

twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

Impactómetro tipo ISO Sistema Métrico e Inglés BL-BGD306

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BGD 306

Impact Tester

Operation Instruction

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INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

1.0 Introduction

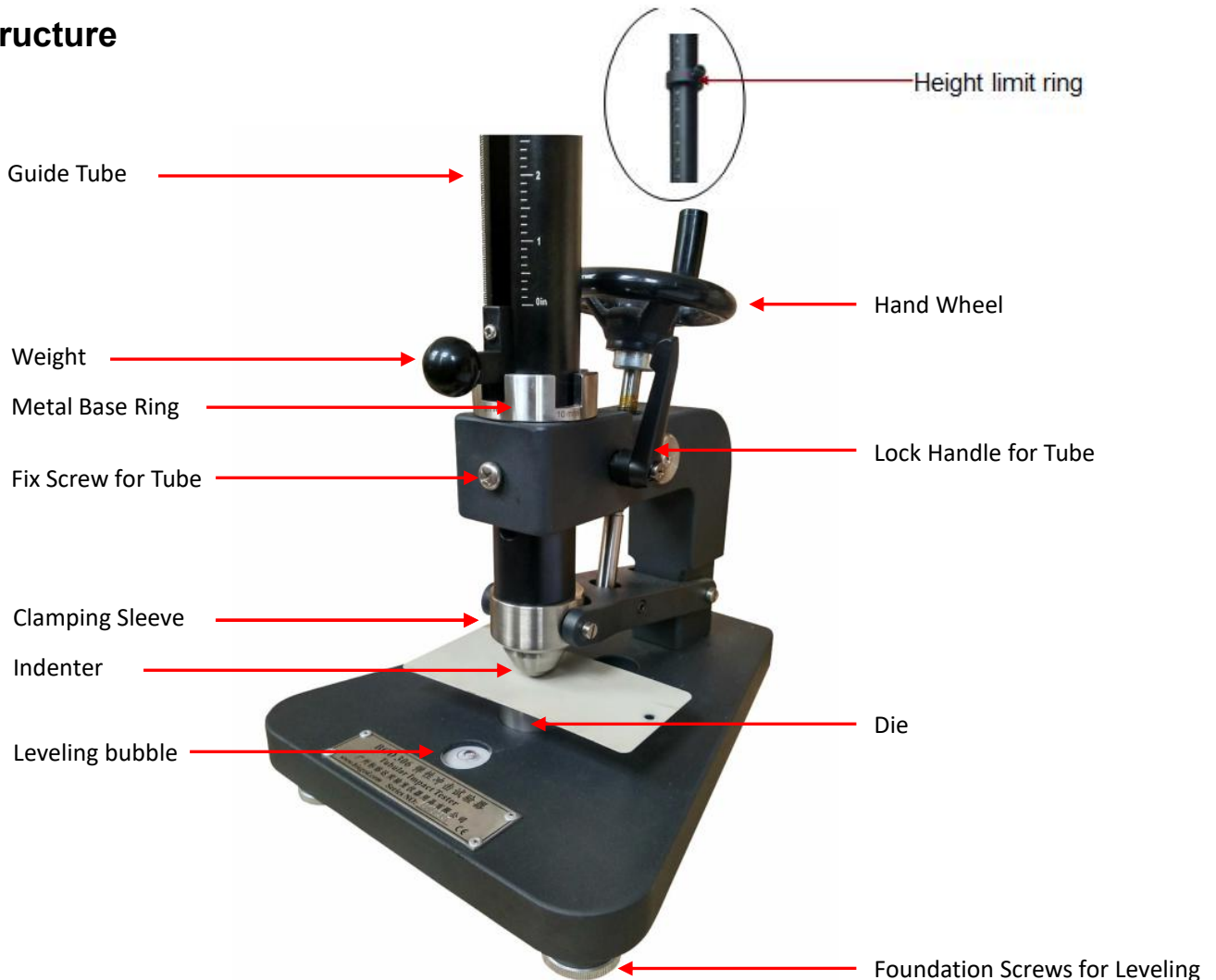
BGD 306 Impact Tester is used for testing the impact resistant performance when the coating such as paints, varnish and other relative coating get impact and deformed under the standard conditions.

This instrument conforms to ISO 6272-1: 2002 《Paints and varnishes--Rapid-deformation (impact resistance) tests--Part 1:Falling-weight test, large-area indenter》 and other relative requirements.

2.0 Principle

The coating under test is applied to suitable thin metal panels. After the coatings have cured, a standard weight is dropped a distance so as to strike an indenter that deforms 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 and indenter) or downwards (i.e. away from the weight and indenter). By gradually increasing the distance 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 or, on steel, by the application of a copper sulfate solution.

3.0 Structure





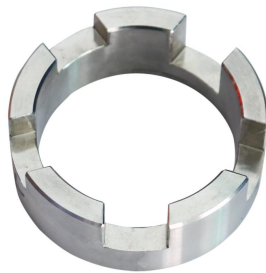
Indenter



2kg additional weight



1kg additional weight



Metal Base Ring



φ 27mm die

Guide Tube: black alumina, around 1.2m in length; there is a notch with graduation.

Height limit ring: black nylon ring, when making test, slip it into the tube and move up and down to adjust the the falling height, then fix it on the tube with the screw.

Fix screws for tube: screw it into the guiding groove of the tube when installing the tube, in case it moves during the test.

Lock handle for tube: after installing the tube on the seat, tightly lock up the tube.

Metal Base Ring: Semicircle, above the mental base ring, of different thickness, to limit the indentation depth of the falling weight.

Mental base ring: circular, 4mm in thickness, fix on the base stand during the test.

Clamping sleeve: stainless steel, the internal diameter is the same as ISO101's (27mm), clamp the test panel by rolling the hand wheel.

Hand wheel: to clamp and loosen the test panel.

Leveling bubble: to determine the level of the impact tester

Foundation screw for leveling: 3 piece, to regulate the level of the impact tester.

1kg Indenter: conforms to ISO6272-1, the head having the shape of a spherical segment of diameter 20mm, and a total mess of 1000g.

27mm die: conforms to ISO6272-1, with an inner diameter of 27mm.

1kg additional weight: stainless steel cylinder, with screws on one side, of 1000g, to attach it on the ISO weight for adding the total weight.

2kg additional weight: stainless steel cylinder, with screws on one side, of 2000g, to attach it on the ISO weight for adding the total weight.

4.0 Procedure

4.1 Preparation of test panels

4.1.1 Substrate

Unless otherwise specified, the substrate should conform to the requirement of ISO1514.

The panel should be planar, free from distortion and at least 0.25mm thick. The dimensions shall be allowed the test to be carried out at least five different positions not less than 40mm from each other and not less than 20mm from the edge of the panel.

Measure the thickness to nearest 0.01mm.

4.1.2 Coating

Unless otherwise specified, prepare metal test panels in accordance with ISO 1514, then coat the prepared panel according to the specified method.

4.1.3 Drying

Dry (or stove) and age (if applicable) each coated test panel for the time, and under the conditions, specified by the manufacturer of the product or system under test, or as agreed between the interested parties.

4.1.4 Thickness of coating

Determine the thickness, in micrometer, of the dried coating by one of the procedures specified in ISO 2808. Make the measurements at, or as near as possible to, the positions at which the test is to be carried out.

Use only test panels for which the film thickness values do not differ from the specified or agreed film thickness by more than 10 %.

Unless otherwise specified, the test should be carried out under the condition of $(23 \pm 2) ^\circ\text{C}$ and $(50 \pm 5) \%$ in humidity.

4.2 Installation

4.2.1 Mount the apparatus on a level firm surface, then adjust it with 3 leveling foundation screws until it level.

4.2.2 Install the metal base ring on the right position of the base stand.

4.2.3 Choose a suitable weight (or with the additional weight) and install it from the top of the tube, then install the height limit ring in the same way (the height limit ring is above the weight) .

4.2.4 Screw out the fix screw for tube and loosen the lock handle, then put the tube into the hole and make its guiding groove face to the fix screw for tube.

Note: don't fix the tube !

4.2.5 Lift the clamping sleeve by rolling the hand wheel and lift the weight, then choose and install a suitable die according to the requirements.

4.2.6 Lift the weight and put a panel whose thickness is the same as the test panel on the die, then make the clamp sleeve tightly clamp the panel by rolling the hand wheel.

4.2.7 Ensure the panel be flat on the die, and the head of the weight touching the testing surface. Adjust and ensure the top of the weight handle is at the zero mark (see the following picture) .

4.2.8 Fix the tube by screw up the screw and lock up the lock handle, then take out the panel.



After placing the test panel, the top of the weight handle is at the zero mark

4.3 Procedure

4.3.1 Environmental requirements

Before testing, condition the coated panels at a temperature of $(23 \pm 2)^\circ\text{C}$ and a relative humidity of $(50 \pm 5)\%$ (or at another temperature and humidity, agreed between the interested parties, from those specified in ISO 3270) for a minimum period of 16 h. Begin the test procedure as soon as possible after conditioning, but in any case complete it not later than 30 min after removal of the test panels from conditioning.

Mount the apparatus on a firm surface (for example, concrete, steel or stone).

Carry out the test at $(23 \pm 2)^\circ\text{C}$ or at another temperature, agreed between the interested parties, from those specified in ISO 3270. State the test temperature at which the test was carried out in the test report.

Measure the relative humidity during the test and state it in the test report.

4.3.2 Pass/ fail test (using specified mass)

4.3.2.1 Adjust the height limit ring until its underneath edge stop at the specified height where it is expected that no failure will occur.

4.3.2.2 If necessary, fit stops of total thickness sufficient to limit the indentation to a depth agreed between the interested parties or as otherwise specified.

4.3.2.3 Place a test panel on the die, with the coated face up or down, as specified. Hold the test panel in position by means of the clamping sleeve.

4.3.2.4 Lift the weight to the height limit ring, and let it fall on to the test panel.

4.3.2.5 Remove the test panel and examine the coating with the 10-times magnifier.

4.3.2.6 Report whether the coating on the test panel has cracked or has peeled from the substrate and whether or not the substrate has cracked.

4.3.2.7 Repeat the test a further four times at different positions, giving a total of five drops. Report the coating as satisfactory if at least four test positions show no cracking or peeling from the substrate.

4.3.3 Classification test (to determine the minimum drop height and mass which will cause cracking or peeling)

4.3.3.1 Adjust the height limit ring until its underneath edge stop at the specified height where it is expected that no failure will occur.

4.3.3.2 If necessary, fit stops of total thickness sufficient to limit the indentation to a depth agreed between the interested parties or as otherwise specified.

4.3.3.3 Place a test panel on the die, with the coated face up or down, as specified. Hold the test panel in

position by means of the clamping sleeve.

4.3.3.4 Lift the weight to the height limit ring, and let it fall on to the test panel.

4.3.3.5 Remove the test panel from the apparatus and examine the deformed area with the lens for coating cracks and/or peeling from the substrate. If no cracks and/or peeling are evident, repeat the procedure at successively greater heights until cracks and/or peeling are observed, the increments in the height being 25 mm or multiples of 25 mm. Note the height where cracks and/or peeling are observed for the first time.

If no cracks and/or peeling are observed when the weight is dropped from the maximum height allowed by the apparatus, repeat the operation (starting at the lowest height setting) with an additional weight, making a total of 2 kg.

If no cracks and/or peeling are observed, repeat the operation (starting at the lowest height setting) with a further additional weight, making a total of 3 kg. Where required, a final additional weight may be added to give a maximum mass of 4 kg.

4.3.3.6 Once cracks and/or peeling are observed, carry out the following procedure. Release the appropriate weight and allow it to fall on to a test panel five times at different positions from each of the following heights:

- ◆ the height where cracks and/or peeling were first observed during the procedure described in 4.3.3.5;
- ◆ 25 mm below this height;
- ◆ 25 mm above this height.

Test in a random fashion, taking care that not all impacts from one height are made in succession on one panel.

4.3.3.7 Examine, using the lighting and the procedure specified in ISO 13076, the relevant areas of the coating with the 10 times magnifier for cracking and/or peeling from the substrate and tabulate all results as pass or fail. Report as the end point of the test the mass/height combination for which the results change from mainly passing to mainly failing.

4.3.3.8 If no end point can be established, repeat the procedure in 4.3.3.6 and 4.3.3.7, taking all heights 25 mm higher or lower, as appropriate, to ensure that the end point of the test is covered by the range of heights tested.

Note:

1. About the usage of the stops:

Stops apply to ISO 6272-1, use with 20mm steel indenter. The depressed depth is 10mm impacted by 20mm indenter without stops (no test panel) . If it requires 7mm in depressed depth, then it needs 1mm and 2mm 2 piece of stops, and the like. Actually, different materials and thickness will cause the depressed depth different, so it needs to repeatedly combine those stops until it reaches the required depressed depth.

The depressed depth of this apparatus should be 2mm at least, that is, the amount of stops can be 8mm at most; do not install all the stops at the same time in case damage the apparatus.

2. If it needs replace different weights, please loosen the screw and lock handle, and take out the tube, then re-install the apparatus according to 4.2.2~4.2.8

5.0 Notice

5.1 If the deepest depressed point deviates from the center of impact area, please contact with the manufacture to calibrate.

5.2 If it needs to exchange a different weight and indenter, please loosen the screw for tube and the lock handle, dismantle the tube and re-install the apparatus according to 4.2.2~4.2.8.

5.3 Regularly check the surface of the hemispheroid, exchange it in time if it gets deformed, rust, broken or other failures.

5.4 Dismantle all the weights, indenter, and panel support, then clean them put them back to the package after

the test. Smear some preservative oil if not use in a long period of time.

6.0 Maintenance & After service

Biuged offers 1 year after service (from the day of delivery) to all our products free of charge, and offers repair and calibration service for their whole life.

A. It shall be replaced free of charge with 15 days if it is not damaged by artificial factors, and we undertakes the freight of the round trip.

B. Any machine damaged by nature factors which under the warranty, users only needs to send us the machine and relevant components, we will provide repair service as well as relative accessories, then send back to user free of charge.

C. Some machine damaged by nature factor or improper use which expired the warranty, users need to undertake the freight of the round trip, the expense of replaced component and repair service.

D. To some machine damaged by human (such as changing circuit himself), we will not offer any service and support.

E. To make sure the machine whether it is damaged by nature factor or human, users have to offer the original broken machine and components. If not, it will be regarded as damaged by human, and we will not offer any service.

F. Guarantee certificate: the receipt and with our company stamp and delivery receipt with our company stamp and the guarantee labels sticking on the machine, both are guarantee certificate. If not provide any certificate as mention above, users can not have the guarantee service.

Note: It will cause other expense if dismantling or repairing the machine without our permission!

7.0 Packing List

Base	1 pc
Guide tube	1 pc
Height limit ring	1 pc
Metal base ring	1 pc
1kg indenter	1 pc
27mm die	1 pc
1kg additional weight	1 pc
2kg additional weight	1 pc
ISO 100 weight plastic holder	1 pc
Instruction manual	1 pc
Certificate	1 pc

8.0 Others

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