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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 1043.1-2008

**Plastics -- Determination of Charpy impact properties -- Part 1:
Non-instrumented impact test**

塑料 简支梁冲击性能的测定 第1部分：非仪器化冲击试验

(English Translation)

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Foreword

GB/T 1043 "Plastics - Determination of Charpy impact properties" is divided into 2 parts:

- Part 1: Non-instrumented impact test;
- Part 2: Instrumented impact test.

This Part is Part 1 of GB/T 1043. It identically adopted ISO 179-1:2000 "Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test" (English edition) and incorporated the contents of the Amendment No. 1 issued by ISO/TC 61/SC 2 in 2005 into the text.

This Part is an identical translation to ISO 179-1:2000. They are fully consistent in technical content.

For ease of use, this Part made the following editorial changes:

- changed "this Part of ISO 179" to "this Part of GB/T 1043" or "this Part";
- deleted the foreword of ISO 179-1:2000;
- added the foreword of GB/T 1043;
- replaced the international standards listed in "Normative references" with corresponding

national standards that use the international standards, except there are no corresponding national standards.

This Part replaces GB/T 1043-1993 "Plastics Determination of Charpy impact strength of rigid materials".

Compared with GB/T 1043-1993, the main changes in this Part are as follows:

- changed the standard name; added the table of contents, foreword;
- expanded the scope of application; added thermotropic liquid crystal polymer;
- expanded and modified the terms and definitions; introduced "edgewise impact", "flatwise impact", "normal impact", "parallel impact"; deleted "relative impact strength"; included several types of damage in the operation steps;
- changed the notch position of notched specimen, that is, the notch is opened on the narrow longitudinal plane of the specimen;
- changed the specimen size;
- added the chapter of precision;
- expanded the content of test report;
- added Annex A "Additional methods for investigating the influence of surface effects";
- added Annex B "Precision data".

Annex A and Annex B of this Part are informative.

This Part was proposed by China Petroleum and Chemical Industry Association.

This Part shall be under the jurisdiction of National Technical Committee on Plastics of Standardization Administration of China (SAC/TC 15).

Main drafting organizations of this Part: National Synthetic Resin Quality Supervision and Inspection Center, Guangzhou Synthetic Materials Research Institute Co., Ltd.

1.1 This Part of GB/T 1043 specifies a method for determining the Charpy

impact strength of plastics under defined conditions. A number of different types of specimen and test configurations are defined. Different test parameters are specified according to the type of material, the type of test specimen and the type of notch.

1.2 This Part is used to investigate the behavior of specified types of specimen

under the impact conditions defined and for estimating the brittleness or toughness of specimens within the limitations inherent in the test conditions. It may also be used for the determination of comparative data from similar types of material.

1.3 This Part has a greater range of applicability than that given in GB/T 1843

and is more suitable for the testing of materials showing interlaminar shear fracture or of materials exhibiting surface effects due to environmental factors.

1.4 This Part is suitable for use with the following range of materials:

- rigid thermoplastic moulding and extrusion materials, including filled and reinforced compounds in addition to unfilled types; rigid thermoplastics sheets;
- rigid thermosetting moulding materials, including filled and reinforced compounds; rigid thermosetting sheets, including laminates;
- fibre-reinforced thermosetting and thermoplastic composites incorporating unidirectional or non-unidirectional reinforcements such as mat, woven fabrics, woven rovings, chopped strands, combination and hybrid reinforcements, rovings and milled fibers, sheet made from pre-impregnated materials (prepregs), including filled and reinforced compounds;
- thermotropic liquid-crystal polymers.

1.5 This Part is not normally suitable for use with rigid cellular materials and sandwich structures containing cellular material. Also, notched specimens are not normally used for long-fiber-reinforced composites or thermotropic liquid-crystal polymers.

1.6 This Part is suited to the use of specimens which may be either moulded to the chosen dimensions, machined from the central portion of a standard multipurpose test specimen (see GB/T 11997) or machined from finished or semi-finished products such as mouldings, laminates and extruded or cast sheet.

1.7 This Part specifies preferred dimensions for the test specimen. Tests which are carried out on specimens of different dimensions or with different notches, or specimens which are prepared under different conditions, may produce results which are not comparable. Other factors, such as the energy capacity of the apparatus, its impact velocity and the conditioning of the specimens can also influence the results. Consequently, when comparative data are required, these factors must be carefully controlled and recorded.

1.8 This Part should not be used as a source of data for design calculations.

Information on the typical behavior of a material can be obtained, however, by testing at different temperatures, by varying the notch radius and/or the thickness and by testing specimens prepared under different conditions.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding

corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable.

For undated references, the latest edition of the referenced document applies.

GB/T 1843-2008, Plastics - Determination of Izod impact strength (ISO 180:2000, IDT)
GB/T 2918-1998, Plastics - Standard atmospheres for conditioning and testing (idt ISO 291: 1997)
GB/T 3360-1982, Statistical interpretation of data - Estimation of the mean -Confidence interval (neq ISO 2602: 1980)
GB/T 4550-2005, Preparation of unidirection orientated fiber reinforced plastic plates for test purposes (ISO 1268-5:2001, NEQ)
GB/T 5471-2008, Plastics - Compression moulding of test specimens of thermosetting materials (ISO 295:2004, IDT)
GB/T 9352-2008, Plastic - Compression moulding of test specimens of