SLOVENSKI STANDARD
SIST EN ISO 291:1999

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Polimerni materiali – Standardne atmosfere za kondicioniranje in preskušanje (ISO 291:1997)

Plastics - Standard atmospheres for conditioning and testing (ISO 291:1997)

Kunststoffe - Normalklimate für Konditionierung und Prüfung (ISO 291:1997)

Plastiques - Atmospheres normales de conditionnement et d'essai (ISO 291:1997)

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Plastics - Standard atmospheres for conditioning and testing (ISO 291:1997)

Plastiques - Atmosphères normales de conditionement et d'essai (ISO 291:1997)

Kunststoffe - Normalklimate für Konditionierung und Prüfung (ISO 291:1997)

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

The text of the International Standard ISO 291:1997 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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 291:1997 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 291

Second edition
1997-08-01

Plastics — Standard atmospheres for conditioning and testing

Plastiques — Atmosphères normales de conditionnement et d'essai

Reference number
ISO 291:1997(E)

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.

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.

International Standard ISO 291 was prepared by Technical Committee ISO/TC 61, *Plastics,* Subcommittee SC 6, *Ageing, chemical and environmental resistance.*

This second edition cancels and replaces the first edition (ISO 291:1977), which has been technically revised.

Annex A forms an integral part of this International Standard. Annex B is for information only.

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Plastics – Standard atmospheres for conditioning and testing

1 Scope

This International Standard sets out specifications relating to the conditioning and testing of all plastics and all types of test specimens at constant atmospheric conditions which correspond to the average atmospheric conditions in laboratories.

Special atmospheres applicable to a particular test or material or simulating a particular climatic environment are not included in this International Standard.

2 Definitions

For the purposes of this International Standard, the following definitions apply:

2.1 standard atmosphere
Preferred constant atmosphere for which specific air temperature and humidity values, as well as limit ranges for atmospheric pressure and air-circulation velocity, are specified, the air not having any significant additional constituents and the atmosphere not being subject to any significant additional radiation influences.

NOTE 1: Standard atmospheres permit a defined state to be attained and maintained for samples or specimens.

NOTE 2: Standard atmospheres correspond to the average atmospheric conditions in laboratories and can be established in conditioning (controlled atmosphere) cabinets, chambers or rooms.

2.2 conditioning atmosphere
Constant atmosphere in which a sample or test specimen is kept before being subjected to test.

2.3 test atmosphere
Constant atmosphere to which a sample or test specimen is exposed throughout the test.

2.4 conditioning
One or more operations intended to bring a sample or test specimen into a state of equilibrium with regard to temperature and humidity.

2.5 conditioning procedure
Combination of the conditioning atmosphere and the period of conditioning.

NOTE 3: In this standard the conditioning atmosphere and the test atmosphere are usually selected as the standard atmosphere.

2.6 ambient temperature
Environmental conditions corresponding to the usual atmospheric conditions in laboratories with uncontrolled temperature and humidity.

3 Principle

If a test specimen is exposed to a specific conditioning atmosphere or temperature, then a reproducible state of temperature and/or moisture equilibrium is reached between the test specimen and the conditioning atmosphere or temperature.

4 Standard atmospheres

Unless otherwise specified, use the conditions given in table 1 as the standard atmosphere.

Table 1 – Standard atmospheres

Symbol for standard atmosphere	Air temperature t °C	Relative humidity U %	Remarks
23/50	23	50	Shall be used unless otherwise specified
27/65	27	65	May be used for tropical countries if agreed on by all parties

NOTE 4: The values in table 1 apply to normal altitudes with an atmospheric pressure between 86 kPa and 106 kPa and an air-circulation velocity ⩾ 1 m/s.

5 Classes of standard atmosphere

Table 2 gives two different classes of standard atmosphere corresponding to different tolerance levels for the temperature and relative humidity. The tolerances given in table 2 apply to the specimen-stowage space in a test enclosure or conditioning enclosure and include deviations both with respect to time and with respect to the position of the test specimen in the enclosure.

Table 2 – Standard atmosphere classes corresponding to different permitted deviations

Class	Permitted deviation in temperature Δt °C	Permitted deviation in relative humidity ΔU %	
		23/50	27/65
1	±1	±5	±5
2	±2	±10	±10

NOTE 5: Usually, the tolerances are coupled in pairs, i.e. class 1 tolerance for both temperature and relative humidity or class 2 tolerance for both.

6 Standard and ambient temperatures

If humidity has no influence or a negligible influence on the properties being examined, the relative humidity does not have to be controlled. The corresponding environments are designated "temperature 23" and "temperature 27", respectively.

Similarly, if neither temperature nor humidity has any noticeable influence on the properties being examined, neither the temperature nor the relative humidity has to be controlled. In this case, the atmospheric condition is termed the "ambient temperature".

The phrase "at ambient temperature" refers to an environment the air temperature of which lies within a specified range, no consideration being given to relative humidity, atmospheric pressure or air-circulation velocity. In general, the air temperature range extends from 18 °C to 28 °C and shall be stated as "at an ambient temperature of 18 °C to 28 °C".

7 Procedure

7.1 Conditioning

The period of conditioning shall be stated in the relevant specifications for the material.

When the periods are not stated in the appropriate International Standard, the following shall be adopted:

a) a minimum of 88 h for atmospheres 23/50 and 27/65;
b) a minimum of 4 h for ambient temperatures of 18 °C to 28 °C.

NOTE 6: For particular tests and for plastics or test specimens that are known to reach temperature and humidity equilibrium either very rapidly or very slowly, a shorter or longer time may be specified for the conditioning period in the appropriate International Standard (see annex A).