ◆ Best function: automatic calibration, automatic temperature compensation, automatic power off, low voltage alarm, pH electrode invalidation display, etc.
- ◆ Easy to use : single button operation.
- ◆ Reliable structure design: meet IP57 waterproof, replaceable batteries, calibration solution, electrode soaking solution and standby batteries in a portable case.



Main Technical Parameters:

Ordering Information → Parameters ↓	BGD 287	BGD 288
Measuring range	0 ~ 14.0 pH	-1.00 ~ 15.00 pH
Resolution	0.1 pH	0.01 pH
Accuracy	± 0.1 pH	± 0.01 pH
Stability	± 0.1 pH/3h	± 0.01 pH/3h
Temp. compensation range	0 ~ 60°C (Automatic)	0 ~ 60°C (Automatic)
Show Temperature	No	Yes
Auto.Calibration	1 Point (pH7.00)	1 ~ 3 point (pH4.00/7.00/10.01)
Power	CR2032 lithium batteries × 2, continuous use for over 100 hours	
Dimension	148 × 29 × 14mm	
Weight	43g	

Optional Accessories:

BGD 1171/4----Plastic three-in-one combination pH electrode (for BGD 287)

BGD 1171/5----Plastic three-in-one combination pH electrode (for BGD 288)

③ Portable pH Meter

The most cost effective portable pH, suited for industrial and mining factories, power plant, water treatment project, environmental protection industry, etc, especially suited in field and on-site

◆ Built-in microprocessor chips, intelligent functions such as automatic calibration, automatic temperature compensation, data storage, function set-up, self-diagnose information, automatic power-off and low voltage display.

◆ Automatic identification of 13 pH standard calibration solutions, three options of standard buffer solutions: Europe and America series, NIST series and China series.

◆ Able to set pH measurement modes of high purity water and pure water with ammonia.

◆ Equipped with calibration solution and portable case and suited in field and on site.

◆ Meter meets IP57 waterproof rating

◆ Can store 200 groups data (Series number, measuring value measuring unit and temperature)

Main Technical Parameters:

★ Measuring Range: -2.00~19.99 pH;
★ Resolution: 0.01pH;
★ Accuracy: ± 0.01 pH
★ Stability: ± 0.01 pH/3h
★ Temp. compensation range: 0°C ~ 100°C, automatically
★ Power: Two AA batteries (1.5V \times 2)
★ Meter size and weight: 120 \times 65 \times 31mm (L \times W \times H) ; 180g
★ Package size and weight: 360 \times 270 \times 76mm (L \times W \times H) ; 1.6kg
★ Standard kit includes:
BGD 283 pH/mV meter (1 unit)
Plastic pH three-in-one combination electrode (1 pc)
pH standard buffer solution (pH4.00, pH7.00 and pH10.01) /50mL (3 bottles)
Spare AA batteries (2 pcs)
★ Ordering Information:
BGD 289---Portable pH Meter
BGD 1171/3---Plastic three-in-one combination pH electrode
BGD 1172/4---Glass pH electrode for oil sample (used to organic solvent, ink and coating)



Conductivity Meter

Conductivity meter is used widely to determine the level of impurities in water supplies for domestic consumption as well as industrial use. Industries that employ this method include the chemical, semi-conductor, power generation, hospitals, textile, iron and steel, food and beverage, mining, electroplating, pulp and paper, petroleum and marine industries.

Specific applications include chemical streams, demineraliser output, reverse osmosis, stream boilers, condensate return, waste streams, boiler blow down, cooling towers, desalinisation, laboratory analysis, fruit peeling and salinity level detection in oceanography.

It is used to measure the capacity of ions in an aqueous solution to carry electrical current. As the ranges in aqueous solutions are usually small, the basic units of measurements are milli-siemens/cm (mS/cm) and micro Siemens/cm (μ S/cm).

① Table Conductivity Meter

BGD 292 Electrical Conductivity (EC) meters have double digits LCD display with big screen and blue back light, display conductivity value and temperature value: With manual or automatic temperature compensation. There are four types of electrodes for conduction cell constant: 0.01, 0.1, 1.0 and 10.0cm⁻¹, user can select by your need. At the same time, it have automatic switching measuring frequency, measuring ultrapure water with using K=0.01cm⁻¹ titanium alloy electrode and sealing measuring cell.

Main Technical Parameters:

- ★ Conductivity Range: 0.001–2 × 10⁵ μS/cm (1000MΩ–5Ω.)
- ★ Display: 3 + 1/2 LCD
- ★ Resolution: 0.05% of Full Scale
- ★ Accuracy: ± 1% Full Scale + 1 bit
- ★ Stability: ± 0.67% Full Scale + 1 bit/24h
- ★ Temperature Compensation Range: 10–40 °C (standard temperature: 25°C)
- ★ Tested sample Temperature Range: 50–60 °C
- ★ **Ordering Information:**
- BGD 292----Table Conductivity Meter
- BGD 1175/1----Plastic conductivity electrode



② Portable Conductivity Meter

BGD 293 portable conductivity Meter is used widely for laboratory or field measurement of the conductivity of liquid.

- ◆ Built-in microprocessor chips, intelligent functions such as automatic calibration, automatic temperature compensation, data storage, function set-up, automatic power-off and low voltage display.
- ◆ Automatic identification of 8 conductivity standard calibration solutions, two options of standard calibration solutions: Europe and America series and China series.
- ◆ Adopt advanced conductivity measurement technology, use conductivity electrode of constant K=1, only need one point calibration and meet the measurement precision requirement of 0.5μS/cm ~ 200 mS/cm.
- ◆ Ability to switch among conductivity, TDS, salinity and resistivity. Multinomial calculation for TDS and salinity to ensure the conversion precision of the full scale.
- ◆ Conductivity measurement mode has the function of non-linear temperature compensation for high purity water.
- ◆ Plastic conductivity electrode with automatic temperature compensation, fast response and accurate result.
- ◆ Meter meets IP57 rating waterproof standard, equipped with calibration solution and portable case.

Main Technical Parameters:

- ★ Measuring range: 0 ~ 2 × 10⁵ μS/cm
- ★ Resolution: 0.01/0.1/1 μS/cm; 0.01/0.1 mS/cm
- ★ Accuracy: Meter: ± 1.0% FS, Overall: ± 1.5% FS
- ★ Temp. compensation range: (0 ~ 50) °C (manual)
- ★ Data storage: 200 groups (Series number, measuring value measuring unit and temperature)
- ★ Power: Two AA batteries (1.5V × 2)
- ★ Meter size and weight: 120 × 65 × 31mm (L × W × H); 180g
- ★ Package size and weight: 360 × 270 × 76mm (L × W × H); 1.6kg
- ★ Standard kit includes: BGD 293 pH/mV meter (1 unit); Plastic conductivity electrode (1 pc) 1,413 μS/cm conductivity standard solution (50mL); Spare AA batteries (2 pcs)
- ★ **Ordering Information:**
- BGD 293----Portable Conductivity Meter
- BGD 1175/3----Plastic conductivity electrode
- BGD 1176/3----Glass conductivity electrode



③ Portable pH/Conductivity Meter

BGD 290 is a double-parameter meter, it is equipped with pH electrode and conductivity electrode, automatic identification of electrode by meter.

All features and parameters are same as BGD 289 Portable pH meter and BGD 293 Portable conductivity meter.

◆ Standard kit includes:

- ① BGD 290 pH/mV/Conductivity meter (1 unit)
- ② Plastic conductivity electrode (1 pc)
- ③ Plastic pH/ATC three-in-one combined electrode (1 pc)
- ④ 1,413 μ S/cm conductivity standard solution (50mL)
- ⑤ pH standard buffer solution (pH4.00, pH7.00 and pH10.01/50mL)
- ⑥ Spare AA batteries (2 pcs)

◆ Ordering information: **BGD 290--- Portable pH&Conductivity Meter**



Standard Solution

Product Name	Ordering Information	Description
pH4.00 buffer	BGD 1170/1	500mL/250mL/50mL (bottle)
pH6.86 buffer	BGD 1170/2	500mL/250mL/50mL (bottle)
pH7.00 buffer	BGD 1170/3	500mL/250mL/50mL (bottle)
pH9.18 buffer	BGD 1170/4	500mL/250mL/50mL (bottle)
pH10.01 buffer	BGD 1170/5	500mL/250mL/50mL (bottle)
84 μ S/cm conductivity standard	BGD 1174/1	500mL/250mL/50mL (bottle)
1413 μ S/cm conductivity standard	BGD 1174/2	500mL/250mL/50mL (bottle)
12.88 mS/cm conductivity standard	BGD 1174/3	500mL/250mL/50mL (bottle)



Karl Fischer Titration Tester

These instruments use Kari-Fischer measurement to measure the trace of moisture in the coating, ink etc. It use ascertaining end-point titrimetry to measure the end-point. It can be used to measure the moisture content in chemical fertilizer medicine, foodstuff, chemical material and other industrial products.

It can absorb and transfuse liquid automatically measure the end-point automatically, and show titrimetry value by LED digital display.

Main Technical Parameters:

- ★ Polarization voltage: -20mv
- ★ Sensitivity: 10^{-8}A
- ★ Distinguish ability: 0.01ml
- ★ End-point delay: 10 ± 1 second.
- ★ Titration flux: control automatically
- ★ Power supply: $220\text{V}/50\text{Hz}$
- ★ Power: 18W

★ Ordering Information:

BGD 232--- Karl Fischer Titration Tester



Automatic-Intelligence Karl Fischer Titration Tester

Based on Kari-Fischer principle, this instrument is the latest water titrimetry designed by newest mechanical-electronic technology with human interface. It is also features high precise, simple operation and usage. This instrument can determine crystal water, adsorbent water, dissociative water is gas, liquid, solid samples. It is applicable in many fields as petroleum, chemistry, pharmacy, foodstuff, agriculture, labs and others.

Main Technical Parameters:

- ★ Extra colorful LCD screen, Chinese or English menu
- ★ Dynamic online guidance, simply windows-style operation
- ★ All results are shown in one screen, including water content, water percentage, ppm content, reagent consumption, Dynamic color titration curve display, automatic saving titration results.
- ★ Automatic subtract floating water, automatic track of environment floating water, to secure exact final results.
- ★ Stepless-speed mixing PWM, select from menu.
- ★ Whole system is sealed, preventing escaping of poisonous gas. automatic reagent change, automatic discharge waste water.
- ★ On-line parameters shown of instrument status, metric pump output, instant time shown, 3-way valve status shown, drafting volume, and other parameters shown.
- ★ Testing Scope: $0.01\% - 100\%$
- ★ Solution: 0.01ml
- ★ System error: $\leq 2\%$
- ★ Terminal Resistance: $500, 1.5\text{k}, 2\text{k}$
- ★ Terminal Time-lapse: $10 - 300\text{s}$ (Adjustable)
- ★ Ordering Information: BGD 233--- Automatic-Intelligence Karl Fischer Titration Tester



Note: Biuged do not offer Karl Fischer reagent because of transportation problem, customer can get it from local market.

Flash Point Tester

Flash Point Tester is designed and produced according to ISO 2719, ISO 2592, ASTM D93, D65, ASTM D 6450 etc standards. It is suitable to test flash and fire point (Except fuel oil and petroleum products whose open flash point is below 79°C)

① Basic Type

◆ The design of firing adopt patent technology, keeping a stable fire through controlling the flow speed for flammable liquid. Operator can adjust the flow rate hence avoiding some dangerous and inconvenient factors which would be happened by electronic or LNG firing.

- ◆ Clear and beautiful LCD screen
- ◆ Small size, light weight and reasonable structure.

Main Technical Parameters:

- ★ Power supply: AC 220 V \pm 10%, 50Hz
- ★ Thermometer: 0 ~ 400 °C
- ★ Ambient temperature: \leq 35 °C
- ★ Relative humidity: \leq 85%
- ★ Total power consumption: less than 650 W

★ Ordering Information:

- BGD 235----- Open Cup Flash Point Tester
- BGD 238----- Closed Cup Flash Point Tester



BGD 235



BGD 238

② Automatic Type

◆ The design of firing adopt patent technology, keeping a stable fire through controlling the flow speed for flammable liquid. Operator can adjust the flow rate hence avoiding some dangerous and inconvenient factors which would be happened by electronic or LNG firing.

- ◆ With the atmospheric pressure sensor in the machine and the pressure can be revised automatically
- ◆ Controlling the speed of rising temperature automatically, with coercive cooling system.
- With the safe protection for firing, alarm and stop testing when exceeding the safe temperature
- ◆ Controlling heating, stirring, scanning and flashing procedure automatically.
- ◆ With double heating elements and can switch mutually.
- ◆ Can self-check automatically and show the failure
- ◆ With a large data-base and can store 100 datas also including inquire, manage etc.
- ◆ With RS-232 interface and can print testing results.
- ◆ Monitor can refiring automatically when the igniter die.
- ◆ Clear and beautiful big LCD screen (320×240)
- ◆ Small size, light weight and reasonable structure.

Main Technical Parameters:

- ★ Power supply: AC 220 V \pm 10%, 50Hz
- ★ Thermometer: 0 ~ 400 °C; each scale division is 0.1 °C.
- ★ Ambient temperature: \leq 35 °C
- ★ Relative humidity: \leq 85%
- ★ Total power consumption: less than 700 W
- ★ With accessional printer

★ Ordering Information:

- BGD 236----- Automatic Open Cup Flash Point Tester
- BGD 239----- Automatic Closed Cup Flash Point Tester



BGD 236



BGD 239

Automatic Interfacial Tension Tester

This instrument is designed with ISO 6295, ISO 1490, ASTM D1417, EN14370 etc "Test Methods for Interfacial Tension of Petroleum Products between Oils and Water (Ring Methods)". It is suitable to determine interfacial tension between mineral oils and water under non-equilibrium conditions (Liquid-liquid interface). It can also be used to determine surface tension of various liquids (liquid-gas interface).

Features:

- ◆ Combination of both test methods of platinum plate and ring
- ◆ The maximum tension of sample is self-locked in test method of platinum ring, and then the surface tension is converted by attached calculation software or automatically calculated by purchased data processing software;
- ◆ Platinum ring size: wire radius: 0.185mm; ring radius: 9.55mm, ring circumference: 60mm;
- ◆ Fully automatic measurement can avoid the manual operation error
- ◆ Automatic calibration in whole range ensures accurate and reliable data and good repeatability
- ◆ One-key minimum clearing in a flash; stable and non-drifting zero position;
- ◆ International advanced lift platform drive technology without vibration and noise;
- ◆ Real time measurement of liquid surface or interfacial tension can be achieved when using the platinum plate, which is very practical for measurement of samples containing surface active agent or volatile substance varies at different time
- ◆ Automatic measurement of surface tension of medium and high viscosity liquid samples can be achieved when using the platinum plate
- ◆ The two test methods can measure the interfacial tension of non-mixed liquid such as oil/water interface;

Main Technical Parameters:

- ★ Measurement range: 0 ~ 600mN/m
- ★ Sensitive: 0.1mN/m
- ★ Accuracy: ± 0.2 mN/m
- ★ Repeatability: ± 0.2 mN/m
- ★ Display mode: Wide-viewing angle backlighting LTD
- ★ Range of temperature: 0~100°C
- ★ Measurement time: 3~5 seconds for measurement of low concentration sample liquid
- ★ Container constant: min.15ml
- ★ Data output: RS 232C
- ★ Voltage: commercial power AC220V, 1A



★ Ordering information:

BGD 234---Automatic Interfacial Tension Tester

Automatic Distillation Tester

The instrument is designed and made as per the National Standard ASTM D86 “Test Methods for Distillation Characteristics of Petroleum Products at Barometric Pressure”. It is suitable to determine distillation characteristics of natural gasoline, vehicle gasoline, aviation gasoline, jet fuels, special boiling point solvent, naphtha, diesel oil, distillate and similar petroleum products.

The instrument has two sets of distillation systems. It can make determination using one set of distillation system or make determination for two same sample or different sample using two set of distillation systems. This highly improves the working efficiency. It is suitable to be used in companies with many samples to be determined. It also increases determination speed for normal customers. It is a desired distillation tester for petroleum products.

- ◆ Can transfer the datas to computer with COM
- ◆ 320×340 LCD screen
- ◆ Automatic nitrogen-protection, automatic section using hiring sensor, automatic flameout
- ◆ Automatic wind-cooling can finish fast cooling

Main Technical Parameters:

- ★ Volume of graduated flask: 0 ~ 100 ml with scale division of 0.1 ml
- ★ Temperature Range: 0~400°C with scale division of 0.1°C
- ★ Distillation speed: 2 ~ 5ml/min(adjustable)
- ★ Cooling: Electric cooling
- ★ Operation: Star with procedure and controlled by keyboard
- ★ Temperature range of Cooling equipment: 0~60°C
- ★ Distillation Heating: IR heating
- ★ Total power consumption: not more than 2500 W
- ★ Ordering information:
 - BGD 237/1---Automatic Distillation Tester (Single tube)
 - BGD 237/2---Automatic Distillation Tester (Double tube)



APPLICATION

Film Application

For numerous products such as paint, ink, varnishes, glue and cosmetics, the reliability of many laboratory tests is directly related to the quality of the samples prepared for it.

It is absolutely essential that any measurements made on such coatings, whether for the purpose of describing their appearance or their physical properties (color, gloss, hiding power, drying time, etc.) , Are made on the basis of uniform and comparable samples with precisely controlled thickness.

In order to meet such specific demands, Biuged company has a wide range of high quality, high precision film applicators and motorized film applicators for greater repeatability and reproducibility when undertaking a large number of sample tests.

Stainless steel and anodized aluminum are the preferred materials of construction, due to their resistance to corrosion.

All applicators are marked with gap clearance, this gap clearance isn't wet film thickness. The theoretical wet film thickness is etched onto every applicator. Generally speaking:

- ◆ Gap clearance is from 15~100μm, the theoretical wet film thickness is 50% of gap clearance
- ◆ Gap clearance is from 100~300μm, the theoretical wet film thickness is 60% of gap clearance
- ◆ Gap clearance is from 300~500μm, the theoretical wet film thickness is 80% of gap clearance
- ◆ Gap clearance is more than 500μm, the theoretical wet film thickness can reach 90% of gap clearance

How to choose suitable applicator:

- Low viscous paint: BGD 202, BGD 203, BGD 204 Frame-type Applicator
- High viscous paint: BGD 201, BGD 205, BGD 206 One or four-sided applicator
- Flexible substrate like foils: Wire Bar coaters

Biuged accepts any order for customized special applicators!

① One-sided Applicator

The Bar-Type One-Sided Applicator is made using modern technology of metallurgy with a precision grinding machine. The accuracy of the gap depth is $\pm 1.0\mu\text{m}$ (50μm and below) and or 2% of Full Scale. It is designed with ASTM D 823-25 and ASTM D 3022.

It is made of high-grade, corrosion-resistant stainless steel 440C.

Main Technical Parameters:

★ Effective Wet Film Width : 100mm

★ The total length: 128mm

★ Ordering information:

BGD 201/1: 25μm	BGD 201/2: 37.5μm
BGD 201/3: 50μm	BGD 201/4: 75μm
BGD 201/5: 100μm	BGD 201/6: 125μm
BGD 201/7: 150μm	BGD 201/8: 200μm
BGD 201/9: 250μm	BGD 201/10: 300μm
BGD 201/11: 350μm	BGD 201/12: 400μm
BGD 201/14: 500μm	BGD 201/15: 600μm



② Cube Applicator

This small applicator is available with 12.7 film width (overall width respectively 25mm) . It has 2 gap sizes, machined into each application face. Ideal for application of parallel film stripes. This applicator is recommended for use in conjunction with BGD 261 Drying time recorder.

Main Technical Parameters:

- ★ Wet Film Width of: 12.7mm
- ★ The total length: 25mm
- ★ **Ordering information:** BGD 203/1: (38 μ m, 76 μ m)
BGD 203/2: (75 μ m, 150 μ m)



③ Two-sided Applicator

The U shaped-Type Two-Sided Applicator is made using modern technology of metallurgy with a precision grinding machine. The accuracy of the gap depth is $\pm 1.0\mu\text{m}$ (50 μm and below) and or 2% of Full Scale. It is designed with ASTM D 823-25

It is made of high-grade, corrosion-resistant stainless steel 440C.

Main Technical Parameters:

- ★ Wet Film Width of: 80mm
- ★ The total length: 100mm
- ★ **Ordering information:**
BGD 202/1: (25 μm , 50 μm)
BGD 202/2: (75 μm , 100 μm)
BGD 202/3: (150 μm , 200 μm)
BGD 202/4: (300 μm , 400 μm)



④ Four-sided Applicator

A flexible and easy to use applicator, combining 4 gaps size in one unit. The cylindrical shape provides excellent results particularly on firm substrates and smooth surface. By simply rotation through 90 angles, the next gap size is placed onto the test surface. It is designed with ASTM D 823-25 and made of high-grade, corrosion-resistant stainless steel 440C.

Main Technical Parameters:

- ★ Wet Film Width of: BGD 205→160mm; BGD 206→80mm;
- ★ The total length: BGD 205→190mm; BGD 206→100mm;

★ Ordering information:

Universal Type

- BGD 206/1: (5 μm , 10 μm , 15 μm , 20 μm)
- BGD 206/2: (25 μm , 50 μm , 75 μm , 100 μm)
- BGD 206/3: (50 μm , 100 μm , 150 μm , 200 μm)
- BGD 206/4: (30 μm , 60 μm , 90 μm , 120 μm)
- BGD 206/5: (100 μm , 200 μm , 300 μm , 400 μm)
- BGD 206/6: (50 μm , 75 μm , 100 μm , 150 μm)
- BGD 206/7: (100 μm , 150 μm , 200 μm , 250 μm)
- BGD 206/8: (250 μm , 500 μm , 750 μm , 1000 μm)

Long Type

- BGD 205/2: (25 μm , 50 μm , 75 μm , 100 μm)
- BGD 205/3: (50 μm , 100 μm , 150 μm , 200 μm)
- BGD 205/4: (30 μm , 60 μm , 90 μm , 120 μm)
- BGD 205/5: (100 μm , 200 μm , 300 μm , 400 μm)
- BGD 205/6: (50 μm , 75 μm , 100 μm , 150 μm)
- BGD 205/7: (100 μm , 150 μm , 200 μm , 250 μm)
- BGD 205/8: (250 μm , 500 μm , 750 μm , 1000 μm)



BGD 206



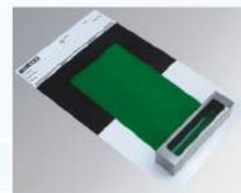
BGD 205

⑤ Four-sided Applicator (Frame-Type)

The Frame-Type Four-Sided Applicators are designed for the production of uniform films of paint, adhesives and similar products on plane substrates. They combine the accuracy of fixed applicators with the versatility of multiple gap choice in one unit. These applicators are suitable for use of aqueous, acid, and alkaline products.

It is made of high-grade, corrosion-resistant stainless steel 440C.

Main Technical Parameters:	
★ Wet Film Width of:	80mm
★ The total length:	100mm
★ Ordering information:	
BGD 204/1:	(5 μ m, 10 μ m, 15 μ m, 20 μ m)
BGD 204/2:	(25 μ m, 50 μ m, 75 μ m, 100 μ m)
BGD 204/3:	(50 μ m, 100 μ m, 150 μ m, 200 μ m)
BGD 204/4:	(30 μ m, 60 μ m, 90 μ m, 120 μ m)



⑥ Square Applicator

This applicator is designed as square type, and its eight sides are precisely machined different gap depth. Maximize customers' satisfaction of applying different wet film thickness

It is made of high-grade, corrosion-resistant stainless steel 440C.

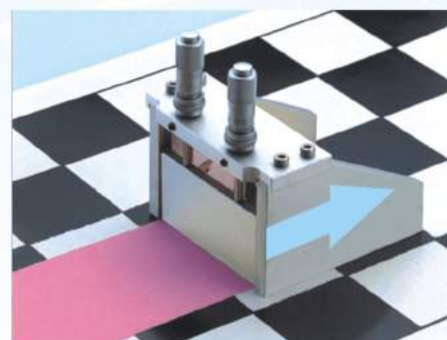
Main Technical Parameters:	
★ Wet Film Width of:	80mm
★ Applicator Size:	
★ Ordering information:	
BGD 208/1:	(0.5mils, 1mils, 1.5mils, 2mils, 3mils, 4mils, 5mils, 6mils)
BGD 208/2:	(1mils, 2mils, 3mils, 4mils, 5mils, 6mils, 7mils, 8mils)
BGD 208/3:	(5mils, 10mils, 15mils, 20mils, 25mils, 30mils, 40mils, 50mils)



⑦ Micrometer Adjustable Applicators

The blade of this applicator can be accurately adjusted by means of 2 micrometric screws, from 0 to 3.5 mm, in 10 μ m increment. Suitable for various precision tests, e.g. research tasks. 4 widths available.

Ordering Information → Technical Parameters ↓	BGD 209/1	BGD 209/2	BGD 209/3	BGD 209/4
Blade width (Wet film width)	50mm	100mm	150mm	200mm
Setting scope	0 ~ 3,500 μ m	0 ~ 5,000 μ m	0 ~ 5,000 μ m	0 ~ 5,000 μ m
Precision	10 μ m	10 μ m	10 μ m	10 μ m



⑧ Wire Bar Coaters

The wire and its rod from the wire-rod applicators are made of stainless steel, which are corrosion-resistance. A coating (Paint or Ink) is being drawdown by a known thickness wire-rod applicator over a substrate (eg. Black/White Test Chart, Glass or Wood Panel, etc.) onto our Drawdown Board. The motion of the drawdown is done by gripping the 2 edges of the applicator or by using the Holder (for BGD 212 Wire Rod Applicators only)

This applicators provide an economical way to assure the uniformity of thickness of very thin films.

- ◆ Bar diameter: 10mm
- ◆ Bar and wire manufactured of stainless steel
- ◆ Perfect for very thin films, e. g. foils and paper coating tests
- ◆ Ideal for flexible materials such as paper, cardboard, test charts, Foils, leather, textiles, etc.
- ◆ Maximum attainable wet film thickness engraved on bar end
- ◆ Simultaneous drawdown of several samples side by side is possible



BGD 212



BGD 213

Ordering Information	Effective Wire-Winding Length (mm)	Total Length (mm)	Gripping Space (mm) -Left/Right	Wet Film Thickness (μm) available
BGD 211	100	130	15/15	6-8-10-12-15-20-25-30-40-50 -60-80-100-120-150-200
BGD 212	200	240	20/20	
BGD 213	300	400	50/50	
BGD 1151	Holder for BGD 211			
BGD 1152	Holder for BGD 212			

⑧ Formed Rods

Traditional wire bar coaters are wire-wound rods (twine rods with steel wires), the fine wire on the surface is easily loosed or broken, and it is not easy to clean and neither use to make the ultra-thin coating.

To solve this problem, Biuged develops a new product-Formed Rods. These rods are made by a precise mould, as well as implied with the cold extrusion technique to make the uneven wavy curve on the its surface, which makes it has the same coating results with traditional wire bar coaters.

Features:

- ◆ Machined by CNC with precise mould, the deviation of groove depth and space is lower than 2um, which gets more uniform film.
- ◆ The service life will be longer without broken or loosen steel wires.
- ◆ Smooth curving surface makes it easier to clean.
- ◆ Realizing the ultra-thin coating, the thinnest we film can reach 4um, which makes it known as super wet film coater.



Main Technical Parameters

Products Name	Ordering Information	Coating Width	Rod Length	The length of holding part	Optional Wet Film Thickness (μm)
Regular Formed Rods	BGD 214	200mm	240mm	20mm/20mm	4-6-8-10-12-15-20-25-30-40-50-
Extended Formed Rods	BGD 215	300mm	400mm	47mm/47mm	60-80-90-100-180

Optional Accessories: BGD 1152---holders (suitable for BGD 214)

Automatic Film Applicator

Drawdown made by hand can show irregularities caused by variations in speed and pressure on the applicator tool. The quality of the drawdown will be dependent on the shear rate and the weight on the applicator. Measurements of film properties such as abrasion resistance, hiding power and gloss are greatly affected by the application quality.

The new automatic film applicators will guarantee a linear and even movement of the film applicator repeatable and high quality results are guaranteed:

① Drawdown Plate

Provides an economical and convenient means for making drawdowns of uniform film thickness.

It consists of a glass clip board set firmly on a phenolic plastic panel. The entire apparatus is mounted on rubber supports in order to eliminate sliding while in use. The drawdown surface is 6.4mm thick polished glass, equal in planarity to fine mirror glass. A steel clip holds the chart firmly while the drawdown is made. The workable area is equal to the size of the glass plate.

- ◆ Easy to use and easy to clean
- ◆ Holds charts securely for drawdowns
- ◆ Helps to achieve uniform results

★ Ordering information:

BGD 2608---Drawdown Plate
(Glass plate size 299 × 381mm; for drawdowns on the paper charts)
BGD 2609--- Drawdown Plate
(Glass plate size 178 × 508mm; for scrub test panel)



② Vacuum Film Applicator Bed

These drawdown vacuum plates are machined from hard aluminum solid stock and finished with grey hardcoat anodized that gives a high durability with corrosion resistance that will dramatically increase wear and longevity of the vacuum plate. The top section of the plate has a series of holes. When attached by a hose connection to a vacuum pump or sink aspirator, the vacuum created holds down paper charts during application of wet coatings with any type of film applicator.

Each plate comes complete with a chrome plated brass ball valve with an easy on/off lever handle to enable or disable vacuum, and includes a high quality vacuum pump.

★ Ordering information:

BGD 217/1--- Vacuum Film Applicator Bed
Overall size: 360 × 250 × 32.5mm
Area with hole size: 290 × 190mm
BGD 217/2--- Vacuum Film Applicator Bed
Overall size: 533 × 340 × 32.5mm
Area with hole size: 460 × 270mm



We also accept other special size vacuum bed order!!

③ Automatic Film Applicator

Automatic Film Applicator enables experimental chemists conveniently draw down precise coating film on the different substrate so as to reduce and eliminate errors caused by manual factors. Factors affecting the draw down are the shear rate and downward force applied to the applicator tool. The equipment sucks test paper smoothly on the vacuum bed. It greatly improves the reproducibility of paint film.

BGD 218 is the newest product, comparing the traditional products, it has:

- ◆ Adjustable variable speed: 2~100mm/s
- ◆ High precision linear guide bar and direct current motor without carbon brush, making the draw down speed more stable.
- ◆ Reasonable design bracket, easily and simply operated, and can add any load to applicate on easily bent substrates..
- ◆ Special precise machining vacuum saction-gas plate with high smooth precision (Whole plate 's flatness is less than 5 micron) and high hardness-for better repeatability.
- ◆ Optimal design for vacuum plate to ensure suction power is distributed uniformly.
- ◆ Can set the starting point freely, is suitable for different size substrates.
- ◆ Four types application distance can be selected freely.
- ◆ Applicable to all Biuged's different type and size applicators and wire bars
- ◆ External vacuum pump eliminate all shake coming from traditional structure (put pump into machine)



Ordering Information → Technical Parameters ↓	BGD 218/1	BGD 218/2
Draw down vacuum bed size	360 mm × 250 mm	490 mm × 250 mm
Draw down vacuum bed size with hole	290 mm × 190mm	410 mm × 190mm
Max. application length	250mm	375mm
Draw down speed	2 ~ 100mm/s (adjustable variable speed)	
Carriage holder weight	1.5KG (2KG or 2.5KG is optional)	
Total Power	370W	
Power Source	220V; 50Hz	
Weight	40KG	46KG
Overall Size (No vacuum pump) (L × W × H)	500 × 345 × 340mm	635 × 345 × 340mm

④ Film Applicator with Holding Device

Comparing with BGD 218 Automatic Film Applicator, this film applicator uses glass bed (without vacuum holes) as drawdown bed. It's only available for applying on the hard substrate (no need be sucked), such as metal or glass substrate.

- ◆ Adjustable variable speed: 2~100mm/s
- ◆ Special precise machining glass plate with high smooth precision (Whole plate's flatness is less than 20 micron), easy to clean.
- ◆ High precision linear guide bar and direct current motor without carbon brush. Making the draw down speed more stable.
- ◆ Reasonable design bracket, easily and simply operated, and can add any load to applicator on easily bent substrates.
- ◆ High smooth precision glass drawdown bed for easier cleaning
- ◆ Can set the starting point freely, is suitable for different size substrates
- ◆ Four types application distance can be selected freely.
- ◆ Applicable to all Biuged's different type and size applicators and wire bars

Main Technical Parameters:

- ★ Draw down base: 400mm × 220mm
- ★ Draw down length: 280mm
- ★ Draw down speed: 2 ~ 100mm/s (adjustable variable speed)
- ★ Total power: 50W
- ★ Electrical power source: 220V; 50/60Hz
- ★ Overall dimensions: 550 × 320 × 340mm (L × W × H)
- ★ Weight: 25Kg
- ★ **Ordering information:**

BGD 219--- Film Applicator with Holding Device



Table Water-curtain Spray Cabinet (All stainless steel)

As the paint sprayed from the gun can not completely cover on the work, so it produces great amount of poisonous coating mist when spraying the works. To keep the air not polluted and protect the workers' health, we produce a Table Water-curtain Spray Cabinet for small scale spraying in labs.

This spray cabinet applies the latest design plan, using The negative pressure principle, the dental plate and arc plate produce strong air flow when working, and makes the water becomes eddy to wash the indrawn coating mist, the gas will be exhausted by the fan, and the paint residue left in the water.

In addition, the whole spry cabinet is made of stainless steel and equipped with high-pressure contrifugal fan, and it possesses small footprint, easy operate, safe, easy clean and so many other characters, it is a new and favorable environmental protection equipment. This spray cabinet is capable to directly splash the residual coating mist to the water pool or water curtain, the processing efficiency up to over 90%. The smell and residual coating mist produced during the spraying will be filtered by the water curtain and exhausted outside the spraying room through the fan, so as to realize the cleansing of the spraying environment and the protection of people's health, as well as increasing the cleanliness of the works.

Structure Introductions:

① **Coating mist collecting system:** consists of stainless steel water-curtain plate, annular tank, water-curtain, and dash plate. Water-curtain plate, made of 1.5mm thickness stainless steel, facing towards operator. Water flows on its surface without break and pounding, maintaining a 2mm thickness water film. Most coating mist fully mixed with the water on the water curtain then flow into the annular tank, then filtered by the filter in the inlet of annual water pump.

② **Water supply system:** consists of annual water pump, valve, overflow channel and pipes.

③ **Exhausting system:** Consists of Baffle-type steam separator, centrifugal exhaust fan, several exhaust pipe and fan holder, belonging to large flow and low thickness exhaust. Steam separator with maze structure fixed behind the water-curtain plate, capable to efficiently separate and condense the mist in the air, then flow back to the annual tank in case over lost fluid.

Main Technical Parameters:

- ★ Overall Size: 835 × 630 × 1155 (L × W × H)
- ★ Max. Airflow rate: 9m³/min
- ★ Fan Power: 375W
- ★ Water curtain Size: 600 × 460mm (L × W)
- ★ Samples holder Size: 595 × 220mm (L × W)
- ★ Opening dimension of working room: 600 × 380mm (L × W)
- ★ **Ordering Information:**
BGD 228---Table Water-curtain Spray Cabinet



Spray Gun

Spray Gun is the most commonly tool when spray paint, Using it can obtain uniform, exquisite film. the good quality Spray Guns can be distinguished from it degree of pulverization, useful time.

Main Technical Parameters:

- ★ Nickel-plated gun body, stable instruction, steady mass centre
- ★ Uniform pulverization, smooth film
- ★ Have a large range adjustment to pressure of air
- ★ Aluminum pot



★ Ordering Information

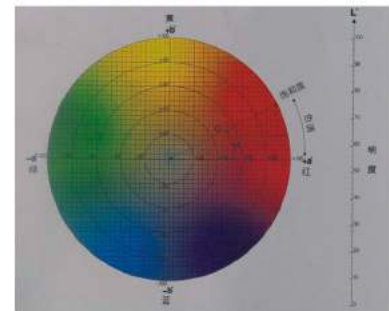
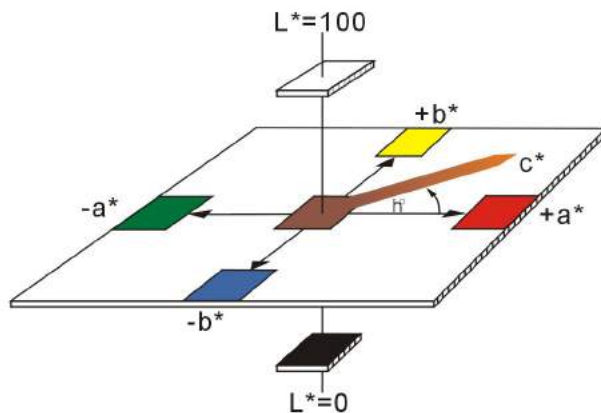
Ordering Information	Model	Fluid nozzle orifice (mm)	Pattern Width (mm)	Pot Capacity	Air Pressure (kg/cm ²)	Air consumption (l/min)
W71-G	Gravity	1.0; 1.3; 1.5; 1.8	125--210	400cc	3.0--3.5	85--250
W71-S	Attract	1.0; 1.3; 1.5; 1.8	105--180	600cc	3.0--3.5	105--180
W77-G	Gravity	1.5; 2.0; 2.5; 3.0	290--330	400cc	3.0--3.5	290--460
W77-S	Attract	1.5; 2.0; 2.5; 3.0	260--300	1000cc	3.0--4.0	260--300
W101-P	Compress	0.8; 1.0; 1.3; 1.5	190--240	---	2.5	270
F-2-R	Gravity	0.5	230	250	3.0	35

Film Physical performance

COLOR

The human eye is capable of differentiating several million colors, despite this subjective visual evaluation, when used for quality control purpose, is no longer preferred as it suffers from a lack of real quantifiable data and inconsistent documentation. Since the early 1930's many scientific measuring techniques have been developed by National Standard Organisations, among them the CIE (International Committee of Light), based on a logical numeric scaling where physical parameters and calculations have been clearly defined, universally accepted and adopted. As a result, many methods are today perfectly proven, and governed by major standard such as ASTM, BS, DIN, or ISO etc.

Colorimeters use the mathematically defined light sources and observers described above to measure colors under precisely defined measuring geometries and output the requested data to their display, printer or computer.



① Economic Portable Colorimeter

Since 1998, from import to domestic, BGD 551 precision colorimeter is an iconic milestone in color test industry.

- ◆ Double Locating: Illuminating locating and cross locating
- ◆ Double Measurement End Face: Large area measurement and small area measurement
- ◆ New Integrating Sphere Design: More stable measurement
- ◆ Equipped with Rechargeable High-Capacity Li-ion Battery

Feature and Advantages

- ◆ Built-in white plate parameters. No need to calibrate each time which realize rapid measurement.
- ◆ Double Locating: Illuminating locating and precise cross locating.
- ◆ Switchable Double Measurement End Face: Large stable end face and small concave-convex end face.
- ◆ New Integrating Sphere Optical Path Design: Eliminating the stray light of main optical path and auxiliary optical path. Possessing the highest measurement stability and precision.
- ◆ 4mm Measuring Aperture.
- ◆ Equipped with rechargeable high-capacity Li-ion battery. No need to purchase battery repeatedly.
- ◆ Configure CQCS3 software. Connect PC computer to realize more functions.
- ◆ Having got SCM Metrological Certification, CE Certification, and ISO9001 Quality Management System Certification.
- ◆ Hand-head structure: small and convenient; make the measurement easier.
- ◆ Spending huge sums on high-end mold. Product consistency approaches 100%.
- ◆ High cost performance: large output, good quality, cheap products.



Illuminating Locating



Cross Locating,
Large Stable End Face



Small Concave-Convex End Face

Technical Parameters	
Illuminating/Viewing Geometry	8/d
Measuring Aperture	Φ4mm
Detector	Silicon photoelectric diode
Locating	Illuminating Locating/Cross Locating
Measurement End Face	Large stable end-face and small concave-convex end-face
Color Space	CIE L*a*b*C*h* ; CIE L*a*b* ; CIE XYZ
Color Difference Formula	$\Delta E^*a\ b\ \Delta L^*a^*b^*\ \Delta E^*C^*h^*$
Light Source	D65
Light Source Device	LED blue light excitation
Errors Between Each Equipment	$\leq 0.80 \Delta E^*a\ b$
Storage	100pcs standards; 10,000pcs samples
Repeatability	Standard deviation within $\Delta E^*a\ b\ 0.08$ (Average of 30 measurements of standard white plate)
Language	English/Chinese
Weight	450g
Dimension	205 × 67 × 80 mm
Power source	Rechargeable lithium-ion battery 3.7V@3200mAh
Lamp Life	3 years, more than 1.6 million measurements
Charging Time	8 hours -- 100% electricity
PC Software	CQCS3 Software
Printer (optional)	Miniature thermal printer

◆ Ordering Information: BGD 551--- Economic Portable Colorimeter

② Precise Computer Colorimeter

BGD 555 & 556 Precise Computer Colorimeter have adopted multi-channel color sensors of international brands, more stable IC platform as well as efficient and accurate algorithms to provide users with accurate and fast color management and application. They are also designed with ergonomics and humanized operation and have applied for a number of patents. BGD 555& 556 are multifunctional colorimeters with high quality and competitive price. BIUGED insists on independent research whose technology innovation is unique in color management field. These colorimeters are the most convenient colorimeters for users

◆ Leading Humanity Design and Convenient Operation

- ★ Auto White and Black Calibration at Startup (only for BGD 556)
- ★ Structure Design in line with Ergonomics
- ★ Fool-style Operation Interface.

◆ Stable Measurement Performance

- ★ The average fluctuation of ΔE is less than 0.06, actually more in 0.03~0.05.
- ★ Portable structure design which is more conducive to keeping the instrument stable when using.

◆ Flexible and Accurate Locating

- ★ Camera locating can solve the problem of locating a small area. The minimum width of locating is 4mm (only for BGD 556)
- ★ Illumination locating is a fast, simple and convenient locating function which is the original function by Biuged.

◆ More Measurement Modes (Only for BGD 556)

- ★ Two measuring apertures for more circumstances.
- ★ Five color spaces for more color schemes selection.
- ★ Three light sources for more circumstances.

◆ PC Software Realize More Function Expansion

- ★ BIUGED has the intellectual property of PC software. The corresponding software serial number and password protection are configured in 3nh colorimeter.
- ★ Be able to perform color difference analysis, color difference cumulative analysis, chromaticity index, color Sample database management, simulating object color, etc.

◆ Advanced Power Management Design

- ★ BIUGED is the first enterprise using high capacity Li-ion battery in colorimeter.
- ★ BIUGED Li-ion battery can be repeatedly charged which will save cost. Meanwhile, it can measure more than 3000 times on one charge to ensure The stability of long time measurement.



Camera locating
Illumination locating



Built-in White Plate
Automatic Calibration at Startup



Extended Aperture (Optional)
Available for measuring concave surface



Configuring 8mm & 4mm apertures

Ordering Information → Technical Parameters ↓	BGD 555 Precise Computer Colorimeter	BGD 556 Precise Computer Colorimeter
Illuminating/Viewing Geometry	8° /d	
Measuring Aperture	Φ8mm	Φ8mm/Φ4mm
Detector	Silicon photoelectric diode	
Color Space	CIEL*a*b*C*h* ; CIEL*a*b* ; CIEXYZ	CIEL*a*b*C*h* ; CIEL*a*b* ; CIEXYZ ; CIERGB ; CIEL*u*v* ; CIEL*C*h* ; Yellowness & Whiteness ; Color Fastness
Color Difference Formula	$\Delta E^*a b$; $\Delta L^*a^*b^*$; $\Delta E^*C^*h^*$	$\Delta E^*a b$; $\Delta L^*a^*b^*$; $\Delta E^*C^*h^*$; $\Delta E_{CI E94}$; ΔE_{hunter}
Light Source	D65	D65 ; D60 ; A
Light Source Device	LED blue light excitation	
Errors Between Each Equipment	$\leq 0.40 \Delta E^*a b$	
Storage	100pcs standards ; 20000pcs samples	
Repeatability (Average of 30 measurements of standard white plate)	Standard deviation within $\Delta E^*a b$ 0.07	Standard deviation within $\Delta E^*a b$ 0.06
Language	English/Chinese	
Weight	500g	
Dimension	205 × 70 × 100 mm	
Power source	Rechargeable lithium-ion battery 3.7V@3200mAh	
Lamp Life	5 years, more than 1.6 million measurements	
Charging Time	8 hours -- 100% electricity	
Measuring Times Before Recharging	3000 times in 8 hours	
Operating Environment	-10~40℃, relative humidity 0~85% with no condensation	
PC Software	CQCS3 Software	
Data Interface	USB	
Extended Aperture (Optional)	----	Φ8mm extended aperture, available for measuring concave surface
Printer (Optional)	Miniature thermal printer	



CQCS3 Software



Operation Menu

Sample Measurement					
No. 001	T002	D65	SCI	Φ8	00:32 2012.04.17
L*	98.72	ΔL^*	0.62	White++	
a*	-10.53	Δa^*	0.82	Red++	
b*	-2.37	Δb^*	0.56	Yellow++	
C*	10.02	ΔC^*	0.32		
h°	192.69	ΔH^*	-0.41		
ΔE^*			1.24	Fail	
Standard Measure		Locating		Save	

③ Spectrophotometer

BGD 557 & 558 Spectrophotometer uses the principle of combination LED precision spectroscopy, separates the light according to a certain wavelength interval, and adopts groups of sensor array to perform sensitive analysis. **BGD 557 & 558 Spectrophotometer** with higher accuracy is very sensitive to any colors. It not only can measure L^*a^*b value and ΔE value accurately, but also can display spectral reflectance curve which can realize color matching function and calculate the real parameters of various color formulas.

In the R&D process, **BIUGED** scientists and engineers measured various color samples from dark to light, white to black, and other standard color boards provided by ISO (International Standardization Organization). The parameters of test results are integrating with international standards.

BIUGED also analyzed the parameters from Japan, American and Germany spectrophotometers. The differences of L^*a^*b absolute value between them are within ± 1.5 . Compared the L^*a^*b value between BGD 557 & 558 and Japan spectrophotometer, when measuring any color objects, the biggest L^*a^*b difference is within ± 1.0 . This is a breakthrough of **BIUGED** high technology which realizes to be fully compatible with international market.

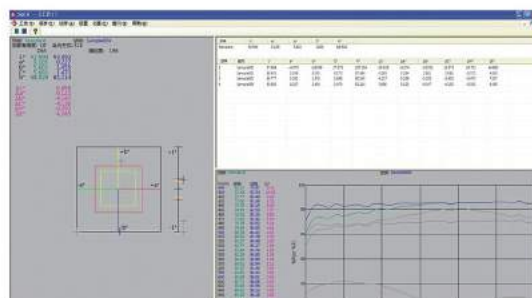
Application

BGD 557 & 558 Spectrophotometer is widely used in plastic, electronic, paint, ink, textile, garment, printing and dyeing, food, medical, cosmetic, industries, scientific research institutes, schools and laboratories.

It can measure reflectance spectrum and other color index precisely. **BGD 557 & 558 Spectrophotometer** not only can help to perform color matching and color management studies, but also can control product quality management accurately. The instrument is equipped with high-end color management software which can connect PC to achieve more extension functions.

Characters

- ◆ Aesthetic design perfectly combined with ergonomics structure.
- ◆ 45° / 0° or $d/8^\circ$ geometrical optics structure, comply with CIE, ISO, ASTM, DIN standard.
- ◆ 3.5 inch large capacitive touch screen.
- ◆ Two standard observer perspectives, multiple light sources modes, a variety of color systems.
- ◆ The repeatability ΔE^*ab is within 0.04, the errors between each instrument ΔE^*ab is less than 0.2.
- ◆ Large capacity storage, can save more than 10000 data.
- ◆ PC software with powerful extension functions.
- ◆ High hardware configuration with a number of innovative technologies.
- ◆ Oversized integrating sphere, more effective homogenization ray of lights and precise measurement.
- ◆ BGD 558 can work at SCI or SCE mode



Software



BGD 1390
Special test box for powder



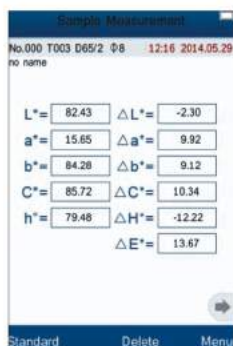
BGD 1391
Universal Test Components



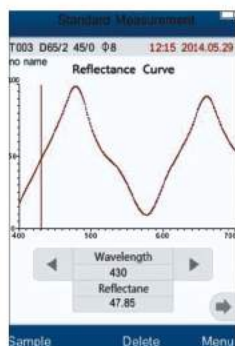
BGD 1392
Φ8mm Extended
Measuring Aperture



Main Menu



Sample Measurement



Spectral Reflectance Interface



Input Standard LAB



Color Space

Main Technical Parameters

Ordering Information → Technical Parameters ↓	BGD 557 Spectrophotometer	BGD 558 Spectrophotometer
Illumination/observation system	45° /0° (45 ring-shaped illumination, vertical viewing)	D/8° (diffused illumination, 8-degree viewing angle)
Integrating sphere Size	Φ58mm	
Light Source	Combined LED sources	
Sensor	Silicon photodiode array	
Wavelength range	400~700nm	
Wavelength interval	10nm	
Reflectance range	0~200%	
Measuring Aperture	Φ8mm	
Color Space	CIE LAB; XYZ; Yxy; Lch; CIE LUV	CIE LAB; XYZ; Yxy; Lch; CIE LUV; LAB&WI&YI
Color difference Formula	ΔE*ab, ΔE*uv, ΔE*94, ΔE*cmc (2:1), ΔE*cmc (1:1), ΔE*00v	ΔE*ab, ΔE*uv, ΔE*cmc (2:1), ΔE*cmc (1:1), ΔE*94, ΔE*cmc (l:c), CIE2000 ΔE*00, ΔE (h)
Other Chromaticity Data	WI(ASTM E313, CIE/ISO, AATCC, Hunter), YI(ASTM D1925, ASTM 313), TI(ASTM E313, CIE/ISO), Metamerism Index (Mt), Color Stain, Color Fastness	
Observer	2° /10°	
Illuminant	D65, A, C, D50, D55, D75, F1, F2 (CWF), F3, F4, F5, F6, F7 (DLF), F8, F9, F10 (TLP5) F11 (T184), F12 (TL83/U30)	D65, A,C,D50, D55, D75, F2, F6, F7, F8, F10, F11, F12
Display Data	Spectral Value/Graph, Colorimetric Value, Color Difference Value/Graph, PASS/FAIL Result, Color Offset, Color Simulation, color index setting(ΔE* 94, ΔE*cmc, ΔE2000), tolerance prompt,reverse prompt, time setting, language setting, restore factory setting	Spectral Value/Graph, Colorimetric Value, Color Difference Value/Graph, PASS/FAIL Result, Color Offset, Color Simulation
Measurement Time	1.5s	
Repeatability	Spectral Reflectance: standard deviation within 0.1% (400~700nm: within 0.2%) Colorimetric Value: Standard deviation within Delta E*ab 0.04 (Measurement conditions: white calibration plate measured 30 times at 5 seconds intervals after white calibration was performed.)	
Inter Instrument Agreement	Within Delta E*ab 0.2 (Average for 12 BCRA Series II color tiles)	
Dimension/Net Weight	90 × 77 × 230mm(L × W × H)/600g	
Battery	Li-ion battery. 5000 times within 8 hours	
Lamp Life	5 years, more than 1.6 million measurements	
Display Screen	TFT 3.5inch, Capacitive Touch Screen	
Interface	USB/RS-232	
Data Memory	1,000 Standards, 15,000 Samples	
Standard Accessory	Power Adapter, Li-ion Battery, Operating Instruction, CD-ROM (containing management software), Data Line, White and Black Calibration Cavity, Protective Cover and Wrist Strap	
Optional Accessory	Universal Test Components, Micro Printer, Special test box for powder	
Others	Provide complete spectrum reflectance curve, Input L, a, b value manually	

④ Digital Whiteness Meter

BGD 585 Digital Whiteness Meter consists of light filter, sample clamp and photo-detector. The total whiteness is the whiteness of blue light R457. The instrument is strictly designed according to standard light source A and the condition of illumination test 45/0 stipulated by CIE. It has been tested and trial run seriously and conforms to JJG512-87 national measurement testing regulations and is designed according to many national standards.

Main Technical Parameters:

- ★ Range of Measurement: 0–100 (Digital Display Type)
- ★ Zero Drift: $\leq 0.2/10\text{min}$
- ★ Resolution Ratio: 0.1
- ★ Display Drift: $\leq 0.3/3\text{min}$
- ★ Light Source: 12V/30W Halogen Tungsten Lamp
- ★ The Stability of Voltage Fluctuation: 0.1
- ★ Whiteness formula: The Whiteness of Blue Light $WB=R457$
- ★ The Reappearance of Measurement: ≤ 0.3
- ★ Weight: 1.8Kg ;
- ★ Dimensions: 260 × 320 × 280mm (L × W × H)
- ★ **Ordering Information:**
- BGD 585--- Digital Whiteness Meter
- BGD 1355---Special box for testing powder



⑤ Portable Whiteness Meter

BGD 586 Portable Whiteness Meter has been developed by our company recently. It is designed with the demand of CIE, including standard light resource and light environment. And it complies with GB2913, GB5950, GB8940.1, GB12097, GB13025.2 etc standards. It is used widely in the fields such as textile printing and dyeing, paint and coating, chemical materials, paper and cardboard, plastic, white cement, ceramic, enamelware, porcelain clay, French white, amyllum etc.



Main Technical Parameters:

- ★ Incidence Angle: 45/0
- ★ Range of Measurement: 0–199.9
- ★ Whiteness Formula: The Whiteness of Blue Light
- ★ Light Source: D65
- ★ Repeatability: 0.2
- ★ Power Supply: 1.5V AA
- ★ Weight: 300g
- ★ **Ordering Information:**
- BGD 586---Portable Whiteness Meter

Features:

- ◆ Can be put in pocket because of microminiature size, portable and is convenient for testing fieldwork.
- ◆ With the newest repairing light resource system, and can measure the fluorescence whiteness
- ◆ Simple operation and no need to zero calibration
- ◆ Saving electrical power, it only needs one battery and can work excess of fifty hours continuously (can measure ten thousands data) .
- ◆ Special technical design about moisture protection can ensure you use it in various harsh environments.
- ◆ Long lifetime light source.
- ◆ Pass the standard value through the calibrated white board.
- ◆ Can select the case which put the powder sample in specially and pressing sample apparatus.

GLOSS

Gloss is an important attribute of surface appearance, it changes our perception of colors and shapes and influence our overall visual experience.

Gloss affects objects by the interaction of incident light with the surface and observation depends on variables such as illumination angles, surface profile, physical characteristics and observation conditions.

For many products, gloss can play an important part in their visual acceptability and for quality purpose should be monitored with precision instrumentation particularly when it varies through the process. Unified methods for the measurement of gloss as described in ASTM, DIN and ISO standards.

When a defined light source illuminates a surface, it is partly scattered and partly reflected in the equal but opposite angle. This specular reflection determines the surface gloss level. The intensity of the specular reflection, which depends on the material and the illumination angle, is measured under specified conditions. Results are expressed in Gloss Units (GU), which is a calibrated scaling based on the refractive index of a black glass having a specular reflectance of 100 Gloss Units (GU) at the specified angle. All non-metallic materials e. g. paints or plastics can have a value related to this level, while for highly reflective metallic surfaces e.g. plated components and some raw materials can reach 2000GU (mirror gloss).

Our range of instruments offer a variety of measurement geometries each applicable to different gloss measurement applications or materials.

Generally three geometries which cover the majority of industrial applications:

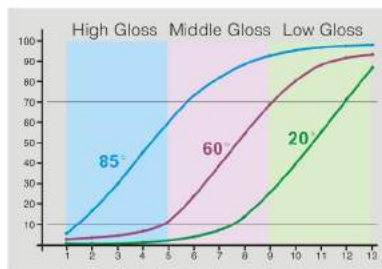
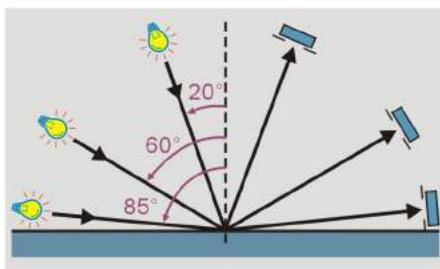
- 20° for high gloss surface
- 60° for medium gloss surface
- 85° for low gloss or matt surface

The 60° geometry is widely used due to its medium gloss coverage. However, it has been experimentally shown that when reading taken at 60° exceed 70 GU, then a change to 20° is recommended for better differentiation. Equally when reading drops below 10 GU the geometry should be changed to 85° for the same reason.

For some specific industrial applications such as the measurement of ceramics, plastics and paper, special 45° or geometries 75° are also available.

All of Biiged glossmeters can meet global standard requirements:

ISO 2813, ISO 7668, ASTM C584, ASTM D523, ASTM D1455, ASTM D2457,
DIN 67530, JIS Z8741, BS 3900, BS 6161



① Economic Glossmeter

These economic glossmeters use metal shell, separate standard board and have portable small size. It is designed to measure gloss of paint, film, ink, plastics, stone, paper, tile, enamel, etc.

Features:

- ◆ Easy to use—only one button operation; Simple to calibrate—Simple to use.
- ◆ Saving electrical power, it only needs a battery and can work exceed sixty hours continuously (can measure ten thousands data points).
- ◆ Special technical design about moisture protection ensures you use it in harsh environments.
- ◆ No time to warm up and measure immediately after operated, the data is stable and no drift.
- ◆ With long lifetime light source, no replacement needed.
- ◆ Automatic zero adjustment.

Main Technical Parameters:

★ Measuring range:	0–160.0GU (85°); 0–1,000.0GU (60°); 0–2,000.0GU (20°);
★ Resolution:	±0.1GU; Accuracy: ±1.2GU
★ Stability:	±0.4GU/30min
★ Power Supply:	1 battery AA alkaline
★ Voltage supply:	0.8V–1.5V
★ The size of facula:	11 × 22mm
★ The size of measuring aperture:	10 × 10mm (20°); 10 × 20mm (60°); 8 × 30mm (85°);
★ Work condition:	Temperature: 0°C–40°C; Relative humidity: < 85%
★ Dimensions:	BGD 512→114mm (L) × 32mm (D) × 64mm (H) BGD 515→142mm (L) × 32mm (D) × 64mm (H)
★ Weight:	BGD 512→180g; BGD 515→390g;
★ Ordering Information:	BGD 512--- Economic Glossmeter (60°) BGD 515--- Economic Tri-Glossmeter (20°/60°/85°)



② Basic Glossmeter (60°)

BGD 513 Basic Glossmeter uses plastic shell and one-body standard board. It can be used in many fields as below:

- All kinds of coating and finishing surfaces, such as paints, varnishes, printing ink, etc.
- Decorative materials, such as marble, granite, polishing brick, ceramic tile and so on.
- The other kinds of materials and objects, such as plastic, woodenware, paper, etc.

At the same time, it has better characters comparing with old types:

- ◆ Small, Smart, Stable.
- ◆ A single battery only. AA size, Rechargeable or alkaline.
- ◆ Simple to use.
- ◆ The knob protector for operating with ease.

Main Technical Parameters:

★ Reading Range:	0.0 ~ 199.9GU
★ Indication Error:	±1.2GU
★ Measuring Area:	20 × 10 mm
★ Incidence Angle:	60Deg
★ Volume (L × W × H):	123 × 38 × 65 mm
★ Main Weight:	300g
★ Power Supply:	DC: 1.2 ~ 1.5; One AA-size battery
★ Ordering Information:	BGD 513/1--- Glossmeter (0.1GU) BGD 513/2--- Glossmeter (1.0GU)



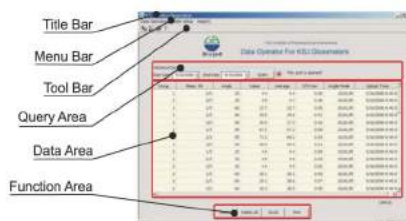
③ Intelligent Glossmeter

This versatile glossmeter covers a wide range of applications from matt to high gloss measurements conforming to International Standard. Samples can be measured separately at each angle or at 2 or 3 angle simultaneously and effectively processed using the powerful built-in software. And it has many advanced features as blow:

- ◆ All kinds of coating and finishing surfaces, such as paints, varnishes, printing ink, etc.
- ◆ Decorative materials, such as marble, granite, polishing brick, ceramic tile and so on.
- ◆ The other kinds of metallic and non-metallic materials and objects, such as plastic, woodenware, paper, etc.
- ◆ Complies with standards as: ASTM D 523,D2457; DIN 67530; ISO 2813 ,ISO 7668,JIS Z 8741,BS3900,BS 6161 etc
- ◆ Calibrate automatically.
- ◆ Simultaneous display 20° / 60° / 85° -for high gloss to matte coatings
- ◆ Interface: Serial RS 232
- ◆ Software: BGD GLOSS software included for professional documentation in Excel
- ◆ Memory: 10,000 measurements or 999 data groups
- ◆ Power Supply: A single battery only. AA size, Rechargeable or alkaline.
- ◆ Comes Complete With: Main Device, Holder with Working Standard, Tracable Certificate, BIUGED GLOSSMETER

Data Operator Software, Cable for PC Serial port, USB Adapter (optional) , Users Manual, Carrying Bag.

- △ **Guaranteed for one year and repaired for ever.**
- △ **Anytime be checked free.**
- △ **Technical support on the gloss measurement.**
- △ **Customizing any glossmeter for a special application.**



Software



Main Technical Parameters:

- ★ Measuring rang: 0 ~ 199.9 ~ 2,000.0 GU
- ★ Resolution: ± 0.1GU
- ★ Accuracy: ± 1.5GU
- ★ Stability: ± 0.4GU/30min
- ★ Power Supply: 1 battery AA alkaline
- ★ Voltage supply : 0.8V~1.5V
- ★ Measuring Area: 9×10mm; 9×16mm; 5×39mm
- ★ Dimensions: 155mm (L) × 48mm (D) × 75mm (H)
- ★ Weight: 400g
- ★ **Ordering Information:**
 - BGD 516/1--- Intelligent Glossmeter (60°)
 - BGD 516/2--- Intelligent Dual-Glossmeter /Haze Glossmeter(20° / 60°)
 - BGD 516/3--- Intelligent Tri-Glossmeter (20° /60° /85°)

④ Multifunction Glossmeter (New)

BGD 514 Multifunction Glossmeter is developed for foreign market. It has many characteristics such as precise measurement, powerful function, stable performance, easy operation etc.

Features:

- ◆ Conform Standards: ISO 2813、ISO 7668、ASTM D 523、ASTM D 2457、DIN 67 530、JIS Z 8741、BS 3900、BS 6161、GB/T 9754、GB/T 9966、GB/T13891etc.
- ◆ Calibration Automatically: When turn on the glossmeter, it will measure standard board automatically and finish calibration.
- ◆ Specially designed scroll wheel is easy to use, let the operator enter quickly different operation menu.
- ◆ Intelligent USB Interface: Use standard Mini-USB, no need to install any software. Measurement data is stored automatically with Excel format, and also can be transferred to computer or mobile phone at any time. Easy to use and very convenient.
- ◆ With data storage and querying functions: Super capacity for data storage space, can store one million groups data, and can store for decade.
- ◆ Multifunction: Can set any measuring times for one sample and calculate its average value, set auto shut-off time, buzzer etc.
- ◆ Multilingual: Chinese, English, Arabic, Portuguese, Spanish, Russian, French
- ◆ Many measuring angle modes for choose: Single angle measuring mode (20° or 60° or 85°) and multi angle measuring mode (20° & 60° or 60° & 85° or 20°、60°、85°) ;
- ◆ Ultra-low power consumption: One AA alkaline battery can measure continuously for more than 20,000 times.
- ◆ Come with calibration certificate.
- ◆ After service: One year warranty and lifelong maintenance.

Main Technical Parameters:

- ★ Measuring Range: 0 ~ 199.9 ~ 2,000GU
- ★ Accuracy: $\leq \pm 1.2$ GU
- ★ Zero Error: ≤ 0.1 GU
- ★ Stability: ≤ 0.2 GU/30min
- ★ Annual Variation of standard board: $\leq \pm 0.5$ GU
- ★ Measuring Area: 20°: 8.5mm × 10mm; 60°: 16mm × 10mm ;
85°: 35mm × 5mm
- ★ Power Supply: One 1.5V aa alkaline battery
- ★ Dimension: 155mm × 48mm × 85 mm (including holder, L × W × H)
- ★ Weight: 350g
- ★ Ordering Information:

BGD 514 /3---Multifunction Tri-Glossmeter (20° /60° /85°)



Time	Group	Count	Total	20°	60°	85°
1	0:04:02	1	5	91.1	94.1	99.1
2	0:04:08	1	2	91.1	94.1	99.1
3	0:04:11	1	2	91.1	94.1	99.1
4	0:04:15	1	4	91.1	94.1	99.1
5	0:04:18	1	5	91.1	94.1	99.1
6	0:04:21	2	1	91.1	94.1	99.1
7	0:04:25	2	2	91.1	94.1	99.1
8	0:04:29	2	2	91.1	94.1	99.1
9	0:04:32	2	3	91.1	94.1	99.1
10	0:04:35	2	4	91.1	94.1	99.1
11	0:04:38	3	1	91.1	94.1	99.1
12	0:04:42	3	2	91.1	94.1	99.1
13	0:04:45	3	3	91.1	94.1	99.1
14	0:04:48	3	4	91.1	94.1	99.1
15	0:04:50	3	5	91.1	94.1	99.1
16	0:04:53	4	1	91.1	94.1	99.1
17	0:04:57	4	2	90.9	94.1	99.1
18	0:04:59	4	3	91.1	94.1	99.1
19	0:05:03	4	4	91.1	94.1	99.1
20	0:05:06	4	5	91.1	94.1	99.1
21	0:05:10	5	1	91.1	94.1	99.1
22	0:05:14	5	2	91.1	94.1	99.1
23	0:05:18	5	3	91.1	94.1	99.1
24	0:05:21	5	4	91.1	94.1	99.1
25	0:05:24	5	5	90.9	94.1	99.1
26	0:05:27	6	1	91.1	94.1	99.1
27	0:05:30	6	2	91.1	94.1	99.1
28	0:05:33	6	3	90.9	94.1	99.1
29	0:05:37	6	4	91.1	94.1	99.1

⑤ Special Glossmeter

Biuged Instruments also manufacture some special glossmeters which are used in other fields. All these glossmeters have the same perfect performance as our normal glossmeter. And its technical parameters are compatible to international standard such as ISO2813, ASTMD523, DIN67530 etc.

Products	Glossmeter (for plastic, film)	Glossmeter (for paper making)	Glossmeter (for metal)	Glossmeter (for stone)	Glossmeter (small orifice)
Ordering information	BGD 517/1	BGD 517/2	BGD 517/3	BGD 517/4	BGD 518
Apply for	Ceramic, Enmal, Plastic	Paper making	Metal, electroplate, glass or with high gloss surface	Marble, granite, terrazzo etc.	Curve or small area thing
Incidence Angle	45°	75°	60°	60°	60°
Reading Range	0 ~ 199.90 GU	0 ~ 199.90 GU	0 ~ 1999 GU	0 ~ 199 GU	0 ~ 199.90 GU
Facula size	10×14mm	8×20mm	10×20mm	25×25mm	2×2mm
Resolutio	0.1 GU	0.1 GU	1 GU	1 GU	0.1 GU
Accuracy	± 1.2 GU	± 1.2 GU	± 1.2 GU	± 2 GU	± 1.2 GU
Stability	± 0.4 GU	± 0.4 GU	± 0.4 GU	± 1 GU	± 0.4 GU



⑥ Intelligent Double-Geo Haze Glossmeter

BGD 519 Intelligent Double-Geo Haze Glossmeter uses both geometries together to calculate the haze on a high-gloss or highly polished surface. Haze is used to describe the situation when two high gloss surfaces have similar gloss values at 60° angel, but one of the surface has a milky/hazy appearance compared to the other.

Poor product formulation or polishing effects leading to a drop in surface quality can quickly be identified by using the BGD 519.

- ◆ Calculates haze to ASTM D 4039
- ◆ Measures using the 60° geometry
- ◆ Measures using the 20° geometry
- ◆ Haze measurement Mode (for BGD 519/2)
- ◆ Calibrate automatically
- ◆ Statistical analysis for 10 group data
- ◆ USB Connection



Main Technical Parameters:

- ★ Reading Range: 0.0~2000GU (20°), 0.0~1000GU (60°)
- ★ Data repeatability: 0.2GU (0~99.9GU); 0.2% (100~1999GU)
- ★ Data quantitative repeatability: 0.5GU (0~99.9GU); 0.5% (100~1999GU)
- ★ Windows Size: 11×52mm
- ★ The size of measuring apertuer: 10×10mm (20°) 10×20mm (60°)
- ★ Confirm Standard: ASTM D 4039; ISO 2813; ASTM D523
- ★ Dimensions: 144mm (L) ×64mm (H) ×32mm (D)

★ Ordering Information:

- BGD 519/1--- Double-Geo Glossmeter
- BGD 519/2--- Double-Geo Haze Glossmeter

THICKNESS

① Wet Film Comb Thickness Gauges

The Wet Film Thickness Gauges are made of a comb-shaped design with precision cut gaps to determine the coating thickness by placing vertically onto a wet coated substrate. It is a corrosion-resistant stainless steel with a hole at the top corner so that a string (not supply) can be attached for hooking.

All Wet Film Thickness Gauges are machined by high precision CNC and with less than 3 micron deviation. They come standard with 10 gaps with inscriptions of the thickness at the side of each gap. It is recommended to replace a new gauge if there are chips, crack or uneven at the gap (s) of the gauge.

◆ Ordering Information:

BGD 531/1	10–100 μm	(@10 μm)
BGD 531/2	20–200 μm	(@20 μm)
BGD 531/3	50–750 μm	(@25 μm / @50 μm)
BGD 531/4	250–700 μm	(@50 μm)
BGD 531/5	50–950 μm	(@50 μm)
BGD 531/6	300–2,600 μm	(Quadrilateral @100 μm)
BGD 531/7	25–3000 μm	(Hexagon)



② Rolling Wheel Wet Film Thickness Gauges

The Rolling Wheel Wet Film Thickness Gauge has long been the standard for measuring wet film thickness in the coatings industry. (U.S. Patent No. 3, 128,558) .

The gauge consists of an eccentric inner wheel, supported by two large outer concentric wheel. At a specific point, the inner wheel touches and picks up wet film when the gauge is rolled on the coated surface. The critical clearance may be read on a rotating scale.

Both the body of the gauge and the centre holder are made of high-grade stainless steel. The scale value are casted on 1 side.

Biuged offer three basic models in various ranges. All models have an accuracy of 2.5 μm (± 0.0001 in) or 2.5% full scale, whichever is greater.

Main Technical Parameters:

★ Dimensions: 50 (Φ) \times 15 (H) mm@2mm path

★ Weight: approx.177g

★ Ordering Information:

BGD 532/1	0–100 μm	(@5 μm)
BGD 532/2	0–200 μm	(@10 μm)
BGD 532/3	0–500 μm	(@50 μm)
BGD 532/4	0–1,000 μm	(@100 μm)



③ Thickness Gauge

These gauges are simple tool used to test the thickness of leather, paper, film, wire and similar products. It can be used widely, dexterous and convenient, high efficiency.

◆ Ordering Information:

BGD 963/1---	Analog Thickness Gauge
(Test range: 0-10mm; Resolution:0.01mm)	
BGD 963/2---	Analog Thickness Gauge
(Test range: 0-1mm; Resolution:0.001mm)	
BGD 964/1---	Digital Thickness Gauge
(Test range: 0-10mm; Resolution:0.01mm)	
BGD 964/2---	Digital Thickness Gauge
(Test range: 0-10mm; Resolution:0.001mm)	



BGD 963



BGD 964

④ Economic Dry Film Thickness Gauge

This is a economic dry film thickness gauge which can measure both non-magnetic coatings on steel and insulating coatings on non-ferrous metals.

Features:

- ◆ Menu operation system
- ◆ Two measuring mode: CONTINUE and SINGLE mode
- ◆ Two working Mode: DIRECT and GROUP mode
- ◆ Statistic Display: AVG, MAX, MIN, NO., S.DEV
- ◆ One point calibrating, two points calibrating and basic calibratingeasily
- ◆ Memory for 400 readings (80 DIRECT and 320 GROUP readings)
- ◆ Delete single readings and all group readings easily
- ◆ High alarm and Low alarm for all working mode
- ◆ Low battery, error indication
- ◆ USB interface for PC software (windows 98/2000/xp/vista)
- ◆ **Accessories:** Two “AAA” atteries, USB cable, CD, Calibration Iron, Calibration Aluminum, PrecisionStandard, Gift box with carrying case.

Main Technical Parameters:

Sensor Probe	F	NF
Working principle	Magnetic induction	Eddy current principle
Measuring range	0~1250um	0~1250um
Guaranteed tolerance (of reading)	(± 3%+1)um	(± 3%+1.5)um
Low range Precision	0.1um	0.1um
Minimum curvature radius	1.5mm	3mm
Diameter of Minimum area	3mm	5mm
Basic critical thickness	0.5mm	0.3mm
Size (HxWxD)	113.5mm x 54mm x 27mm	
Weight	110g	

◆ Ordering Information:

BGD 540---Economic Dry Film Thickness Gauge



⑤ Precise Dry Film Thickness Gauge

Using magnetic induction or Eddy current, this electronic gauge offers precision thickness measurement of non magnetic coatings such as paints, zinc etc. on steel (F: ferrous probe) , and insulating materials on non-ferrous substrates (FN: non-ferrous.) . The gauge is available with either integral or external F, N or dual FN probes. The FN probe features automatic substrate recognition to simplify operation.

Biuged offer many different types of thickness Gauges to meet with different clients' request under different conditions.



BGD 542 One-body



BGD 543 Separate probe

Ordering Information → Technical Parameters ↓		BGD 542/1	BGD 542/2	BGD 543/1	BGD 543/2
Type		In built probes		With separate probes	
Operating principle		Only F	F&NF	Only F	F&NF
Measuring range		0-1250μm/0-50mil (Also can ask for larger range)			
Resolution		0.1/1			
Accuracy		±1-3% or ±2.5μm			
Min. radius work piece		F: Convex 1.5mm/Concave 25mm; N: Convex 3mm/Concave 50mm			
Min. measuring area		6mm			
Min. sample thickness		0.3mm			
Metric/ Imperial		Convertible			
Power supply		4×1.5V AA Battery			
Battery indicator		Low battery indicator			
Operating conditions		0-40℃; 10-90%RH			
Dimension		126×65×27mm			
Weight		81g			
Standard delivery	Main unit	√	√	√	√
	F type probe	√	√	√	√
	N type probe		√		√
	F calibration base set	√	√	√	√
	N calibration base set		√		√
	Calibration foil set	√	√	√	√
	Carrying case	√	√	√	√
	Instruction manual	√	√	√	√
Optional Accessories		Cable & software for RS-232C			

⑥ Paint Inspection Gauge (P.I.G)

BGD 548 is a paint inspection gauge which is suitable for use wherever conventional electro-magnetic measuring techniques are ineffective, namely for coatings on wood, concrete, plastics and other non-metallic substrates.

Testing with the BGD 548 is based on the standardized wedge cut procedure: The coating is cut through at a defined angle in such a way that the cut penetrates the substrate. The layer thickness (s) is calculated on the basis of the slope projection (b) of the cut face, determined using a measuring microscope, and the cutting angle (α). Similarly, the individual layer thickness of multilayer systems can be ascertained.

The BGD 548 consists of a black painted aluminium block which accommodates the following functional elements:

- ◆ Exchangeable carbide tip with precision-ground angular cutting blade (come with 4 cutters)
 - No.1 Cutter: Measuring range: 20-2,800 μ m (Factor: 20 μ m)
 - No.2 Cutter: Measuring range: 10-1,400 μ m (Factor: 10 μ m)
 - No.3 Cutter: Measuring range: 5-700 μ m (Factor: 5 μ m)
 - No.4 Cutter: Measuring range: 2-280 μ m (Factor: 2 μ m)
- ◆ Measuring microscope with a magnification of 50 and a reticle(2mm with 1/140 division), which is also suitable for inspection tasks.
- ◆ With two wheels design let cutting working is more stable and uniform.
- ◆ Battery compartment for 1.5 V battery block.
- ◆ Combination of LED and fibre-optic light guide for optimum specimen illumination at low current consumption.

It complies with ASTM D 4138, AS 1580 Meth 408.1

Main Technical Parameters:

- ★ Measuring range (standard): 2 ~ 2,800 μ m
- ★ Power supply: 1 pc 1.5V battery
- ★ Overall Size: 110 × 85 × 25mm
- ★ Weight: 0.5 KG

★ Ordering Information:

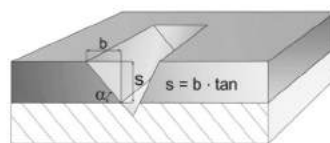
BGD 548--- Paint Inspection Gauge

BGD 548/1P--- No.1 Cutter (20-2,800 μ m)

BGD 548/2P--- No.2 Cutter (10-1,400 μ m)

BGD 548/3P--- No.3 Cutter (5-700 μ m)

BGD 548/4P--- No.4 Cutter (2-280 μ m)



Measuring Theory



Perme Cup (Water Vapor permeability)

Perme cups are used to determine the permeability of films to the vapor of water and other liquids. Materials that are tested include paint, varnish, thin plastic films and other types of sheets thin enough to be tightly sealed in place across the face of the cup. Permeability is expressed as the weight of a vaporous material that passes through a specified area and thickness of free film within a specified time interval under controlled conditions.

These Perme Cup is made up of three basic parts, each machined from the highest grade anodized aluminum. The cup top surface, as well as both surfaces of the clamp ring are smoothly finished to provide a tight seal against the product under test. Two gaskets with the same dimensions as the clamp ring, except for thickness, are furnished for use with rough or uneven materials to insure complete sealing. Extending upward from the face of the cup are two stainless steel pins which closely engage the clamp ring, and any gaskets used, to prevent movement with respect to the test material as the cap is tightened against the cup. The cap design permits use of longer pins than possible with earlier models to accommodate thicker sample and gasket combinations.

Perme Cup is designed to be in complete compliance with ASTM Method D 1653

Ordering Information:

BGD 340/1---Perme Cup (10cm²)

BGD 340/2---Perme Cup (25cm²)



Digital Anti-static Resistance Ohmmeter

BGD 967 Digital Anti-static Resistance Ohmmeter is used to produce anti-static materials, test anti-static and construct and check of anti-static task. It can convert the measuring scope automatically.

- ◆ High precision
- ◆ High resolution
- ◆ Rapid testing speed
- ◆ Good reading stability
- ◆ Large scope of constant output voltage
- ◆ Large power of output voltage and large short-circuit current
- ◆ Small size for portable
- ◆ Operation by one key.

Main Technical Parameters:

★ Rated voltage:	100V, 500V
★ Measuring Scope:	0~20000MΩ
★ Resolution:	10KΩ
★ Standard disposition:	
BGD 557 Meter	1 pc
Standard electrode	1 pair
1.8Ah Nickel metal hydride batteries	8 pcs
Charger	1 pc
Case	1 pc

★ Ordering Information:

BGD 967--- Digital Anti-static Resistance Ohmmeter



Insulation Resistance Meter

Insulation resistance Meter is used to test electrician insulated materials, cable and wire, Anti-static engineering and other electric materials. It is made up of the most advanced high megohm resistance, weak current electronic components. With high precision, high resolution, strong capacity anti jamming etc characters.

Main Technical Parameters:

★ Rated voltage:	10V; 100V; 500V
★ Measuring Scope:	$0-2 \times 10^2 \Omega$
★ Measurement error:	
± (1% showing value+2 LSD)	$R_x \leq 10^7 \Omega$
± (3% showing value+2 LSD)	$10^{10} \Omega \geq R_x \geq 10^7 \Omega$
± (5% showing value+2 LSD)	$10^{12} \Omega \geq R_x \geq 10^{10} \Omega$
± (10% showing value+2LSD)	$10^{14} \Omega \leq R_x < 10^{12} \Omega$
± (20% showing value+10 LSD)	$> 10^{14} \Omega$
★ Testing set time:	1min ~ 7min
★ Power supply:	8 pcs 1.2V(rechargeable batteries) or 8 pcs 1.5V battery
★ Operating environment:	0 ~ 40℃ 85%RH (25℃)
★ Weight:	2kg
★ Size:	270mm × 250mm × 100mm
★ Ordering Information:	BGD 968--- Insulation Resistance Meter



ADHESION

www.bugged.com / +86-20-82169666 (10 line)

② Cross Cutting Rule

BGD 503 Cross Cutting Rule is used to test the adhesion of film with substrate (the thickness of dry film less than $250\mu\text{m}$). It confirms to BS 3962-6 Standard.

Main Technical Parameters:

- ★ Cutting Distance: 1mm、1.5mm、2mm、3mm
- ★ Cutting Length: 35mm
- ★ Number of Cutter: 11teeth
- ★ **Ordering Information:** BGD 503--- Cross Cutting Rule
BGD 1280---Cutter Blade (pack of 10)



3M Scotch Transparent Tape

Used to test the adhesion of film after the film was cut , Its adhesion power is $10 \pm 1\text{N}/25\text{mm}$

Ordering Information

- ★ BGD 1011---600P Type: Length/32.9m; Width/19 mm
- ★ BGD 1012---600 Type: Length/66.0m; Width/19 mm
- ★ BGD 1013---600 Type: Length/66.0m; Width/25.4 mm
- ★ BGD 1020---610 Type: Length/66.0m; Width/19 mm
- ★ BGD 1021---610 Type: Length/66.0m; Width/25.4 mm
- ★ BGD 1030---810 Type: Length/32.9m; Width/19 mm
- ★ BGD 1040---898 Type: Length/50.0m; Width/25 mm



③ Digital Pull off Adhesion Tester (PsiaTester)

In order to perform satisfactorily, coatings must adhere to the substrates on which they are applied. There are three different adhesion test procedures to assess the resistance of paints to separate from the substrate. The cross cut test, also described as cross-hatch, uses a blade to cut through the coating to the substrate. At least two cuts are made that intersect at 90 degrees to get a right angle lattice pattern. The cross-cut area is observed for any adhesion failure. The second method to test the coating adhesion is using a stylus or loop that an increasing amount of weight is applied until the coating is removed from the substrate. The third method called pull-off adhesion, measures the amount of tensile stress to pull the coating off the substrate. A dolly is glued to the coating surface, after the glue is cured, a testing apparatus is attached to the loading fixture and aligned to apply tension perpendicular to the test surface. The force applied is gradually increased and monitored until either a plug of coating material is detached, or a specified value is reached.

BGD 500 digital pull-off adhesion tester is a portable, hand-operated instrument which is used to measure the force required to pull a specified test diameter of coating away from its substrate using hydraulic pressure. The pressure is displayed on a digital LCD and represents the coating's strength of adhesion to the substrate.

It evaluates the adhesion (pull-off strength) of a coating by determining the greatest tensile pull-off force that it can bear before detaching. Breaking points, demonstrated by fractured surfaces, occur along the weakest plane within the system consisting of dolly, adhesive, coating layers and substrate.

Characters

CONVENIENT

- ◆ Portable design, can be used anywhere.
- ◆ Built-in rechargeable lithium battery, no need any external power source.
- ◆ Selectable directly four different sizes dolly for different resolution and testing range

- ◆ Get the testing results from LCD directly.
- ◆ Includes all tools needed for testing

PRECISE

- ◆ Each **PsiaTester**'s pressure system is calibrated to within 1% accuracy by NIST traceable load cells
- ◆ High-precise professional sensor ensures 0.01MPa resolution
- ◆ Self-aligning dollies ensure to get a reliable testing results for smooth or uneven surfaces.
- ◆ Come with calibration certificate

INTELLIGENT

- ◆ Store all test results (includes Max. pull-off power, pull-off rate, dolly size and time) automatically
- ◆ Two units (MPa and psi) for selection and can be converted automatically.
- ◆ No need any software, **PsiaTester** is also a U disk, when connecting the computer, operator can read all data directly which is recorded during testing.
- ◆ Showing pull-off rate allows users monitor and adjust pull speed according to different test requirements.

DURABLE

- ◆ Waterproof, dustproof and shockproof design meets any harshest operating environment
- ◆ Strong plastic carrying case
- ◆ Two year warranty

Main Technical Parameters:

- ★ Dolly Size: 20mm (Standard) ; 10mm、14mm、50mm (Optional)
- ★ Resolution: 0.01MPa (1psi)
- ★ Accuracy: $\pm 1\%$ Full scale
- ★ Max. Pull-off Pressure: Φ 10mm dolly \rightarrow 0–80MPa; Φ 14mm dolly \rightarrow 0–40MPa;
 Φ 20mm dolly \rightarrow 0–20MPa; Φ 50mm dolly \rightarrow 0–3.5MPa;
- ★ Power: Built-in rechargeable lithium battery, and standard configuration charging adapter.
- ★ Adhesion Tester Size: 360mm \times 75mm \times 115mm (L \times W \times H)
- ★ Adhesion Tester Weight: 3KG

★ Packing List:

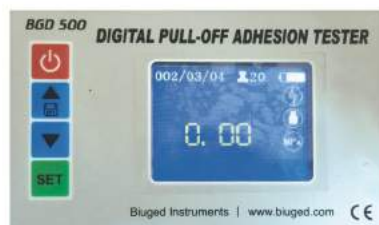
- ① Adhesion Tester with digital display
- ② 20mm Aluminum test dollies (20 pcs)
- ③ Cutting toll for 20mm dollies,
- ④ 3M Adhesive and glue gun
- ⑤ Micro-USB cable
- ⑥ Operation Manual
- ⑦ Carrying case

★ Ordering Information:

- BGD 500-----Digital Pull-off Adhesion Tester
- BGD 1520-----10mm Dolly (10 pcs/package)
- BGD 1521-----14mm Dolly (10 pcs/package)
- BGD 1522-----20mm Dolly (10 pcs/package)
- BGD 1523-----50mm Dolly (10 pcs/package)
- BGD 1526-----Cutting Tool
- BGD 1527-----3M Adhesive



Cutting Tool



HARDNESS

Improving mechanical resistance is part of many quality requirements. One important criteria for assessing this feature is hardness.

Depending on the requirements there are various methods for testing hardness. Some are dedicated to characteristic coatings and others are more suitable for testing bulk materials such as metals, plastics, rubber or elastomers.

Biuged manufacture and supply a wide range of instrumentation designed for the hardness tests most frequently used in the industry-these include pendulum, scratching etc.

① Pencil Hardness Tester

This instrument offers an easy method for the determination of film hardness for coating applied to a flat substrate. The pencil lead, prepared beforehand by rubbing it on fine abrasive paper (400), is maintained at an angle of 45° and pushed with uniform pressure onto the sample. Either leaving a superficial trace or causing destruction down to the substrate. It complies with the requirements of ASTM D 3363, ISO 15184.

Main Technical Parameters:

- ★ Three points are touched on the tested surface (roller, pencil lead)
- ★ The angle between pencil and the tested surface: 45°
- ★ Built-in spirit bubble, convenient to check level when tester is working
- ★ Pressure of pencil lead : 500g/750g/765g/1000g
- ★ Packing List:
 - ① Pencil Tester, Body
 - ② 1 Set of Pencils (12) : -4B-3B-2B-B-HB-H-2H-3H-4H-5H-6H.
 - ③ Special Pencil Sharpener
 - ④ Abrasive Paper, 400 grade grit.
 - ⑤ Spirit bubble
 - ⑥ Calibration Certificate

★ Ordering Information:

- BGD 506/1----- Pencil Hardness Tester (500g)
- BGD 506/3----- Pencil Hardness Tester (1000g)
- BGD 506/4----- Pencil Hardness Tester (7.5N±0.1N/765g)



Moving more smoothly with axletree design



② Adjustable Pencil Hardness Tester

BGD 505 Adjustable Pencil Hardness Tester is designed according with ASTM D 3363, ISO 15184. Operator can obtain three different loading weights (500g, 765g and 1000g) through selecting different loading weight.

Main Technical Parameters:

- ★ Three points are touched on the tested surface (roller, pencil core)
- ★ The angle between pencil and the tested surface is 45°
- ★ Built-in spirit bubble, convenient to check level when tester is working
- ★ Pressure of pencil lead is 500g, 765g, 1000g

★ Ordering Information:

- BGD 505----- Adjustable Pencil Hardness Tester



Mitsubishi Pencil

Used to test the film hardness specially, have 17 grades from 6B-9H

- ◆ **Ordering Information:** UNI—A set of Mitsubishi Pencil (17 pcs/set)
(6B-5B-4B-3B-2B-B-HB-F-H-2H-3H-4H-5H-6H-7H-8H-9H)



③ Pendulum Hardness Tester

A pendulum resting on a coating surface is set into oscillation and the time for the oscillation amplitude to decrease by an amount specified in this International Standard is measured. The shorter the damping time, the lower the hardness.

Two test procedures are considered in some detail, namely those of König and Persoz. (The Persoz and König methods differ by the period and amplitude of the oscillation. The Persoz test measures the time taken for the amplitude of oscillation to decrease from 12° to 4° ; the König from 6° to 3° .)

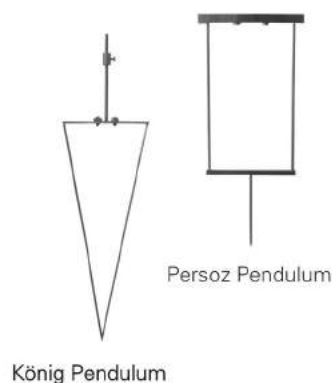
The instruments embody the same principle that the amplitude of oscillation of a pendulum touching a surface decreases more rapidly the softer the surface but differ in respect of dimensions, period and amplitude of oscillation.

BGD 509 Pendulum Hardness Tester is the newest product which can be used in accordance with the following National and International Standards: ISO 1522 which supersedes ASTM D4355; BS 3900-E5; DIN 53157; NBN T22-105; NF T30-016.

It's a simple to use instrument and can be supplied in one of three model types: Persoz, König, and Persoz & König combined

Features

- ◆ Automatic counter range: 0~999 times
- ◆ High precision machined pendulums are good stable, ensure a repeatable and comparable testing result.
- ◆ Can change two test procedure: König or Persoz test
- ◆ Suitable to different thickness substrates from 0.1mm~5.5mm
- ◆ Humanistic LCD Operator Interface
- ◆ Release Pendulum with shutter release, can get more accuracy test result.
- ◆ Lifting platform designed specially can fix specimen easily, platform can keep stable and no shake when pendulum is oscillating.
- ◆ Spirit levels produced specially have high precision, convenient customer to adjust level precisely.
- ◆ Can record automatically the time or times for the amplitude of swing to decrease from one angle to other angle and stop testing automatically.
- ◆ Record the data with two light sensitive sensors
- ◆ Can select record mode freely: Timing mode or counting mode.
- ◆ Single piece glass enclosure reduces the effects of air flow on final results.
- ◆ Come with Calibration Certificate.



Main Technical Parameters

Ordering Information → Technical Item ↓	BGD 509/K	BGD 509/P	BGD 509/K+P
Pendulum	König	Persoz	König+Persoz
Weight	200g ± 0.2	500g ± 0.1	200g ± 0.2/500g ± 0.1
Ball Diameter	5mm (0.2in)	8mm (0.3in)	5mm/8mm
Deflection Start	6°	12°	6° /12°
Deflection End	3°	4°	3° /4°
Period of Oscillation	1.4s	1s	1.4s /1s
Damping Time on Glass	250 ± 10s	430 ± 10s	250 ± 10s/430 ± 10s

④ Automatic Scratch Tester

Coatings and paints can protect, decorate substrate or conceal the defects of substrate, and these three functions are related with coatings hardness. And hardness is the important performance for paint mechanical strength, as well as the important indicator to judge paint quality. One of important indicators to evaluate coatings hardness is scratch tester.

ISO 1518 《Paints and varnishes -- Determination of scratch resistance》 specifies a test method for determining under defined conditions the resistance of a single coating or a multi-coat system of paint, varnish or related product to penetration by scratching with a scratch stylus loaded with a specified load. Penetration of the stylus is to the substrate, except in the case of a multi-coat system, in which case the stylus can penetrate either to the substrate or to an intermediate coat.

This test has been found to be useful in comparing the scratch resistance of different coatings. It is most useful in providing relative ratings for a series of coated panels exhibiting significant differences in scratch resistance.

Before 2011, there is only one standard which is used to evaluate paint scratch resistance, which against to evaluate scientifically to paints scratch resistance under different applications. After revise this standard on 2011, this test method is divided two parts: One is constant-loading, i.e the loading to panels is constant during the scratch test, and the test results is shown as max. weights which don't damage coatings. The other is variable loading, i.e. the loading on which stylus loads test panel is increased continuously from 0 during the whole test, then measure the distance from final point to the other point when the paint appear scratch. Testing result is shown as critical loads.

As a important member of Chinese Paint & Coating Standard Committee, Biuged is responsible for drafting the relative Chinese standards on the base of ISO 1518, and developed BGD 520 scratch testers which conforms the newest ISO 1518:2011.

Characters

- ◆ Big working table can be moved left and right convenient for measuring different areas in the same panel
- ◆ Special fixing device for sample---can test different size substrate
- ◆ Sound-light Alarm system for puncturing through sample panel---more visual
- ◆ High hardness material stylus---more durable

Main Technical Parameters

Ordering information→ Technical parameter ↓	BGD 520/1	BGD 520/2
Conform standards	ISO 1518-1; BS 3900 : E2	ISO 1518-2
Stylus	Having a hemispherical hard-metal tip of radius 0.5mm	Coned sapphire or diamond, the tip radius is 0.03mm
Weight	Constant-loading (0.5N × 2, 1N × 2, 2N × 1, 5N × 1, 10N × 1)	Variable-loading (0g - 50g or 0g - 100g or 0g - 200g)
Working distance	120mm	100mm
Stylus moving speed	35 ± 5mm/s	10 ± 2mm/s
Angle between stylus and sample	90°	
Motor	60W 220V 50Hz	
Max. panel size	200 × 100mm	
Max. panel thickness	Less than 1mm	Less than 12mm
Dimensions	500 × 260 × 380mm (L × W × H)	500 × 260 × 340mm (L × W × H)
Net weight	17 KG	17.5 KG

Optional Accessories

BGD 1003---Stylus with hard-metal tip (0.5mm)
BGD 1007---Stylus for BGD 520/2



BGD 520/1



BGD 520/2

⑤ Mar Resistance Tester

What is “Mar” : blemish on the surface of a coating, extending over a particular area of the coating and visible due to the difference in the light-reflection properties of the area affected compared with the light-reflection properties of adjacent areas.

Mar resistance test for coatings is very similar with scratch resistance test, but this test uses arc (loop-shaped or ring-shaped) stylus to test the mar resistance of a single coating of a paint, varnish or related product, or the upper layer of a multi-coat system.

The product or system under test is applied at uniform thickness to flat panels of uniform surface texture. After drying/curing, the mar resistance is determined by pushing the panels beneath a curved (loop-shaped or ring-shaped) stylus which is mounted so that it presses down on the surface of the test panel at an angle of 45°. The load on the test panel is increased in steps until the coating is marred.

This test has been found to be useful in comparing the mar resistance of different coatings. It is most useful in providing relative ratings for a series of coated panels exhibiting significant differences in mar resistance. Kindly note this test does not specify a method using a pointed stylus, two of which are specified in ISO 1518-1 and ISO 1518-2, respectively. The choice between the three methods will depend on the particular practical problem.

BGD 536 Mar resistance Tester produced by Biuged confirms the newest international standard ISO 12137-2011, ASTM D 2197 and ASTM D 5178. It can offer from 100g to 5,000g load to test panel.

Characters

- ◆ Working speed can be adjusted from 0 mm/s ~ 10 mm/s
- ◆ Double adjusting balance device to reduce the test error because of level.
- ◆ Two stylus for optional
- ◆ Moveable working table is convenient for operator do more tests at different areas in the same test panel.
- ◆ Lifiable balance arm can do mar test on the different thickness panels from 0mm ~ 12mm

Main Technical Parameters:

- ★ Motor Power: 60W
- ★ Weights: 1 × 100 g, 2 × 200 g, 1 × 500 g, 2 × 1000 g, 1 × 2000 g
- ★ Loop-shaped Stylus: Made of chromium-plated steel and shall be in the form of a rod of 1.6 mm diameter bent into a “U” shape with an outside radius of (3.25 ± 0.05) mm. With smooth surface and hardness is Rockwell HRC56 to HRC58 and its surface shall be smooth (roughness $0.05 \mu\text{m}$).
- ★ Stylus moving speed: 0 mm/s ~ 10 mm/s (step: 0.5 mm/s)
- ★ Angle between stylus with test panels: 45°
- ★ Test panels Size: Less than 200mm × 100mm (L × W), Thickness is less than 10mm
- ★ Power: 220V AC 50/60Hz Weight: 15kg
- ★ Overall Size: 430 × 250 × 375mm (L × W × H)
- ★ Ordering information:
- BGD 536---Mar Resistance Tester
- BGD 1008---Loop-shaped stylus



⑥ Buchholz Indentation Tester

BGD 510 Buchholz Indentation Tester is a reliable test method for evaluation of indentation resistance of plastic deformable coatings. A beveled disc with a sharp edge is applied onto the test surface under a constant 500g. Test load provided by a steel block holder. The trace left after 30 s. Load is measured with a 20X magnification illuminated microscope. The length of the indentation is inversely proportional to the hardness.

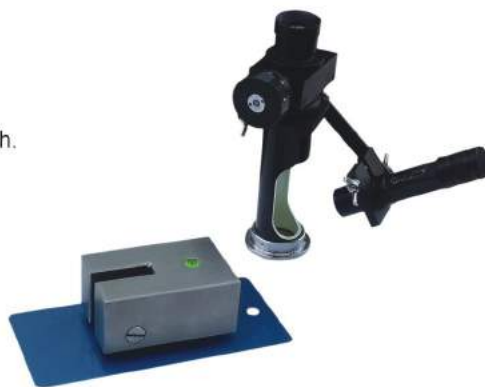
- ◆ Conform with Standard ISO 2815
- ◆ Stainless steel block
- ◆ Circular tool is a double cone block
- ◆ Circular tool and support of hard metal
- ◆ Marking triangle for precise positioning.
- ◆ 20x magnification with graduated scale to measure indentation length.

Main Technical Parameters:

- ★ Indentation load: 500 ± 5g
- ★ Accuracy of indentation reading: 0.1mm

★ Ordering Information:

BGD 510--- Buchholz Indentation Tester



⑦ Digital Shore Hardness Meter

This is the newest type Shore hardness meter in the market, which is used for Shore hardness testing with pocket size model and integrated probe. With RS 232 interface and can be switched off automatically. The meter screen can show hardness result, average value, max. value directly.

Standards: DIN53505, ASTM D2240, ISO7619, JISK7215

Shore A is designed to measure the penetration hardness of rubber, elastomers and other rubber like substances such as neoprene, silicone, and vinyl. It can also be used for soft plastics, felt, leather and similar materials.

Shore C is designed for various foam and sponge.

Shore D is designed for plastics, Formica, Epoxies and Plexiglass.

Main Technical Parameters:

- ★ Measurement range: 0–100HA(HC/HD)
- ★ Measurement deviation: < 1% H
- ★ Resolution: 0.1
- ★ Power supply: 4x1.5V AAA (UM-4) battery
- ★ Battery indicator: low battery indicator
- ★ Dimensions: 162x65x38mm
- ★ Weight (not including probe): 173g

★ Ordering information:

BGD 935/A---Digital Shore A Hardness Meter

BGD 935/C---Digital Shore C Hardness Meter

BGD 935/D---Digital Shore D Hardness Meter



⑧ Hardness Test Pencil

This instrument has been designed for the measurement of the hardness of protective coatings. The degree of hardness of paint films, plastic coatings, etc. can be accurately measured and recorded with the **Hardness Test Pencil**. No matter whether on a level or curved surface, small or large. The instrument is always ready for use and, because of its small size easy transportable, an asset which will be appreciated by all concerned with hardness tests.

The handling of the Hardness Test Pencil is extremely simple. The estimated or known spring tension is set with the help of the slider. Holding the instrument upright and placing its point on the test surface one draws a 5 to 10 mm long line at a rate of approximately 10 mm/sec. The stylus should produce a scratch which is just visible with the naked eye. If the spring pressure is too high, the scratch is clearly visible; if too low, no scratch appears. The applied pressure, fixed by locking the slider, is marked in Newtons.

Three scales are engraved into the test pencil for the four pressure ranges:

No.1: 0 - 3 N (blue marked)

No.2: 0 - 10 N (red marked)

No.3: 0 - 20 N (yellow marked).

No.4: 0 - 40 N (White marked).

Main Technical Parameters:

- ★ Compression Springs: spring steel
- ★ Test tips: No.1, 2 and 3: tungsten carbide spheres;
No. 4 spring steel,
- ★ Total length: 160 mm; Net Weight: approx. 250 g
- ★ Diameter: 16 mm
- ★ Standard kit includes:
 - 1 Test tip: (0.75mm dia.-Bosch)
 - 3 Springs (0 - 3 N; 0 - 10 N; 0 - 20 N)
 - 1 Plastic carrying case



★ Ordering information:
BGD 511---Hardness Test Pencil

FLEXIBILITY

① Hinge-type Cylindrical Mandrel Tester

It is used to assess the pliability of the paint film through the capability that the paint film deforms with bottom material and does not get damage at the specified standard conditions. It is expressed with the minimum shaft stick diameter which does not cause the paint film to crack when the test plate moves around the shaft stick of 180° within 1-3 seconds at the specific conditions in the standard. It confirms to ISO 1519 ,ASTM D 522,DIN 53152.

This tester consists of eight hinges and each hinge has different diameter axis. Put the test panels into hinge then fold it and test panels then have finished 180° bend.

The test can be carried out:

---either as a "pass/fail" test, by carrying out the test with a single specified size of mandrel, to assess compliance with a particular requirement;

---Or by repeating the procedure using successively smaller mandrels to determine the diameter of the first mandrel over which the coating cracks and/or becomes detached from the substrate.

Main Technical Parameters:

- ★ Shaft stick diameter: 2mm、3mm、4mm、5mm、6mm、8mm、10mm、12mm
- ★ Thickness of bottom material for the test plate: less than 0.3mm
- ★ Ordering Information:
BGD 561---Hinge-type Cylindrical Mandrel Tester



② Cylindrical Mandrel Tester

BGD 564 Cylindrical Mandrel Tester complies with ISO 1519: 2011, ASTM D522 and DIN 53152. It is used to assess the resistance of a coating of paint, varnish or related product to cracking and/or detachment from a metal or plastic substrate when subjected to bending round a cylindrical mandrel under standard conditions.

This tester consists of three PVC rolls which are arranged side by side and run on pivoting bearings. Thus, the coating is not exposed to damage or shear stress during the test.

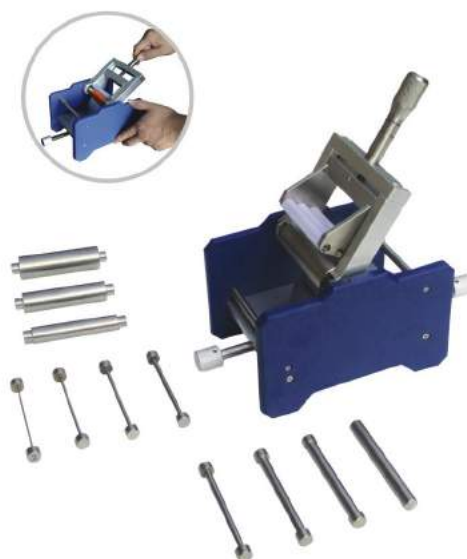
The test can be carried out:

--either as a "pass/fail" test, by carrying out the test with a single specified size of mandrel, to assess compliance with a particular requirement;

--or by repeating the procedure using successively smaller mandrels to determine the diameter of the first mandrel over which the coating cracks and/or becomes detached from the substrate.

Main Technical Parameters:

- ★ Latest and humanization design, convenient and quick to operate.
- ★ 12 pcs stainless steel mandrels with different diameters: $\Phi 2$ 、 $\Phi 3$ 、 $\Phi 4$ 、 $\Phi 5$ 、 $\Phi 6$ 、 $\Phi 8$ 、 $\Phi 10$ 、 $\Phi 12$ 、 $\Phi 16$ 、 $\Phi 20$ 、 $\Phi 25$ 、 $\Phi 32$ mm
- ★ All mandrels are machined precisely by high hardness stainless steel, 2mm and 3mm mandrels are done by hardening treatment, it won't be deformed even bend the thick test panels.
- ★ Suitable test panels size: Length ≤ 120 mm; width ≤ 80 mm; thickness ≤ 1.0 mm
- ★ Come with Calibration Certification
- ★ **Ordering Information:**
BGD 564---Cylindrical Mandrel Tester



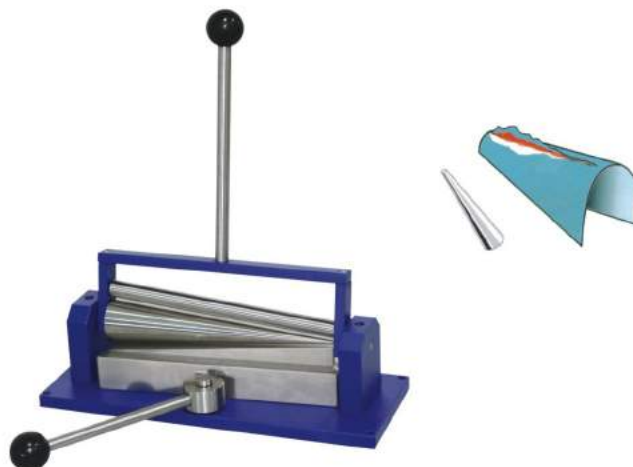
③ Conical Mandrel Tester

BGD 566 Conical Mandrel Tester is applicable to determine extensibility of paint coatings on metal panels which are clamped in position and formed round the conical mandrel by rotating of the roller frame. The panels are examined to evaluate crack resistance and detachment from the metal substrate of coated surface which is coated with paint under standard condition. It complies with ASTM D 522, D1737, BS 3900E11 and ISO 6860 Standard.

This instrument allows easy identification in a single operation the coating failure at specified diameter, over part or entire mandrel length.

Main Technical Parameters:

- ★ Dimension of conical mandrel: Big end: $\Phi 38 \pm 0.1$ mm; Small end: $\Phi 3.1 \pm 0.1$ mm; Length: 203 ± 0.3 mm
- ★ New clamping device make fixing sample become faster and more convenient
- ★ Overall dimensions: $300 \times 120 \times 83$ mm (L x W x H)
- ★ Come with Calibration Certification
- ★ Weight: 7kg
- ★ **Ordering Information:**
BGD 566---Conical Mandrel Tester



④ T-Bend Tester

BGD 568 T-Bend Tester is designed to evaluate the flexibility and adhesion of an organic coating on a metallic substrate by observing the cracking or loss of adhesion when a coated test panel is bent. This method can be used to confirm whether paints, varnishes or related products meet a given test requirement in a pass/fail test, or to determine the minimum bending diameter at which cracking does not occur.

Coated panels are bent back on themselves to 180°, with the coated surface on the outside of the bend, at progressively less severe radii of curvature, the radii of curvature being defined by spacers or mandrels. After bending, each panel is examined with a magnifying glass for cracking of the coating and by a tape pull-off test for loss of adhesion of the coating. The minimum diameter to which the test panel can be bent without cracking or loss of adhesion, i.e. when failures no longer occur, is taken as the T-bend rating.

It conforms with DIN EN ISO 17132, ASTM D4145, EN 13523-7 《Paints and varnishes - T-bend test》 “olding method”

Main Technical Parameters:

★ Max. thickness for sample: 1.0mm (steel panel) ;
2.0 mm (aluminum panel)

★ Width of panel: < 100mm

★ Weight: 50kg

★ Size: 300 × 300 × 190mm (L × W × H)

★ **Ordering Information:** BGD 568---T-Bend Tester



Impact

① Dupont Impact Tester

This tester is designed to test the impact endurance of coating material (after coated) ; Put the coating face of specimen upward and connect it with specified radius Impact Head, then use a certain Weight to impact the Impact Head on a fixed height, afterward, check the damage or deformation of coating.

To do an impacting test for painting and coating materials is to use an impacting head with various round angles to touch the specimen in the beginning, and then a selected weight free dropping from a certain height to hit the impacting head to impact the specimen. Running the same way to test three more specimens, and put and leave them for an hour, and then watch if there is crack on the painting.

It is compatible with ASTM D 2794, JISK 5400, CNS 10756.

Main Technical Parameters:

★ Instrument scale Length: 50–500mm (grade : 0mm)

★ Mass of hammer: 300g、500g、1000g

★ Piercer specification: ϕ 1/2、1/4、1/8、1/16、3/16in

★ Notch diameter on the bolster block: 1/2、1/4、1/8、1/16、3/16in

★ **Ordering Information:** BGD 301---Dupont Impact Tester



② Impact Tester

Impact test describes a method for evaluating the resistance of a dry film of paint, varnish or related product to cracking or peeling from a substrate when it is subjected to a deformation caused by a falling weight.

The coating under test is applied to suitable, thin (normally metal) panels. After the coating has cured, a standard weight is dropped on the each panel from a height that will cause deformation of the coating and the substrate. The test can be carried out with the coated side of the panel facing upwards (i.e. towards the falling weight) or downwards (i.e. away from the weight). By gradually increasing the height from which the weight drops, the point at which failure occurs can be determined. Films generally fail by cracking, which is made more visible by the use of a magnifier.

The test can be carried out:

—either as a pass/fail test, the test being carried out from one drop height and with a specified mass, so as to test compliance with a particular specification.

—or as a classification test, to determine, by gradually increasing the drop height and/or the mass, the minimum mass and/or drop height for which the coating cracks or peels from its substrate.

Biuged offers many different types impact testers according to different standards. These impact testers consist of a solid base with a guide tube support, some different weights hammers (falling weights) and some different diameters punches. Users can choose different size and weight hammer to simulate paint used different environments.



Main Technical Parameters

Ordering information→ Technical parameter↓	BGD 305 Heavy-Duty Impact Tester	BGD 306 ISO Impact Tester
Features	<ul style="list-style-type: none"> ◆ Latest design make changing punch, weight and die become more easy and faster. ◆ The aluminum oxid guide tube is produced by special technology, never fade and rust. ◆ Special structure design make impact groove won't deviate forever, no calibration. ◆ Come with Calibration Certificate. 	<ul style="list-style-type: none"> ◆ Ring slot for height limitation, convenient for operator to adjust different impact depth. ◆ The aluminum oxid guide tube is produced by special technology, never fade and rust. ◆ Guide tube is produced by special mould, the gap with weight is controlled precisely. ◆ Come with Calibration Certificate.
Instrument scale length	0–100cm (40inch)	
Graduation	1cm	
Falling Weights	1000g (2 pcs) 、 300g (1 pc)	1000g (2 pcs) 、 2 lb (2 pcs)
Punch Diameter	Φ12.7mm (1/2 inch) 、 Φ15.9mm (5/8 inch)	Φ20 mm、 Φ15.9mm (5/8 inch)
Die inside Diameter	Φ16.3mm、 Φ31.75mm	Φ27mm、 Φ16.3mm (41/64inch)
Standards	ASTM D 2794、 ASTM D 3029、 ISO 6272.2	ASTM D 2794、 ASTM D 3029、 ISO 6272.1

③ Digital Cupping Tester

BGD 309 Cupping Tester is applicable to evaluate crack resistance and detachment from the metal substrate of coated surface which is coated with paint, varnish, etc., after the coating layer is deformed gradually under standard condition. The sample panel (max. 1.25mm thick × 70 mm width, coated min.0.03mm) is clamped by an upper wheel and manually cupped by a $\phi 20\text{mm}$ hemispherical indenter onto a $\phi 27\text{mm}$ die by a drive wheel. The depth to cause failure is indicated on a precise digital display. The results can be easily observed with an illuminated magnifier

- ◆ Compliance with ISO 1520、BS 3900 Part 4, DIN 53166, DIN 53233 etc
- ◆ Automatic coordinate positioning system: tester can memorize the home position after being zeroed, also track the punch's position automatically. Therefore, the traditional error caused by return or shake can be avoided.
- ◆ Highly precise position sensor: the minimum division value of the depression depth can reach 0.01mm.
- ◆ Applicable for every kind of substrate, and the maximum pressure can reach 2,500N.
- ◆ The coordinate position of the plug can be zeroed manually and can be memorized while it is cold.
- ◆ Come with 10X illuminated magnifier, convenient to observe and judge test result.
- ◆ Hand twist operation: laborsaving and easy-handling.

Main Technical Parameters:

- ★ Diameter of punch: $\phi 20\text{mm}$
- ★ Maximum dent thickness: 12mm
- ★ Maximum depress power: 2,500N
- ★ Precision of dent: 0.01mm
- ★ Counter: digital display, in 0.01mm increments
- ★ Dimension of test pane: 150mm × 70mm × 0.03–1.25mm
(Smooth, not deformed)
- ★ Material: polished steel panel
- ★ Weight: 20Kg
- ★ Dimensions: 230 × 300 × 280mm (L × W × H)



- ★ Ordering Information:
BGD 309---Digital Cupping Tester

④ Automatic Cupping Tester

BGD 310 is a automatic cupping tester. On the base of BGD 309, this machine's punch can rise automatically at the speed of 0.2mm/s which is required by standard. Eliminate the error coming from hand lifting.

Moreover, BGD 310 automatic cupping tester is equipped with a high definition screen , operator can observe clearly the damages (cracking) from tested specimen, thus judge test result easily and more precise.

It conforms ISO 1520,BS 3900 Part 4,DIN 53166,DIN 53233 etc

Features:

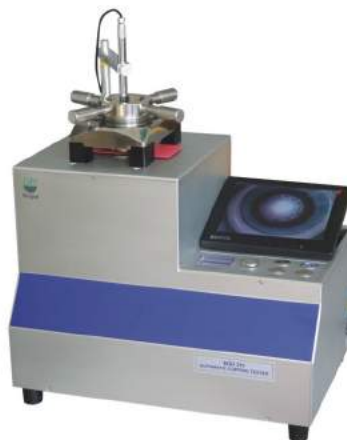
- ◆ Punch is lifted automatically (Constant speed: 0.2mm/s) , get more reliable and more comparable test results.
- ◆ Automatic coordinate positioning system: machine can memorize the home position after being zeroed, and locate the punch position automatically.
- ◆ High-power magnifier and high definition showing screen, judging test results is easier and more directly. And no need to focus during the whole test.
- ◆ The lifting distance of punch can be set freely from 0~18mm
- ◆ High precision raster displacement sensor, locate accurately and precision can reach $\pm 0.01\text{mm}$
- ◆ The max. width of test panel can be 90mm

Main Technical Parameters:

- ★ Diameter of punch: $\phi 20\text{mm}$ (0.8 inch)
- ★ Maximum dent depth: 18mm
- ★ Maximum depress power: 2,500N
- ★ Precision of dent: 0.01mm Weight: 20Kg
- ★ Suitable thickness of test pane: 0.03mm–1.25mm
- ★ Dimensions: 230 × 300 × 280mm (L × W × H)

★ Ordering Information:

BGD 310/2---Automatic Digital Cupping Tester



ABRASION

① Wet Abrasion Scrub Tester

Paint often become soiled especially near doorways, windows, and in work and play areas. Coated surfaces need to be tested for resistance to abrasion caused by a brush, sponge, or other means. The Wet Abrasion Scrub Tester can produce a repeatable, controlled condition to simulate everyday use or wear patterns.

BGD 526 Wet Abrasion Scrub Tester is the newest machine which is developed by Biuged. It can examine washability and related properties that affect the stain resistance of coatings. Detergent performance testing can also be determined in a reproducible manner.

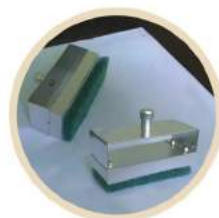
It accords with standards such as ASTM D2486、ASTM D 3450、ASTM D 4213、ASTM D 4828、DIN EN 11330、EN. ISO 11998 etc.

Feature:

- ◆ Running speed can be set to meet requirements of different standards.
- ◆ With four-digit counter, start the machine and it will automatically be stopped when reaching set times.
- ◆ Compatible with a variety of abrasion pads to comply with different standards requirements, such as ISO, ASTM, DIN etc..
- ◆ Quickly and easily to load and unload testing samples and replacing abrasion head.
- ◆ Can work normally under different voltage and frequency
- ◆ With stable and uniform running speed because of Push-rod design
- ◆ Features two brush holders for side by side testing
- ◆ Long service life with hard and durable design
- ◆ The whole machine body is made of anodized aluminum, having stable working status, repeatable test results, no exception even in the fastest speed of the stroke
- ◆ With peristaltic pump design, control scrub medium flow accurately.



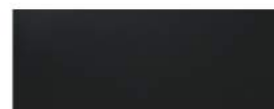
Nylon brush of ASTM 2486



ISO 1998 Special brush



Sponges of ASTM D 3450、
ASTM D 4213 、ASTM D 4828



Black plastic panel

Main Technical Parameters:

- ★ Specification of brush: Nylon brush bristles in 5/4 pattern extending 19 mm from block.
- ★ Weight of brush (including device holding brush): 454 ± 10 g (ASTM D 2486); 135 ± 1 g (ISO 11998)
- ★ Stroke Length: 300mm
- ★ Frequency of travel: 5 ~ 95 times/min (adjustable)
- ★ Range of count: 9999 times
- ★ Size of test plate: $430 \times 150 \times 0.03$ mm
- ★ Power of motor: 25W
- ★ Power: 110V ~ 220V; 50/60 Hz
- ★ Overall size: $500 \times 460 \times 280$ mm
- ★ Capacity of Water Container: 1L

Ordering Information:

- BGD 526/1---Wet Abrasion Scrub Tester (ASTM D 2486)
BGD 526/2---Wet Abrasion Scrub Tester (ISO 11998, no includes peristaltic pump)
BGD 526/3---Wet Abrasion Scrub Tester (ASTM D 3450)
BGD 526/4---Wet Abrasion Scrub Tester (ASTM D 4213)
BGD 526/5---Wet Abrasion Scrub Tester (ASTM D 4828)
BGD 526/6---Wet Abrasion Scrub Tester (DIN 53778)
BGD 527---Wet Abrasion Scrub Tester (ASTM D 2486& ISO 11998)

Optional Accessories:

- BGD 1045---Abrasive pad (3M Scotch Brite® handpads) (ISO 11998; Size--- 90×39 mm; Pack of 50 pairs)
BGD 1364---Special nylon brush (ASTM D 2486; 1 pair)
BGD 1365---Hog Bristle Brush (1 pair)
BGD 1510---Sponges (ASTM D 3450; 12 pcs)
BGD 1511---Sponges (ASTM D 4213 & ASTM 4828; 12 pcs)
BGD 2355---Brass Shim ($165 \times 12.7 \times 0.25$ mm; pack of 10 pairs)
BGD 2208---Black Plastic Panel ($432 \times 165 \times 0.25$ mm; pack of 100 pcs)

② Multifunction Abrasion Scrub Tester

BGD 528 Multifunction Abrasion Scrub Tester is a powerful abrasion tester. By changing different abrasion heads, it can conform all testing standards for linear reciprocating abrasion, including wet abrasion scrub, sponge washability, scrub resistance, cleanability, dirt pickup resistance, MEK test, Rub test etc.

Moreover, this machine use touch screen to operate, user can set all required test parameters directly through touch screen, and also can check its working status at any time. Very easy and convenient to operate it.

Standards:

- ISO 11998 《Paints and varnishes - Determination of wet-scrub resistance and cleanability of coatings》
ASTM D 2486 《Standard Test Methods for Scrub Resistance of Wall Paints》
ASTM D 3450 《Standard Test Method for Washability Properties of Interior Architectural Coatings》
ASTM D 4213 《Standard Test Method for Scrub Resistance of Paints by Abrasion Weight Loss》
ASTM D 4828 《Standard Test Methods for Practical Washability of Organic Coatings》
ASTM D 4752 《Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub》
DIN EN 13300 《Paints and varnishes - Water-borne coating materials and coating systems for interior walls and ceilings》

Features:

- ◆ With double working channels, each channel is equipped with a separate container for scrub medium. Operator can use two different type mediums to do two different tests, also can do wet abrasion and dry abrasion test at the same time.
- ◆ Working speed can be set from 5-95 times/minutes freely; Working distance can be set from 0-300mm freely, meet with different standards.
- ◆ Push-rod design for reciprocating motion, thus working speed is more stable and more even and can get more reliable test results.
- ◆ With peristaltic pump, operator can set and control precisely scrub medium flow
- ◆ Installing and dismantling test panels or replacing different abrasion heads is more convenient and faster.
- ◆ All machine is made up of aluminum alloy, beautiful and strong, has a longer service time.
- ◆ Compatible for 110V/220V and 50HZ/60HZ

Ordering Information:

- BGD 528--- Multifunction Abrasion Scrub Tester
BGD 1182---Abrasion Heads for ASTM D 4752 (Cheesecloth pad+weights, total weight is 1000 ± 10 g)
BGD 1185---Abrasion Heads for ISO 11998 (3M Scotch Brite handpads + Weights, total weight is 135 ± 1 g)
BGD 1186---Abrasion Heads for ASMT D 2486 (Nylon+ Weights, total weight is 450 ± 10 g)
BGD 1187--- Abrasion Heads for ASTM D 3450 (Sponge+ Weights, total weight is $1,500$ g)
BGD 1188--- Abrasion Heads for ASTM D 4213 (Sponge+3M Scotch Brite handpads + Weights, total weight is 470 ± 10 g)
BGD 1189--- Abrasion Heads for ASTM D 4828 (Sponge+ Weights, total weight is 1000 ± 10 g)
BGD 1182--- Abrasion Heads for ASTM D 4752 (Absorbent cotton gauze+ Weights, total weight is 1000 ± 10 g)

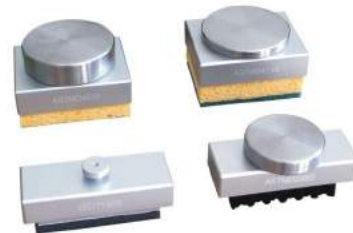
Main Technical Parameters:

- ★ Stroke Length: 0~300mm (adjustable)
- ★ Frequency of travel : 5~95 times/min (adjustable)
- ★ Range of count: 0~9,999 times
- ★ Size of test plate: 430×150×0.03mm
- ★ Power of motor: 25W
- ★ Power: 110V~220V; 50/60 Hz
- ★ Overall size: 500×460×280mm
- ★ Capacity of Water Container: 500ml×2



Optional Accessories:

- BGD 1045---Abrasive pad (3M Scotch Brite® handpads) (ISO 11998; Size--- 90×39mm; Pack of 50 pairs)
- BGD 1364---Special nylon brush (ASTM D 2486; 1 pair)
- BGD 1365---Hog Bristle Brush (1 pair)
- BGD 1510---Sponges (ASTM D 3450; 12 pcs)
- BGD 1511---Sponges (ASTM D 4213 & ASTM 4828; 12 pcs)
- BGD 2355---Brass Shim (165×12.7×0.25mm; pack of 10 pairs)
- BGD 2208---Black Plastic Panel (432×165×0.25mm; pack of 100 pcs)



③ Solvent Rub Resistance Tester

BGD 521 Solvent Rub Resistance Tester is designed according to ASTM D 4752 and NCCA11-18 《Test Method for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub》. The Solvent Rub Test is usually performed using methyl ethyl ketone (MEK) as the solvent. The MEK resistance or degree of cure applies to paint topcoats and primers.

ASTM D4752 involves rubbing the surface of a baked film with cheesecloth soaked with MEK until failure or breakthrough of the film occurs. The type of cheesecloth, the stroke distance, the stroke rate, and approximate applied pressure of the rub are specified. The rubs are counted as a double rub (one rub forward and one rub backward constitutes a double rub).

The test is used widely in the paint industry because it provides a quick relative estimation of degree of cure without having to wait for long-term exposure results. It has been reported that the tests of two-component zinc-rich primers has shown good correlation with the cure of the primer as determined by diffuse reflectance infrared spectroscopy.

- ◆ Wide voltage range design (110-220V; 50/60Hz) , good compatibility
- ◆ Adjustable variable speed: 5~95 c.p.m
- ◆ Micro-computer control, LCD displays data and set parameters.
- ◆ Parameters set freely and permanently storage.
- ◆ Glass work platform is easy to clean

Main Technical Parameters:

- ★ Motor Power: 60W 220V 50Hz
- ★ Rubbing weight: 1000±10 g
- ★ Rubbing speed: 5~95/min (stepless speed regulation)
- ★ Rubbing head diameter: 14±0.5 mm (area is 1cm²)
- ★ Rubbing Distance: 120mm (also can be customized) (selectable, and we also can offer special rubbing distance)
- ★ Rubbing times: 0~9,999
- ★ Overall dimension: 270×310×340mm (length by width by height)
- ★ Weight: 15Kg
- ★ Ordering Information:
BGD 521--- Solvent Rub Resistance Tester



④ Rotational Abrasion Tester

BGD 523 Rotational Abrasion Tester is applicable to determine abrasion resistance performance of various coatings. It is also used to determine abrasion resistance of paper, plastic, textile fabric, decorations, etc.

The principle of abrasion derived by the test sample, turning on a vertical axis, against the sliding rotation of 2 Abrading Wheels. The wheels are driven by the sample in opposite directions about a horizontal axis displaced tangentially from the axis of the sample. One of the abrading wheel rubs the specimen outward toward the periphery and the other wheel, inward to the centre. The area of abrasion from a pattern of crossed arcs of about 30sq.cm

The degree of abrasion for the specimen also depends on the load force (500g, 750g or 1000g on each arm) being acted onto the axial of the 2 Arms, which has a load pressure of 250g

It confirms to DIN 52347 53109 53754 53799

ISO 5470, 9352, 3573, 4586-2, 7784-2

ASTM C217, D1044, D3389, D4060, D5342

Feature

- ◆ Can select many different sorts abrasion medium for different tests
- ◆ Specimen turntable speed control options of both 60 rpm and 72 rpm.
- ◆ LCD display for accurate and convenient setting and monitoring to the whole test.
- ◆ Three different precise stainless steel weights (500g, 750g, 1000g) ensure the different requirements for different loads. Weights are marked to show total load on each wheel. This marking includes the weight of the abrading arm (250 grams)
- ◆ Abrading arms and fixing sleeve of abrading wheel have been calibrated and balanced before leaving factory.
- ◆ A vacuum system is included and equipped with cleaner to move the loose abrading's or any dirt
- ◆ A precision vacuum nozzle adjustment control allows the height to be modified for accommodating varying specimen thickness.
- ◆ A Quick Release Mounting Hub permits quick wheel mounting without the need of a locking nut.
- ◆ Equipped with S-11 Resurfacing medium disc from Taber company
- ◆ Equipped with a pair of standard abrasive rubber wheel CS-10 or CS-17 from Taber company

Main Technical Parameters:

- ★ Platform speed: $60 \pm 2r/min$ or $72 \pm 2r/min$
- ★ Range of count: 0 ~ 9,999 times
- ★ Specimen size requirement: $\Phi 100 \times \Phi 8$ (center hole) $\times 3mm$
- ★ Dimension of abrasive sheet: $\Phi 50 \times \Phi 16$ (center hole) $\times 13mm$
- ★ Load weight: 500g-750g-1000g
- ★ Main motor power: 25W 220V 50Hz
- ★ Overall dimension: 320 \times 280 \times 254 (length by width by height)
- ★ Net Weight: 20KG
- ★ **Ordering Information:**
 - BGD 522---Rotational Abrasion Tester (for wood)
 - BGD 523---Rotational Abrasion Tester (for paint film)
 - CS-10---Taber Abrading Wheels
 - CS-17---Taber Abrading Wheels
 - CS-11---Taber resurfacing medium disc
 - BGD 1368---180 # Emery cloth stripe (pack of 100)
 - BGD 1372--- Fixing ring for soft specimen.
 - BGD 2601---Glass Panel with circular hole (pack of 100)
 - BGD 2328---Aluminum Panel with circular hole (pack of 100)



CS-10
Standard abrasive rubber wheel



CS-17
Standard abrasive rubber wheel



S-11
Resurfacing medium disc

⑥ Falling Sand Abrasion Testers

BGD 529 Falling Sand Abrasion Tester is designed according to ASTM D 968. It's applicable to determine abrasion resistance performance of organic coating. Abrasive is allowed to fall from a specified height through a guide tube onto a coated panel until the substrate becomes visible. The amount of abrasive per unit film thickness is reported as the abrasion resistance of the coating on the panel.

- ◆ Funnel with fan-shaped switch is more convenient to operate
 - ◆ The distance between guide tube and specimen holder is calibrated
- By special tool which comes with tester, more precise.
- ◆ Funnel installation height can be adjusted freely by below bearing.

Main Technical Parameters:

- ★ Overall dimensions: 230 × 200 × 1500mm (L × W × H)
- ★ Length of conduct pipe: 36 inch (914mm)
- ★ Inner diameter: 0.75 inch (19mm)
- ★ Volume of hopper: 3L
- ★ Weight of whole machine: 25kg
- ★ **Ordering Information:**
- BGD 529--- Falling Sand Abrasion Tester
- BGD 1370--- Standard Sand (25kg/package)



⑦ R.C.A. Paper Abrasion Wear Testers

BGD 530 R.C.A Paper Abrasion Wear Testers have been designed to test numerous shapes and finishes with ease and consistency. A simple change to the adjustable vertical shaft will allow for testing flat, convex, and concave shaped surfaces. They can be used to test painted and organic finishes, foil, and inked keypad lettering for resistance to abrasion and wear. These testers have become a standard in automobile, appliance, electronics, cell phone, plastics and coating industries.

International: ASTM F2357-04, Standard test method for determining the abrasion resistance of inks and coatings on membrane switches using the Norman Tool, Inc. "RCA" Abrader.

This tester is a standard to the auto, appliance, cell phone, plastics, and coating industries. It uses an inexpensive roll of throw away abrasion paper. All build-up error is eliminated and consistent readings are easily obtained.

Main Technical Parameters:

- ★ Size: 890 (L) × 485 (W) × 410 (H) mm
- ★ Weight: 20KG
- ★ Power: 50HZ/220V
- ★ Packing List:
- ① Paper Roll (2) ② 1/4" Roll of Paper (1)
- ③ Wrench Set (1) ④ Universal Vise (1)
- ⑤ Extra O-Rings (5) ⑥ Dust Cover (1)
- ⑦ Handy Mag (1) ⑧ Surface Gage & Indicator Set (1)
- ⑨ Weights (55g, 175g, 275g)
- ★ **Ordering Information:**
- BGD 530--- R.C.A Paper Abrasion Wear Testers
- BGD 1360--- Special R.C.A Paper (40 rolls/box)



Tensile Machines

The Tensile Machine is also called Tensile Testing Machine or Universal Material Testing Machine. It is mainly used for tensile test (you also can call it stress-strain tester), they usually clip both ends of the material sample in two clamps which are in a certain distance apart, both of clamps separate and extrude the sample at a certain speed, testing the stress change which happens to the sample, and end of the test until the machine destroyed; recording the maximum and displacement during the test at the same time, so you can calculate the tensile strength, shear strength, peeling strength, yield strength, ring crush strength etc through the software. The tensile test is one of the most widely used methods in studying material mechanical strength, and it needs to adopt the constant speed.

In the present market, the tensile machine has mostly been adopted the design of electromechanical integration, which is consist of Main Part, Mechanic Part, Hydraulic System, Force Measuring System etc, the Force Measuring System is made up of Force Sensor, Transmitter, Microprocessor, Load-driving Mechanism and Computer.

① Table Electronic Tensile Machine

Introduction: This is a Table Electronic Tensile Machine attached with the micro printer, it can not only can test the tensile strength, compressive strength and extension length of all kinds of material, semi finished products and products, but also do the experience of stripping, tearing, bending, flexural, compression etc. Therefore, it is widely applied in the field of metal, plastic, rubber, textile, synthetic chemicals, wire and cable, leather etc



Main Technical Parameters:

- ★ Max. Capacity (Optional): 50N、100N、200N、500N、1000N
- ★ Test range of test force: 0.4% ~ 100 FS (full range)
- ★ The indicated error of test force: $\leq \pm 0.5\%$
- ★ The resolution of test force: $\pm 1/250000$ of max. force, there is no grades in the whole process ,and the process keep the constant resolution
- ★ The valid length of tensile: 800mm (clamp is not included)
- ★ The error of indicated displacement: $\leq \pm 0.2\%$ (indication)
- ★ The resolution of displacement: 0.015mm
- ★ The range of test speed: 50 ~ 500 mm/min(adjustable)
- ★ External dimensions: 55 × 45 × 135cm
- ★ Weight: 75Kg
- ★ Power Supply: 220V/50Hz
- ★ Power: 120W

★ Order Information:

BGD 572--- Table Electronic Tensile Machine



Wedge Clamp
for Metal



Wedge Clamp
for Hard Plastic



Eccentric Wheel Clamp



Plane Clamp



Film Clamper

② Computer Servo Tensile Machine

Introduction: Computer servo tensile machine is a new type of material machine which combines the electronic technology and mechanical transmission, it can make all kinds of function true, do the data analysis and print the test result by computer controls the operation of machine. Communicate between machine and computer usually adopts serials communication modes of RS232, it communicates through the interface (USB interface) which lies in the back of computer. It has wide accuracy acceleration and test force range, not only measuring and controlling the load and displacement in higher accuracy and sensitively, but also doing the control test by automatically of isokinetic load and displacement. It operates easily and convenient, especially applied in inspect instruments which is used for controlling products of produce line. This series of Servo Tensile Machines is mainly suit for nonmetal and metal test with test load less than 10kN.

These machines have a widely usage range, can test all sorts of materials, such as end products and semi-manufactures dumbbell specimen of plastic (cloth tube plate), rubber (plate tube), metal wire, tape, wheel, textile, acrylic, FRP, EVA, PE and shoes etc, testing their functions which include tensile strength, elongation, tearing, stripping, glue force etc.

Characteristics:

- ◆ Standards: ASTM D 903、GB/T 16491、GB/T 1040、GB/T 8808、GB 13022、GB/T 2790 etc.
- ◆ Sensor with high accuracy (transmission mechanism adopts high accuracy ball screw)
- ◆ Sampling frequency of Data: 200 times/s
- ◆ It can storage numerous testing results of reference points, counting the average and grasping the Max which exist on the point of broken by automatically.
- ◆ The setting range of broken proportions: 0~99%, you can set it according to the test demand of different specimen at you will, make the downtime true on different point.
- ◆ Safety set: Overload, urgent downtime set, up and down process limited set.
- ◆ The collection with synchronous puts into practice by true, 24 bites AD transformed, resolution is up to 1/500,000, and it oversteps the same industry level absolutely.
- ◆ It include the voice prompt during the test, and we are the unique
- ◆ Modular+ SQL technology + Crystal reporter + Database technology, it is very convenient for the create user setting reporter or more
- ◆ Thousands of clamps and clamps set for choosing
- ◆ With several sensors supported, it can satisfy with different range demands by assembling several sensors at the same time.

The Characteristics of software:

- ◆ Support Windows XP/Vista operating system.
- ◆ With nine languages in Simplified Chinese, Traditional Chinese, English, Spanish, Russian, Japanese, French, German, Portuguese, the software interface can be converted at your will, the database field displayed name of test data translated automatically along with chosen words, make the data are easily to scan under the chosen words, and to meet the machine be used all over the world
- ◆ Support three types: SI international standard unit, kg-cm unit, Lb-Inch unit, six common units: N-mm-MPa, kN-mm-MPa, gf-cm-kgf/cm², kgf-cm-kgf/cm², Lb-Inch-kpsi, kP-Inch-kpsi, the unit is easy to convert. It is used to meet different area using.
- ◆ By using the USB2.0 communicate interface with Photoelectric isolation, it completely get rid of the computer serial interface or Circuit board serial interface damage caused by different earth wire, thus realizing hot-swap between the computers and test machine board.
- ◆ Software adopts permission grading management: tester permission, test management permission, test machine producer permission, both convenience and safety are included.
- ◆ Operator interface attached with Voice, Graph, image: using intuition and convenient, and it will decrease the operation error by voice mentioned, improving the reliability at the same time. It is very convenient for professional user with virtual dial display.
- ◆ MS-ACCESS database technology and SQL technology: it is not only applied for data preservation and processing standardization, but also convenient for connecting to Intranet or Internet; it can also connect Word or Excel etc software easily; the user can read original test data just through standard database.
- ◆ Modular programming: Crystal Reporter system and VBScript or JAVA Script can enlarge the user's reporter and parameters program by automatically calculate; the user can develop by secondary, it can make extruding, compression, bending, tearing, stripping, shearing etc test function true except for software bag. Every kinds of test function can support more than 20 pc of test reporter and parameters program by automatically calculate (adopt VBScript or JAVA Script)
- ◆ The Curve Function: the main sheet shows real-time curve during the test, besides, there are other sheets which are used for curve deal, it can deal with six kinds of curve display (force-deform, force-time. Stress-strain, stress-time, strain-time, deform-

time curve), you can calculate elastic modulus, surrender point, hardening start point etc parameters in mouse through curve (attention: it usually calculates the mentioned parameters accurately by calculate automatically, the mentioned functions are supplement in special situations)

◆ multi-sensor support: it can support the sensor with five forces, sensor with five deform, expanded the test range greatly.



Main Technical Parameters

Product → Technical Parameters ↓	Computer Servo Tensile Machine (Single Column)	Computer Servo Tensile Machine (Double Column)
Power system	Dongyuan servo machine	
Max. range (optional)	5、10、20、25、50、100、200kg	5、10、20、25、50、100、200、500kg
Unit convertible	g, kg, N, LB(supply with three units which include international standard, metric, inch, they can convertible by automatically)	
Measuring range of test force	0.4% ~ 100 FS (full range)	
Display error of test force	≤ ± 0.3%	
Resolution of test force	1/500,000	
Resolution of displacement	0.015mm	
Display error of displacement	≤ 0.2%	
Max. Space of Tension	800mm (clamp is not included)	
Test speed	0.01 ~ 500mm/min (stepless speed regulating)	
Valid test wide	Unlimited	300mm
Overall Size (L×W×H)	450 × 550 × 1350cm	600 × 420 × 1250mm
Weight	75kg	100 KG
Power supply	220V/50HZ; 15A or designation	
Power	200W	400W
Order information	BGD 573--Computer Servo Tensile Machine	BGD 574--Computer Servo Tensile Machine

Notice: about the Elongation of Tensile Machine

The tensile machine attached with displacement measuring system is just used for measuring the cross distance of tensile head. If there is a required to the elongation, such as testing elongation of rubber products, thus another requirement is necessary with large-deformation test frame and large-deformation extensometer, if the metal with small elongation, small-deformation extensometer is enough(metal extensometer). Large-deformation and small-deformation is the absolute displacement between two points during the extruding. You can pick up the machine according to your company products' size, the small volume and tensile for choosing: tensile machine (single column). But with big size and tensile, the tensile machine (Double Column) is indeed, the processing of common tensile machine is about 600MM.

③ Universal Material Testing Machine

Introduction: It is a new material testing machine with powerful functions which combine electronic technique with mechanical drive. With controlling machine by computer, it accomplish all functions and deal with and analyze data, print testing results

This machine is driven by frequency conversion motor, servo motor drive movable cross-beam through gearing design to move up and down to accomplish force load. Use PC computer and interface board to collect data, store data, process data and print testing results. Can calculate maximum force, yield strength, average stripping strength, maximum distortion, yield point, elastic modulus parameters etc. Can process curve, support multi sensors, Figuring and Imaging operating windows, flexible processing data, support MS-ACCESS database etc, make the system function become more powerful...

These machines have a widely usage range, can test all sorts of materials, such as end products and semi-manufactures dumbbell specimen of plastic (cloth tube plate), rubber (plate tube), metal wire, tape, wheel, textile, acrylic, FRP, EVA, PE and shoes etc, testing their functions which include tensile strength, elongation, tearing, stripping, glue force etc.

Character:

- ◆ Standards: ISO 527, ISO 604, ISO 178, ISO 1209, ASTM D 638, ASTM D 903
- ◆ High precision sensor (use high precision ball screw as driving mechanism)
- ◆ Frequency of collecting data: 200 times/second
- ◆ Can store many testing results of referenced points, calculate average value automatically, grab automatically max. value, force value at break.
- ◆ Set range of break point proportion: 0~99% , and can set freely according to different samples, accomplish stopped status at different position.
- ◆ Safety Device: Over loading, Emergency shut down, limitation device for above travel and under travel.
- ◆ Collect date synchronously, conversable full 24 bits AD codes,, resolution arrives 1/500,000, surpass all competitors.
- ◆ Voice prompts when testing, the unique technology in the field.
- ◆ Modularization+ SQL technology+ crystal report+ database technology etc make establishing user, customizing report and multi-reports become more easy.
- ◆ More than one thousand clamps and grippers for selection.
- ◆ Support multi-sensors, can equip with a few sensors at the same time for different range.

Measure and Control System Introduction:

We use newest system which was developed in 2008. With strong functions and convenient application such as language conversion, translate automatically testing results, units conversion, manage sample shape, manage users, process data, generate report etc., This system uses newest tools --Visual Studio .Net 2005 which is developed by Microsoft . With strong function and friendly windows, it become a developing tool for new generation operation system, and arrive more than 90% areas and population of global.

Software

- ◆ Support nine languages: English, Chinese, Traditional Chinese, Japanese, German, French, Spanish, Russian, Portuguese. Application programs and data (Access database storage) can be translated anytime.
- ◆ Support three units: Metric system (N, kN, mm, MPa etc) : British System (Lb, kP, Inch, kpsi) and old system (g, kg, Ton, cm, kg/cm² etc)
- ◆ Support many international testing standard: ISO, GB, ASTM, DIN, JIS ec. And also can add any standards. Manage testing methods for easy application.
- ◆ Testing report format: On the base crystal report and VS.Net report and can be export as Word、EXCEL、PDF document. Can add user's LOGO to report make the report become excellent.
- ◆ Super curve function: Curve can be moved freely, zoom, sign important parameter, sign parallel line of E value. Can print separately (high-resolution) or export as picture document (BMP or JEG) : 169 theory curves.
- ◆ Can manage users at different grades, ensure safe management and convenient usage for data and software..
- ◆ Figuring and Imaging operating windows which can be modified for distinguishing different users. Can set showing or hiding showing area of windows.
- ◆ Support redevelop: Parameter calculation is written by VBS script whose source codes have been opened. Separate Report document is written by crystal report whose system parameters are stored in the database, convenient for redevelop by senior user.
- ◆ VBS scriptize control process, many control parameters can be imported or exported according to user's self-setting. Expand the use scope of machine.

◆ There are original setting to system, establishing standard, sample shape, management word etc functions among ten main procedures, convenient for debugging machine.

Hardware

- ◆ Three-way independent simulant input channel, 24 bits AD converter, gain amplifier controlled by program.
- ◆ Use USB 2.0 insulated photoelectricity to connect computer, reduce disturb and increase reliability.
- ◆ Unit for testing force uses the newest high-speed, high resolution, high precision, no dividural grade AD converter which can arrive ± 250000 fractionized codes. It's superior to six grades amplifier and reach or approach advanced international standards.
- ◆ Unit for testing big distortion: this system use high-speed circuit system to accomplish four-quadrant collection of photoelectric encoder, solve all influence to testing results because of dithering under low speed and redirection thoroughly, and increase four times resolution to big distortion of test machine big distortion.
- ◆ Unit for testing displacement: use high-speed circuit system to accomplish four-quadrant collection of photoelectric encoder, solve all influence to testing results because of dithering under low speed and redirection thoroughly, and increase four times resolution to big distortion of test machine big distortion.
- ◆ Unit for controlling speed: full digital controlling unit and its speed regulation ratio arrive 1:50000, namely 0.001 ~ 500mm/min (precision : 0.1%) , and can be tested under the whole range.

Main Technical Parameters:

★ Max. Range: 1KN、2KN、5KN、10KN、20KN (optional)
★ Precision Grade: 0.3 grade
★ Measuring range of test force: 0.4% ~ 100 FS (Full range)
★ Display error of test force: $\leq \pm 0.3\%$
★ Resolution of test force: ($\pm 1/250000$ of max. test force, no classify grade in the whole range, and keep a constant resolution)
★ Display error of displacement: $\leq \pm 0.2\%$ (showing value)
★ Resolution of displacement: 0.015mm
★ Adjustable range of speed: 0.005% ~ 5% FS (Full range)
★ Control accuracy of speed: Within $\pm 2\%$ of set value when speed $< 0.05\%FS/s$; Within $\pm 0.5\%$ of set value when speed $\geq 0.05\%FS/s$;
★ Adjustable range of deformation speed: 0.005% ~ 5% FS (Full range)
★ Control accuracy of deformation speed: Within $\pm 2\%$ of set value when speed $< 0.05\%FS/s$; Within $\pm 0.5\%$ of set value when speed $\geq 0.05\%FS/s$;
★ Adjustable speed range of working platform: 0.001 ~ 500mm/min
★ Control accuracy of testing bench speed: $\leq \pm 0.2\%$ of set value
★ Control range of constant force、constant deformation、constant displacement: 0.5% ~ 100% FS (Full range)
★ Constant deformation、constant displacement: Within $\pm 0.5\%$ of set value when speed $\geq 10\%FS$; Within $\pm 1\%$ of set value when speed $< 10\%FS$;
★ Effective tensile space (no including clamp) : 1100mm
★ Effective test width: 380mm
★ Overall Size: 80 × 55 × 217 cm Weight: 150 Kg
★ Power supply: 220V/50Hz Power: 750 W



◆ Ordering-Information:

BGD 570--- Universal Material Testing Machine

Special Instruments For Ink and Printing

Falling Rod Viscometer

This unit is designed to measure the time it takes for a precision rod to fall 10cm. After several "fall times" are measured, the viscosity and yield value of the ink can be calculated by using the software included with the instrument or by using your own technique. This test conforms to ASTM D 4040-10 and ISO 12644 . "Standard Test Method for Rheological Properties of Paste Printing and Vehicles by the Falling-Rod Viscometer"

The basic system consists of the instrument stand, rod and collar, and a 100 gm weight.

Main Technical Parameters:

- ★ Falling rod size: ϕ 12mm \times 300mm
- ★ Falling rod weight: 132g Timing precision: 0.01s
- ★ Viscosity range of interest: 2–200Pa.s (Non-newtonian fluid)
- ★ Mass of the weight load: 25–50–100–200–200–500–1,000
–1,000g (total 4075g)
- ★ Total weight: 140 \times 140 \times 300mm Overall Size: 18kg
- ★ Power Supply: 220V 50Hz
- ★ **Ordering Information:** BGD 611---- Falling Rod Viscometer



Intelligent Inkometer

Each type of ink has a different tack (viscosity) and this is why it is important to measure the tack of the ink. After all, this determines how an ink behaves on the press. How much force is required to distribute the ink over the roller evenly and is the ink suitable for specific types of paper? Too much tack could loosen fibers on the surface of the paper. It is also important for the correct color sequence on the printing press. With a four color press the tack value of the inks on consecutive towers of the press will have to be slightly less in order to prevent the last ink layer from pulling the previous ink layer from the paper.

BGD 615 Intelligent Inkometer is designed to measure the apparent tack of printing ink under conditions closely approximating the dynamic conditions of the ink-distribution system of a printing press. It also can measure the integrated forces involved in ink film splitting and the effects of roller speed, film thickness, temperature and solvent evaporation.

This Inkometer consists of three rollers: The center roller is a temperature controlled brass roller; The bottom roller is an oscillating rubber composition distribution roller; The top roller is a rubber composition roller attached to the measuring system which measures tack. And all rollers are available for testing standard and UV inks. The brass roller temperature is controlled by circulating a coolant mixture provided by a thermostatic bath.

Features:

- ◆ The tack is reported in 0.1 gram-meters and represents the torque required to work the ink film at a known rate with predetermined film thickness and temperature.
- ◆ With big digital display shows the temperature, tack, roller speed and test time. Statistical reports can be viewed directly from the display.
- ◆ Highest accuracy and efficiency,

Main Technical Parameters:

- ★ Brass roller speed range: 400 RPM, 800 RPM, 1200 RPM, 1600 RPM, 2000 RPM;.
- Additional: Roller Testing Speeds – Programmable 0 to 2000 RPM (3000 RPM Optional customized)
- ★ Brass Roller Lateral Error: \pm 0.3mm after leveling on workbench .
- ★ Roller Speed Accuracy: \pm 2 RPM
- ★ Thermostatic Bath Pump Flow: 10L/minute (Bath capacity: 6L)
- ★ Temperature Error: \pm 0.2°C
- ★ Testing Accuracy: \pm 0.3 gram-meters base on same testing condition
- ★ Printing: Testing time, number, temperature, speed, viscosity values
- ★ Accessory: With a piece of ink injector which is very easy to dismantle and install.
- ★ Power Supply : 220 V, 50 Hz
- ★ Total Power: 1600W (motor 800W, water tank 800W)
- ★ Dimensions: 750 \times 300 \times 480mm Net weight: 130 KG
- ★ **Ordering Information:** BGD 615--- Intelligent Inkometer



Printing Proofer

High quality proofs using gravure, gravure-offset or flexo inks are produced instantly using the BGD Printing Proofer. Featuring electronically engraved printing plates and variable printing speeds of up to 45m/min, this is an essential tool for all those involved in the manufacturing or use of liquid inks. Ideal for R &D and computer colour matching data, quality control and presentation samples. And these Printing Proofer are very easy to clean and all parts are solvent resistant.

- ◆ Almost any flexible substrate can be printed or laminated
- ◆ Excellent printability ensured by micrometer control
- ◆ Multiple ink samples may be printed simultaneously for comparison purposes
- ◆ High printing speeds enable use of inks nearing press viscosity

Ordering Information → Parameter ↓	BGD 622/1	BGD 622/2
Applicable for	Gravure Ink	Flexographic Ink
Motor Power	120W	120W
Impression roller	φ 76 × 130mm	φ 50 × 130mm
Roller Hardness	Shore A 55	Shore A 50
Printing Speed	Four sorts : 20-30-40-45m/min	Four sorts : 20-30-40-45m/min
Printing Length	150mm	150mm
Power	220V 50Hz	220V 50Hz
Overall Size	500 × 425 × 350mm	500 × 425 × 350mm
	26kg	27kg

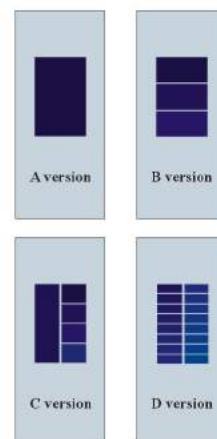


Printing Plate

Printing plates for use with the Printing Proofer are electronically engraved in exactly the same way as production cylinders. A choice of one or more of the standard plates available will normally be satisfactory.

TYPE	Number of Lines (Lines/inch)	Density (%)	Remark
A1	150	100	Solid Area Plate
A2*	100	100	
B1	150	100-80-60	Single 3 Wedge Plate
B2*	150	100-90-80	
C1	150	100-90-80-70; 90	1+4 Wedge plate
C2*	300	100-90-80-70; 90	
C3*	175	100-90-80-70; 90	
C4*	175	80-60-40-20; 100	
D1	150	100-95-90-85-80-75-70-60 100-95-90-85-80-75-70-60	Double 8 Wedge Plate
D2*	150	40-35-30-25-20-15-10-5 80-75-70-65-60-55-50-45	

Note: "*" are special plates and need custom-made



Hand Proofer

Each Biuged Hand Proofer mainly includes a rubber transfer roll and a spring-adjustable mechanically engraved anilox roll (Pyramid type/surface is hard chrome plated). It gives customers more options for testing ink on polyethylene, cellophane, glassine, metallic foils, plastic films, paper and paperboard.

Moreover, what you see on the proof is what you'll print on press. Since proofer rolls are available in a full range of screens to duplicate your press requirements, you can make any changes in ink or screen before you get to the pressroom!

How to produce a sample proof

- ◆ Prepare a flat, clean sheet of the stock to be used.
- ◆ Adjust the anilox roller against the rubber roller by gradually turning the single vernier knob at the base of the hand proofer. A spring mechanism inside the handle makes it simple to position the rollers to get just the right amount of pressure.
- ◆ Put about 1/2 teaspoon of ink in the nip, rest the rubber roller on the stock, and draw the hand proofer toward you, smoothly and evenly.

That's all there is to it. What you see on the proof is what you'll get on your flexo press.

Main Technical Parameters:

- ★ Proofing width: 70mm
- ★ The number of line: 100 ~ 300 (LPI/Lines per inch; also can be customized)
- ★ **Ordering Information:**

BGD 220/1--120 Line Hand Proofer	BGD 220/2--160 Line Hand Proofer
BGD 220/3--180 Line Hand Proofer	BGD 220/4--200 Line Hand Proofer
BGD 220/5--250 Line Hand Proofer	BGD 220/6--300 Line Hand Proofer
BGD 1380--Metal Anilox roller	BGD 1381--Rubber roller



Line Screen Per Inch (LPI)	Line Screen Per Centimeter (LPC)	Volume BCM/in ²	Volume cm ² /m ²
120	47.24	12.79	19.823
160	62.99	9.32	14.446
180	70.87	8.24	12.767
200	78.74	7.28	11.292
250	98.43	5.45	8.454
300	118.11	4.44	6.889



Note:

1. This table is only available for Pyramid type
2. For Line Screen, divide Cell (LPI=Line Per Inch) count by 2.54 to get Lines per CM
3. For Volume, multiply BCM (billion cubic micron per square inch) by 1.55 to get cm³/m²

Multi-section Ink Printing Proofer

BGD 626 Multi-section Ink Proofing Press is the newest product used for the testing the adaptability of ink printing. Compared with other types, it has many features as below:

- ◆ Distribute ink automatically and time and speed for distributing ink are adjustable.
- ◆ Used for lithography printing, letterpress printing or UV ink, UV flexographic ink
- ◆ Printing pressure and printing speed can be set according to the user's requirements.
- ◆ Can print different substrates, such as book paper, art paper, matt art paper, gray paperboard, film and tinplate etc.
- ◆ High repeatability and reproducibility.
- ◆ High quality, easy to clean and maintenance, simple and safe for operation.

Main Technical Parameters

- ★ Effective size of coloured strips: 106mm×215mm (two colours) ; 106mm×215mm/45mm 215mm (three colour s) ; 45mm×215mm (four colours)
- ★ Printing Rubber: Common rubber or special rubber for UV ink (either-or)
- ★ Speed of distributing ink: There are three different speeds (550,700,900 rpm) on the control board.Operator also can dismantle shell of machine to do stepless speed regulation.
- ★ Printing speed: There are three different speeds (10,16,22 rpm) on the control board.Operator also can dismantle shell of machine to do stepless speed regulation.
- ★ Distributing ink time: 1~120 second (adjustable)
- ★ Print pressure: Can be adjusted precisely externally according to the substrate thickness ($\pm 0\sim 800g$)
- ★ Distributing ink pressure: Can be adjusted precisely externally according to the rubber using status
- ★ Power supply: AC 220V/50HZ; Power: 250W (saving electrical power design)
- ★ Dimensions of machine: 525×430×280mm
- ★ Weight: 75KG

★ Ordering Information:

BGD 626---- Multi-section Ink Printing Proofer

BGD 1145---- Ink Injector

BGD 1386---- Special roller for UV ink

Note:

Ink Injector is used for compare ink and its colour, operator can control precisely thickness of coloured striped when printing. And also can get the dosage of spot colour ink in advance by calculation. Its size is $\phi 20 \times 180\text{mm}$ and min quantitate unit is 0.00112CC



Rub Resistance Tester

BGD 630 Rub Resistance Tester is applicable in rub abrasion resistance test of printing works, light sensitive layer of PS boards, and coating layers of relative products. It can help users to analyze the affairs of lower abrasion assistance, ink layer falling-off, lower printable of PS boards, and rigid of coating layers of other products.

- ◆ Wide voltage range design(110-220V; 50/60Hz), good compatibility
- ◆ Adjustable variable speed: 5~150 c.p.m
- ◆ Micro-computer control, LCD displays data.
- ◆ Parameters set freely and permanently storage.
- ◆ Control and resolve the problems of low bad abrasion resistance and easy falling-off of ink layer of printing works.
- ◆ By test, controls production technique efficiently, avoids loss of goods returns caused by bad quality.
- ◆ The specimen's coating and receptor rub each other under specified speed and pressure load. Determine the abrasion of coating or ink layer by testing the decrement of coating concentration or decrement of coating thickness.

Main Technical Parameters:

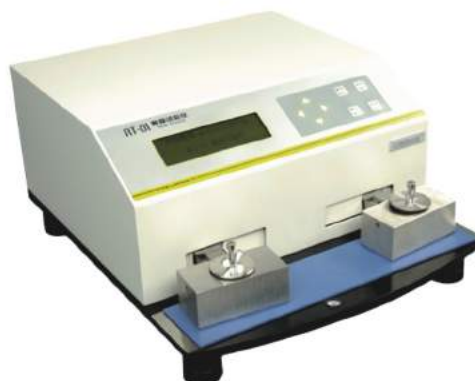
- ★ Motor Power: 50W 110V~220V 50/60Hz
- ★ Rubbing Pressure: $10 \pm 0.2 \text{ N}$ (abrasive head) ;
 $10 \pm 0.2 \text{ N}$ (additional weight)
- ★ Rubbing Speed: (5~95) times/min.(stepless speed regulation)
- ★ Rubber Pads Size: 25mm x 50 mm x 8mm (L x W x H)
- ★ Rubber Pads Hardness: 50Hs ~ 53Hs
- ★ Rubber Medium: 80g/m² clean offset paper, the width is 50mm
- ★ Rubbing Distance: 60mm
(We also can offer special rubbing distance as 100mm, 120mm and 155mm)
- ★ Settable Rubbing Times: 0~9,999
- ★ Suitable Specimen Size: 300 mm (L) x 60 mm (W)
- ★ Overall Dimension: 275 x 305 x 340mm (L x W x H)
- ★ Weight: 15Kg
- ★ Ordering Information: BGD 630----Rub Resistance Tester



BGD 632 Precise Rub Resistance Tester is designed and manufactured according to ASTM D 5264 and TAPPI T 830. It is applicable in abrasion resistance test of printed materials like labels, folding cartons, corrugated boxes, inserts, circulars, and other packaging materials having applied graphics on a flat substrate. It can help users to analyze the affairs of lower abrasion assistance, ink layer falling-off, lower printable of PS boards, and rigidity of coating layers of other products.

Main Technical Parameters:

- ★ Rubbing pressure: 8.9N (2lb) ,17.8N (4lb)
- ★ Rubbing speed: 21, 42, 85,106cpm
- ★ Rubbing motion: to-and-fro arc motion
- ★ Rubbing times: 0~999,999
- ★ No. of specimens: 1~2 pieces
- ★ Dimension: 485 (W) × 390 (D) × 230 (H) mm
- ★ Power: AC 220V 50Hz/60Hz
- ★ Net weight: 40 kg
- ★ Standards: ASTM D5264 TAPPI T830
- ★ Configuration Standard: Mainframe, test block 8.9N (2lb) , test block 17.8N (4lb) , Rubbing pad
- ★ Optional: Non-standard test block
- ★ **Ordering Information:**
- BGD 632---Precise Rub Resistance Tester



Characteristics

- ◆ Applicable in dry or wet rubbing or scuffing, wet bleed, transfer, wet smear and functional tests.
- ◆ Arc moving model, double testing station, high efficiency
- ◆ Manifold speeds, convenient and flexible.
- ◆ Micro computer controls, film front control panel
- ◆ LCD displays testing data
- ◆ Function of memory when power off, buzzer prompts automatically when test is finished.
- ◆ By test, controls production technique efficiently, avoids loss of goods returns caused by bad quality.
- ◆ The specimen's coating and receptor rub each other under specified speed and pressure load. Determine the abrasion of Coating or ink layer by test the decrement of coating concentration or decrement of coating thickness.

Digital Emulsification Tester

BGD 675 Emulsification Tester is used to test fleetly the water demand of hectograph ink and its binder in laboratory. And it complies with ASTM D 4942. This instrument use double-frame stirrer rake through planetary stirring, with shearing, dispersion action, the non-dissolve liquid are dispersed and minimized. These liquid flow in the container circularly and achieve uniform emulsification situation. It is controlled by programmable controller and can show the working situation and parameters. This Instrument has such advantages as newest design, steady working, accurate measurement, high reliability and easy operation.

Main Technical Parameters:

- ★ Power Supply: AC220V 50HZ
- ★ Stirring Rotating Speed: 90/100/150 r. p. M
- ★ Container Size (Inner Diameter × Height) : 100 × 100mm
- ★ Stirrer rake Size (w × h) : 56 × 100mm
- ★ Overall Size: 330 × 150 × 460mm
- ★ Weight: 20kg
- ★ **Ordering Information:** BGD 675---Digital Emulsification Tester



Automatic Drying Tester for ink

Automatic Drying Tester for ink is applicable to test the ink drying time. This tester consists of a rotating cylinder, a weight wheel and touch screen. When it work, the rotating cylinder rotates at constant speed, meanwhile the weight wheel moves in line along the cylinder axis at the constant speed. Applicate the sample on the parchment (film length is 30cm) , then stick the parchment on the rotating cylinder. Move the weight wheel to the starting point (cylinder left) and set the needed time (from 5hours to 20 hours) which it go over the whole distance (the length of cylinder) .If the ink don't dry completely, then the weight wheel would leave a mark on the parchment blank space, till the test is finish. Obtain the test results by counting the ink traces on the parchment and rotating cylinder working speed.

Main Technical Parameters:

- ★ Power: 220V ± 22V 50Hz
- ★ Speed of weight wheel : 2mm/r
- ★ Settable time of whole distance: 5~20 (hour)
- ★ Circle Numbers of Whole distance: 120r
- ★ Overall dimensions: 500 × 200 × 220mm (L × W × H)
- ★ Wheel weight: 100g
- ★ Weight: 17kg
- ★ **Ordering Information:**

BGD 660---Automatic Drying Tester for ink



Surface Tension Test Pens (Dyne Test Pens)

Surface tension test pens were introduced to give an accurate measurement of graduated surface tension levels. The fluid is applied to the surface or substrate until a satisfactory dyne level is found.

Experience has shown that wetting is normally adequate when a continuous film of test fluid remains intact for 2 seconds. Breaking of the fluid into droplets in less than 2 seconds indicates a lack of wetting and a lower numbered test fluid should be tried. If the fluid remains intact for longer than 2 seconds, a higher numbered test fluid should be tried.

A clean, new cotton applicator should be used each time to avoid contamination of the solutions ensure the film surface is not touched or contaminated in the areas in which the tests are to be made.

These pens are widely used in PS、PE、PP、PET、PI、PC、NY、CPP、OPP、PVC etc.

Biuged offer 16 sorts different dyne value pens (30,32,34,36,38,40,42,44,46,48,50,52,54,56,58,69 dyne) .Please select the correct type when ordering.

Procedure:

- ◆ Draw with a pen on the test area of about 1 inch
- ◆ Check the time how long it takes the ink changes to small drop or makes peripheral shrinkage. After 2 seconds, there is nothing change, repeat the test with higher dyne pen.
- ◆ Suitable dyne is that takes 4 seconds till the ink changes to small drop or makes peripheral shrinkage.
- ◆ Surface energy should be more 10 dyne than ink, adhesive, coating.
- ◆ When the liquid drops in the surface of material, if surface energy of material is lower than surface energy of ink, the shape of ink is Marble.
- ◆ On the contrary to this, if surface energy of material is bigger than surface energy of ink, the ink uniformly spread on the surface

★ Ordering Information:

BGD 1146---Surface Tension Test Pens (5ml)
 BGD 1147---Surface Tension Test Pens (12ml)
 BGD 1148---Surface Tension Test Pens (30ml)
 BGD 1149---Surface Tension Test Pens
 (Rechargeable 60ml)



Universal Instruments of Laboratory

Precise Digital Overhead Stirrer

These newest stirrers are of the highest quality. The core a direct current brushless motor is explosion-proof and overcomes the disadvantages of traditional stirrers. The stirrers can operate under high load for an extended period of time without any need for maintenance.

Features:

- ◆ Direct current motor without brush, work silently and no need maintenance. Whole machine is explosion-proof.
- ◆ Indicator of over load, stop automatically when over-load. Individual safe circuit design, protect motor automatically under unexceptional situation.
- ◆ High axis concentricity, start and work steadily, can prevent sample spill over; Adjust torque automatically according to the sample viscosity.
- ◆ International safety certification: get CE, cTÜV us and FCC safety certification issued by German TUV company.
- ◆ Close case can prevent liquid to splash into the machine and lead to corrosion to circuit.
- ◆ With back light LCD or LED display screen show fact speed, set speed or torque.
- ◆ RS 232 interface can connect computer for controlling stirrer and recorder rotate (For 702 & 704).

Main Technical Parameters

Ordering Information → Parameters ↓	BGD 701	BGD 702	BGD 703	BGD 704
Max. Stirring Capacity (water)	20 L		40 L	
Motor Rating Input	60 W		120 W	
Motor Rating Output	50 W		100 W	
Speed Range	0–2,200 rpm	50–2,200 rpm	0–2,200 rpm	50–2,200 rpm
Speed Display Accuracy	---	± 3 rpm	---	± 3 rpm
Display	LED	LCD	LED	LCD
Speed Display Resolution	1 rpm		1 rpm	
Max. Torque	40 N.cm		60 N.cm	
Max. Viscosity	10,000 mPa.s		50,000 mPa.s	
Chuck Range Diameter	0.5–13		0.5–13	
Dimension (W×H×D)	220×810×450 mm		220×810×450 mm	
Weight	2.4 kg	2.8 kg	2.4 kg	2.8 kg
Packing List	① LCD or LED digital overhead stirrer head-----1 pc ② Flat Base -----1 pc ③ Main Pole-----1 pc ④ Dispersing pole with four leaf-----1 pc			



BGD 702/704



BGD 701/703

Air Pneumatic Mixer

These air pneumatic mixers are designed to be used in explosion-proof requirements environment, such as oil-based paints or some special solvents. They use compressed air (5kg/cm²/70psi) as power, and can be moved anywhere to finish mixing.

- ◆ Explosion-Proof (no electric and spark)
- ◆ Motor will not be hot when the machine working
- ◆ Motor can rotate clockwise or counter-clockwise



BGD 722



BGD 723



BGD 725



BGD 728



BGD 729

Parameters → Ordering Information ↓	Power	Max.Torque	Working Speed	Capacity	Structure
BGD 720 Air Pneumatic Mixer	0.1HP	0.64N.M	0-1100 r/min;	1-10 KG	Floor Mode
BGD 722 Air Pneumatic Mixer	0.25HP	1.56N.M	0-900 r/min	20-50 KG	Floor Mode
BGD 723 Air Pneumatic Mixer	0.25HP	1.56N.M	0-900 r/min	20-50 KG	Transportable (With bench)
BGD 725 Air Pneumatic Mixer	0.5HP	4.8NM	0-720 r/min	50-200 KG	Transportable (No bench)
BGD 728 Portable Pneumatic Agitator	0.5HP	----	0-700 r/min	10-50 KG	Portable
BGD 729 Portable Electric Agitator	1200W	----	0-550 r/min	10-50 KG	Portable

High-speed Dispersing Machine (HSD Machine)

What is dispersing in the coating field? It means that in the manufacturing process solid materials are made to be distributed evenly in the liquid; in the process of dispersion, pull of particulates are broken down. The round saw tooth-type dispersion tray influenced by the electromotor will be dispersing in the container to effect the solid and liquid dispersion, moisturization, depolymerization. Its work principle description is mainly as follows:

- ◆ Make the serosity annular and cause powerful vortex, so the particulates of the serosity fall to the bottom vortex bottom,
- ◆ An 2.5-5mm eldge in the dispersion tray is formed a flow area in which the particulates are impacted intensely.
- ◆ Two beam currents outside the area are formed to make the serosity fully circulated and turned over.
- ◆ What is below the dispersion tray is a current flow, serosity with different speed disperses mutually to effect the function of dispersion

Biuged offer many different High-speed dispersing machines, they are applicable to the stir, dissolution and dispersion of coating, paint, ink, dyestuff, cosmetic goods, foodstuff, resin, adhesive, latex, medicine, petroleum, whose speed can be adjust at will.

Features:

- ◆ With squirrel-cage motor of frequency control and use frequency converter to adjust working speed (Explosion-proof machine uses Siemens motor)

- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Main parts are all made up of stainless steel, with perfect corrosion resistance
- ◆ Standard configuration: Two different size dispersing blades, and also can select different size sand-milling blades and stainless steel double jacket container to carry out milling function.
- ◆ Power Supply: 220V 50HZ
- ◆ 550W and 750W is bench-structure, size is 45×42×65 cm; Others are console mode structure and size is 64×57×133 cm

Ordering Information	Motor Power	Speed (r/min)	Lift Distance	Lift System	Come with dispersing blades size
BGD 740/1	550W	0–7,500	230 mm	Spring lift by hand	50mm&60mm
BGD 740/2	750W	0–6,000	230 mm	Spring lift by hand	50mm&60mm
BGD 740/3	1,100W	0–5,000	340 mm	Electric	60mm&80mm
BGD 740/4	1,500W	0–5,000	340 mm	Electric	80mm&100mm
BGD 740/5	2,200W	0–4,000	340 mm	Electric	100mm&120mm
BGD 741/1	550W	0–7,500	300 mm	Electric	50mm&60mm
BGD 741/2	750W	0–6,000	300 mm	Electric	50mm&60mm
BGD 742/2 (Explosion-proof)	750W	0–3,000	300 mm	Electric	50mm&60mm
BGD 742/4 (Explosion-proof)	1,500W	0–3,000	340 mm	Electric	80mm&100mm
BGD 742/5 (Explosion-proof)	2,200W	0–3,000	340 mm	Electric	100mm&120mm



BGD 740/1–2



BGD 742/2



BGD 740/3–5

◆ Optional Accessories:

BGD 1410---35 mm dispersing blade
 BGD 1412---60 mm dispersing blade
 BGD 1414---100 mm dispersing blade
 BGD 1416---150 mm dispersing blade
 BGD 1451---0.5 L dispersing container
 BGD 1453---3 L dispersing container
 BGD 1455---10 L dispersing container
 BGD 1460---Stand for explosion-proof box

BGD 1411---50 mm dispersing blade
 BGD 1413---80 mm dispersing blade
 BGD 1415---120 mm dispersing blade
 BGD 1417---200 mm dispersing blade
 BGD 1452---1.5 L dispersing container
 BGD 1454---5 L dispersing container
 BGD 1456---20 L dispersing container



Note: All containers have double jacket for cooling water.

Multifunction High Speed Dispersing Machine

B 745 Multifunction High Speed Dispersing Machine is developed newly after collecting many customers suggestions, and also got many patents. Compared with traditional products, it adds many practical functions and let laboratory dispersing work become more scientific, high efficiency and easy.

Main Features:

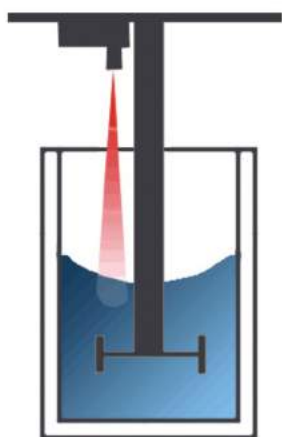
- ◆ New brushless DC motor: Has wider adjustable working speed, ultra-low noise when working (avoid electromagnetic noise from tradition AC motor) .Moreover, DC motor has a feedback system to working speeding and can monitor speed more precisely.
- ◆ Touch screen design: Setting working parameters become more simple and easy. All state parameters are shown directly and clearly, easy to operate.
- ◆ Show directly linear velocity of current dispersing blade, save time to calculate linear velocity by dispersing blade size and working speed for operator.
- ◆ New auto location clamping device for container: Rotate locking handle to fasten container at the central position automatically, safe, simple and convenient.
- ◆ High quality one body mixer shaft: Made up of high quality 304SS, anti-corrosion and easy to clean.
- ◆ Monitor sample temperature: With infrared temperature probe, can real-time monitor dispersed sample without touching sample. Operator also can set a certain temperature by touch screen for preventing sample changing because of over heat generating from milling.
- ◆ Timing device for dispersing: Operator can set dispersing time, the machine would be stopped automatically when arrive this time
- ◆ Can choose arc bottom container with double-layer and sand-mill blades for bead mill.

Main Technical Parameters:

- ★ Motor Power: 1000W (Brushless DC motor)
- ★ Adjustable working speed: 200 ~ 6,000r/min
- ★ Lift distance: 300mm
- ★ Overall Dimension: 450 x 450 x 700mm
(motor is the lowest position)
- ★ Net Weight: 40KG
- ★ Come with dispersing blades: $\Phi 50\text{mm}$ and $\Phi 80\text{mm}$, one each.

★ Ordering Information:

BGD 745---Multifunction High Speed Dispersing Machine



Measure Sample Temperature with infrare



Operation Menu



Versatile Sand-Milling dispersing-agitator

BGD 750 series Versatile Sand-Milling dispersing-agitator is a new product designed by our company. It is equipped with two sand-milling discs, two dispersing blades and a double-layer stainless steel container. With only one machine, operator can finish such as sand-milling, high speed dispersing and mixing. Furthermore, electric lift design is very convenient for female operator.

Features:

- ◆ With squirrel-cage motor of frequency control and use frequency converter to adjust working speed (Explosion-proof machine uses Siemens motor)
- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Main parts are all made up of stainless steel, with perfect corrosion resistance
- ◆ Inlet and outlet of cooling water are equipped with fast joints, convenient for operator to install or remove quickly.
- ◆ Container is produced by a whole special mould, no welding line and bottom is arc structure, can be cleaned completely. Very convenient for operator to do the different color sample.
- ◆ Standard configuration: Two different size dispersing blades, two different size sand-milling blades, a stainless steel double jacket container.
- ◆ Power Supply: 220V 50HZ
- ◆ 550W and 750W is bench-structure, size is 45×42×65 cm;
Others are console mode structure and size is 64×57×133 cm



Ordering Information	Motor Power	Speed (r/min)	Container Capacity	Lift Distance	Lift System	Dispersing blades	Sand-Mill blades
BGD 750/1	550W	0-7,500	1.5 L	230 mm	Spring lift by hand	50mm&60mm	45mm&60mm
BGD 750/2	750W	0-6,000	1.5 L	230 mm	Spring lift by hand	50mm&60mm	45mm&60mm
BGD 750/3	1,100W	0-5,000	3 L	340 mm	Electric	60mm&80mm	90mm&100mm
BGD 750/4	1,500W	0-5,000	3 L	340 mm	Electric	80mm&100mm	90mm&100mm
BGD 750/5	2,200W	0-4,000	5 L	340 mm	Electric	100mm&120mm	100mm&130mm
BGD 751/1	550W	0-7,500	1.5 L	300 mm	Electric	50mm&60mm	45mm&60mm
BGD 751/2	750W	0-6,000	1.5 L	300 mm	Electric	50mm&60mm	45mm&60mm
BGD 752/2 (Explosion-proof)	750W	0-6,000	1.5 L	300 mm	Electric	50mm&60mm	45mm&60mm

Lab Basket Mill (New)

For paint, ink laboratory special requirements, Biuged develops a newest high quality Lab Basket Mill. Compared with the traditional products, main parts of milling basket, such as basket wall, milling blades and pump impeller, are made of strong abrasion resistance material—zirconia (Other suppliers use stainless steel), extend greatly the service time of mill and also reduce influence to color of sample milled in basket.

Moreover, in order to offer a convenience for customers to replace sample rapidly and clear the basket completely, we design the basket as easy to dismantle structure. Customers can inspect the grinding medium (beads) usage and replace it at any time.

Features

- ◆ With 750W squirrel-cage motor of frequency control and use frequency converter to adjust working speed
- ◆ Direct digits display axis revolution through display screen of frequency converter installed on the machine.
- ◆ No carbon brush, no produce any flame when working
- ◆ Lower noise, bigger torque and wider adjustable speed
- ◆ Another dispersing blade is installed under the basket, disperse and mill the sample at the same time.
- ◆ Electric lift, easy and convenient to operate
- ◆ Double wall milling basket and double wall container for cooling rapidly
- ◆ Excellent mill results, can mill sample size to below 10 μ m shortly.

Main Technical Parameters:

- ★ Motor Power: 750W
- ★ Working Speed: 0–3,00 r.p.m (Adjustable)
- ★ Lift Distance: 300mm
- ★ Container Capacity: 3 L
- ★ Milling Basket Capacity: 260 ml
- ★ Suitable Added Amount for Mill Medium: 180ml
- ★ Suitable Mill Medium Size (mm) : 1.4–1.6 mm
- ★ Milling Blades Size: Φ 60mm
- ★ Dispersing Blades Size: Φ 60mm
- ★ Overall Size: 480 × 430 × 970 mm
- ★ Net Weight: 50KG
- ★ Power Supply: 220V 50Hz/60Hz
- ★ **Ordering Information:** BGD 756----- Lab Basket Mill



Lab Basket Mill

BGD 755 series Lab Basket Mill is an integrated equipment, which combines milling and dispersing to reduce particle size for paint, coatings, inks and pigment dispersions applications. The basket mill integrates high speed dissolving and pump wheels, a very narrow particle size distribution can be achieved in this machine.

Features

- ◆ Replaceable basket structure, easy to clean
- ◆ Easy to maintain and move from one batch to another different product production
- ◆ Little grinding media required
- ◆ Double wall milling basket and double wall container for cooling an heating is optional
- ◆ Excellent mill results



BGD 755/3



BGD 755/5

Main Technical Parameters:

★ Parameter of motor:	750 ~ 2200W; 220V 50Hz
★ Rotation speed:	0-2,880 r.p.m
★ Processing Capacity:	0.8-20L
★ Control Method:	Stepless speed control, with digital speed display
★ Medium Size (mm) :	1.8-2.5mm
★ Material:	The part contacting with material is Ss304
★ Lifting System :	
	For 550W and 750W---Spring Lift by hand/ lift platform;
	For 1,100W or more Electric Lift automatically.
★ Ordering Information :	
	BGD 755/3---1100W Basket Mill (5L)
	BGD 755/4---1500W Basket Mill (15L)
	BGD 755/5---2200W Basket Mill (20L)



Lab Horizontal Mill

Lab Horizontal Mill is an advanced wet process bead grinding machine for milling and dispersing to reduce particle size for paints, inks, pigment dispersion and other chemicals. It can achieve high milling efficiency and fine milling effect.

Motor-driven feeding device internal high-speed rotation, a negative pressure, through self-absorption effect, placed above the feed tank material inhaled and sent to the grinding chamber. The discs drive the grinding medium inside the grinding chamber to do irregular movements in all direction to put the materials under the action of constant collision and friction. At same time, the materials are separated from the grinding medium by the sieve and keep circulation from the tank to the grinding chamber to obtain smaller particle size, narrower particle size range.

Features

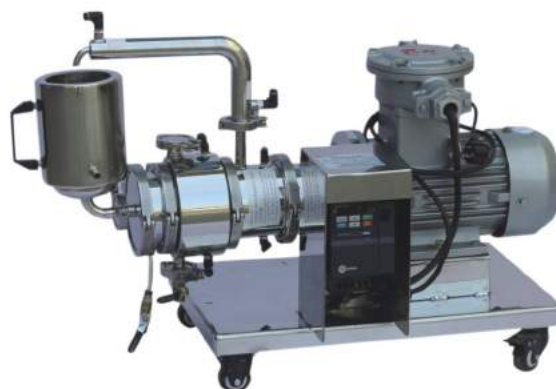
- ◆ **High milling-efficiency and good fineness:** Big kinetic energy drive zirconia working-pole to make the grinding medium move irregularly, crash with high-speed, abrade mutually etc, (Can choose diameter from 1.4mm to 1.6mm zirconia beads)
- ◆ **Convenient operation:** With frequency converter, operator can start the machine and adjust working speed directly. Once pour sample into the hopper of machine, with automatic cycle function, the milling work can be finished automatically.
- ◆ **Low temperature-rise during milling:** Both of container and milling chamber are designed with double wall for cooling

sample. Normally, the temperature-rise is less than 10°C , which effectively prevent sample changing because of high temperature.(It is better to use a water chiller)

- ◆ Long lift-time: The whole machine is made up of stainless steel, more durable and easier to clean.

Main Technical Parameters:

- ★ Capacity: 0.6L–5L (Container capacity: 0.6L、1.2L、2L、3L、5L for option)
- ★ Milling Chamber Capacity: 0.5 L
- ★ Motor Power: 2.2 KW (Siemens)
- ★ Working Speed: 0–3000 rpm
- ★ Power: AC 220V, 50HZ (other power can be customized)
- ★ Overall Size: 880mm × 350mm × 480mm
- ★ **Ordering Information:** BGD 758---Lab Horizontal Mill



Coating Fast Mixer

Having a high efficiency mixer for the dispersing job becomes more necessary. That is why we designed our coating fast mixer. BGD 760 mixers are a great mixing solution that are capable of handling an extremely broad range of materials for countless applications including automotive, chemical, wood finishes, marine, R&D, and various lab settings.

- ◆ Suitable for a wide range of mixing applications
- ◆ With two types for option:

Carrying Can---Shakes a variety of containers of all sizes and shapes (User should prepare container by himself. The max. diameter of container is 180mm, the container height range is from 65mm to 180mm)

Carrying Bottle---Shakes eight glass bottles whose capacity is 200ml (Each arm has four bottles ,and every bottle can finish dispersing of 150ml sample)

- ◆ Two different structures: Column type and Floor type, are suitable different applications
- ◆ With timer can automatically stop mixing cycle

Main Technical Parameters:

- ★ Motor: 550W 220V 50Hz
- ★ Crankshaft revolution: 660 r/min
- ★ Main shaft reciprocating stroke: 16 mm
- ★ Upper and lower maximum amplitude: 8 mm
- ★ Head arm swinging angle: 30°
- ★ Overall dimension: 790 × 520 × 1090 mm (L × W × H)
- ★ Weight: 80Kg



Floor Type



Column Type

★ Ordering Information:

- BGD 760/1---Coating Fast Mixer (Column type with carrying can)
- BGD 760/2---Coating Fast Mixer (Column type with carrying bottle)
- BGD 760/3---Coating Fast Mixer (Floor type with carrying can)
- BGD 760/4---Coating Fast Mixer (Floor type with carrying bottle)

Closed Paint Mixer/Shaker

These closed paint mixers and shakers, suitable size containers having sample which is needed to be dispersed are put into, then use the special clamping device to fix containers, set required working time. With high-speed rotating and shaking, sample can be dispersed efficiently. These machines are easy and convenient to operate, high-efficiency, no VOC leakage, no pollution etc advantages.

According working principle, these machines can be divided into two types: shaking type and rotating type. For shaking type, the container is shaken up and down, back and forth with high-speed. For rotating type, the container is rotated at revolution and rotation at the same time.

Features:

Manual Type:

- ◆ Clamp the container by manual, can select clamping power freely, suitable for any size and type container.
- ◆ Safety interlock--- the machine will stop immediately when open its door, prevents the cabinet door from being opened while the machine is running.
- ◆ The supporting table for container can be pulled-out, rotated and fixed, save time and power for operator.

Automatic Type:

- ◆ Run self-checking program automatically before operation till all parameters are accordance with requirements then begin to work. In case of any abnormality, the machine will alarm by buzzer and indicate need to be set.
- ◆ Digital display will show the working status and run time, so that the operators can know the machine working status.
- ◆ With PLC microcomputer control---Detect and response automatically, adjust height to clamp container.
- ◆ Automatic fix or loosen container and offer the suitable working speed.
- ◆ Automatically check container size and according it to adjust suitable clamping power and rotating speed.
- ◆ Multi-grade intelligent timing inverter, adequate speed control ensures stable operation



BGD 763



BGD 764

Ordering Information → Parameters ↓	BGD 763/1	BGD 763/2	BGD 764/1	BGD 764/2
Working Method	Shaking	Shaking	Rotating	Rotating
Clamping Container Method	Manual	Automatic	Manual	Automatic
Suitable Container Capacity	0.5L—20L			
Suitable Container Height	100mm—380mm		70mm—390mm	
Shaking Frequency	680~710 times/min		----	
Rotating Speed	----		Revolution: 130r/min Rotation: 260r/min	
Motor Power	0.75 KW			
Power Supply	110V or 220v, +-10% adjustable, 50/60HZ			
Net Weight/Gross Weight	195 KG/240KG	210 KG/245KG	200 KG/240KG	187 KG/228KG
Overall Size (H×W×D)	1050×860×710	1060×760×825	1035×800×810	1010×860×800

Three Rollers Grinder

BGD 770 series Three Rollers Grinder is widely used in paste materials including inks, Paint, Pigment, Soap, Artificial leather, Plastics, Lubricant grease, Chocolate and so on. Especially for high viscosity and fineness material. The mill roller is made of high hardness alloy and anti abrade, also equipped with cooling device for continuous operation.



BGD 770/1

Main Technical Parameters

Ordering Information		BGD 770/1	BGD 770/2	BGD 770/3	BGD 770/4	BGD 770/5
Roller diameter(mm)		65	100	150	200	260
Working length(mm)		125	250	300	500	675
Speed (R.p.m)	Slow	26	28	34	19	23
	Middle	70	66	78	55	64
	Fast	145	152	181	155	183
Motor Power (kw)		0.75	1.5	2.2	4.0	7.5
Capacity (L)		5	30	60	100	150
Overall size (mm)		410x400x450	680x600x700	830x830x930	1180x1120x980	1680x1320x1150
Weight (kg)		80	300	500	800	2100

Note: we also offer BGD 770/1S Three Rollers Grinder whose whole body are stainless steel

BGD 771 series Improved Three Rollers Grinder use good quality material as drive section, its transmission gear adopts oil-immersed way and the operative handwheel is transmitted by gear, with abrasion resistance, low voice, easy to repair etc. advantages. Moreover, Using gear adjust the roller and roller (but BGD 770, use spring to adjust) and make adjust become more easy. And the coppery baffle is designed as butterfly model, the operator can clean the coppery knife easily. Particularly it is suitable for grinding the products with high dispersive viscosity and size.

Main Technical Parameters

Ordering Information		BGD 771/1	BGD 771/2	BGD 771/3
Roller diameter(mm)		150	260	305
Working length(mm)		300	675	760
Speed (R.p.m)	Slow	34	23	15.8
	Middle	78	64	47.4
	Fast	181	183	142
Motor Power (kw)		2.2	7.5	11
Overall size (mm)		920 × 880 × 1150	1690 × 1330 × 1300	1655 × 1490 × 1400
Weight (kg)		500	2000	3800



Muller Laboratory Grinder

BGD 650 Muller Laboratory Grinder is a sturdy machine, enabling optimal and perfectly reproducible grinding and dispersion to be obtained in the laboratory. It has been designed to grind and discharge small amounts of raw materials for paint and varnish.

This unit consists of a steel frame holding two ground-glass plates, the lower of which is motor driven. A LCD counter can help operator register the total number of revolutions and automatically stops the motor once the user's defined number of revolutions has been met. Furthermore, it also can show the total after each test cycle.

An amount of raw material is spread over a limited area of the lower glass plate. The mixture is ground in successive stages, for example 50 revolutions each, at a pressure, of 445N. Between each stage, the mixture should be redistributed within the limited area.

The BGD 650 Muller Laboratory Grinder is suitable for preparing dispersions for testing mass color and tinting strength and preparing small samples for use in the quality control of pigments.

It can be used in accordance with ASTM D 387, ASTM D 332-B, ISO 8780-5, ISO 787/16.

Features:

- ◆ Counting control system uses SCM, counting accurately, reliable running and achieve intelligent control.
- ◆ Use coupling with flexible connection method to connect reducer with motor, has big torque, no step to lose and self-protection.
- ◆ Grinding glass are made of heat-resisting, pressure-resisting and colorless sight glass after precise grind, with high flatness, strong and durable and no any influence to light colored sample.

Main Technical Parameters:

★ Motor Power: 0.75KW	
★ Power Voltage: 380V 50Hz	
(220V can be Customized according to customer need)	
★ Working Speed: 75 ± 5r/min	Load: 43Kg; 64Kg; 100Kg
★ Weights: 1.75kg; 5 kg; 6.4 kg	Grind Plate Diameter: 240mm
★ Digital Displaying Range: 0 ~ 9,999	
★ Overall dimension: 530 × 360 × 480 mm (L × W × H)	
Weight: 80Kg	
★ Ordering Information: BGD 650/1---Muller Laboratory Grinder(380V)	
BGD 650/2---Muller Laboratory Grinder(220V)	



Homogenizer

BGD 749 Homogenizer is a high speed dispersing instrument. It is based on the Rotor/Stator Technology. The shaft and rotor/stator can be disassembled for easy cleaning. You will receive the dispersing tools completely assembled for immediate use with your disperser.

The material is sucked in to the head axially, then accelerated using the rotor's high rpm rate, circumferential or peripheral velocity. The centrifugal acceleration between the outer rotor wall and the inner stator wall propels the material through the stator shearing slits.

This product is for laboratory use only and is used in chemical industry, cosmetic industry, pharmaceutical industry, paint industry as well as in universities and a wide range of medical laboratories. The unit is a high performance dispersing/homogenizing unit and also can be used as a high speed mixing unit with certain dispersing shafts.

The drive unit can be used, based on the dispersing shaft used for volumes from 10ml to 8,000ml. There is a wide range of dispersing shafts with diameters of 20mm, 30mm and 40mm stator diameters. It is to be mounted on a stand and not used as a handheld instrument.

Features

- ◆ Top speed of high 10000-30000 rpm, reduces processing time significantly.
- ◆ Big safety switch for unexpected emergency stop.
- ◆ Smooth motor drive makes working, very safe and comfortable.
- ◆ Additional feature of automatic overload protection increases the life span of the motor.
- ◆ Smooth start also prevents unnecessary spills; Viscosity up to 10,000 mPa.s
- ◆ Continuously adjustable speeds for better results
- ◆ Light-weighted and small-dimensioned for better handling
- ◆ Triple safety of the drive, overload protection and smooth start against jerky work, safety switch

316L steel High quality dispersing tools as standard for better resistance to corrosion
Quick change system of the dispersing tools for a short changing time between preparations

Main Technical Parameters:

- ★ Voltage: 220V 50/60Hz or 110V 50/60Hz ; Power input/output: 500/380 Watt
- ★ Rotor speed: [22,7 ~ 36 m] /sec ; Weight: 1.3 kg
- ★ Sound Pressure Level : 79 dB(A) ; Double Insulated
- ★ Speed Setting: Infinitely Variable ; Relative Humidity: 85%
- ★ Permissible Ambient Temperature: 5°C – 40°C ; Protection Grade: Ip20
- ★ Permissible Period of Operation: 100% ; Dimensions: 70 x 70 x 255mm
- ★ **Ordering Information:** BGD 749/1--- Homogenizer for solid-liquid mix
(includes a BGD 749 drive ,a H Stand and a BGD 1430 dispersing shaft)
- BGD 749/2--- Homogenizer for emulsification
(includes a BGD 749 drive ,a H Stand and a BGD 1431 dispersing shaft)

Optional Accessories

- BGD 1430---One body dispersing shaft for mixing solid and liquid (10ml ~ 5000ml)
- BGD 1431---One body dispersing shaft for emulsification (10ml ~ 5000ml)
- BGD 1432--- One body dispersing shaft for mixing small quantity solid and liquid (1ml ~ 50ml)
- BGD 1433---20mm Coarse Stator
- BGD 1434---20mm Fine Stator
- BGD 1435---30mm Coarse Stator
- BGD 1436---30mm Fine Stator
- BGD 1437---40mm Coarse Stator
- BGD 1438---20mm Standard Rotor
- BGD 1439---30mm Standard Rotor
- BGD 1440---20mm Homogenizing Rotor
- BGD 1441---30mm Homogenizing Rotor
- BGD 1442---20mm Mixing Rotor
- BGD 1443---30mm Mixing Rotor
- BGD 1442---20mm Emulsification Rotor
- BGD 1443---30mm Emulsification Rotor



Economic Electrical Balance

Biuged offers a range of laboratory scales for accurate measurements during the development of a coating. The Biuged range of balances provides the user with a choice of standard, analytical or precision balance, with or without enclosed cabinet.

Features

- ◆ Calibration function
- ◆ Whole range of gross to net conversion
- ◆ Unit conversion (g,CT,OZ,1b)
- ◆ Power: AC 220V±10% 50HZ±1HZ DC 9V
- ◆ Higher resolution
- ◆ LED indicator
- ◆ With RS-232 interface.

Ordering Information	Max Load Capacity	Resolution	The size of the weighing platform	Hurricane globe
HZY-A 100	100g	0.001g	Φ80mm	✓
HZY-A 200	200g	0.001g	Φ80mm	✓
HZT-A 100	100g	0.01g	Φ125mm	----
HZT-A 200	200g	0.01g	Φ125mm	----
HZT-A 300	300g	0.01g	Φ125mm	----
HZT-A 500	500g	0.01g	Φ125mm	----
HZT-A 600	600g	0.01g	Φ125mm	----
HZT-A 1000	1000g	0.01g	Φ125mm	----
HZT-A 2000	2000g	0.01g	Φ125mm	----
HZT-B 2000	2000g	0.1g	155×175mm	----
HZT-B 3000	3000g	0.1g	155×175mm	----
HZT-B 5000	5000g	0.1g	155×175mm	----
HZT-B 6000	6000g	0.1g	155×175mm	----



HZT



HZY

Balance

The BL Precision Balance is an accurate, stable and robust balance which can be supplied with or without a plastic draft guard for higher accuracy of measurements.

The BL Precision Balances are protected against spray and dust according to the IP54 standard.

With the cable accessory, the BL can be connected to a computer for accurate recording of your data.

A range of User programmable metric and imperial measurement units can be displayed.



◆ Ordering Information

Ordering Information → Technical Item ↓	BL-120	BL-200	BL-410	BL-1200	BL-2000	BL-4100
Capacity (g)	120	200	410	1200	2000	4100
Readability (g)	0.001	0.001	0.001	0.01	0.01	0.01
Repeatability (g)	± 0.001	± 0.001	± 0.001	± 0.01	± 0.01	± 0.01
Linearity (g)	± 0.002	± 0.002	± 0.002	± 0.02	± 0.02	± 0.02
Keyboard	Six key	Six key	Six key	Six key	Six key	Six key
Pan Size	φ 120mm	φ 120mm	φ 120mm	φ 158mm	φ 158mm	φ 158mm
Draftshield	Standard	Standard	Standard	N/A	N/A	N/A
Security Lock Kit	Option	Option	Option	Option	Option	Option
Size W*H*D (in)	7*5.75*11	7*5.75*11	7*5.75*11	7*2.5*11	7*2.5*11	7*2.5*11
Interface	Bidirectional RS-232, (standard on all models)					
Display	0.57 " LED (all models)					
Power	7.2VDC (115VAC,60HZ adaptor provided)					

Precise Analytical Balance

- ◆ Electric magnetic force balanced principle
- ◆ Auto zero-tracking
- ◆ Dynamic temperature compensation
- ◆ Zero in range ability
- ◆ LCD display
- ◆ Function of piece counting
- ◆ Over-loading warning
- ◆ RS232 communication
- ◆ Unit conversion (g oz ct kg lb)

◆ Ordering Information

Ordering Information → Technical Item ↓	FA1104	FA1604	FA2004
Weighing Capacity (g)	110	160	200
Readability (mg)	0.1	0.1	0.1
Repeatability (≤mg)	± 0.1	± 0.1	± 0.1
Linearity (≤mg)	± 0.2	± 0.2	± 0.2
Pan Size (mm)	φ 90	φ 90	φ 90



Precise Analytical Balance

- ◆ High-sensitivity electric magnetic force balanced principle for ultra resolution
- ◆ Built-in dual-weight balanced calibration technology for ultra accuracy
- ◆ Digital multi-point linear calibration, which is convenient for balance calibration
- ◆ Internal weight calibration technology, which is convenient for periodical calibration and adjustment without dismantling the balance
- ◆ Pillar-free transparent glass draft shields for comfortable operation with enlarge weighting space
- ◆ Advanced design with SMT and switch power supply technology, which reduces the dimensions of the rear sensor, and leads to a compact appearance of the balance
- ◆ Six-key integrated display panel for easy operation: Big handles for easy movement

Ordering Information

Ordering Information → Technical Item ↓	FB124	FB224	FB223	FB323	FB423
Weighing Capacity (g)	120	220	220	320	420
Readability (mg)	0.1	0.1	1	1	1
Repeatability (≤mg)	± 0.1	± 0.1	± 1	± 1	± 1
Linearity (≤mg)	± 0.2	± 0.2	± 2	± 2	± 2
Pan Size (mm)	φ 90	φ 90	φ 90	φ 90	φ 90



Special Balance for Paint

These special balances are designed for paint, ink and other chemical fields. They have large LCD display and RS 232 output interface, and whole balance are metal construction, more durable. They can be calibrated automatically by external weights, have overload protection and check weight alarm function (the user can according to your requirements to set the upper and lower limit of the weight. And also have four weighing units (G,Ct,Oz,Dwt) and three test modes: counter, percent and weighing.



ES-K Series



ES-P Series

Technical Item → Ordering Information ↓	Capacity	Readability	Pan Size	Features
ES-P5K	5 KG	0.1g	Φ 240mm	<ul style="list-style-type: none"> ◆ Paint mixing especially suitable for bad environment conditions. ◆ Adjusting counting factor and calculation function ◆ Independent display, stainless steel stand bar of display, Angle, height and direction can be adjusted by three-dimensional
ES-P8K	8 KG	0.1g		
ES-P10K	10 KG	0.1g		
ES-15K	15KG	0.1g	330 × 380mm	<ul style="list-style-type: none"> ◆ High precision & fast response ◆ Function of being connected with external displayer ◆ Check weighing, the limits of weight could be setup ◆ Optional independent displayer and stainless displayer support with adjustable angle, height and position when
ES-25K	25KG	0.1g		
ES-30K	30KG	0.1g		
ES-60K	60KG	0.5g		

Bench Scale

- ◆ LCD display; Rechargeable, both AC and DC can be used;
- ◆ Weighing display react swift, stable and accurate;
- ◆ Low battery will be informed by electricity amount indicator.

◆ Ordering Information

Ordering Information → Technical Item ↓	CAP	Division	Platter	Power
BWS T01-60	60KG	2g	400*500mm	AC: 220V DC: 4V
BWS T01-150	150KG	5g		
BWS T01-300	300KG	10g	460*600mm	
BWS T01-500	500KG	20g		



Fast Moisture Tester

The instrument is suitable for testing the free water of various samples, such as medicine, corn and biological products etc.



SH10A



MB 25



MB 35

◆ Ordering Information

Ordering Information → Technical Item ↓	SH10A	MB 23	MB 25	MB 35
Mian Function	1. Double plate balance; 2. Magnetic damping design; 3. Automation: auto-test, auto-alarm.	1. Custom backlit LCD; 2. RS232 Interface; Durable ABS, in-use cover, sample pan holder; 3. Moisture determination from 50° C to 160° C, 5° C increments 4. Repeatability 0.2% (10g sample) 5. compact design, infrared heating, manual, automatic or timed duration drying time		1. RS232 interface; 2. Durable ABS, stainless steel pan, in-use cover and optional sample pan holder 3. Fast halogen heating (50C increments to 160oC in less than a minute), 4. Repeatability 0.03%, (10g sample), 5. manual/timed temperature program, simple auto shut off program, simple 3 key operation, text prompts and scrolling menus
Max. weight (g)	10	110	110	35
Division Value(g)	0.005	0.01	0.005	0.001
Temperature Range	60 ~ 170°C ± 2°C	IR heating	Halogen heating	
Setting Time	1 ~ 30min	1-90min		1-120min
Showing datas	%(water); g(solid)	Water Content(%), Solid(%), Weight, Time, Tem.		
Accurace	± 0.2%	0.01%	0.05%	0.001%
Scale Diameter(mm)	Φ 100	90		
Overall Size (mm)	240 × 390 × 560	165 × 127 × 280		190 × 152 × 360

Precise Oven

Main Technical Parameters

- ★ Interior of oven is made of special stainless steel by argon-arc-welding technology, and the exterior of oven is made of high-quality steel sheet with a beautiful and novel appearance.
- ★ Microprocessor PID temperature controller with temperature control protection, digits display and timing function ensures a precise and reliable temperature control. (intelligent programmable LCD temperature controller is an option)
- ★ Hot-air circulating system consists of a fan keeping running under a high temperature and proper air ducts to ensure a uniform distribution a high temperature in chamber
- ★ Independent alarm system for temperature-limiting ensures experiments run safely and no accident would happen.
(Option)
- ★ Recorder and printer are options which can print or record set parameters and trace variation curves of temperature.
(Option)
- ★ Temperature Stability: $\pm 1^{\circ}\text{C}$
- ★ Temperature Control: 0.1°C
- ★ Timing Range: 1~9,999min



★ Ordering Information

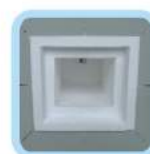
Ordering Information → Technical Item ↓	Electrical Supply	Temperature Range	Power	Cubage	Interior Dimension (mm) W×D×H	Overall Dimension (mm) W×D×H	Shelves
BGD 802	220V 50HZ	RT+10~250°C	850W	30L	340×320×320	620×530×490	2 pcs
BGD 804	220V 50HZ	RT+10~300°C	850W	30L	340×320×320	620×530×490	2 pcs
BGD 806	220V 50HZ	RT+10~300°C	1100W	50L	420×395×350	720×590×520	2 pcs
BGD 808	220V 50HZ	RT+10~250°C	1550W	80L	450×400×450	740×618×630	2 pcs
BGD 810	220V 50HZ	RT+10~300°C	1550W	80L	450×400×450	740×618×630	2 pcs
BGD 812	220V 50HZ	RT+10~250°C	2050W	136L	550×450×550	840×670×730	2 pcs
BGD 814	220V 50HZ	RT+10~300°C	2050W	136L	550×450×550	840×670×730	2 pcs
BGD 816	220V 50HZ	RT+10~250°C	2450W	220L	600×500×750	880×720×930	2 pcs
BGD 818	220V 50HZ	RT+10~300°C	2450W	220L	600×500×750	880×720×930	2 pcs
BGD 820	380V 50HZ	RT+10~250°C	3100W	420L	640×585×1355	780×750×1880	2 pcs
BGD 822	380V 50HZ	RT+10~300°C	3100W	420L	640×585×1355	780×750×1880	2 pcs
BGD 824	380V 50HZ	RT+10~250°C	4000W	620L	840×600×1355	980×800×1880	3 pcs
BGD 826	380V 50HZ	RT+10~300°C	4000W	620L	840×600×1355	980×800×1880	3 pcs
BGD 827/1	220V 50HZ	RT+10~400°C	2500W	50L	350×350×400	540×660×615	2 pcs
BGD 827/2	220V 50HZ	RT+10~500°C	2500W	50L	350×350×400	540×660×615	2 pcs
BGD 828/1	220V 50HZ	RT+10~400°C	3000W	100L	450×450×450	620×745×645	2 pcs
BGD 828/2	220V 50HZ	RT+10~500°C	3000W	100L	450×450×450	620×745×645	2 pcs
BGD 829/1	220V 50HZ	RT+10~400°C	3500W	220L	600×600×600	1000×1000×1300	2 pcs
BGD 829/2	220V 50HZ	RT+10~500°C	3500W	220L	600×600×600	1000×1000×1300	2 pcs

One-body High-Temperature Oven (Muffle Kiln)

The new generation box resistance oven is integrated with the Company's years of experiences in design and manufacturing as well as foreign technologies. It is of various design patents and is especially supplied to the laboratories of factories, mines, universities and scientific research institutions for chemical element analysis and such high-temperature treatment as quenching, annealing and tempering of small castings. It can also be used for such high-temperature heating as baking, dissolving and analyzing of metals, graphite and ceramic.

Features of Product

- ◆ Unique design of oven door for safe and easy operation to ensure that the high-temperature hot gas will not escape for inside the oven.
- ◆ Inert gas inlet and outlet reserved in the chamber.
- ◆ Micro-computer PID Controller: easy operation, accurate, reliable and safe control.
- ◆ Inside lining of fire-door and box panel are both made of stainless steel materials and are featured for corrosion-resistance and free deformation under high temperature.
- ◆ Light chamber for durable service (refractory-brick chamber and ceramic-fiber chamber are optional)
- ◆ With excellent door seal, thermal loss is minimized and temperature evenness is increased in the chamber.



Optional: 30-segment programmable controller

(each segment can setup "heating" or "stop" and the circulation of programmed temperature, time heating power is

Ordering Information → Technical Item ↓	Max Temp(℃)	Chamber Size W×P×H(mm)	Capacity	Power	Input Power	Heating Element
SX2-2.5-10	1,000	200×120×80	2L	220V/50HZ	2.5 KW	heating cord
SX2-4-10	1,000	300×200×120	7L	220V/50HZ	4 KW	heating cord
SX2-8-10	1,000	400×250×160	16L	380V/50HZ	8 KW	heating cord
SX2-12-10	1,000	500×300×200	30L	380V/50HZ	12 KW	heating cord
SX2-2.5-12	1,200	200×120×80	2L	220V/50HZ	2.5 KW	heating cord
SX2-5-12	1,200	300×200×120	7L	220V/50HZ	5 KW	heating cord
SX2-10-12	1,200	400×250×160	16L	380V/50HZ	10 KW	heating cord
SX2-4-13	1,300	250×150×100	4L	220V/50HZ	4 KW	heating cord
SX2-6-13	1,300	400×200×160	13L	380V/50HZ	6 KW	heating cord
SX2-8-13	1,300	500×200×180	18L	380V/50HZ	8 KW	heating cord
SX2-8-16	1,600	300×150×120	5.4 L	380V/50HZ	8 KW	Globar
SX2-12-16	1,600	400×250×160	13 L	380V/50HZ	12 KW	Globar
Remarks	① For every chamber, we offer two types inner material, one is "refractory-brick" , the other is "ceramic-fiber" , please mark it when you place order. ② Optional accessory: Programmable controller with 30-segments or 60-segments					

UV Solidify Machine

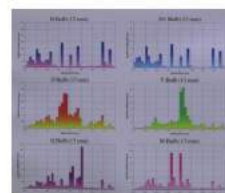
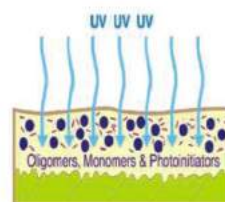
UV Solidify Machine is used widely for UV paint, UV glue, UV inks, UV gloss ink ; It is small, economic and practical as it's selling point, suit for small batches, trial production or used in small enterprise and also is welcomed in painting, glue manufacturers for research and development.

- ◆ Portable and small with one UV lamp installed, which is suitable for operation line and also handwork;
- ◆ Easy to operate; one of mass production models, components selected are standardized; simple operation and maintenance with low cost;
- ◆ Reasonable exhaust design with effective cooling system;
- ◆ Speed can be set free within the effective scope;

Main Technical Parameters:

Ordering Information →	BGD 8212	BGD 8213	BGD 8313	BGD 8222	BGD 8223	BGD 8323
Parameters ↓						
Power supply	220VAC/50HZ		380VAC/50HZ			
Total power	2.2KW	2.2KW	3.5KW	5.0KW	5.0KW	7.2KW
UV lamp Power	2KW	2KW	3KW	2KW	2KW	3KW
Number of Lamp	1 pc	1 pc	1 pc	2 pcs	2 pcs	2 pcs
speed range	0–10 m/min					
Belt Material	Stainless steel or TEFLON					
Belt Width	200mm	300mm	300mm	200mm	300mm	300mm
Entrance Height	100mm					
Cooling System	Air Cooling					
Main Wavelength	365 nm					
Lamp Life	600hours , over 75% intensity					
UV lamp type/Unit power	High–pressure mercury lamp; 100w/m					

We also accept the special custom-made UV Solidify machine order!!



UV Integrator (UV Radiometer Dosimeter)

The UV-Integrator is a high quality UV measuring instrument. It is used to measure UV energy of different light-sources, especially on printing machines and UV solidify machine. It is ideal to ensure quality control of printing and drying processes.

It is measuring an integral in the spectral range from 250-410 nm, with a peak at the area of 365 nm.

By addition of the incidence of the light quantities during the exposure cycle, relative values are calculated.

Because of uneven radiation distribution of the UV light source and different type of construction of the measuring devices by different manufacturers, different readings may appear under the same measurement conditions.

Main Technical Parameters:

- ★ Spectral range: UV 250-410 nm
- ★ Measuring range: 0 to 5,000 mW/cm²
- ★ Display range: 0 to 999,999 mJ/cm²
- ★ Power source: 3V Lithium Battery (Replaceable)
- ★ Shape: Disc structure, diameter is 95mm and height is 12mm
- ★ Weight: 160g
- ★ Work environment: While on the conveyer belt, it can withstand max.110°C for up to 10 seconds
- ★ Calibration period: one year
- ★ Ordering information: BGD 140--- UV Integrator



Heating Bath

Heating Bath Provided to colleges, industrial and mining enterprises and scientific research departments for precise constant temperature and auxiliary heating. It is controlled by microprocessor and with timing function.

Main Technical Parameters:

- ★ interior of bath is made of stainless steel with a beautiful and novel appearance.
- ★ Digits display, Microprocessor control with timing function.
- ★ Audible and visible tracking alarm indicates over temperature, which provide samples reliable protection.
- ★ Power Supply: 220V 50HZ
- ★ Temperature Stability: $\pm 0.5^{\circ}\text{C}$
- ★ Temperature Track Alarm: $+2^{\circ}\text{C}$
- ★ Timing Range: 1 ~ 9999min



Ordering Information → Technical Item ↓	Temperature Range	Power	Cubage	interior Dimension (mm) W×D×H	Overall Dimension (mm) W×D×H
BGD 834	RT+5~99 °C	500W	11L	420×180×150	570×270×260
BGD 835	RT+5~99 °C	1000W	34L	600×300×190	750×400×300
BGD 836	RT+5~99 °C	400W	12L	320×240×160	460×280×190
BGD 837	RT+5~99 °C	600W	22L	450×300×160	610×340×190
BGD 838	RT+5~99 °C	1000W	30L	600×300×160	760×340×190

Water/Oil Bath Kettle

Provided to colleges, industrial and mining enterprises and scientific research departments for precise constant temperature and auxiliary heating.

Features

- ◆ interior of bath is made of stainless steel and the center lids can be removable discretionarily.
- ◆ High precision microprocessor temperature controller ensures a precise and reliable temperature control.
- ◆ Audible and visible tracking alarm indicates over-temperature, which provide samples reliable protection.

★ Ordering Information

Ordering Information → Technical Item ↓	Water Bath (with removable center lids)				Oil Bath	
	BGD 830	BGD 831	BGD 832	BGD 833	BGD 839	BGD 840
Electrical Requirements	220V 50HZ				220V 50HZ	
Input Power	500W	1000W	1500W	2000W	1000W	2000W
Temperature Range	From ambient+5 to 99℃				From ambient+5 to 200℃	
Temperature Stability	± 0.5℃				± 0.5℃	
Tracking Alarm	± 0.2℃				± 0.2℃	
Chamber Capacity	4.9L	9.9L	14.8L	19.8L	12 L	20 L
Interior Dimension (mm) W×D×H	150×300×110	300×300×110	450×300×110	600×300×110	250×250×200	400×250×200
Timing Range	1~9999min				1~9999min	
Note	Two holes	Double columns four holes	Double columns six holes	Double columns eight holes	---	---



Water Bath



Oil Bath

Low Temperature Thermostatic Bath

THD series Low Temperature Thermostatic Bath is widely used in the fields of biological engineering、medicine、food、chemical industry、chemical analysis、petroleum, etc, providing a constant high precise、controlled、temperature homogeneous place for users. Its temperature is controlled by microprocessor with PID regulator. It has such advantages as fastness in temperature rising and dropping, high precision in controlling temperature.



Vertical



Horizontal

Main Technical Parameters:

Ordering Information → Technica Item ↓	Range of Temperature (°C)	Fluctuating degree of temperature (°C)	Volume of inner container (mm)	Volume of inner	Szie of opening (mm)	Depeth (mm)	Pump flux (L/min)
THD-05	0 ~ 100	± 0.05	260 × 170 × 120	6 L	150 × 150	150	6
THD-0506	-5 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-0515	-5 ~ 100	± 0.05	300 × 250 × 200	15L	235 × 180	220	6
THD-0530	-5 ~ 100	± 0.05	400 × 325 × 230	30L	310 × 280	230	13
THD-1006	-10 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-2006	-20 ~ 100	± 0.05	250 × 200 × 150	7.5L	180 × 150	150	6
THD-2015	-20 ~ 100	± 0.05	300 × 250 × 200	15L	235 × 180	200	6
THD-2030	-20 ~ 100	± 0.05	400 × 325 × 230	30L	310 × 280	230	13
THD-3006	-30 ~ 100	± 0.1	250 × 200 × 120	6L	180 × 150	120	6
THD-3010	-30 ~ 100	± 0.1	250 × 200 × 200	10L	180 × 150	200	6
THD-3015	-30 ~ 100	± 0.1	300 × 250 × 200	15L	235 × 180	200	6
THD-3030	-30 ~ 100	± 0.1	400 × 325 × 230	30L	310 × 280	230	13
THD-4006	-40 ~ 100	± 0.1	250 × 200 × 120	6L	180 × 150	120	6
THD-08W	0 ~ 100	± 0.05	290 × 180 × 150	8L	155 × 155	150	10
THD-1008W	-10 ~ 100	± 0.05	290 × 180 × 150	8L	155 × 155	150	8
THD-2008W	-21 ~ 100	± 0.05	280 × 250 × 130	9 L	235 × 150	100	6
THD-1015W	-10 ~ 100	± 0.05	300 × 250 × 200	15 L	235 × 180	200	6

Laboratory Freezers

Laboratory Freezers are designed to test the freeze-thaw-resisting test of paint or temperature variation resisting test of film.

Main Technical Parameters:

- ★ Microprocessor temperature control
- ★ Digital temperature display
- ★ Alarms for over temperature and under temperature
- ★ Malfunction alarms for over/under temperature, and sensor error
- ★ Alarm signals audible and flashing
- ★ Highly efficient deafness compressor
- ★ CFC-free refrigerants
- ★ High density insulation with excellent insulation properties
- ★ Superior cooling performance with optimized evaporator and condenser
- ★ Drawer designs for convenience of storing and accessing materials
- ★ LED digital temperature display for easy observation
- ★ Wide applicable voltage tolerance of 187 VAC to 242 VAC
- ★ Door handle design for easy operation
- ★ Casters for easy moving unit



Horizontal



Vertical

Ordering Information → Technical Item ↓	Temperature Range (°C)	Volume (L)	Working Room Size (mm) L×W×H	Overall Size (mm) L×W×H
DW-25L92	-10 ~ -25	92	435 × 410 × 635	597 × 610 × 860
DW-40L92	-20 ~ -40	92	435 × 410 × 635	597 × 610 × 860
DW-25W198	-10 ~ -25	198	802 × 387 × 696	940 × 560 × 845
DW-25W 388	-10 ~ -25	388	1114 × 529 × 690	1240 × 745 × 845
DW-25L262	-10 ~ -25	262	480 × 462 × 1430	657 × 685 × 1665
DW-40W100	-20 ~ -40	100	500 × 385 × 625	680 × 600 × 805
DW-40W255	-20 ~ -40	255	1040 × 430 × 605	1243 × 633 × 838
DW-40W380	-20 ~ -40	380	1376 × 457 × 625	1550 × 633 × 838
DW-40L278	-20 ~ -40	278	520 × 435 × 1230	736 × 6600 × 1810
DW-40L348	-20 ~ -40	348	535 × 650 × 1228	715 × 840 × 1860

Note: “L” indicate Vertical; “W” indicate Horizontal

ISO Scratching Tool

BGD 1285 ISO Scratching Tool is a simple but effective instrument which is used to scratch the surface of samples in preparation for adhesion, salt spray and corrosion tests. The tool is held horizontally and pulled across the sample to produce the scratch.

It is be used in according with ISO 17872: 2007, ISO 2063, ISO 7253, BS 7479. There are two “V” shape cutters at one end , and two “U” shape cutters at the other end. All cutters are made of special tungsten steel and can be replaced easily. Having this scratch tool, operator can do “V” or “U” shape scratch easily and quickly.

★ **Ordering information:** BGD 1285---ISO Scratching Tool
BGD 1285/V---V shape cutter
BGD 1285/U---U shape cutter



Salt Spray (Fog) Cabinets

The salt spray test is a standardized test method used to check corrosion resistance of coated samples. Coatings provide corrosion resistance to metallic parts made of steel, zamak or brass. Since coatings can provide a high corrosion resistance through the intended life of the part in use, it is necessary to check corrosion resistance by other means. Salt spray test is an accelerated corrosion test that produces a corrosive attack to the coated samples in order to predict its suitability in use as a protective finish. The appearance of corrosion products (oxides) is evaluated after a period of time. Test duration depends on the corrosion resistance of the coating; the more corrosion resistant the coating is, the longer the period in testing without showing signs of corrosion.

Salt spray testing is popular because it is cheap, quick, well standardized and reasonably repeatable. There is, however, only a weak correlation between the duration in salt spray test and the expected life of a coating (especially on hot dip galvanized steel where drying cycles are important for durability), since corrosion is a very complicated process and can be influenced by many external factors. Nevertheless, salt spray test is widely used in the industrial sector for the evaluation of corrosion resistance of finished surfaces or parts.

The apparatus for testing consists of a closed testing chamber, where a salted solution (mainly, a solution of 5% sodium chloride) is atomized by means of a nozzle. This produces a corrosive environment of dense saline fog in the chamber so that parts exposed in it are subjected to severely corrosive conditions.

Tests performed with a standardized 5% solution of NaCl are known as NSS (neutral salt spray). Results are represented generally as testing hours in NSS without appearance of corrosion products (e.g. 720 h in NSS according to ISO 9227). Other solutions are acetic acid (ASS test) and acetic acid with copper chloride (CASS test), each one chosen for the evaluation of decorative coatings, such as electroplated copper-nickel-chromium, electroplated copper-nickel or anodized aluminium.

Some sources do not recommend to use ASS or CASS test cabinets interchangeably for NSS tests, as it is claimed that a thorough cleaning of the cabinet after ASS or CASS test is very difficult. ASTM does not address this issue, but ISO 9227 does not recommend it and if it is to be done, advocates a thorough cleaning.

Biuged offer various Salt Spray Cabinets from 150L capacity to customized cabinets according to different requirements.

Features

- ◆ Shell of inside and outside both adopts imported PVC hard plastic board which have a good corrosion resistance and age resistance, no leaking and surface is easy to clean.
- ◆ Tower design for spraying fog system ensures slat fog distribute equally. Settlement can be adjusted freely.
- ◆ Box cover is made of hard transparent PPM or PVC hard plastic board, operator can view sample status during test anytime.
- ◆ Use a hot water storage heater which is located at bottom of cabinet to heat, adopts titanium alloy material and far-infrared heating way to heat. Thus can rise temperature rapidly, and make the whole cabinet temperature become more uniform. So, the cabinet temperature is easy to control.
- ◆ Plug board and other electronic components are fixed at position which is convenient for checking and maintaining. With door lock open-type side coven plate, easy to maintain.

- ◆ Equipped with no-crystal glass spraying nozzle.
- ◆ Spray mode: can select Continuous Spray or Period Spray.
- ◆ High precision digital display temperature controller (error is less than 0.1℃), import executive parts
- ◆ Multi-ply safety protection: Oven temperature, lack water, double pressure adjustment.
- ◆ With demist function, with water-seal structure, no salt fog leakage.

Standards

ASTM B 117 《Standard Practice for Operating Salt Spray (Fog) Apparatus》

ASTM B368 《Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test) 》

ASTM B 380 《Standard Test Method for Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodokote Procedure》

ASTM G85 - 11 《Standard Practice for Modified Salt Spray (Fog) Testing》

ASTM D 1735 《Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus》

ISO 7253 《Paints and varnishes -- Determination of resistance to neutral salt spray (fog) 》

ISO 9227 《Corrosion tests in artificial atmospheres -- Salt spray tests》

DIN 50021 《Salt Spray Testing》.

Ordering Information		BGD 880	BGD 881	BGD 882	BGD 883
Technical Parameters:					
Working Room	Size (D×W×H) , mm	450 × 600 × 400	600 × 900 × 500	750 × 1100 × 500	850 × 1300 × 600
	Capacity (including V shape cover)	150L	350L	550L	750L
	Adjustable Tem. Range	From ambient +5℃ to 50℃			
	Temperature Stability	≤0.5℃			
	Temperature Uniformity	≤2℃			
Over all Size (D×W×H) , mm		560 × 1150 × 1100	850 × 1400 × 1200	950 × 1700 × 1300	1100 × 2000 × 1400
Qua. of V Shape sample holder/pole		4/6	10/12	12/14	12/14
Tank capacity for Salt Solution		12 L	19 L	21 L	31 L
Collectors		1 pc	2 pcs	2 pcs	2 pcs
Max. Sample Capacity (15cm×7cm)		28 pcs	70 pcs	108 pcs	120 pcs
Method of Opening Cover		Manual	Manual	Pneumatic	Pneumatic
Total Power		1.5 KW	2.5 KW	3.5 KW	4.5 KW
Power Supply		220V; 50/60HZ			220/380V, 50/60HZ

Note: If customer need to do CASS test (ASTM B368-09 Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing, then the cabinet should be produced by PPR material. Please specify it when purchasing.



Cyclic Corrosion Test (CCT) Cabinets

Prior to cyclic corrosion testing, conventional salt spray (a continuous salt spray at 35 °C), was the standard way to simulate corrosion in a lab. Because conventional salt spray methods failed to mimic the natural wet/dry cycles of the outdoors, test results frequently provided poor correlation to outdoors.

In a cyclic corrosion cabinets, specimens are exposed to a series of different environments in a repetitive cycle that mimics the outdoors. Simple cycles, such as Prohesion, may consist of cycling between salt fog and dry conditions. More sophisticated automotive methods may call for multi-step cycles that incorporate humidity or condensation, along with salt spray and dry-off.

Within one chamber, it is possible to cycle through a series of the most significant corrosion environments. Even extremely complex test cycles can easily be programmed with the controller. Biuged CCT Cabinets can perform salt spray, Prohesion, and 100% humidity for most cyclic automotive tests.

Easy Programming and Sample Mounting

The CCT Cabinet is designed to cycle between four conditions: Fog, Dry-Off, 100% Humidity (Model CCT only), and Dwell. Test conditions, time, and temperature are controlled by a built-in microprocessor. A remarkably simple user interface allows for easy user programming and operation. The operator can quickly create new cycles, or run any of the programmed cycles. The allows for easy user programming and operation. The operator can quickly create new cycles, or run any of the programmed cycles. The controller includes complete self-diagnostics, including warning messages, routine service reminders and safety shut down.

Precise Control of Fog Dispersion

The cyclic corrosion cabinet has superior fog dispersion compared to conventional systems, which cannot vary volume and distance independently. A variable speed peristaltic pump controls the amount of corrosive solution delivered to the spray atomizer, while the air pressure regulator controls the distance of the "throw." Note that purified water is required for proper operation of corrosion testers.

Internal Solution Reservoir

Space utilization is maximized and maintenance is minimized with the cabinet's internal solution reservoir. The 120 liter reservoir has enough capacity for running most tests for 7 days or more. The reservoir has an integral salt filter and a built-in alarm to alert the operator when the solution is low.

Fast Cycling

CCT can change temperatures exceptionally fast because of their unique internal chamber heater and their high volume cooling/dry-off blower. An additional air heater allows very low humidity dry-off exposures. Conventional chambers with water jackets cannot cycle rapidly because of the thermal mass of the water, nor can they produce low humidity.

Affordable

Biuged's cyclic corrosion testers offer state of the art corrosion testing technology, reliability, ease of operation and easy maintenance all at a remarkably affordable price.

Features

- ◆ Whole cabinet structure is made of imported reinforced hard PVC plates with smooth and flat surface, and is aging resistant, corrosion proof, and easy to clean without leakage, avoiding the disadvantage of color fading with time of GRP
- ◆ Introduces imported original TEMI 880 temperature and humidity controller, 7" HD true color LCD touch display to bring you dignity and comfort in touch and vision.
- ◆ Have 1000 sections of programmes. Every section is capable of circulating 999 steps. The longest duration of every section is 99 hours and 59 minutes. Have the function of linking of 10 sets of programmes
- ◆ With USB interface to transmit data
- ◆ Chinese and English for optional in the controller, and can display real-time working graph.
- ◆ Temperature and humidity control introduces the same channel coordination control method of P.I.D + S.S.R system.
- ◆ Heat and humidification through boiler, heating rapidly, Temperature and humidity are evenly distributed
- ◆ Sealing of the chamber: The chamber cover and the chamber structure introduces the water seal method to prevent leakage of salt spray.
- ◆ The spraying device introduces spraying tower (height of the top of the tower is adjustable), guiding salt spray with fine spray granularity, natural settlement; the nozzle shall not have salt crystal, and settlement is adjustable.
- ◆ Plug board and other electronic components are fixed at position which is convenient for checking and maintaining. With door lock open-type side cover plate, easy to maintain.
- ◆ Multi-ply safety protection: Oven temperature, lack water, double pressure adjustment.
- ◆ The saturated spatial air drum supply water automatically.

Standards

ASTM B 117 《Standard Practice for Operating Salt Spray (Fog) Apparatus》

ASTM B368 《Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASS Test) 》

ASTM B 380 《Standard Test Method for Corrosion Testing of Decorative Electrodeposited Coatings by the Corrodokote Procedure》

ASTM G85 - 11 《Standard Practice for Modified Salt Spray (Fog) Testing》

ASTM D 1735 《Standard Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus》

ASTM D1654 《Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels》

ASTM D2247 《Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity》

ASTM D2803 《Standard Guide for Testing Filiform Corrosion Resistance of Organic Coatings on Metal》

ASTM D3451 《Standard Guide for Testing Coating Powders and Powder Coatings》

ASTM D4585 《Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation》

ASTM D5894 《Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metal, (Alternating Exposures in a Fog/Dry Cabinet and a UV/Condensation Cabinet) 》

ASTM D6577 《Standard Guide for Testing Industrial Protective Coatings》

ASTM D6675 《Standard Practice for Salt-Accelerated Outdoor Cosmetic Corrosion Testing of Organic Coatings on Automotive Sheet Steel》

ISO 7253 《Paints and varnishes – Determination of resistance to neutral salt spray (fog) 》

ISO 9227 《Corrosion tests in artificial atmospheres – Salt spray tests》



Operation Windows

Ordering Information	BGD 886	BGD 887	BGD 888
Technical Parameters:			
Temperature Range	RT +20℃ ~ 60℃		
Temperature Stability	≤2℃		
Temperature Uniformity	≤2℃		
Humidity Range	45% ~ 100%		
Humidity Deviation	± 3% RH		
Sedimentation speed of salt fog	0.5 ~ 2ml/80cm ² .h		
Spray Mode	Continuous Spary or Period Spray		
Spray Time	Can set from 1 ~ 9,999 (H,M,S)		
Work Room Dimension (D×W×H)	750 × 1100 × 500	850 × 130 × 600	900 × 2000 × 600
Overall Dimension (D×W×H)	1100 × 1700 × 1250	1150 × 2100 × 1550	1250 × 2800 × 1600
Total Power	4 KW	5 KW	6.5 KW
Power Supply	AC 380V ± 10% 50HZ		
Gloss Weight	175Kg	300Kg	500Kg

High-Low Temperature & Humidity Chamber (Climate Chamber)

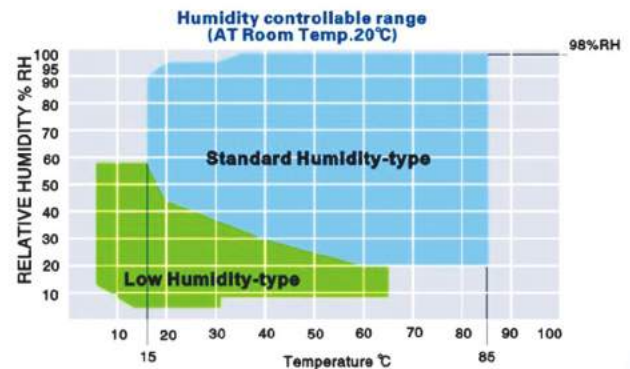
These new programmable cabinet with a precise system of temperature and humidity control, which provide various necessary environmental simulative conditions for industrial researches and biotechnology tests. Widely applied in sterile tests and stability check-up of pharmaceuticals, textile and food processing as well as tests in material performance, packing and lifetime of industrial products.

Features:

- ◆ **Control System:** Use “TIME” touch screen programmable controller imported originally from Korea. The control way of temperature and humidity is definite value operation and formula operation, which can program 120 groups procedures with 100 sections for every group.
- ◆ **Cooling System:** High quality R404/R23 as frozen medium. Air-cooled condenser. Multi-stage finlike evaporator. French “Tecumseh” cooling compressor.
- ◆ **Cabinet body material:** Interior material is polished stainless-steel (SUS 304), outer material is SUS 304 or A3 steel panel with powder coating.
- ◆ **Humidification System:** Shallow groove humidification method is adopted, which is able to control the humidity quickly and stably. Automatic water feeding is adopted for the humidification water, no need supplyment water manually.
- ◆ **Heating System:** With 316# stainless steel chip cooling heater, high density super-thinnes glass fiber wool as heat insulating material.
- ◆ **Air Feeding System:** Single cycle with low noise motor, Stainless steel multi-wing centrifugal wind rotor
- ◆ **Security Sytem:** Independent alarm system for temperature limiting,electric leakage, water shortage,over voltage for compressor esures experiments run safely and no accident would happen.
- ◆ **Others:** With anti-fog osvervation windows and illumination light which is convenient for observing the working room of cabinet. Gland strip of chamber door is made of Silicon rubber which has high and low temperature resistance and a good tightness.

Main Technical Parameters:

- ★ Temperature Uniformity: $\pm 2^{\circ}\text{C}$
- ★ Humidity Uniformity: $\pm 2\% \text{RH}$
- ★ Temperature Stability: $\pm 0.5^{\circ}\text{C}$
- ★ Humidity Stability: $\pm 2\% \text{RH}$
- ★ Temperature Increasing Time: $\geq 2^{\circ}\text{C} \sim 3^{\circ}\text{C} / \text{min}$
- ★ Temperature Decreasing Time: $\geq 0.7^{\circ}\text{C} \sim 1^{\circ}\text{C} / \text{min}$
- ★ Power Supply: 220V/380V; 50HZ
- ★ Total Power: 5.5KW
- ★ Overall Size (100L): 92 × 100 × 145cm (L × W × H)
- ★ Net Weight: 500KG



First Page



Main Display Windows



Set Programme



Working Curve



Ordering Information		Temperature Range	Humidity Range	Interior Size (mm)
High-Low Temperature & Humidity Cabinet	BGD 896/100B	-20 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 896/100C	-40 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 896/100D	-60 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 896/250B	-20 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 896/250C	-40 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 896/250D	-60 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 896/500B	-20 ~ 130 °C	20 ~ 98%	700 × 800 × 900
Programmable High-Low Temperature & Humidity Cabinet	BGD 897/100B	-20 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 897/100C	-40 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 897/100D	-60 ~ 130 °C	20 ~ 98%	400 × 500 × 500
	BGD 897/250B	-20 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 897/250C	-40 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 897/250D	-60 ~ 130 °C	20 ~ 98%	500 × 600 × 810
	BGD 897/500B	-20 ~ 130 °C	20 ~ 98%	700 × 800 × 900

Accelerated Aging Test Chambers

Many polymer materials are often be damage by natural environmental factors which from Earth's surface and atmosphere when used outdoor. This affects their useful life. In order to properly assess their useful life in the outdoors, using the environmental testing equipment to simulation of each kinds of natural climatic conditions , study weather resistance of each kinds of products in the laboratory has become a widely and effective method.

For accelerated aging test, two most universal light sources in the world are Fluorescent UV lamp and Xenon lamp. Fluorescent UV lamp just simulates the UV part of full sunshine, so it's too difficult to get the consistent testing result between exposed sample and practical use sample. But xenon lamp can simulate the spectrum distribution of full spectrum sunshine. So, using the xenon lamps as light source to evaluate the fact lifetime of high polymer materials has higher feasibility.

As the earliest company in China who works on researching and developing accelerated aging test chambers, Biuged has rich experience and unique advantage in research and manufacture these aging chambers. Most of our aging testers are equipped with the same light source as Amercian similar products, thus ensure the test results have the comparability and repeatability. Moreover, considering the experimenters operation habits, we developed our own intellectual property rights controlling system. At the same time, Biuged has a lot of seasoned engineers who can offer strong and timely technical supporting.

According to different fields and different laboratories' requirements, Biuged developed more than ten different types aging chambers which cover from UV light accelerated aging testers to Xenon light accelerated aging testers, from bench type to console mode and cabinet type, from flatbed samples holder to rotating samples holder. For any experimenter, he always can find a suitable aging tester for his own application.

Now, there are more than one thousand Biuged's aging test chambers who are working everyday in all over the world. High efficiency and stable working status, affordable price , precise and accurate test results and professional technical supporting make Biuged products become preferred aging testers in many fields.

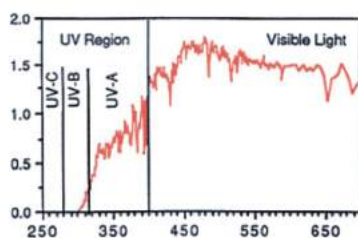
UV Light Accelerated Aging Test Chambers

Test Principle

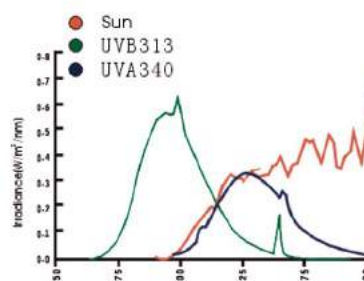
The ultraviolet rays of sunlight are the main factor who damage weathering resistance of most materials. We use UV lamps to simulate the short wave part of sunlight, it produce few visible lights and infrared lights. According to different testing requirements, we choose different wavelength UV lamps, this is because each type UV lamps produce different irradiance energy and wavelength. Generally speaking, UV lamps can be divided into UVA and UVB.

Different types fluorescent UV lamps are used in different fields, for example:

- ① **UVA-340 Lamp:** UVA-340 Lamp can highly simulate short-wave ultraviolet light of sunlight, the wavelength range is from 365 nm to 295 nm.
- ② **UVA 351 Lamp:** Simulates UV sunlight which has passed through the windows. It is excellent for testing materials aging process indoor.
- ③ **UVB 313 Lamp:** UVB-313 lamp emits stronger shortwave ultraviolet light compared with the ultraviolet rays on Earth, thus can accelerate material aging process. However, this lamp may cause some unrealistic material damage. It is mainly used in quality control, research and development, and the test of the materials with strong weather resistance.



Distribution of Sun Spectrum



The Spectrum comparison of UV and Sun

UV Light Accelerated Aging Chamber

BGD 852 Bench UV light Accelerated Aging Chamber is an economic and easy-to-use machine which can meet some customers' requirements. It is equipped with 3 pcs 20W UV lamps as light sources. Operator can set the total illumination time, temperature, spray time etc to simulate the natural environment which would cause the damaged factor to samples.

This chamber can isolate 18 pcs standard panels (Size is 150×70mm). Samples are installed a column form rotating sample rack. During the test, the sample rack rotate uniformly and ensure every sample get the same irradiance energy, increase the comparability and repeatability of testing results.

Features:

- ◆ Touch screen and user-friendly operation interface allow handlers set the test parameters and monitor all the test process easily.
- ◆ Equipped with professional UV lamps who has high irradiance energy: 0.90W/m² (New lamp)
- ◆ Full stainless steel inner working room with sandwich design, never getting rusty and leakage. Also prevent water vapour coming from working room from entering electrical box and damaging electron components.
- ◆ Built-in water level switch, it will alarm and stop running automatically when under low water level.

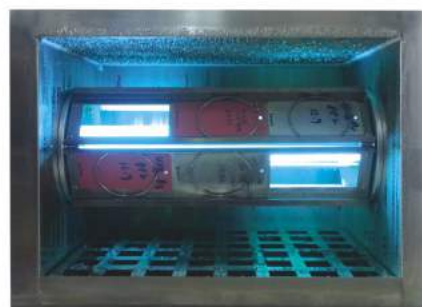


Main Technical Parameters:

- ★ Total power: 1.2 KW
- ★ Power voltage: 220 ± 22V/50 ± 0.5Hz
- ★ Setable temperature range of working room: RT+5°C ~ 60°C
- ★ Setable range of test time: 1h ~ 9,999h
- ★ Setable range of spray time: 1min~9,999min
- ★ Setable range of spray interval time: 1min~9,999min
- ★ Rated life of lamp: 1,600h
- ★ Wave length of lamps: 313 nm (UVA Lamps) or 340 nm (UVB Lamps)
- ★ Lamp power: 3 pcs ; each lamp is 20 W
- ★ Spray water: 2L/min
- ★ Capacity for test panels: 18 pcs standard size panels
- ★ Specification of sample: 150mm × 70mm
- ★ Cabinet Size: 930 × 460 × 630mm (L × D × H) ;
- ★ Net Weight: 72kg

★ Ordering Information:

BGD 852--- Bench UV Light Accelerated Aging Chamber
 BGD 8100--- UVB lamps (20W/313nm)
 BGD 8101--- UVA lamps (20W/340nm)



Working Room



Operation Menu

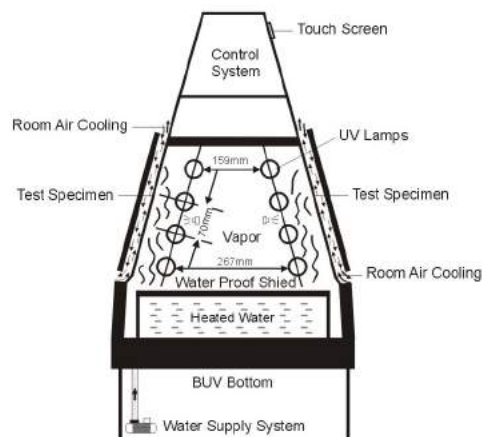
UV Light Accelerated Weathering Tester

BGD 855 & 856 UV Light Accelerated Aging Test Chamber (hereinafter referred as BUUV) adopts fluorescent UV lamp as the light source. Its inner temperature and humidity can be properly controlled to obtain the periodic condensation on the sample for fully evaluating the damaged factor caused by sunlight, moisture and temperature (materials aging phenomenon includes fading, disluster, intensity reduction, cracking, flaking, chalking, and oxidation).

Fluorescent UV light can emulate the effect of sunshine, while condensation and water spray system can emulate the effects of rain and dew. During the test, radiation energy and temperature are controllable. A typical test cycle generally carries out under strong irradiation of UV light or in the dark and wet condensation period with 100% relative humidity. These tests generally applied in the fields of paint and coatings, automotive industry, plastic, wood, glue, etc

Test Methods & Material Standards

- ◆ ISO 11507 《Paints and varnished-Exposure of coatings to artificial weathering- Exposure to fluorescent UV lamps and water》
- ◆ ISO 4892-1 《Plastics-Methods of exposure to laboratory light sources-Part 1: General Guidance》
- ◆ ISO 4892-3 《Methods of exposure to laboratory light sources-Part 3: Fluorescent UV lamps》
- ◆ ASTM D 4587 《Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings》
- ◆ ASTM D 4329 《Standard Practice S for Fluorescent UV Exposure of Plastic》
- ◆ ASTM G-151 《Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that use laboratory light sources》
- ◆ ASTM G-154 《Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Non-Metallic Materials》
- ◆ BS 2782:Part5, 《Method 540B (Methods of Exposure to Lab Light Sources) 》
- ◆ SAE J2020 《Accelerated Exposure of Automotive Exterior Malts Using a Fluorescent UV/Condensation Apparatus》
- ◆ JIS D 0205 《Test Method of Weather-ability for Automotive Parts》



BUUV Test principle

Main Technical Parameters:

- ★ Light Source: UV-A (wave length 340 nm) or UV-B (wave length 313 nm) ; 40W × 8 pcs (The normal use-life is 6,000 hours)
- ★ The range of Irradiance: 0.1 W/m² ~ 1.0 W/m²
- ★ Temperature Range: Black Panel temperature (BPT) : RT+10℃ ~ 80℃
- ★ Interior of cabinet: Stainless steel -SUS 304 material
- ★ Exterior of cabinet: Powder coating on SUS 304
- ★ Insulating Area: 5,175cm²/828in²
- ★ Sample Capacity: 48 pieces of standard specimen (75 × 150mm standard samples) or 15 pieces of 100 × 300mm
- ★ Adjustable range for water supply: 0-4LPM
- ★ Water Consumption: 7L/day (for condensation) ; 4L/minute (for spray)
- ★ Overall Size: 1,360 × 520 × 1,310mm (L × W × H)
- ★ Net weight: 165 kg Total Max. Power: 3KW
- ★ Power: 220VAC ± 10% 50/60Hz; 15A (Max Electric Current)

Feature

◆ Original UVA or UVB lamps from American, ensure the comparability of testing results.

All UV machines use fluorescent UV lamps produced by American as testing light source, comparing with other type lamps (including Xenon Lamps), UV lamps are more stable. Its spectrum power distribution won't change as the lamps weathering, even to 6,000 hours. Thus more repeatable testing results can be achieved easily, and decrease changing lamps times and reduce the running cost.

Furthermore, these lamps from American are produced on the base of more than 40 years' experience and fluorescent technology. It is designed specially and tested with most serious quality control.

◆ With Original Intellectual Property Rights and Initiated in China, our ballast can extend the lamp life to 6,000 hours, save use-cost greatly for users.



Original UV lamps from America



Four sensors monitor UV irradiance

◆ Irradiance can be controlled automatically (with the closed-loop system, the value of irradiance is more precise and steady. Only for BGD 856)

The superiority of BGD 856 UV Light Accelerated Aging Test Chamber is that it can be controlled and adjusted automatically during testing process. As it is well known, the energy in testing process is the main factor in polymer materials aging. In order to ensure reproducibility and comparability of testing results, the UV energy is a very important technical indicator. We adopt the principles which similar with Sun-eye automatically monitor the testing process throughout the energy value, when the lamp energy is less than the expected value, the system can automatically monitor the difference and automatically replenish energy immediately.

◆ Irradiance can be calibrated automatically (Only for BGD 856)

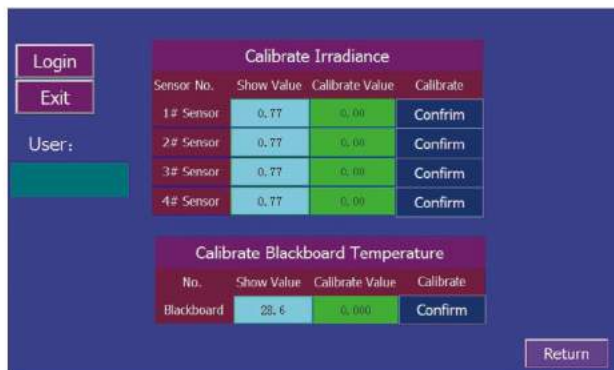
As any other lamps, UV lamps energy of UV also decreases as time increase. The control system would compensate it automatically through strengthening the voltage of lamps. But as the using time become longer and longer, the energy of lamps decrease continuously. For some high set point of irradiance, UV couldn't keep this irradiance any longer, and now the system of UV would reminder failure the error of irradiance is too large and shut off the machine. Now, the operator should calibrate the UV by standard calibration radiometer. If machine still can't get the set point after calibrating, the user should replace the two pcs lamps corresponding to the relative sensor and calibrate again.

UV is calibrated by BGD Calibration Radiometer which is produced by our company. User can use one radiometer to calibrate some UV, radiometer can test fluorescent UV lamps. It is not only used to calibrate the UVA lamps, but also to do UVB lamps. For UVB lamps, it has been calibrated well under the wave length 313 nm with $W/m^2/nm$ unit before delivery. For UVA lamps, it has been calibrated well under the wave length 340 nm with $W/m^2/nm$ unit.

Calibration Radiometer is made up of radiometer and sensor (see picture as below) :



Calibration Radiometer



UV Calibration Windows

The sensor of BGD 8118 calibration radiometer is very sensitive to ultraviolet rays, but don't have any action to visible light, and just have a little response for infrared light even can be ignored. So other rays can't bring any influence for this radiometer.

◆ Water Spray and Condensation function

Water spray

For some applications, the water spray can simulate end-use environmental conditions better. Water spray can effectively simulate heat shock or mechanical erosion caused by dramatic temperature changes or rain. In some practical application conditions, such as a sudden brash in a sunshine day, can bring heat shock because the temperature of the material changes drastically. This heat shock severely tests the properties of many materials. BUW water spray can simulate this heat shock and / or stress corrosion.

BUW spray system design with 12 nozzles, each side has 6 pieces in the test chamber. Spray system can run a few minutes and then shut down. This transitory water spray can cool the samples quickly, creating heat shock conditions.

Condensation

In many outdoor environments, materials are placed in wet condition for over 12 hours each day. Studies have shown that the main factor of this wet condition outdoor is caused by dew, not rain. BUW simulates the outdoor moisture erosion through the unique condensation capabilities. In the condensation cycle during the test, water on the bottom of the chamber is heated to obtain superheated steam filling the test chamber. Hot steam makes the chamber maintain 100% relative humidity, and maintain a relatively high temperature. Sample was fixed on the wall of test chamber. Thus the sample surface is exposed to the ambient air of test chamber. The other side of the sample is exposed to the natural environment which has a cooling effect, bringing internal and external surfaces of the sample with temperature difference, and the temperature difference leads to the test surfaces always have drips caused by condensation process.

◆ Control the temperature automatically with high precision Pt 100 temperature sensor of black board.

In each cycle, the temperature can be controlled at a set value. At the same time, the black panel thermometer can monitor the temperature. Temperature increase can accelerate the aging process, and the temperature control for reproducibility of the test is also very important.

BST (Black panel thermometer) consists of a PT100 sensor and a metal panel painted by black coating, and be exposed to the same condition as test panels. It's used to monitor exposing test panels surface temperature during test. BST can be set any value according to different requirements and also be controlled automatically during the whole test. It also can be calibrated periodically.



BUW Set Test Program Windows



BUW Set Test Parameter Windows

can be set any value according to different requirements and also be controlled automatically during the whole test. It also can be calibrated periodically.

◆ Confirms to many test standards. Operator can set different program freely.

According to different standards or test methods, operator can edit different test programs. For each program, it can be set as 10 segments, and each segment can set different work conditions (four types: Irradiation, water spray, condensation and finish) as well as relevant test parameters.

BUW can permit operator to edit six test programs at most and save it permanently. Generally speaking, if the operator has set and saved one program in the BUW, for next test, if he still use this same program, just choose this program and run BUW directly, no need to set again.

◆ Controlled by touch screen with friendly windows, user can check any parameter during test

BUW all controllings and showings are finished by a high definition colorful touch screen. Menu operation interface is very

convenient for operator to use and maintain BUV. During the working, all parameters are show on the touch screen.

◆ **Real-time collect and store data, all testing data can be converted EXCEL format automatically and be saved.**

There is a USB interface at the BUV back, through this interface, operator can export all running parameters at any period by a U disk. It's convenient for operator to search and do statistics for BUV, and achieve the real unattended running.

Time	Sensor 1#	Sensor 2#	Sensor 3#	Sensor 4#	Blackboard Tem.	Water Tem.
2011-10-09 11:53:06	0	0	0	0	0	0
2011-10-09 11:51:00	0	0	0	0	0	0
2011-10-09 11:50:00	0	0	0	0	0	0
2011-10-09 11:49:00	0	0	0	0	0	0

Count: 0

Start Time: 2011/01/01 12:00:00

Finish Time: 2112/01/01 12:00:00

Export Data Return

BUV Import Data Windows

MOGS_Time	Sensor 1#	Sensor 2#	Sensor 3#	Sensor 4#	Blackboard Tem.	Water Tem.
2011-7-8 12:04	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:05	0.77	0.77	0.77	0.77	59.9	32.4
2011-7-8 12:06	0.77	0.77	0.77	0.77	59.9	32.4

Format of Import Data

◆ **Come with TCP/IP Ethernet interface, the user can tele-control BUV through TCP/IP internet.**

With this interface, operator only need to set reasonable IP address, then can monitor BUV working status at any place. Even operator is not in his laboratory, he still can run and maintain BUV. Moreover, this function is also convenient for Biuged to help our customers to solve all problems and do some necessary after service. Settle completely user's troubles back at home.

◆ **Come with a booster pump, even the user's external water pressure is not enough, BUV still can work normally with this booster pump.**

◆ **Alarm and protection functions: Low water level protection, over-temperature protection switch, leakage protection, heating overload protection, big error for irradiance, lack.**



◆ **Ordering Information:**

BGD 855 :	Basic BUV--- Basic UV Light Accelerated Weathering Tester (No irradiance control)
BGD 856 :	BUV---UV Light Accelerated Weathering Tester
BGD 8110 :	UVB lamps (40w/313nm)
BGD 8111 :	UVA lamps (40W/340nm)
BGD 8118 :	Calibration Radiometer (310nm&340nm)
BGD 8120 :	0°C Standard Resistor
BGD 8121 :	100°C Standard Resistor
BGD 8130 :	Sample Shelf

Xenon Light Accelerated Aging Test Chambers

Test Principle

Artificial weathering of coatings or exposure of coatings to filtered xenon-arc radiation is carried out in order to obtain the degree of change in a selected property after a certain radiant exposure H, and/or the radiant exposure which is required to produce a certain degree of ageing. The properties selected for monitoring should preferably be those which are important for the practical use of the coatings. The properties of the coatings exposed are compared with those of unexposed coating prepared from the same coating materials at the same time and in the same way (control specimens) or with those of coatings exposed at the same time whose behavior during testing in exposure apparatus is already known (reference specimens).

Xenon lamp is full of xenon, and would send out light because of xenon discharge. The energy distribution of spectrum through this way is very close to sunshine, and its color temperature is near 6,000K. Furthermore, xenon lamp has a stable character, its spectrum energy distribution wouldn't change at all within the limited lifetime, this is because its spectrum distribution among continuous spectrum part don't have any relation to input power of lamp. As a special light source, xenon lamp has a good consistency for electric parameters, and it is easy to light, once light on, it can output a steady light energy at once. Furthermore, during working, the electric parameter won't be influenced by any external conditions.

Xenon Lamp light can emulate the effect of sunshine, while water spray system can emulate the effects of rain and dew. During the test, radiation energy and temperature are controllable. A typical test cycle generally carries out under strong irradiation of Xenon light and periodic precipitation. These tests generally applied in the fields of paint and coatings, automotive industry, plastic, wood, glue, etc.

BGD series Xenon Light Accelerated Aging Test Chambers (hereinafter referred as B-SUN) use Xenon lamps as artificial light source, and can modify the full spectrum sun light. Controlling the temperature, humidity. Its inner temperature and humidity can be properly controlled to obtain the periodic precipitation on the sample for fully evaluating the damaged factor caused by sunlight, moisture and temperature (materials aging phenomenon includes fading, disluster, intensity reduction, cracking, flaking, chalking, and oxidation).

Based on sample holder type, B-SUNS are divided into flatbed type and rotating drum type.



Simulated Sun with full spectrum



Simulated Rainfall

Test Standards

ISO 11341 《Paints and varnishes-Artificial weathering and exposure to artificial radiation--Exposure to filtered xenon-arc radiation》

ISO 12040 《Graphic Technology - Prints and Printing Inks - Assessment of Light Fastness Using Filtered Xenon Arc Light

ISO 16474-1 《Paints and varnishes — Methods of exposure to laboratory light sources — Part 1: General guidance》

ISO 16474-2 《Paints and varnishes — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps》

ASTM D3451 《Standard Guide for Testing Coating Powders and Powder Coatings》

ASTM D3794 《Standard Guide for Testing Coil Coatings》

ASTM D4303 《Standard Test Methods for Lightfastness of Pigments Used in Artists' Paints》

ASTM D5010 《Standard Guide for Testing Printing Inks and Related Materials》

ASTM D6577 《Standard Guide for Testing Industrial Protective Coatings》

ASTM D6695 《Standard Practice for Xenon-Arc Exposures of Paint and Related Coatings》

ASTM G151 《Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources》

ASTM G155 《Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials》

ISO 4892-1 《Plastics Methods of Exposure to Laboratory Light Sources Part 1: General guidance》

ISO 4892-2 《Plastics - Methods of Exposure to Laboratory Light Sources - Part 2: Xenon-arc lamps》

SAE J2412 《Accelerated Exposure of Automotive Interior Trim Components Using a Controlled Irradiance Xenon-Arc Apparatus》

All B-SUN Types

Ordering Information→ Parameters ↓	BGD 865 Bench Xenon Chamber	BGD 866 Small Xenon Chamber	BGD 867 Cabinet Xenon Chamber	BGD 862 Big Xenon Chamber
Xenon Lamps	1 piece 1.8KW air-cooled American xenon lamp or 1 piece 1.8KW air-cooled Chinese lamp (Optional)		3 pcs 1.8KW air-cooled American xenon lamps	1 piece 6.5 KW water-cooled American xenon lamp
Filters	Extended UV filters	Daylight Filters	Daylight Filters	Daylight Filters
Sample holder	Flatbed	Flatbed	Flatbed	Rotating drum
Samples Capacity (150×70mm)	9 pieces	9 pieces	27 pieces	65 pieces
Edit Program	No	Yes (6 programs)	Yes (6 programs)	Yes (6 programs)
Spray Function	No	Yes (front of panel)	Yes (front of panel)	Yes (front & back)
Dark Function	No	Yes	Yes	Yes
Control BPT.	Yes	Yes	Yes	Yes
BPT. Range	RT+30℃ ~ 90℃	RT+30℃ ~ 90℃	RT+20℃ ~ 90℃	RT+20℃ ~ 110℃
Control Irradiance	Yes	Yes	Yes	Yes
Irradiance Range (300~400nm)	30 ~ 100W/m ² (Chinese lamp) 50 ~ 120W/m ² (American lamp)		50 ~ 120W/m ²	30 ~ 150W/m ²
Monitoring method to irradiance	1	3	3	3
Monitor cumulative Energy	No	Yes	Yes	Yes
Control work room relative humidity	No	No	Yes	Yes
Export test data	Yes	Yes	Yes	Yes
Alarm Function	Yes	Yes	Yes	Yes
Calibration Function	Yes	Yes	Yes	Yes
Pure water machine	No	Optional	Yes	Optional

B-SUN Filter

Biuged mainly offers three different filters to meet with different testing requirements.

① **Daylight Filters:** used to simulate noon summer direct sunlight, they can offer the best correlation to the natural exposures for most fact applications. Materials which are typically used outdoors like exterior coatings or outdoor rubbers should be tested using Daylight Filters. This test is called as “**Artificial Weathering Test**”

② **Window Glass Filter:** Using 3mm thickness window glass to produce spectra equivalent to sunlight coming through normal window glass. This spectrum can also simulate some indoor lighting such as the harsh lighting found in a typical commercial or office environment. They are used for indoor materials such as printing materials or textiles. This test is called as “**Exposure to artificial radiation Test**”

③ **Extended UV filters:** These filters allow excess UV, below the normal cut-on of natural sunlight, used to simulate sunlight which doesn't come through atmosphere .They are used to produce faster or more severe test results. This test is called as “**Artificial Accelerated Weathering Test**”

Monitoring Method to Irradiance

In the system of xenon test , measuring and controlling irradiance is very important. The spectrum range of xenon lamp is from 295nm to 3,000nm. In the newest standards (such as ISO 11341-2004, ASTM G 155-05, ISO 4892-2: 2003 etc) , irradiance is recommended to be measured and controlled by point (narrow band) or broad band.

Narrow band: 340 nm or 420 nm

Broad band: 300-400 nm

Choosing narrow band or broad band depends on different simulated environment or different material.

340 nm narrow band: for outdoor and evaluate physical performance of material

420nm narrow band: for indoor and evaluate fading of material

300nm-400nm (TUV) : for small special standards.

① Bench Xenon Test Chamber

BGD 865 is a small, simple and economic xenon test chamber. It uses a low power air-cooling xenon lamp to produce enough big irradiance energy in a small space. Moreover, through a special catoptrical system to ensure every exposure sample get the homogeneous irradiance distribution.

BGD 865 is equipped with extended UV filters, thus permit UV which is below the normal cut-on of natural sunlight to pass (equal to simulate sunlight which doesn't come through atmosphere). They are used to produce faster or more severe test results. This test is called as **"Artificial Accelerated Weathering Test"**.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

Characters

- ◆ Small Size, easy to install, use and practically maintenance-free.
- ◆ The xenon light source correspond with international standards; ensure reproducibility and comparability of testing results.
- ◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate the change of light intensity caused by ageing or other factors.
- ◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.
- ◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process
- ◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection when opening door.
- ◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the test process easily.
- ◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray
- ◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into a USB drive, achieving unattended operation.

Main Technical Parameters:

- ★ Xenon Lamp: one 1.8KW xenon lamp (imported from America or Chinese lamp)
- ★ Filter: Extended UV filter (Also can choose daylight filter or window glass filter)
- ★ Irradiance monitor methods: 340nm or 420nm (Narrow band) or 300nm ~ 400nm (Broad band) (Choose anyone before ordering)
- ★ Lamp Lifetime: Near 1,500 hours
- ★ Exposure Area: 1,000 cm² (can put 9 standard samples 150 × 70mm)
- ★ Adjustable Irradiance Range:
Chinese lamp: 30 ~ 100 W/m² (300~400nm) or 0.3~0.8 W/m² (@340nm) or 0.5 ~ 1.5 W/m² (@420nm)
American lamp: 50 ~ 120 W/m² (300~400nm) or 0.3~1.0 W/m² (@340nm) or 0.5 ~ 1.8 W/m² (@420nm)
- ★ Adjustable Black Board Temperature Range: RT+30°C ~ 90°C (Depends on environment temperature and setting irradiance value)
- ★ Interior Material of Chamber: Stainless steel –SUS 304 material
- ★ Exterior Material of Chamber: Powder coating
- ★ Overall Size: 950 × 570 × 535mm
- ★ Net Weight: 93KG (130KG Gross weight)
- ★ Power Supply: 220V 50/60HZ;
 Max Current 13A Max. Current 16A; Max.Power 2.6 KW

★ Ordering Information:

- BGD 865---Bench Xenon Test Chamber (Equipped with Chinese lamp)
- BGD 865/A---Bench Xenon Test Chamber (Equipped with American lamp)
- BGD 8155---Xenon Lamps (1.8 KW)
- BGD 8156---American Xenon Lamps (1.8 KW)
- X-1800---American Xenon Lamps (1.8 KW)
- BGD 8140---Xenon Calibration Radiometer (340nm)
- BGD 8141---Xenon Calibration Radiometer (420nm)
- BGD 8142---Xenon Calibration Radiometer (300nm ~ 400nm)



BGD 865 A Bench Xenon Test Chamber			
	Set Value	Actual Value	Lamp Time
> Calibrate	Irradiance 0.51 W/m ² (nm)	0.51 W/m ² (nm)	45.0 h
> Storage	BPT Tem. 65.0 °C	64.80 °C	Door Locked
> Event	Test time 1000.0 h	45.0 h	Door Test Time
<div>Run</div> <div>Stop</div>			

Operation Menu

② Small Xenon Test Chamber

Compared with BGD 865, BGD 866 adds spray function. Spray function is used to simulate rain and humidity when the material is used at outdoor. Furthermore, operator can set the cumulative energy (Total irradiance energy) obtained by sample to stop a test procedure.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

Characters

◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time. Every procedure includes up to 10 segments setting data.

◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.

◆ With spray function, can set spray time and spray interval time.

◆ The xenon light source correspond with international standards; ensure reproducibility and comparability of testing results.

◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate the change of light intensity caused by ageing or other factors.

◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.

◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process

◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection when opening door.

◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the test process easily.

◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray

◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into a USB drive, achieving unattended operation.

Main Technical Parameters:

- ★ Xenon Lamp: one 1.8KW xenon lamp (imported from America or Chinese lamp)
- ★ Fliter: Daylight filter (Also can choose extended UV filter or window glass filter)
- ★ Lamp Lifetime: Near 1,500 hours
- ★ Exposure Area: 1,000 cm² (can put 9 standard samples 150 × 70mm)
- ★ Adjustable Irradiance Range:
Chinese lamp: 30 ~ 100 W/m² (300~400nm) or 0.3~0.8 W/m² (@340nm) or 0.5 ~ 1.5 W/m² (@420nm)
American lamp: 50 ~ 120 W/m² (300~400nm) or 0.3~1.0 W/m² (@340nm) or 0.5 ~ 1.8 W/m² (@420nm)
- ★ Adjustable Black Board Temperature Range: RT+30°C ~ 90°C
(Depends on environment temperature and setting irradiance value)
- ★ Interior Material of Chamber: Stainless steel -SUS 304 material
- ★ Exterior Material of Chamber: Powder coating
- ★ Overall Size: 925 × 600 × 1050mm
- ★ Weight: 140 KG (180KG Gross weight)
- ★ Power Supply: 220V 50/60HZ; Max. Current 16A; Max.Power 2.6 KW
- ★ **Ordering Information:**
BGD 866---Samll Xenon Test Chamber (Equipped with Chinese lamp)
BGD 866/A---Samll Xenon Test Chamber (Equipped with American lamp)
BGD 8155---Xenon Lamps (1.8 Kw)
BGD 8156---American Xenon Lamps (1.8 KW)
X-1800--- American Xenon Lamps (1.8 KW)
BGD 8140---Xenon Calibration Radiometer (340nm)
BGD 8141---Xenon Calibration Radiometer (420nm)
BGD 8142---Xenon Calibration Radiometer (300nm ~ 400nm)
BGD 8170---Pure Water Machine (50L/h)



③ Cabinet Xenon Test Chamber

BGD 867 is a standard xenon chamber who has many functions. It is equipped with three xenon lamps imported from Amercia and daylight filter, can meet with all standards' requirements.

BGD 867 is equipped with a pure water machine and slove completely the water requirements from B-SUN. Furthermore, it can hold 27 pieces samples, not only has spray function ,but also can control the relative humidity of working room.

Operator can set all required test parameters (Irradiance, test time, BPT etc) through the touch screen, and can check its running status at any time. All running parameters can be exported to computer through the USB interface.

Characters

- ◆ Three xenon lamps imported from America can offer higer irradiance energy, meet with all test standards' requirements.
- ◆ Can set and control automatically the relative humidity of working room.
- ◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time.

Every procedure includes up to 10 segments setting data.

- ◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.
- ◆ With spray function, can set spray time and spray interval time.
- ◆ Irradiance energy can be accurately controlled. The "Sun Eye" control system can automatically compensate

the change of light intensity caused by ageing or other factors.

- ◆ Users can easily calibrate and adjust the irradiance or the blackboard temperature by themselves.
- ◆ With High precision Pt100 Temperature sensor. Blackboard temperature is auto-controlled during the whole process
- ◆ Alarm function for protection: Over temperature, over heating load, big error for irradiance, auto shut-down protection

when opening door.

- ◆ Touch screen and user-friendly operation interface allow operator to set the test parameters and monitor all the test process easily.

- ◆ Specimen mounting and evaluation is fast and easy With unique slide-out specimen tray

- ◆ Real-time data can be collected and recorded. The incidental USB connector allow users to copy the test data into a USB drive, achieving unattended operation.

Main Technical Parameters:

★ Xenon Lamp: Three 1.8KW xenon lamps (imported from America or Chinese lamp)
★ Fliter: Daylight filter (Also can choose extended UV filter or window glass filter)
★ Lamp Lifetime: Near 1,500 hours
★ Exposure Area: 2,800 cm ² (can put 27 standard samples 150 × 70mm)
★ Adjustable Irradiance Range:
0.3 ~ 1.0 W/m ² (Single point of control: 340nm)
0.5 ~ 1.8 W/m ² (Single point of control: 420nm)
30 W/m ² ~ 120 W/m ² (Full spectrum : from 300 ~ 400nm)
★ Controlling irradiance point: 340nm or 420nm or 300nm ~ 400nm (show at the same time)
★ Adjustable Black Board Temperature Range: RT+20°C ~ 90°C
★ Adjustable relative humidity of working room: 30% ~ 75% (Light) ; 50% ~ 95% (Dark) ;
★ Interior Material of Chamber: Stainless steel –SUS 304 material
★ Exterior Material of Chamber: Powder coating
★ Overall Size: 940 × 940 × 1850mm
★ Weight: 300KG
★ Power Supply: AC: 380V 50/60HZ, Max. Current 12 A (Also can choose single phase 220V, Max. Current 36 A)
★ Ordering Information:
BGD 867---Cabinet Xenon Test Chamber
BGD 8156---Ammerican Xenon Lamps (1.8 KW)
BGD 8140---Xenon Calibration Radiometer (340nm)
BGD 8141---Xenon Calibration Radiometer (420nm)
BGD 8142---Xenon Calibration Radiometer (300nm ~ 400nm)
BGD 8170---Pure Water Machine (50L/h)

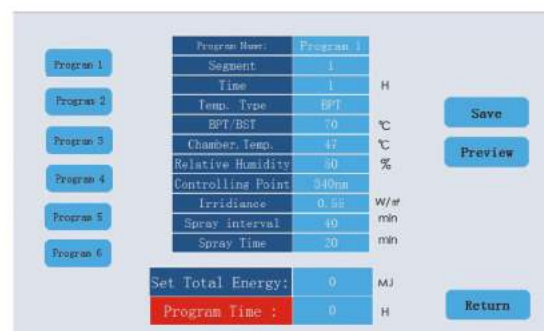




BGD 8170 Purity Water Machine



Operation Menu



Set Program

④ Big Xenon Chamber

BGD 862 is a multi-function big xenon light accelerated weathering testers which is equipped with one piece high power (6.5KW) water-cooling xenon lamp, its exposure area arrive 6,500cm²

Powerful functions and reliable test results

- ◆ Meet with all international standards of xenon test.
- ◆ Equipped with ATLAS xenon arc lamp , filter and components, ensure to get high and same running parameters. Test results have a good reliability and repeatability comparing with import machines.
- ◆ Automatic rotating drum-type sample rack with three floors structure maximizes exposure uniformity over all specimens
- ◆ 6,500cm exposure area , can hold different shapes and sizes samples.
- ◆ Can set the cumulative energy (total irradiance energy) obtained by sample to finish a test procedure.
- ◆ Chinese or English operation window

Can set and control automatically many test parameters

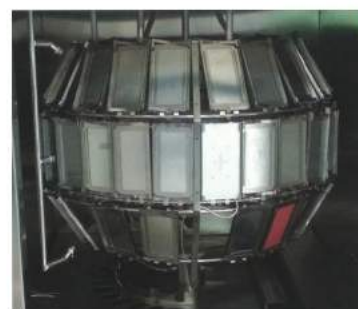
- ◆ Irradiance energy can be set and accurately controlled (340nm or 420nm or 300nm~400nm) . The "Solar Eye" control system can monitor and automatically compensate the change of light intensity caused by ageing or other factors.
- ◆ Working room temperature, BPT (black panel temperature) and BST (black standard temperature) can be set and controlled automatically. With high precision Pt 100 temperature sensor, all these temperatures could be monitored accurately.
- ◆ Working room relative humidity can be set and controlled automatically. With ultrasonic wave humidifying system, the working room can obtain more stable and uniform humidity distribution.
- ◆ Can set spray way to sample (front spray or back spray) , spray time and spray interval time.

Simple, easy to use

- ◆ Colorful touch screen and user-friendly operation interface allow operator to set the test parameters and monitor it easily.
- ◆ The test procedures can be programmed freely; and up to 16 predetermined procedures can be saved in one time. Every procedure includes up to 10 segments setting data.
- ◆ With USB interface, operator can export any test parameters with Excel format at any time, convenient to check B-SUN's running status at any time.
- ◆ Pure (deionized) water machine is optional. With high purity water, operator can get a more reliable testing result. Chamber has alarm function for monitoring water.

Safe and reliable

- ◆ Many alarm protections: Big irradiance difference, water conductivity is over limits, too high temperature of cooling water, too low flow rate of cooling water, over-temperature, heating problem. B-SUN will stop running automatically and show the alarm information in the operation window.
- ◆ Can select TCP/IP Ethernet interface, the user can tele-control the machine through TCP/IP internet. Convenient to help customers to solve all problems and do some necessary after service.



Working room



Touch-screen

Main Technical Parameters

Ordering Information → Technical Item ↓	BGD 862 Xenon Tester Chamber	
Xenon Lamp	6.5 KW water cooling long arc xenon lamp	
Light Filter	Import originally from ATLAS, can simulate indoor or outdoor sunshine spectrum	
Exposure Area	6,500 cm ²	
Wave Length of Xenon Spectrum	Can select 300–800nm (simulate sunshine, filtrate all wavelength under 300nm) or 280–800nm (Add UV wave, keep some short–wave of UV)	
Adjustable Irradiance	0.35 ~ 1.5 W/ m ² (Single point of control: 340nm) 0.5 ~ 2.7 W/ m ² (Single point of control: 420nm) 30 W/m ² ~ 150 W/ m ² (Full spectrum : from 300 ~ 400nm)	
Lifetime of lamps	2,000 hours	
Adjustable BPT	RT+20℃~110℃	
Temperature stability	± 1℃	
Temperature uniformity	≤ 2℃	
Temperature Declination	≤ ± 1℃	
Adjustable Humidity	Light: 10%–85% Dark: 10%–95%	
Rotate speed of sample	1 ~ 7r/min (circle as lamp centre)	
Spray Function	Can set spray continuous time and spray period	
Water demands	High purity deionized water (Conductivity<2us/cm)	
Flow of Deionized Water	Adding humidity: 0.2L/min; Spray: 0.2L/min	
Overall Size	1,200×1,200×2,000mm (L×W×H)	
Net Weight	850 KG	
Machine producing deionized water	Size: 620×650×1600mm (L×W×H) Weight: 120KG	
Structure		
Cabinet Material	Whole chamber is made up of good quality stainless steel (SUS304)	
Chamber Door	Simple door to left with filter window; silicon rubber seal the door edge	
Sample Crack	Stainless steel material, its position in the chamber can be adjusted (up, middle or down) , Sample crack rotate around the centre of lamp	
Controller	Siemens programmable controller, LCD touch–screen	
Way of adding humidity	Add humidity by ultrasonic humidifier	
Black panel thermometer	Heat insulate type black standard thermometer	
Cooling System	Cooled by compressor and forced–air blast system	
Security Protections And Error Protections		
Xenon Lamp Protect	Protection to cooling water for xenon lamp shortage. Protection to big electric current to xenon lamp Protection to big irradiance deviation for a long time	
Water Shortage Protection	Water shortage, cooling water to lamp shortage, low flow rate of cooling water, water shortage when heating	
Power Source Protection	Over–power, over–electric current, shortage phase and wrong phase sequence	
Working Room Temperature Protect	Individual over–temperature protection of working room temperature. Over–temperature protection for BPT and BST	
Pure System Protect	Monitor the conductivity of pure water at real–time (Once the conductivity≥2us/cm, the machine will stop and alarm)	
Protection to Radiation	Xenon lamp will turn off automatically when opening the chamber door, in case xenon lamp radiate operator	
Installing Environment Requirements		
Power Source	380V±10% 3–phases 4 lines or 220V±10% 2–phase;50 or 60Hz;Max.electric current≥40A Max.power is 8KW	
Air Outlet	There should be air outlet in the indoor for convenient to connect vent pipe	
Standard Accessories		
Xenon---1 pc (Can select Atlas or other Chinese brand) Xenon Lamp Filter---1 set (Can select Atlas or other Chinese brand) Human–computre Interface---1 pc (Touch Screen) Black Panel Temperatrue Holders---2 pcs (include 2 PT 100)		Sensor---2 pcs (OSRAN) Simens Control System---1 set Specimen Holders---65 pcs Irradiance Calibration Holder---1 pc
Optional Accessories		
BGD 8171---Purity Water System (50L/min) BGD 8141---Radiometer (420nm) ;		BGD 8140---Radiometer (340nm) ; BGD 8142---Radiometer (300 ~ 400nm) ;

Others

Surface Roughness Tester

Surface Roughness Tester is widely used in production site to measure surface roughness of various machinery-processed parts, calculate corresponding and clearly display all measurement parameters.

Specifications		Ordering Information	
		BGD 930	BGD 931
Standard		ISO4287,DIN4768,JIS B,ANSI 146.1	
Measuring range	Ra	0.005 ~ 16 μ m/1.000 ~ 629.9 μ inch	0.050 ~ 10 μ m/1.000 ~ 400.0 μ inch
	Rq	0.005 ~ 16 μ m/1.000 ~ 629.9 μ inch	-----
	Rz	0.020 ~ 160 μ m/0.780 ~ 629.9 μ inch	0.020 ~ 160 μ m/0.780 ~ 629.9 μ inch
	Rt	0.020 ~ 160 μ m/0.780 ~ 4000 μ inch	-----
Accuracy		$\leq \pm 10\%$	
Resolution		0.001 μ m (reading < 10 μ m)	
		0.01 μ m (10 μ m \leq reading < 100 μ m)	
		0.1 μ m (reading \geq 100 μ m)	
Fluctuation of display value		$\leq 6\%$	
Profile digital filter	Filtered profile	RC,PC-RC,GAUSS	-----
	Non- filtered profile	D-P	-----
Sensor	Radius	5 μ m	10 μ m
	Material	Diamond	Diamond
	Measuring force	4mN (0.4gf)	16mN (1.6gf)
	Probe angle	90 $^{\circ}$	90 $^{\circ}$
	Vertical radius of guiding head	48mm	48mm
	Maximum driving stroke	17.5mm/0.75inch	
	Cutoff length	0.25mm,0.8mm,2.5mm	
Driving speed	Measuring	Sampling length = 0.25mm When Vt=0.135mm/s	
		Sampling length = 0.8mm When Vt=0.5mm/s	
		Sampling length = 2.5mm When Vt=1mm/s	
	Returning	Vt=1mm/s	
Evaluation length		1 ~ 5L selectable	
Metric/Imperial		Conversion	
Auto off		$\sqrt{\quad}$	
Memory		7 Groups	-----
Pc interface		RS-232C	-----
Built in Li-ion battery		Rechargeable	
Operating condition	TEMP	0 ~ 50 $^{\circ}$ C	
	Humidity	< 85%RH	
Dimension		140 \times 52 \times 48mm (5.5 \times 2.2 \times 1.9inch)	
Net weight		420g	



BGD 930



BGD 931

Optional accessories:

- BGD 1290---RS-232 or USB cable
- BGD 1291---Software
- BGD 1292---Sensor for deep groove
- BGD 1293---Sensor for curve surface
- BGD 1294---Measuring stand

Temperature Tracker

BTemperature Tracker is a user-friendly device. It takes just a few minutes to learn how the entire system works. It's excellent suited for industrial oven and laboratory oven temperature profiling. Mandatory test in Qualicoat, QIB and GSB accredited laboratories.

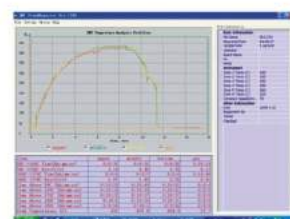
Temperature Tracker is mainly made up of Oven datalogger, analysis software and insulation box.

Oven datalogger: Oven datalogger is the heart of temperature tracker. It designed to measurement temperature and store them for a specified amount of time. This instrument measures continuously but only stores readings at certain intervals defined by the operator. The maximum recording period depends on the number of sensors being used and the specified recording interval.

It offers easy-to-use, high quality temperature logging for industrial paint and powdercoat cure ovens. The oven data tracker is fitted with a large display for easy menu-driven operation and quick display of measurement results.

Analysis software: allows user to analyse the logged temperature data and create detailed reports. Advanced oven profiling features like cure data analysis, ideal cure and tolerance bands, together with a wide range of display, report and printing options, make Oven Logger the most flexible temperature logging solution available.

Insulation Box: A high quality insulation box with outer shield of high-grade stainless steel. The anodized aluminum inner box is shielded with a carefully formulated mixture of insulation material, which makes the combination suitable to resist high temperatures for long time. This insulation box is absolutely silicone free, and therefore very suitable for applications in automotive and wet paint coatings.



Soft-ware

Ordering Information → Technical Item ↓	One-Channel	Four-Channel		Seven-Channel	
	BGD 951	BGD 954/1	BGD954/2	BGD 957/1	BGD 957/2
Number of Channels	1	4	4	7	7
Temperature range	-100℃ ~ 300℃	-100℃ ~ 300℃	-100℃ ~ 500℃	-100℃ ~ 300℃	-100℃ ~ 500℃
Duration	45min for 200 ℃ 60min for 150℃	60min for 300℃ 120min for 150℃	60min for 500℃ 120min for 300℃	60 min for 300℃ 120 min for 200℃	60min for 500℃ 120 min for 300℃
Division	0.1℃	0.1℃		0.3℃	0.5℃
Accuracy	0.5%	0.5%		0.5%	
Storage	Can store 32,000 readings. Record per seconds for 5 hours	Every channel can store 16,000 readings. Record per seconds for 5 hours		Record per seconds for 4 hours	Record per seconds for 3 hours
Sampling period	1s, 10s	1s, 2s, 3s, 4s, 5s, 6s, 10s, 20s, 30s, 1min programmalbe		1s, 2s, 3s, 5s, 8s,10s,12s, 20s,40s, 60s programmable	
Setting Software	① Can select sampling period ② Print the Tem.Curve with Computer ③ Check the data with EXCEL	① Can select sampling period ② Show the real-time Tem.curve ③ Can save many groups datas		① Select or unselect channel with yes or no ② Verify the accuracy separately for each channel ③ Easy to choose sample rate ④ Switch ON/OFF	
Analysis software	No	① Display Tem. datas; ② Calculate heating rate between tow Tem.leverl ③ Calculate total time above two different Tem ④ Calculate peak Tem. ⑤ Compare different Tem. profile; ⑥ Print Report			
Standard Disposition	◆ Oven datalogger ◆ 2 pcs Thermocouple (0.5m, 1.5m) ◆ USB cable ◆ Setting software ◆ Manual	◆ Oven datalogger ◆ 4 pcs temperature sensors ◆ USB cable ◆ Setting software and Analysis software ◆ Insulation box ◆ Manual		◆ Oven datalogger ◆ 7 pcs temperature sensors ◆ USB cable ◆ Setting software and Analysis software ◆ Insulation box ◆ Manual	
Size (mm)	φ 63 × 160	110 × 125 × 300	135 × 155 × 300	100 × 120 × 280	130 × 160 × 300

Professional Thermocouple Thermometer

BGD 948 is a professional contact-type precise thermometer with white backlight LCD, it has two channels K-type thermocouple to measure temperature. It's widely used in many fields needed to measure temperature.

Features:

- ◆ Use K-type thermocouple to test temperature, resolution can arrive 0.1°C
- ◆ With temperature compensation, ensure accuracy when measuring temperature.
- ◆ Reading value can be converted °C/°F
- ◆ Auto. Power-off
- ◆ Hold max. value and hold test results.
- ◆ Can change thermocouple

Main Technical Parameters:

- ★ Temperature Range: -50~1300°C
- ★ Accuracy: $\pm 1^{\circ}\text{C} \sim \pm 1.5^{\circ}\text{C}$
- ★ Resolution: 0.1°C
- ★ Error: $\pm 0.5\% \pm 1^{\circ}\text{C}$
- ★ Power Supply: 9V battery (work for 48 hours)
- ★ Size/Weight: 165 × 76 × 43 mm/403g
- ★ Accessories: 9V battery, Holster with stand, Type K temperature probe and gift box with carrying case.
- ★ **Ordering Information:**
BGD 948--- Professional Thermocouple Thermometer



Infrared Thermometer

These series Infrared Thermometers provide much faster and accurate readings for most surface temperature measurements. One or two laser points converge to a single spot when the unit is at the optimal distance from the object being measured.

- ◆ Non-contact measurement with laser pointer.
- ◆ Unique flat surface, mini modern housing design
- ◆ Backlighting illuminates display for taking measurements at night or in areas with low background light levels
- ◆ Low battery indication and overrange indication
- ◆ Auto data hold when trigger released and auto Power Off
- ◆ User selectable °C or °F

Ordering Information → Technical Item ↓	BGD 950/1	BGD 950/2	BGD 950/3
Range	-50~380°C	-50~700°C	-50~1000°C
Distance to Spot Size (D:S)	12:1	10:1	30:1
Emissivity	0.95	0.95	0.1~1.0step step (adjustable, step 0.01)
Accuracy	$\pm 1.5\%$		$\pm 1.0\%$
Response Time	<1second		<150 millisecond
Resolution	0.1°C		0.1°C
Laser Type	Single Laser		Dual Laser
Size	160 × 82 × 42 mm		146 × 104 × 43 mm
Weight	177g		163g



Digital Thermometer and Hygrometer

- ◆ Simultaneously displays temperature, humidity and time together with the function of indicating human bodycomfort
- ◆ Function of alarm setting
- ◆ Range: Indoor temperature: $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ ($-22^{\circ}\text{F} \sim +122^{\circ}\text{F}$) ; Outdoor temperature: $-50^{\circ}\text{C} \sim 70^{\circ}\text{C}$ ($-58^{\circ}\text{F} \sim +158^{\circ}\text{F}$) ; Humidity: 20%~99%
- ◆ Resolution: Temperature: 0.1°C ; Humidity: 1%
- ◆ Power: one 7# Alkaline battery
- ◆ Size: BGD 945--- $111 \times 101 \times 21.5$ (mm)
BGD 946--- $115 \times 64 \times 19$ (mm)
- ◆ Screen Size: BGD 945--- 81.5×64.5 (mm)
BGD 946--- 63×43 (mm)
- ◆ **Ordering Information:**
BGD 945---Digital Thermometer and Hygrometer (Big Screen)
BGD 946---Digital Thermometer and Hygrometer (Normal Type)



BGD 945



BGD 946

Temperature & Humidity Meter

This is a professional three-in-one temperature&humidity meter. Use temperature sensing resistor to measure temperature, use precise capacitive sensor to measure humidity. It can used to measure air relative temperature, air humidity, wet bulb temperature and absolute humidity

Features:

- ◆ Fast response time
- ◆ High accuracy and high performance
- ◆ Max. hold and data hold function
- ◆ Dual display & backlight
- ◆ Dew point & wet bulb temperature

Main Technical Parameters:

- ★ Air Temperature: $-30 \sim 100^{\circ}\text{C}$ (Accuracy: $\pm 1^{\circ}\text{C} \sim \pm 1.5^{\circ}\text{C}$)
- ★ Relative Humidity: 0~100%RH (Accuracy: $\pm 2\% \text{RH} \sim \pm 4\% \text{RH}$)
- ★ Dew Point Temperature: $-30 \sim 100^{\circ}\text{C}$ (Calculated by measuring relative humidity and air temperature)
- ★ Wet Bulb Temperature: $0 \sim 80^{\circ}\text{C}$ (Calculated by measuring relative humidity and air temperature)
- ★ Absolute Humidity: 0~500g/mm³, 0~218.5gr/ft³ (Calculated by measuring relative humidity and air temperature)
- ★ Response Time: < 15 seconds
- ★ Power Supply: 9V battery (work for 48 hours)
- ★ Size/Weight: 300 x 75 x 50 mm/400g
- ★ **Ordering Information:**
BGD 943---Professional Temperature& Humidity Meter



Multifunctional Digital Moisture Meter

Biuged Instruments offers a series of moisture tester, they are applicable of wooden articles, building materials, wood fiber material, Chinese traditional medicine, tobacco, cotton paper, building, soil and other fiber materials.

Ordering Information → Technical Item ↓		BGD 922		
Model with suffix		P	S	PS
Sensing type		Pin type	Search type	Pin & Search type
Wood over 150 species		✓	✓	✓
Building moisture (Range)		0–50% (Concrete)		
Measuring range	Moisture	0–80%		
	TEMP	-----		
Calibration		Automatic		
Resolution		0.1		
Display		LCD display		
Accuracy	Moisture	± (0.5n+1)		
	TEMP	-----		
Power supply		4 × 1.5V AAA (UM–4) battery		
Battery indicator		Low battery indicator		
Dimension		165x62x26mm		
Weight (No battery)		119g	114g	175g



BGD 922/PS



BGD 922/P

Spatulas for Paint and Ink Applications

The spatulas are widely used in the Paint and Ink Applications. The different sizes of the spatulas allow the user to select the correct size of the spatulas for the applications.

They are made up of stainless steel with high tenacity. With tail knife can prize up coating container easily.

Ording Information	Products	Overall Length (mm)	Spatula Length (mm)	Max. Spatula Width (mm)	Wooden Handle Length (mm)
BGD 1201	Rhombic Spatulas	194	114	19	80
BGD 1202	Rhombic Spatulas	270	155	26	105
BGD 1203	3.5 " Vertical Spatulas	190	90	15	100
BGD 1204	4 " Vertical Spatulas	205	105	20	100
BGD 1205	5 " Vertical Spatulas	235	125	25	110
BGD 1206	6 " Vertical Spatulas	265	145	30	120
BGD 1207	7 " Vertical Spatulas	290	170	30	120
BGD 1208	8 " Vertical Spatulas	320	200	33	120
BGD 1209	9 " Vertical Spatulas	350	230	33	120
BGD 1210	10 " Vertical Spatulas	370	250	34	120

Ording Information	Products	Overall Length (mm)	Spatula Length (mm)	Max. Spatula Width (mm)	Wooden Handle Length (mm)
BGD 1212	12 " Vertical Spatulas	415	295	35	120
BGD 1214	14 " Vertical Spatulas	485	365	36	125
BGD 1216	16 " Vertical Spatulas	513	385	75	115
BGD 1230	3 " Flat hacking Knives	175	80	32	95
BGD 1231	6.7 " Flat hacking Knives	325	175	88	125
BGD 1232	6.5 " Flat hacking Knives	300	165	75	125
BGD 1233	6 " Flat hacking Knives	285	158	63	115
BGD 1234	5.5 " Flat hacking Knives	255	135	45	105
BGD 1235	4.5 " Flat hacking Knives	240	135	45	120
BGD 1236	Ink Knife	90	90	70	0
BGD 1250	Knife-Shaped	240	120	22	110
BGD 1251	Shovel-Shaped	250	155	45/24	95
BGD 1252	Four Colors Plastic Spatulas (S)	295	150	5	145
BGD 1253	Four Colors Plastic Spatulas (M)	295	150	60	145
BGD 1254	Four Colors Plastic Spatulas (L)	270	115	70	155
BGD 1255	White Plastic Spatulas (S)	290	185	45	105
BGD 1256	White Plastic Spatulas (M)	290	185	60	105
BGD 1257	White Plastic Spatulas (L)	290	185	76	105



BGD 1252



BGD 1253



BGD 1254



BGD 1255 BGD 1256 BGD 1257



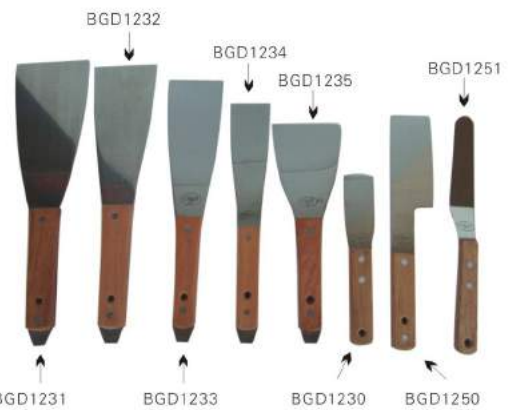
16" 14" 12" 10"



9" 8" 7" 6" 5" 4" 3.5"



BGD1202 BGD1201



BGD1231 BGD1232 BGD1233 BGD1234 BGD1235 BGD1230 BGD1250 BGD1251

Sealing Clamper

Sealing Clamper is designed with international standard barrel and used to seal the coating barrels quickly. It can be used easily and widely!

Main Technical Parameters:

- ★ Diameter of barrelhead: 300mm (18L-20L)
- ★ Thickness of barrelhead: 0.40.5mm
- ★ The max power of clampers: 800N
- ★ Power of handle working: $\leq 680 \pm 50N$
- ★ Size: 858 × 355mm
- ★ Weight: 11 ± 1KG
- ★ **Ordering Information:** BGD 910---sealing clamper(20L)



Digital Calipers/Micrometer

Digital Caliper with high accuracy and high LCD display for easy to read, available in carbon steel & stainless steel material ;

- ◆ Zero setting at any position;
- ◆ Metric/inch interchangeable system;
- ◆ Power on/off at any position, invariable measuring origin (ZERO) ;
- ◆ Display window uses special quartz glass, high scratch-resistance ;



BGD 962



BGD 960

Main Technical Parameters:

Ordering Information → Technical Item ↓	BGD 960	BGD 961	BGD 962
Range	0-150mm (6 inch)	0-500mm (20 inch)	0-25mm
Graduation	0.01mm (0.0005 inch)		0.001
Value Stability	0.01mm (0.0005 inch)		0.001
Max moving speed	1m/s		---
Power Supply	1.5 V SRW		1.5 V SRW

Duck Billed Valve

Duck Billed Valve is mainly applicable to control discharge of discharge orifice of various vessel. It has features, such as rapidity, facility, good sealing.

★ Ordering Information:

- BGD 986/1---1 inch Duck Billed Valve
- BGD 986/2---1.5 inch Duck Billed Valve
- BGD 986/3---2 inch Duck Billed Valve



Biuged Brand Test Substrates

If coatings tests are to be reliable and reproducible, they must be performed on a substrate which is reasonably consistent from test to test. Unfortunately, ordinary commercial sheet steel displays wide variations in the surface properties which affect the bonding of coatings.

The Standard Test Substrate

Biuged brand test substrates provide a uniform and consistent surface for testing paints, coatings and adhesives. Panels are available in a variety of substrates, surface finishes, sizes and shapes. They are used to minimize metal variability as a source of bias in critical tests and they are economical enough to be used for sales samples and batch records.

Panel Options. Panels are available in steel and aluminum, bare and pretreated. Most panels are flat and rectangular, but we do have special shapes such as automotive styling panels which mimic the side of an automobile. In addition, custom panels can be manufactured to specification.

Consistent & Convenient. The Biuged production process is specifically tailored to minimize variability of metallic surfaces. We buy all of our substrates direct from selected mills which control surface texture to our specifications. Our inventory of over a million panels means that 95% of our orders are shipped from stock.

Economical. Due to high volume production, our panels cost less than one might expect. Equally important, the convenience of pre-cleaned, safe, standardized panels reduces the expensive time lab personnel could spend cleaning and handling panels.

Description	Ordering Information	Size (mm)	Minimum Packing	Pretreat
Steel Panels	BGD 2310	120 × 50 × 0.5	300 pcs	Polishing
	BGD 2311	150 × 70 × 0.5	180 pcs	Polishing / hole and Circinal corner
	BGD 2312	120 × 50 × 0.8	300 pcs	Polishing
	BGD 2313	150 × 70 × 0.8	180 pcs	Polishing / hole and Circinal corner
	BGD 2314	120 × 50 × 1.0	300 pcs	Polishing
	BGD 2315	150 × 70 × 1.0	180 pcs	Polishing / hole and Circinal corner
Phosphated Iron Panels	BGD 2318	150 × 70 × 0.8	180 pcs	Spray Sand (Ra 4.5 ~ 5.5)
	BGD 2319	150 × 70 × 1.0	180 pcs	Phosphated
Aluminum Panels	BGD 2320	120 × 50 × 0.5	300 pcs	Chromated
	BGD 2321	150 × 70 × 0.5	180 pcs	Chromated
	BGD 2322	120 × 50 × 0.8	300 pcs	Chromated
	BGD 2323	150 × 70 × 0.8	180 pcs	Chromated
	BGD 2324	120 × 50 × 1.0	300 pcs	Chromated
	BGD 2325	150 × 70 × 1.0	180 pcs	Chromated
ABS Plastic Panels	BGD 2400	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2401	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
PC Plastic Panels	BGD 2410	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2411	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
HIPS Plastic Panels	BGD 2420	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2421	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface
ABS+PC Plastic Panels	BGD 2430	88 × 62 × 2.0	500 pcs	Coarse /smooth surface
	BGD 2431	130 × 80 × 2.0	250 pcs	Coarse emery/exiguous emery/smooth surface



Plastic Panels



Steel Panels



Aluminum Panels

BIUGED-Charts

BIUGED INSTRUMENTS offers a wide range of drawdown cards and charts for virtually any application and coating material. Stringent equality control during the production process assures that they have the most consistent color and gloss in the industry. Test charts are easy to use and an economical substrate to test a variety of coating properties, such as opacity, spreading rate, and flow & leveling behavior. They are used for testing architectural, industrial, automotive, wood finishes or even cosmetic products (e.g. nail polish). Depending on the material properties of the product to be tested and its usage different types of drawdown cards are available.

Selection of test charts dependent on coating technology

Depending on the types of solvent used in paint formulations a drawdown chart needs to be more or less solvent resistant. The resin type requires different solvent types and dependent on the polarity of the solvent, the organic ingredients will be more or less activated. Therefore, BIUGED offers two types of drawdown cards and charts.

Clear-coated Charts

- ◆ Are ideal for a wide range of coating systems: water and solvent borne technologies
- ◆ Guaranteed non-fluorescent paper in compliance with ASTM D 344
- ◆ Repeatable color and gloss-lot after lot
- ◆ Superior adhesion characteristics, especially with latex paints
- ◆ Rugged design (0.5 mm thickness) to prevent warping and bending after the coating is applied.
- ◆ Package is shrink-wrapped with low permeability plastic to prevent moisture absorption during shipping and storage.

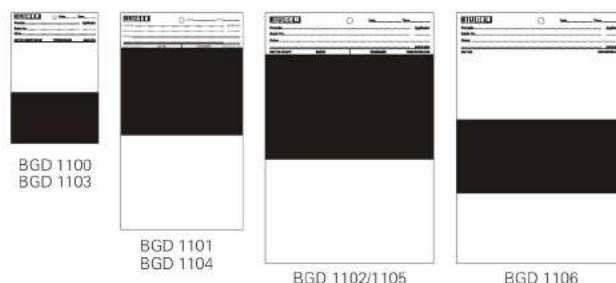
Film Laminated Charts

- ◆ With excellent solvent resistance
- ◆ Repeatable color and gloss-lot after lot
- ◆ Smooth, structure free surface
- ◆ Superior adhesion properties and flexibility
- ◆ With 0.5mm thickness
- ◆ Double film laminated will not warp and bend-even in high humidity environments.

Selection of test charts dependent on application

1. Opacity Charts

- ★ Comprised of a simple combination of black and white areas.
The reflectance of black area < 1 ;
reflectance of white area: 80 ± 2 .
- ★ With ample for reflectance measurement
- ★ With the lot number printed on every chart



★ Ordering information:

Ordering Information	Description	Material	Dimensions (mm)	Qty/Box
BGD 1100	Opacity charts	Film Laminated	150 × 100	1,000
BGD 1101	Opacity charts	Film Laminated	250 × 140	500
BGD 1102	Opacity charts	Film Laminated	289 × 194	500
BGD 1103	Opacity charts	Clear-coated	150 × 100	1,000
BGD 1104	Opacity charts 2A	Clear-coated	250 × 140	500
BGD 1105	Opacity charts	Clear-coated	289 × 194	500
BGD 1106	Opacity charts 3B	Clear-coated	289 × 194	500

Opacity Measurement

Essential sales criteria for architectural paint are hiding power and yield. In other words:

—How many layers are necessary for complete coverage?

—And how many cans will be needed?

$$\text{Opacity (\%)} = \frac{Y_{\text{black}}}{Y_{\text{white}}} \times 100 (\%)$$

100% opacity means complete hiding, no difference can be seen between the drawdown over black and white.

Procedure

A uniform paint film is applied on a black/white contrast chart. After air drying the drawdown can be objectively evaluated using the BIUGED opacity meter. The operator is menu guided through the measurement procedure and the opacity value is displayed automatically in a second.

The same procedure can be applied for transparent films and plastics.

2. Checkerboard Charts/Spreading Rate Charts

Large size drawdown charts, referred to as display or spreading rate charts, were designed for visual evaluation of hiding powder. The diagonal striped patterns or the checkerboard respectively have a strong visual impact and emphasize variations in film opacity.

In order to calculate the spreading rate ASTM D 344 uses Forms 8H and 10H. In this test the paint is spread uniformly on a defined test area (0.1 square meters ~ 1 square foot) and the spreading rate is calculated from the weight and density of the applied coating.



★ Ordering information:

Ordering Information	Description	Material	Dimensions (mm)	Qty/Box
BGD 1110	Opacity-Display Charts	Film Laminated	250 × 140	500
BGD 1111	Display Spreading Charts	Film Laminated	289 × 194	500
BGD 1112	Opacity-Display Charts 9A	Clear-coated	250 × 140	500
BGD 1113	Display Spreading Charts 8B	Clear-coated	289 × 194	500
BGD 1114	Opacity-Display Spreading Rate 12H	Clear-coated	438 × 286	250
BGD 1121	Checkerboard Spreading Rate Charts	Film Laminated	250 × 100	1000
BGD 1122	Checkerboard Spreading Rate Charts	Film Laminated	250 × 140	500
BGD 1123	Checkerboard Spreading Rate Charts	Clear-coated	250 × 140	500

3. Sag and leveling Test Charts

This drawdown charts is designed for use with BGD 225 sagging tester or BGD 226 leveling tester.

The extra large black area allows measurements to be made over the black area only, in accordance with specifications that Require the operator to ignore the leading and trailing edges of the drawdown.

★ Ordering information:

BGD 1109---Sag and leveling Test Charts (289 × 194mm; 500pcs/box)



BGD 1109

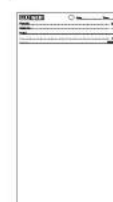
4. Plain White Drawdown Charts

These drawdown charts are plain white with the coating on one side with no text or label on top.

★ Ordering information:

BGD 1132---Plain White Drawdown Charts (150 × 100 mm; 1,000pcs/box)

BGD 1133---Plain White Drawdown Charts (250 × 140 mm; 500pcs/box)



BGD 1133

Biuged accepts any order for customized special charts!!

Zirconia Beads

The Zirconia-beads is the ideal grinding medium produced by introducing advanced equipments and technics, widely used in the field of painting, printing ink, paper printing, packing, dye and medicine, etc.

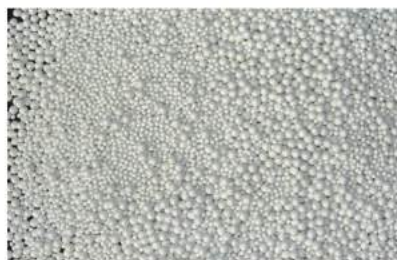
- ◆ High efficiency of grinding: As the density of Zirconia beads is high, grinding kinetic energy is larger at same speed; efficiency of grinding is 2-3 times higher than that of general porcelain beads, getting better effect.
- ◆ Impact resistance, low consumption: As the content of ZrO_2 in TZP Zirconia beads is high, it has the advantages of high density, high toughness, low consumption, no fragmentation and no peeling, etc., as well as little pollution to grinded object; the consumption is 4-10 times lower than that of general porcelain beads.
- ◆ Good stability: excellent stability, resistant to acid and alkali
- ◆ Good fluidity: good roundness, smooth surface, no air hole, reflecting polish, easy to clean; good fluidity between beads; little abrasion to equipments;
- ◆ Low cost: The abrasion of Zirconia beads is the lowest in all grinding medium at present. Compared with overseas products, our Zirconia beads is lower in abrasion, favorable price, it is honored as the best bead in the world at present. To use this product, it will greatly reduce synthesis cost for users, such as medium consumption, electrical consumption, labor force and equipments; realize dual output and improve quality in the condition of not adding any equipment. The earlier you use it, the earlier you will get benefit.

Properties	ZR60	ZR80	ZR95
ZrO ₂ content	50%--60%	80%	94.5%
Density	$\geq 4.0g/cm^3$	$\geq 5.3g/cm^3$	$\geq 6.0g/cm^3$
Bulk	$2.3g/cm^3$	$3.3g/cm^3$	$3.7g/cm^3$
Crushing strength	$> 1.5KN$ ($\phi 2mm$)	$> 1.8KN$ ($\phi 2mm$)	$> 2KN$ ($\phi 2mm$)
Mohs' hardness	8	9	9
Self consumption	$\leq 0.01g/Kg.h$	$\leq 0.01g/Kg.h$	$\leq 0.01g/Kg.h$
Specification	$\phi 0.5 - \phi 7.0mm$	$\phi 0.5 - \phi 7.0mm$	$\phi 0.2 - \phi 3.5mm$



NOTE:

- ◆ To select Zirconia beads in types, sizes and quantity in accordance with adhesion, rigidity and dispersal and grinding requirement of the grinded materials.
- ◆ To clean Zirconia beads and mill's inside before the grinding processes.
- ◆ To input the grinded materials firstly and a certain amount of Zirconia beads later. To add continuously Zirconia beads till 70%-85% of the mill is full.
- ◆ To forbid to keep Zirconia beads running with little grinded material for a long time, The mill is easily broken when the Zirconia beads inside at high speed operation.
- ◆ To add fresh Zirconia beads to ensure the quality efficiency of grinded materials.
- ◆ **Ordering information:** BGD 1340---ZR 60 Beads (25kg)
BGD 1341---ZR 80 Beads (25kg)
BGD 1342---ZR 95 Beads (25kg)



Grinding Glass Beads

① Normal beads:

As blasting, road-marking and grinding media, it has features of crystal, steady chemical change and low cost.

Main Technical Parameters:

- ★ Chemical composition: SiO_2 Al_2O_3 CaO MgO Na_2O
- ★ Proportion: 2.45g/cm^3
- ★ Artificial Proportion: 1.5g/cm^3
- ★ Micro-rigidity: $\approx 635\text{kg/mm}^2$
- ★ Diameters: 0.2–0.4mm; 0.4–0.6mm; 0.6–0.8mm;
0.8–1.0mm; 1.0–1.5mm; 1.5–2.0mm;
2.0–2.5mm; 2.5–3.0mm; 3.0–3.5mm;
3.5–4.0mm; 4.0–4.5mm; 4.5–5.0mm;



★ Ordering information:

BGD 1300---Normal glass beads (25kg)

② Intensive Beads:

Silicate of boron grinding glass beads has features of tenacity, wear resistance, steady chemical change and 7.2 PH-value are suitable both for grinding materials with low, middle adhesion and blasting processes.

Main Technical Parameters:

- ★ Chemical composition: SiO_2 Al_2O_3 CaO BaO Na_2O B_2O_3
- ★ Proportion: 2.5g/cm^3
- ★ Artificial Proportion: 1.5g/cm^3
- ★ Micro-rigidity: $\geq 680\text{kg/mm}^2$
- ★ Diameters: 0.6–0.8mm; 0.8–1.0mm; 1.0–1.5mm;
1.5–2.0mm; 2.0–2.5mm; 2.5–3.0mm;
3.0–3.5mm; 3.5–4.0mm



★ Ordering information:

BGD 1320---Intensive glass beads (25kg)

③ Standard Screen Mesh/Filter Mesh

Standard sieve (also called test screen, the standard test sieve, sieve particle size analysis, particle size calibration screen, check the screen size, sub-sample screening). Mounted on slap-type test sieve shaker (Tyler analysis of vibrating sieves and the United States (rotational separation sieve) Ro-Tap RX-29, RX-30 on the same principle) or standard screen machines used for a variety of powder materials, grain degree of composition grading. Widely used in abrasive, ground Kan, metallurgy, pharmacopoeia, chemical and building materials industry, materials, accurate particle size screening and detection.

Moreover, Biuged also supply a series filter mesh from 2 mesh to 635 mesh which are widely used in Filter for consumer electrical goods, oil filters, humidifier filters, metallic mesh filter, ect. There are two types material : stainless steel and Nylon.

Main Technical Parameters:

- ★ Fine sieve frame and durable, with no leak tight,
- ★ Screen mesh standard sieve mesh precise number and mesh size of tags
- ★ Test sieves of metal perforated plate, the main test for large mesh sieve (greater than 3 mm)
- ★ According to international standards ISO3310-2: 1990 R20 / 3, R20, R40 / 3 series.
- ★ Stainless steel screen material.



★ Ordering information:

BGD 1376---Standard Screen Mesh

BGD 1377---Stainless Steel Filter Mesh

BGD 1378---Nylon Filter Mesh

RAL Formula Guide

The RAL CLASSIC Colour Collection with its 210 colours is indispensable in many areas.

Many products are internationally available in these colours. RAL Colours with four digit numbers will continue to be important for colour decision also in the future.

RAL K5

- ◆ U-shaped protective cover.
- ◆ Full page colour area of 5 x 15 cm.
- ◆ Ideally suited for colour combination and colour comparison.
- ◆ Choice of semi-matte or gloss.
- ◆ Example of a RAL Classic colour "RAL 4010"



RAL K7

The RAL K7 Colour fan deck contains all 210 colours from the RAL CLASSIC colour range and is the definitive guide for selecting and verifying colour for paint and coatings to international standards.

The RAL K7 forms part of the RAL CLASSIC collection of accurate, easy to use resources offering a simple 4-digit code system for ease of selection, making the RAL K7 a definitive guide for professional colour use

The RAL K7 Colour fan deck boasts numerous features, including:

- ◆ Contains all 210 RAL CLASSIC Colours
- ◆ Five colours per page
- ◆ Simple 4-digit coding system
- ◆ Colour swatches measure 2cm x 5cm
- ◆ Fan deck size 5cm x 15cm
- ◆ Gloss finish



PANTONE Plus Series Formula Guide (2016 Version)

The PANTONE Plus Series Formula Guide (Solid Coated & Uncoated) is an essential tool for printers, pre-press professionals and graphic designers and replaces the previous PANTONE Formula Guides.

The PANTONE Formula Guide (Solid Coated & Uncoated), consists of a two-volume set of swatchbooks, offering 1,867 PANTONE colours, 84 more than the previous edition, printed on coated and uncoated paper making up this two volume fan book set.

The PANTONE Formula Guide (Solid Coated & Uncoated) offers a simple chromatic arrangement of swatches, is formulated with the same 14 previous base inks and the new colours are printed with uniform ink film thicknesses for easy matching on press.

The PANTONE Formula Guide (Solid Coated & Uncoated) offers numerous features, including:

- ◆ 1,761 solid PANTONE Colours 336 new additions
- ◆ Same reference numbers as previous edition new numbers begin at 7548
- ◆ Icons indicate whether a colour is achievable in CMYK or RGB
- ◆ Includes ink mixing formulas
- ◆ Printed on coated and uncoated text-weight, FSC certified paper
- ◆ ColorChecker Lighting Indicator aids lighting evaluation
- ◆ Simple index system for easy referencing

★ Ordering information:

GP 1601N---Pantone Forumula Giude



GP-1601N

Equipments

① Single-shaft High Speed Disperser

Single-shaft High Speed Dispersers are commonly used in chemical for mixing and distribution with variable frequency speed adjustment; Currently available for customers to choose from the ordinary or the explosion-proof models.

Items of this equipment with blade distributor, oar distributor or anchor distributor are designed on request with variable specifications of power. With hydraulic lift system, these machines' lift distance and centre distance between the base and the scattered axes.

If required, User-friendly hydraulic lift system of 180° rotation is available, it easily operated. quest with variable specifications of power, lift distance and centre distance between the base and the scattered axes.



Ordering Information → Main Technical Parameters ↓	BGD 8011	BGD 8013	BGD 8015	BGD 8017	BGD 8018
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	9 KW	13 KW	17 KW	21 KW	25 KW
Working Travel (mm)	900	900	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Suitable Container Capacity (L)	300 ~ 500	300 ~ 600	400 ~ 700	500 ~ 800	500 ~ 1000
Including Dispersing Blades (mm)	Φ250、Φ280	Φ250、Φ280	Φ280、Φ300	Φ280、Φ300	Φ300、Φ320
Overall Size (cm)	170 × 80 × 180	175 × 80 × 180	180 × 90 × 180	195 × 90 × 205	195 × 90 × 205

Dispersion Blades

Dispersion blades are mainly applied to pulverize, grind, and stir liquid, emulsion or solid-liquid material as below industrial fields: coating, paint, ink, pigment, dye, adhesive, daily chemicals, food and medicine. Dispersion blade are daily consumptive parts for dispersing machine, grinder, pulverizing mill, stirring machine, emulsifying machine, etc.

Classify Method	Dispersion Blades		
Dispersing Machine	Flat saw type	Paddle type	Disc type
Dispersing Performance	high viscosity dispersion blade	medium/low viscosity dispersion blade	Interior teeth dispersion blade for medium/low viscosity
No. of Dispersion Blade Layers	single layer dispersion blade	bilayer dispersion blade	multi-layer dispersion blade column
No. of teeth	Multit teeth	Three teeth	
Teeth Structures	single side teeth dispersion blade	Double sides dispersion blade.	
Teeth Position	interior teeth dispersion blade	Peripheral teeth dispersion blade.	



② Dual-shaft High Speed Disperser

The perfect combination of BGD series of speed-adjustable stringed-plate dual-axe distributor and BGD series of basket-type fast high grinders and distributors enables the mixing, distribution, grind and package of materials with very high stickiness to be finished in one consecutive process at one machine, 10-20 times more efficient than ordinary distributor and grinder, Ground materials as fine as 5-10 μm , this is absolute breaking-through in the mixing, distribution, grind and package of materials with very high stickiness, and is widely used for high-glass atom ash, sticker pulp, rendering, cosmetics, food, salve, ink etc.

Characteristics:

- ◆ Stringed plates on dual-axe ensures fast mixing and dispersion.
- ◆ Rotary blade unit inside the cylinder prevents the mixture from sticking to the wall and ensures thorough dispersion
- ◆ Speed-adjust unit makes it easy to change speed.
- ◆ Cooling system in the secret compartment of the bucket provides effective protection for temperature -sensitive materials.
- ◆ Hydraulic lift.
- ◆ User-friendly service vehicle accessory to the machine eases laborintensity.



Ordering Information → Main Technical Parameters ↓	BGD 8021	BGD 8023	BGD 8025	BGD 8027	BGD 8028
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	10 KW	14.5 KW	18.5 KW	22.5 KW	26.5 KW
Working Travel (mm)	800	1000	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Including Single-layer Stainless Steel Container (L)	2 × 100L	2 × 150L	2 × 200L	2 × 300L	2 × 400L
Including Dispersing Blades (Dia.mm)	170 or 180	180 or 200	200 or 210	220 or 230	230 or 250
Overall Size (cm)	155 × 75 × 175	175 × 80 × 175	175 × 80 × 175	190 × 85 × 205	190 × 90 × 205

Note: Each shaft is equipped three same diameter dispersing blades, these total six blades are distributed well-proportioned at two shafts.

③ Basket Grinding Machine

This is a new model of fast high grinder for materials with high or middling stickiness, one type with variable frequency speed adjust and the other with electric frequency speed adjust; A model of ordinary design and a model of explosion-proof design are currently available for customers to choose from.

Characteristics:

- ◆ Basket design renders a thorough change of the traditional mode of grind
- ◆ Basket lift design makes the machine user-friendly while feeding and discharging
- ◆ Dual-blade design at the bottom of the basket frees the ground material of circulation assist, saving energy and reducing cost.
- ◆ Circulation cooling design in the secret compartment between the basket wall and inner container wall provides effective protection for temperature-sensitive material.
- ◆ Blade at the basket bottom feeding upwards, all-round interactive collision spurred by the back and cross flows and convection between the ground materials and intermediary agent in the basket renders fast grind and distribution, ensuring the fineness of ground material.
- ◆ Speed of grind is adjustable, which makes it suitable for the grind of varieties of materials and, further more, saves grind time.
- ◆ Temperature-control system precisely surveys and controls the temperature while grinding.
- ◆ Rotary blade design inside the cylinder prevents material from sticking to the wall, making the grind more thorough and the better-distributed.
- ◆ User-friendly service vehicle with machine eases labor-intensity.
- ◆ Timer relay controls grind time, making the machine more user
- ◆ Hydraulic lift.



Ordering Information → Main Technical Parameters ↓	BGD 8051	BGD 8053	BGD 8055	BGD 8057	BGD 8058
Motor Power	7.5 KW	11 KW	15 KW	18.5 KW	22 KW
Total Power	9 KW	13 KW	17 KW	21 KW	25 KW
Working Travel (mm)	800	1000	1000	1000	1200
Adjustable Speed	0 ~ 1450 r.p.m				
Including Single-layer Stainless Steel Container (L)	2 × 100L	2 × 150L	2 × 200L	2 × 300L	2 × 300L~450L
Including Tool Car	No	Yes	Yes	Yes	Yes
Including 95% Zirconia Beads	18 KG	18 KG	28 KG	28 KG	38 KG
Overall Size (cm)	155 × 75 × 175	165 × 90 × 180	165 × 90 × 180	165 × 90 × 190	165 × 90 × 190

Standards and Relative Instruments:

ISO Standards	ASTM Standards	Other Standards	Instruments	Page
ISO 1514			Biuged Brand Test Substrates	135
ISO 1518-1			Automatic Scratch Tester	62
ISO 1519			Cylindrical Mandrel Tester	66
ISO 1520		DIN 53166 DIN 53232 BS 3900	Cupping Tester	69
ISO 1522	ASTM D 4366	DIN 1522	Pendulum Hardness Tester	61
ISO 1524	ASTM D 333 ASTM D 1210	BS 3900-C6 BS 3900-E9	Fineness of Grind Guage	13
ISO 2115	ASTM D 2354		Min.Film Forming Temperature Tester	20
ISO 2409	ASTM D 3359 ASTM D 3002	BS 2409 DIN 2409 EN 2409	Cross Hatch Adhesion Tester	57
ISO 2431	ASTM D 5125		ISO Flow Cups	2
ISO 2555 ISO 2884 2	ASTM D 2196		Rotary Viscometer	5~11
ISO 2592			Open Cup Flash Point Tester	30
ISO 2719 ISO 3679	ASTM D 93		Closed Cup Flash Point Tester	30
ISO 2808	ASTM D 1212 ASTM D 4414		Wet Film Comb Thickness Gauges Rolling Wheel Thickness Gauges	52
ISO 2808 ISO 2360 ISO 2178	ASTM B 499 ASTM D 1186 ASTM D 1400 ASTM D 7091	DIN 50981 DIN 50984	Dry Film Thickness Gauge	52~53
ISO 2811	ASTM D 333 ASTM D 1475 ASTM D 2805	DIN 53217 BS 3900-A 19 DIN 53217	Specific Gravity (SG) Cups	16
ISO 2813 ISO 7668	ASTM D 523	DIN 67530 DIN 2813 EN 2813 EN 7668	Glossmeter	48~51
ISO 2815		DIN 53153 EN 2815 BS 2815	Buchholz Indentation Hardness Tester	64
ISO 3248			Precise Oven	101
ISO 3668	ASTM D 1729		Color Assesment Cabinet	23
ISO 3906 ISO 6504 ISO 2814	ASTM D 2805 ASTM E 97	DIN 55984 BS 3900-D6/D7	Reflectance Meter/Opacity Meter	19
ISO 4624	ASTM D 4541 ASTM D 7234		Pull off Adhesion Tester	58
ISO 4630-1			Gardner Color Comparator with C Illuminant	24
ISO 6272.1			BGD 306 Impact Tester	68
ISO 6272.2	ASTM D 2794		BGD 305 Impact Tester	68
ISO 6819 ISO 6860	ASTM D 522 ASTM D 1737	BS 3900-E11 DIN 53150 DIN 66669	Conical Mandrel Bend Tester	66

ISO Standards	ASTM Standards	Other Standards	Instruments	Page
ISO 7253 ISO 4623-1	ASTM B 117		Salt Fog Cabinets	108
ISO 7619	ASTM D 2240	DIN 53505	Shore Hardness Meter	64
ISO 7724	ASTM D 2244 ASTM E 308 ASTM E 1164	DIN 5033 DIN 5036 DIN 6174	Spectrophotometer	44
ISO 7784-2			Rotational Abrasion Tester	73
ISO 11341 ISO 4892.2	ASTM D 6695 ASTM G 155 ASTM D 3451		Xenon Chamber Tester	120~127
ISO 11507			UV Light Accelerated Weathering Tester	116
ISO 11998		DIN 13300 BS 3900-F17	BGD 526/2 Wet Abrasion Scrub Tester	70
ISO 13803	ASTM E 430		Haze Glossmeter	
ISO 15184	ASTM D 3363	BS 3900-E19	Pencil Hardness Tester	60
ISO 17132	ASTM D 4145	EN 13523-7	T-bend Tester	67
	ASTM C 346 ASTM C 584 ASTM D 2457		Special Glossmeter	51
	ASTM D 1200 ASTM D 333 ASTM D 365		BGD 125 Ford Cups	2
	ASTM D 2486		BGD 526/1 Wet Abrasion Scrub Tester	70
	ASTM D 2794	JIS-K5400	Dupont Impact Tester	67
	ASTM D 2801		BGD 226/1 Leveling Tester	18
	ASTM D 333 ASTM D 968 ASTM D 1395 ASTM D 2205		BGD 529 Falling Sand Abrasion Testers	74
	ASTM D 3450		BGD 526/3 Wet Abrasion Scrub Tester	70
	ASTM D 3730 ASTM D 4400		Sagging Tester	17
	ASTM D 4138		Paint Inspection Gauge	
	ASTM D 4212 ASTM D 816 ASTM D 1084		BGD 126 Zahn Cups	3
	ASTM D 4213		BGD 526/4 Wet Abrasion Scrub Tester	70
	ASTM D 4828		BGD 526/5 Wet Abrasion Scrub Tester	70
	ASTM D 5264		Rub Resistance Tester	
	ASTM D 562	BS 3900-A7-1	Krebs Stormer Viscometer	11
	ASTM D 5895/A		Line Drying Time Recorder	21
	ASTM D 823		Automatic Film Applicator	36~38
	ASTM D 823 ASTM D 3258		Applicator	32~34
	ASTM F 2357-04		RCA Paper Abrasion Wear Testers	74
		BS 3962-6	Cross Cutting Rule	57
			BGD 521 Solvent Resistance Tester	72
		NYPG	BGD 226/2 Leveling Tester	18
		DIN 53211	BGD 127 DIN Flow Cups	4
		DIN 53778	BGD 526/6 Wet Abrasion Scrub Tester	70
		DIN 55667	Conductivity Meters	27

How to order

1. Read carefully product introductions in which you are interested. Call or e-mail us if you need more detailed information or have any further question.
2. Ask for an official quotation issued by Solvica. You can ask a quote via our website www.solvica.com
3. You will receive a detailed offer as well as a copy of our General Terms & Conditions.
4. Place your order. In case of any unexpected misunderstanding, please ensure all following information is included in your purchase order:
 - (1) *Your company information (Consignee, address, tel. number etc)*
 - (2) *Product name, Product code, Ordering Information and Order Quantity*
 - (3) *Expected delivery time.*
5. We will send you a Proforma Invoice with our bank information. We will also inform you about the estimated lead time for delivery of your order.
6. Customer will transfer the payment.
7. We will send you an order confirmation after receipt of your payment, and send out the goods.
8. When the goods arrive, please examine it immediately. Please inform us in case you find any defects. Please notify us in writing within 5 days after your receipt.

Solvica B.V.
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