SLOVENSKI STANDARD
oSIST prEN ISO 6427:2024

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Polimerni materiali - Določevanje snovi, ki se izločijo z ekstrakcijo z organskimi topili (klasične metode) (ISO/DIS 6427:2024)

Plastics - Determination of matter extractable by organic solvents (conventional methods) (ISO/DIS 6427:2024)

Kunststoffe - Bestimmung der extrahierbaren Bestandteile durch organische Lösemittel (Standardverfahren) (ISO/DIS 6427:2024)

Plastiques - Détermination des matières extractibles par des solvants organiques (Méthodes conventionnelles) (ISO/DIS 6427:2024)

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Plastics — Determination of matter extractable by organic solvents (conventional methods)

Plastiques — Détermination des matières extractibles par des solvants organiques (Méthodes conventionnelles)

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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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

ISO 6427 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 5, *Physical-chemical properties*.

This fourth edition cancels and replaces the third edition (ISO 6427:2013), which has been technically revised. The main changes compared to the previous edition are as follows:

— update of normative references;

— addition of tolerances of all relevant test parameters;

— completion of test report.

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

There are several very similar national and international standards for determination of the percentage of extractable matter, with only slight differences in the procedures. To facilitate the work of the laboratory staff which has to carry out these determinations on various plastics products, the generally applicable methods are described in this document.

Plastics — Determination of matter extractable by organic solvents (conventional methods)

1 Scope

This document specifies methods for the determination of components in plastics that can be extracted by hot organic liquids near their boiling points. For one special case, a so-called cold-extraction method is given in Annex B.

The extractable components can be monomers, oligomers, polymers, plasticizers, stabilizers, etc. The kind and percentage of extractable matter influence the properties of plastics.

The recommended extraction liquid depends on the type of plastic and on the purpose of the determination (see Table 1). The extracted amounts of special constituents are often not quantitative in the sense of analytical chemistry.

This document does not apply to plastics that come into contact with food or drinking water. Special regulations for those plastics are established in many countries. In order to test plastics for compliance with these regulations, methods other than those given in this document are used in most cases. The methods of this document are not intended to be used for migration tests.

If this document is used to test plastics other than those mentioned in Table 1, the operating conditions are intended to be agreed upon by the interested parties.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 308, *Plastics — Phenolic moulding materials — Determination of acetone-soluble matter (apparent resin content of material in the unmoulded state)*

ISO 383, *Laboratory glassware — Interchangeable conical ground joints*

ISO 565, *Test sieves — Metal wire cloth, perforated metal plate and electroformed sheet — Nominal sizes of openings*

ISO 1773, *Laboratory glassware — Narrow-necked boiling flasks*

ISO 1875, *Plastics — Plasticized cellulose acetate — Determination of matter extractable by diethyl ether*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Reagents and materials

4.1 Extraction liquid, of AR grade and higher grade, to be selected according to the requirements of the plastic material being tested (see Table 1).

4.2 Anti-bumping granules.

4.3 Glass wool, pre-extracted.

5 Apparatus

5.1 Mill, for reducing the sample to the required grain size.

A mill in which the sample is cut between rotating and stationary blades is preferred. Large pieces can be reduced in size with a pair of shears before they are fed into the mill.

5.2 Set of sieves, complying with the requirements of ISO 565.

5.3 Flat-bottomed flask, of suitable capacity, for example 250 ml, complying with the requirements of ISO 1773, with ground-glass neck complying with the requirements of ISO 383.

5.4 Extraction apparatus, of such a design that the crucible or thimble is heated by the rising vapour of the extraction liquid.

5.4.1 Soxhlet extractor, as shown in Figure 1.

5.4.2 Other extractors, for example that designed by Twisselmann (see Figure 2), may be used, if they give the same results as the Soxhlet extractor.

5.5 Container, for the test portion to be extracted: chosen from one of the following:

5.5.1 Cellulose paper thimble, of suitable size, for example diameter 33 mm and length 94 mm.

5.5.2 Metal wire basket, of the same dimensions as the thimble (5.5.1).

5.5.3 Glass-filter crucible, pore size 40 µm to 100 µm.

NOTE The choice of a suitable container for the extraction is very important. The mass of the cellulose thimble (5.5.1) depends on its moisture content, and this can lead to variable results when weighing. The metal wire basket (5.5.2) cannot be used with a powder sample or if a chemical reaction is possible between the metal and any of the components of the plastic. Difficulties can be caused by penetration of components of the plastic into the pores of the glass-filter crucible (5.5.3) and subsequent swelling.

5.6 Reflux condenser, fitted with a ground-glass cone to fit the extraction apparatus (5.4), for example a Dimroth condenser.

5.7 Heating device, which does not use a naked flame and is explosion-proof, suitable for use with the flask (5.3).

5.8 Balance, accurate to 0,1 mg.

5.9 Desiccator, containing calcium chloride or silica gel.