
Plastomerni elastomeri - Nomenklatura in okrajšave (ISO/DIS 18064:2021)

Thermoplastic elastomers - Nomenclature and abbreviated terms (ISO/DIS 18064:2021)

Thermoplastische Elastomere - Nomenklatur und Kurzzeichen (ISO/DIS 18064:2021)

Élastomères thermoplastiques - Nomenclature et termes abrégés (ISO/DIS 18064:2021)

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Thermoplastic elastomers — Nomenclature and abbreviated terms

Élastomères thermoplastiques — Nomenclature et termes abrégés

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This third edition cancels and replaces the second edition (ISO 18064:2014), which has been technically revised.

The main changes compared to the previous edition are as follows:

- Inclusion of TPO co-polymers
- Differentiation between single polymers and compounds
- Unification of expressions

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Thermoplastic elastomers combine many of the attributes and features of both vulcanized thermoset rubber and thermoplastic materials. It is, therefore, important that any system of classification and nomenclature for this rapidly expanding polymer sector should be acceptable to both the rubber and plastics industries. Neither of the existing International Standards for the nomenclature and abbreviated terms for rubber (ISO 1629) and for plastics (ISO 1043-1) is suitable for this purpose. The system in this document has been devised to avoid any conflict of interests or ambiguity, permit the use of existing terms in the construction of abbreviations for thermoplastic elastomers, and allow for future developments or expansion.

This document uses established abbreviated terms. Its aim is both to prevent the occurrence of more than one abbreviated term for a given thermoplastic elastomer term, and to prevent the interpretation of more than one meaning for a given abbreviated term. For this reason, this document makes appropriate use of the terms and symbols listed in ISO 1043-1 and ISO 1629.

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Thermoplastic elastomers — Nomenclature and abbreviated terms

1 Scope

This document establishes a nomenclature system for thermoplastic elastomers based on the chemical composition of the polymer or polymers involved. It defines symbols and abbreviated terms used to identify thermoplastic elastomers in industry, commerce, and government. It is not intended to conflict with, but to supplement, existing trade names and trademarks.

NOTE 1 The name of the thermoplastic elastomer should be used in technical papers and presentations followed by the abbreviated term used to designate the elastomer in this document.

NOTE 2 Annex A gives thermoplastic-elastomer abbreviated terms that have been used in the past in materials standards, technical bulletins, textbooks, patents, and trade literature.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

ISO 1629, *Rubber and latices — Nomenclature*
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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

Thermoplastic elastomer

TPE

DEPRECATED: Thermoplastic rubber

DEPRECATED: TPR

polymer or blend of polymers that has properties at its service temperature similar to those of vulcanized rubber but can be processed and reprocessed at elevated temperature like a thermoplastic

Note 1 to entry: TPE are elastomers as defined in ISO 472. An elastomer shows recovery after elongation.

4 Nomenclature system

4.1 TPE is the abbreviation for thermoplastic elastomers. However, when defining subcategories of thermoplastic elastomers, the prefix T stands for thermoplastic elastomer, whereas the P and subsequent letter together represent the polymer category.

4.2 The abbreviated term for each category of thermoplastic elastomer shall be followed, after a hyphen, by a combination of symbols to describe a specific member of each category, as detailed in Clause 6.

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4.3 If the TPO and TPS are compounded with other polymers, "-M" is added after the letters describing the main polymer.

5 Categories of thermoplastic elastomer

5.1 TPA

Thermoplastic polyamide elastomer, consisting of a block copolymer of alternating hard and soft segments with amide chemical linkages in the hard segments and ester, ether or carbonate chemical bonds or mixtures of them in the soft segments.

5.2 TPC

Thermoplastic copolyester elastomer, consisting of a block copolymer of alternating hard segments and soft segments with ester linkages in the hard segments and ester, ether or carbonate chemical bonds or mixtures of them in the soft segments.

5.3 TPO

This category comprises the following two definitions:

Thermoplastic polyolefin elastomer, consisting of a block copolymer of alternating hard segments and soft segments where all segments have an olefinic or aliphatic structure.

Thermoplastic polyolefin elastomer mixture, consisting of a blend of a polyolefin and a conventional non-vulcanized rubber and the rubber phase in the blend having little or no crosslinking.

5.4 TPS

Thermoplastic polystyrene elastomer, consisting of at least a triblock copolymer of styrene and a specific diene, where the two end segments, i.e. the hard segments, are polystyrene and the internal soft segment is a polydiene or hydrogenated polydiene.

5.5 TPU

Thermoplastic polyurethane elastomer, consisting of a block copolymer of alternating hard and soft segments with urethane chemical linkages in the hard segments and ether, ester or carbonate chemical bonds or mixtures of them in the soft segments.

5.6 TPV

Thermoplastic elastomer vulcanizate, consisting of a blend of a thermoplastic material and a conventional rubber in which the rubber has been crosslinked by the process of dynamic vulcanization during the blending and mixing step.

5.7 TPZ

Unclassified thermoplastic elastomer, comprising a polymer compound by any composition or structure other than those grouped in TPA, TPC, TPO, TPS, TPU, and TPV.

6 Materials in each TPE category

6.1 TPA

The category of TPA is sub-categorized into groups according to the linkages in the soft blocks. The following symbols are used: