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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

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GB/T 11547-2008

Replacing GB/T 11547-1989

**Plastic - Methods of test for the determination of the
effects of immersion in liquid chemicals**

塑料 耐液体化学试剂性能的测定

(ISO 175:1999, MOD)

Issued on: September 04, 2008

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Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of PRC;

Standardization Administration of PRC.

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Foreword

This standard is modified to use ISO 175:1999 "Plastics - Methods of test for the determination of the effects of immersion in liquid chemicals" (English version).

This standard has been redrafted in accordance with ISO 175:1999. Appendix A provides a comparison list of the clause numbers of this standard and ISO 175:1999.

Taking into account China's national conditions, this standard was revised when adopting international standards. These technical differences are identified by vertical single lines in the margins of the terms they relate to.

The main technical differences between this standard and ISO 175:1999 are as follows:

- MODIFY the note to 4.1.1 of ISO 175:1999 to the clause of 4.1.1 of this standard;
- For clause 4.2.1 in ISO 175:1999, ADD that the allowable temperature deviation in the temperature range of 100 °C ~ 105 °C is ± 3 °C;
- CHANGE the normative references from the ISO standard to the Chinese standard accordingly;
- CHANGE some expressions applicable to international standards to those applicable to Chinese standards.

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

- CHANGE the word "ISO 175" into "this standard";
- DELETE the foreword to ISO 175:1999.

This standard replaces GB/T 11547-1989 "Plastics - Determination of the effects of liquid chemicals, including water". As compared with GB/T 11547-1989, the main technical changes are as follows:

- MODIFY the standard name;
- ADD the table of contents and foreword;
- ADD the specific requirements for specimen size "Preferred specimen size is 60 mm x 60 mm" (see 4.4);
- CHANGE the size requirement of the specimen from "50 \pm 1 mm" to "60

mm ± 1 mm" (see 5.3);

- ADD "5.2.3.4 Specimen soaking device" and "5.5.1.8 Measurement of liquid absorption volume".

Appendix B of this standard is a normative appendix. Appendix A and Appendix C of this standard are informative appendices.

This standard was proposed by the China Petroleum and Chemical Industry Association.

This standard shall be under the jurisdiction of the National Plastics Standardization Technical Committee (SAC/TC 15).

Responsible drafting organization of this standard: National Synthetic Resin Quality Supervision and Inspection Center.

Participated drafting organizations of this standard: Sinopec Beihua Institute National Chemical Building Materials Testing Center (Material Testing Department), National Plastics Product Quality Inspection Center (Fuzhou), Guangzhou Jinfa Technology Co., Ltd.

The main drafters of this standard: Zhao Ping, Wang Jiandong, Li Jianjun, Liu Yuchun, He Fan.

This standard replaces the standard previously issued as follows:

- GB/T 11547-1989

Plastic – Methods of test for the determination of the effects of immersion in liquid chemicals

1 Scope

1.1 This standard specifies the measurement of the performance change of plastic specimen as immersed in liquid chemical reagent without being affected by external influences. This standard does not include the environmental stress cracking test (ESC) as specified in ISO 22088-2:2006, ISO 22088-3:2006, ISO 22088-4:2006.

1.2 This standard only applies to the determination of the specimen the surface of which is completely immersed in liquid chemical reagents.

Note: This method may not be suitable for partial immersion or intermittent immersion of plastic specimens.

1.3 This standard applies to all solid plastics, such as molded or extruded plastics, sheets, tubes, rods or sheets which have a thickness of more than 0.1 mm. This standard does not apply to porous plastic materials.

2 Normative references

The provisions in following documents become the provisions of this standard through reference in this standard. For the dated references, the subsequent amendments (excluding corrections) 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 1034-2008 Plastics - Determination of water absorption (ISO 62:2008, IDT)

GB/T 1690-2006 Rubber vulcanized or thermoplastic - Determination of the effect of liquids (ISO 1817:2005, MOD)

GB 2536-1990 Transformer oils (neq IEC 60296:1982)

GB/T 2918-1998 Plastics - Standard atmospheres for conditioning and testing (idt ISO 291:1997)

GB/T 8806-1988 Measurement method of dimensions of plastic pipes (eqv ISO 3126: 1974)

GB/T 15596-1995 Plastics - Determination of changes in color and variations in properties after exposure to daylight under glass, natural weathering or artificial light (eqv ISO 458: 1980)

GB/T 17037.3-2003 Plastics - Injection moulding of test specimens of thermoplastic materials - Part 3: Small plates (ISO 294 3:2002, IDT)

ISO 2818:1994 Plastics - Preparation of test specimens by machining

ISO 3205:1976 Preferred test temperature

3 Principle

Under the conditions of specified temperature and specified time, soak the specimen completely into the test solution.

Before and after soaking, respectively determine the performance of specimen. If possible, it may also be determined after drying. In the latter case, in the same group of specimens, carry out test one by one as much as possible.

Note: Only when the specimens used have the same shape, the same size (especially the same thickness) and very similar conditions (internal stress, surface, etc.), this test method can compare the performance between different plastics.

The prescribed test methods are as follows:

- a) Immediately after soaking or post-soaking drying, determine the change in mass, size and appearance of the specimen;
- b) Immediately after soaking or post-soaking drying, determine the change of physical properties of the specimen (mechanical properties, thermal properties, optical properties, etc.);
- c) Liquid absorption volume.

If it is required to determine that the material is still affected by the liquid, it shall use the method of testing immediately after soaking. If it is required to determine the status of the material under the effect of liquid (the liquid is volatile), it shall use the method of testing after post-soaking drying. This method can determine the effect of soluble components.

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