SLOVENSKI STANDARD
SIST EN ISO 307:2003

01-december-2003

Nadomeġļ a:
SIST EN ISO 307:2000

Polimerni materiali - Poliamidi - Doloļ anje ġtevila viskoznosti (ISO 307:2003)

Plastics - Polyamides - Determination of viscosity number (ISO 307:2003)

Kunststoffe - Polyamide - Bestimmung der Viskositätszahl (ISO 307:2003)

Plastiques - Polyamides - Détermination de l'indice de viscosité (ISO 307:2003)

Ta slovenski standard je istoveten z: **EN ISO 307:2003**

ICS:

83.080.20	Plastomeri	Thermoplastic materials

SIST EN ISO 307:2003 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 307

August 2003

ICS 83.080.20

Supersedes EN ISO 307:1997

English version

Plastics - Polyamides - Determination of viscosity number (ISO 307:2003)

Plastiques - Polyamides - Détermination de l'indice de viscosité (ISO 307:2003)

Kunststoffe - Polyamide - Bestimmung der Viskositätszahl (ISO 307:2003)

This European Standard was approved by CEN on 1 August 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN ISO 307:2003 E

CORRECTED 2003-10-01

Foreword

This document (EN ISO 307:2003) has been prepared by Technical Committee ISO/TC 61 "Plastics" in collaboration with Technical Committee CEN/TC 249 "Plastics", the secretariat of which is held by IBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2004, and conflicting national standards shall be withdrawn at the latest by February 2004.

This document supersedes EN ISO 307:1997.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 307:2003 has been approved by CEN as EN ISO 307:2003 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

Annex ZA
(normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

NOTE Where an International Publication has been modified by common modifications, indicated by (mod.), the relevant EN/HD applies.

Publication	Year	Title	EN	Year
ISO 1042	1998	Laboratory glassware - One-mark volumetric flasks	EN ISO 1042	1999
ISO 1628-1	1998	Plastics - Determination of the viscosity of polymers in dilute solution using capillary viscometers - Part 1: General principles	EN ISO 1628-1	1998
ISO 1874-1	1992	Plastics - Polyamide (PA) moulding and extrusion materials - Part 1: Designation	EN ISO 1874-1	2000
ISO 6427	1992	Plastics - Determination of matter extractable by organic solvents (conventional methods)	EN ISO 6427	1998

INTERNATIONAL STANDARD

ISO 307

Fourth edition
2003-08-15

Plastics — Polyamides — Determination of viscosity number

Plastiques — Polyamides — Détermination de l'indice de viscosité

Reference number
ISO 307:2003(E)

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Published in Switzerland

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 307 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*.

This fourth edition cancels and replaces the third edition (ISO 307:1994), which has been technically revised.

Plastics — Polyamides — Determination of viscosity number

1 Scope

This International Standard specifies a method for the determination of the viscosity number (also referred to as reduced viscosity) of dilute solutions of polyamides in certain specified solvents.

The method is applicable to the polyamides designated PA 46, PA 6, PA 66, PA 69, PA 610, PA 612, PA 11, PA 12, PA 6T/66 and PA MXD6 as defined in ISO 1874-1, as well as to copolyamides and other polyamides that are soluble in one of the specified solvents under the specified conditions.

The method is not applicable to polyamides produced by anionic polymerization of lactams or produced with crosslinking agents; such polyamides are normally insoluble in the specified solvents.

In general, polyamide samples have to be completely soluble in the solvents mentioned, and the additives contained in them (e.g. reinforcement fibres, flame-retardants and modifiers) must not interfere with the viscosity measurement. However, the method can be used for production control of compounds containing additives which interfere with the viscosity measurement. In such cases, a particular compound in a particular solvent will have a specific viscosity number which, in principle, cannot be converted from one solvent to another except by means of a relationship specific to the compound concerned. Viscosity numbers converted in this way are only suitable for inter-product comparisons.

The viscosity number is determined by the general procedure specified in ISO 1628-1, observing the particular conditions specified in this International Standard.

The determination of the viscosity number of a polyamide provides a measure of the relative molecular mass of the polymer.

2 Normative references

The following referenced documents are indispensable for the application 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 1042:1998, *Laboratory glassware — One-mark volumetric flasks*

ISO 1628-1:1998, *Plastics — Determination of the viscosity of polymers in dilute solution using capillary viscometers — Part 1: General principles*

ISO 1874-1:1992, *Plastics — Polyamide (PA) moulding and extrusion materials — Part 1: Designation*

ISO 3105:1994, *Glass capillary kinematic viscometers — Specifications and operating instructions*

ISO 3451-4:1998, *Plastics — Determination of ash — Part 4: Polyamides*

ISO 6427:1992, *Plastics — Determination of matter extractable by organic solvents (conventional methods)*

ISO 15512:1999, *Plastics — Determination of water content*

ASTM D 789-98, *Standard Test Methods for Determination of Relative Viscosity and Moisture Content of Polyamide (PA)*

JIS K 6920-2:2000, *Plastics — Polyamide (PA) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 1628-1 and the following apply.

3.1
viscosity number
VN
〈of a polymer〉 the value given by the equation

$$\mathrm{VN} = \left(\frac{\eta}{\eta_0} - 1 \right) \times \frac{1}{c} \qquad (1)$$

where

η is the viscosity of a solution of the polymer in a specified solvent;

η_0 is the viscosity of the solvent, expressed in the same units as η;

c is the concentration, in grams per millilitre, of the polymer in the solution.

NOTE The viscosity number is usually expressed in millilitres per gram.

4 Principle

The times of flow of a solvent and a solution of the polyamide at a concentration of 0,005 g/ml in the solvent are measured at 25 °C, the same viscometer being used for both measurements. The viscosity number is calculated from these measurements and from the known concentration of the solution.

5 Reagents and materials

Use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

WARNING — Avoid contact with the skin and inhalation of any vapours of the solvents and cleaning liquids.

5.1 Solvents

5.1.1 Sulfuric acid, (96 ± 0,15) % (by mass) solution.

For the determination of the concentration of commercial sulfuric acid [95 % (by mass) to 97 % (by mass)] and adjustment to 96,0 % (by mass), see Annex A.

5.1.2 Formic acid, (90 ± 0,15) % (by mass) solution.

The solvent shall be stored in a brown glass bottle. Its concentration shall be checked at least every 2 weeks. It shall not contain more than 0,2 % (by mass) of acetic acid or methyl formate.