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Plastics - Thermoplastic polyurethanes for moulding and extrusion - Part 1: Designation system and basis for specifications

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Foreword

This document was drafted in accordance with the provisions of GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document is Part 1 of GB/T 42918 "Plastics - Thermoplastic polyurethanes for moulding and extrusion". GB/T 42918 has released the following parts:

- Part 1: Designation system and basis for specifications.

This document identically adopts ISO 16365-1:2014 "Plastics - Thermoplastic polyurethanes for moulding and extrusion - Part 1: Designation system and basis for specifications".

A "Terms and definitions" chapter is added to this document.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

This document was proposed by China Petroleum and Chemical Industry Federation.

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

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1 Scope

This document establishes the designation system for thermoplastic polyurethane elastomers used in molding and extrusion, AND provides a table of designation codes for thermoplastic polyurethane elastomers.

This document applies to the designation of all thermoplastic polyurethane elastomer materials, which are normally used in powder, granular or spherical forms. It serves as the basis for determining product specifications. These materials are unmodified or modified with colorants, fillers or additives.

Different types of thermoplastic polyurethanes are distinguished by different grades of the following properties:

a) Hardness;

b) Tensile elastic modulus (optional).

Information on the alternation of hard and soft segments in the main chain, intended applications and/or processing methods, important properties, additives, colors, fillers, reinforcements are also relevant for the designation and classification of thermoplastic polyurethanes.

This document does not imply that materials designated identically will necessarily have the same properties. This document does not provide the engineering data, performance data, processing condition data, which is required to specify the material for a particular application and/or processing method. When necessary, determine these additional properties according to the appropriate methods in ISO 16365-2.

In order to describe the special use or recyclable processing of certain thermoplastic elastomers, additional requirements are given in character group 5 (see 4.1 and 4.6).

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, for dated reference documents, only the version corresponding to the date applies to this document; for undated reference documents, the latest version (including all amendments) applies to this document.

ISO 527 (all parts) Plastics - Determination of tensile properties

Note: GB/T 1040 (all parts) Plastics - Determination of tensile properties [ISO 527 (all parts)]

ISO 868 Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)

Note: GB/T 2411-2008 Plastics and ebonite - Determination of indentation hardness by means of a durometer (shore hardness) (ISO 868:2003, IDT)

ISO 1043-4 Plastics - Symbols and abbreviated terms - Part 4: Flame retardants

Note: GB/T 1844.4-2008 Plastics - Symbols and abbreviated terms - Part 4: Flame retardants (ISO 1043-4:1998, IDT)

ISO 16365-2 Plastics - Thermoplastic polyurethanes forming and extrusion - Part 2: Preparation of test specifications and determination of properties

ISO 18064 Thermoplastic elastomers - Nomenclature and abbreviated terms

Note: GB/T 22027-2008 Thermoplastic elastomers - Nomenclature and abbreviated terms (ISO 18064:2003, IDT)

3 Terms and definitions

There are no terms or definitions to be defined in this document.

4.1 General

The designation system for polyurethanes is based on the following standardized schema, see Figure 1.

The designation includes an optional description group and identification group, which

is marked as "thermoplastic"; the identification group includes a national standard number group and a single item group. For clarity of designation, single item groups are subdivided into 5 character groups.

- Character group 1: Identification of thermoplastic polyurethane, according to the abbreviation symbol (TPU) defined in ISO 18064 and optionally the alternating information of hard and soft segments in the main chain (see 4.2).
- Character group 2: Filling material or reinforcing material, containing the outlined nominal content (see 4.3):
* Important properties, modifiers, flame retardants (see 4.3);
* Recycling statement: R followed by a number representing the mass percentage of recycled materials (see 4.3).
- Character group 3: Application and processing:
* Position 1: Processing method (see 4.4).
* Position 2 and beyond: Additives, supplementary information, other properties (see 4.4).
- Character group 4: Design performance (see 4.5):
* Hardness;
* Modulus.
- Character group 5: For classification purposes, a fifth character group containing additional information may be used (see 4.6). The type of information used and the code-letters are not the subject of this document.

The first character of a single item group shall be a hyphen. The 5 character groups shall be separated by commas. If a certain character group is missing, double delimiters (,,) shall be used to identify it, such as using two commas. The trailing comma can be omitted.

For partial tags, use the first two character groups of the designation, connected by a hyphen which is placed between the symbols '>' and '< ', with no spaces between the symbols.