GB/T 1043-93

# Plastics-Determination of charpy impact strength of rigid materials

Replace GB 1043-79

The standard reference adopts international standard ISO 179-1982 *Plastics—Determination of Charpy Impact. Strength of Rigid Materials*

## 1 Subject content and scope of application

This standard specifies the charpy impact test machine shall be used to apply once impact bending load on rigid plastic test samples so as to damage the test samples and the method of measuring the material impact ductility with the energy absorbed per unit area when the test samples are damaged.

This standard applies to rigid thermoplastics and thermoset plastics, including filled plastics and fiber reinforced plastics and these plastic products. This standard does not apply to rigid foamed plastic.

## 2 Referenced standard

GB 2918 Plastics—Standard atmospheres for conditioning and testing

GB 5471 Preparation method for compression moulding of specimens of thermosetting moulding materials

GB 9352 Plastics-Compression moulding test specimens of thermoplastic materials

GB 11997 Plastics-Preparation and use of multipurpose test specimens

## 3 Terms

3.1 Charpy impact strength of unnotched specimens

Under impact load, when the unnotched specimens are damaged, the ratio of absorbed impact energy and the original cross-sectional area of the test sample is expressed in $kJ/m^2$.

3.2 Charpy impact of notched specimens

Under impact load, when the notched specimens are damaged, the ratio of absorbed impact energy and the original cross-sectional area of the specimens are expressed in $kJ/m^2$.

3.3 Relative impact strength

The ratio of notched test sample impact strength and unnotched specimens impact strength or the ratio of similar test sample type A and type B notch impact strength.

The ratio of type C notch test sample impact strength and type A or B notched specimens impact strength shall not be used as a measure of the relative impact strength.

3.4 Complete break

After an impact, the test sample can be divided into two or several sections.

3.5 Partial break

For an incomplete destruction, i.e. the cross-section of unnotched specimens or notch test sample shall be cut by 90% at least.

3.6 Non-break

For an incomplete destruction, i.e. the cross-section of unnotched specimens or notch test sample shall be cut by 90% at most.

## 4    Principle

The pendulum with a known energy shall be used to strike the specimens which is supported into horizontal beam and once pendulum impact can damage the specimens. Impact line is located in the midst of two bearings, if it is notched specimens, the impact line shall be aligned to notch and the energy difference of the pendulum before and after the impact shall be used to determine the energy absorbed when the specimen s   is damaged. Then its impact strength shall be calculated according to the original cross-sectional area of the test sample.

## 5    Apparatus

5.1   Testing machine

Tester shall be pendulum type and include the pendulum, specimens bearing, energy indicating mechanism, machine body and other major components. It can indicate the impact energy absorbed in the process of damage of specimens.

Testing machine shall have the characteristic parameters shown in Table 1. And these parameters shall be regularly inspected by national metrology authorities.

Table 1    Characteristics parameter of pendulum impact testing machines

| Impact energy J | Impact velocity | | Maximum allowable friction loss % | Tolerance after correction J |
|---|---|---|---|---|
| | Basic speed m/s | Limit deviation % | | |
| 0.5 | 2.9 | ±10 | 4 | 0.01 |
| 1.0 | | | 2 | 0.01 |
| 2.0 | | | 1 | 0.01 |
| 4.0 | | | 0.5 | 0.02 |
| 7.5 | 3.8 | ±10 | 0.5 | 0.05 |
| 15.0 | | | | 0.05 |
| 25.0 | | | | 0.10 |
| 50.0 | | | | 0.10 |

Note: Results obtained by different pendulum can not be compared.

5.2   Pendulum body

Pendulum body is a core part of the testing machine, which includes rotating shaft, pendulum bar, pendulum, striking blade and other components.

5.2.1     The distance from axis of rotation to the striking center of the pendulum shall be the same with the distance from the axis of rotation to the center of the specimens and the difference between them shall not exceed ± 1% of the latter.

5.2.2     The provision angle of striking blade is 30 ° ± 1 ° and the end circular arc radius is 2.0 ± 0.5mm. When pendulum swings downward, the central deviation for blade through the space between two supports shall not exceed ± 0.2mm, the blade shall be in contact with the specimens striking surface. Contact line shall be perpendicular to the longitudinal axis of the specimens and the deviation does not exceed ± 2°.

5.3   Specimens bearing

It's two rigidly mounted support blocks, make the test sample be horizontal and the deviation within 1/20 or less. In the moment of an impact, the striking surface of specimens shall be parallel

# 完整版本请在线下单

或咨询：

TEL： 400-678-1309

QQ： 19315219

Email：info@lancarver.com

http://www.lancarver.com

## 对公账户：

**单位名称**：北京文心雕语翻译有限公司

**开 户 行**：中国工商银行北京清河镇支行

**账　　号**：0200 1486 0900 0006 131

## 支付宝账户：info@lancarver.com

注: 付款成功后，请预留电邮，完整版本将在一个工作日内通过电子 PDF 或 Word 形式发送至您的预留邮箱，如需索取发票，下单成功后的三个工作日内安排开具并寄出，预祝合作愉快！