SLOVENSKI STANDARD
SIST EN 1244:1999

01-maj-1999

Lepila - Določevanje barve in/ali spremembe barve premazov lepil pod vplivom svetlobe

Adhesives - Determination of the colour and/or colour changes of adhesive coats under the influence of light

Klebstoffe - Bestimmung der Farbe und/oder der Farbänderung von Klebaufstrichen unter Lichteinwirkung

Adhésifs - Détermination de la couleur et/ou des changements de couleur des revetements adhésifs sous l'influence de la lumiere

Ta slovenski standard je istoveten z: **EN 1244:1998**

ICS:

83.180	Lepila	Adhesives

SIST EN 1244:1999 **en**

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English version

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This European Standard was approved by CEN on 24 January 1998.

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

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

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of an identical text or by endorsement, at the latest by August 1998, and conflicting national standards shall be withdrawn at the latest by August 1998.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.

1 Scope

This European Standard is applicable to solvent-based, dispersion, hot-melt and reactive adhesives, their basic constituents, and related products the coating of which are coloured and/or subject to a change of colour by light. It describes a method of measuring the colour of an adhesive coat and the magnitude of a change of colour under the influence of light.

A change of colour of an adhesive coat can be very undesirable in practice, in particular if goods made of white or bright-coloured materials such as paper, textiles or leather are adhesively bonded and material surfaces are contaminated by coated adhesive.

2 Normative references

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.

EN 923	Adhesives - Terms and definitions
EN 1066	Adhesives - Sampling
EN 1067	Adhesives - Examination and preparation of samples for testing
Publication CIE N° 15.2 (1986)	Colorimetry
ISO 554:1976	Standard atmospheres for conditioning and/or testing - Specifications
ISO 2602:1980	Statistical interpretation of test results - Estimation of the mean - Confidence interval
ISO 105-B02:1988	Textiles - Tests for colour fastness - Part B02: Colour fastness to artificial light: Xenon arc fading lamp test

3 Definitions

For the purposes of this standard, the definitions in accordance with EN 923, Publication CIE N° 15.2, and the following definitions apply:

3.1 adhesive coat: Adhesive layer applied to an adherend.

3.2 adhesive film: Adhesive coat separated from the substrate after setting.

3.3 colour: Sensation perceived by the human eye.

4 Principle

The colour of an adhesive coat is measured by colorimeter converting its readings according to the CIE recommendations (publication CIE N° 15.2) to CIELAB values.

The change of colour of an adhesive coat is determined by exposing an adhesive coat for a specified time under specified conditions to artificial light that is very similar in spectral composition to natural daylight but greater in intensity, and then measuring the colour of the coat before and after the exposure to light and calculating the CIELAB colour differences.

5 Safety

Persons using this standard shall be familiar with normal laboratory practice.

This standard does not purport to address all the safety problems, if any, associated with its use.

It is the responsibility of the user to establish safety and health practices and to ensure compliance with any European and national regulatory conditions.

6 Apparatus

6.1 Cardboard, about 250 g/m^2 in mass in relation to the surface, with a smooth surface and a very high degree of whiteness as carrier for adhesive coats and film.

The cardboard shall be free from hydroxybytyl toluene (BHT) or other ingredients liable to cause discoloration by migration to avoid interferences or false results.

6.2 Glass sheets, with a completely even surface (plate glass) for the preparation of adhesive film.

6.3 Coating device, allowing the spreading of the adhesive to be tested on cardboard (see 6.1) or glass sheet (see 6.2) producing on a flat surface a coating of 100 mm x 30 mm and a uniform thickness of (0,1 ± 0,02) mm after drying, cooling and setting, which shall be measured by any suitable methods.

6.4 Colorimeter, for measuring the colour of test specimens both unexposed and exposed to light (see also 8.2) and converting the readings to the CIE colour space values L*, a* and b* and calculating the CIELAB colour differences ΔL^*, Δa^*, Δb^* and ΔE^*_{ab} automatically according to the CIE recommendations (publication CIE N° 15.2). This colorimeter shall also be suitable for the determination of the yellowness index YI.

6.5 Light exposure apparatus, containing the following elements:

6.5.1 Xenon arc lamp, of correlated colour temperatures range from 5 000 °K to 6 500 °K to conform with ISO 105:B02 and a rating in the range 1,5 KW (as suggested in ISO 105:B02), dependent on the type of equipment and cooling system.

6.5.2 Light filter, placed between the Xenon arc lamp and specimen holders so that the ultra-violet spectrum is steadily reduced.

The transmission of the filter shall be at least 90% between 380 nm and 750 nm, falling to 0% between 310 nm and 320 nm.

6.5.3 Heat filter. The spectrum of the Xenon arc contains an appreciable amount of infra-red radiation.

For minimising this radiation an efficient glass or water filter system is necessary.

6.5.4 Test chamber, of a light source is surrounded by 10 or more holders made from and inert material for test specimens 7.1, size 130 mm x 45 mm, arranged in an equal distance on a carousel in such a manner that the intensity of radiation on the plane of specimen reaches about 1 000 W/m^2. The intensity of radiation shall not vary more than 10% from the mean value calculated on all samples. The rotation rate of the carousel shall be from 1 min^{-1} to 5 min^{-1}.

The irradiation of the test specimens shall be selectable between turning sample operations (periodical light-dark cycles) or stationary sample operations (permanent exposure to light).

A humidified stream of air shall pass through the test chamber over the surfaces of the specimens.

The relative humidity of the test chamber shall be controlled by a contact hygrometer.

6.5.5 Cover mask, For a partial exposure of the test specimens to light, cover masks of stainless steel are required, opening after specified times an unexposed section of the surface of the specimens, of a minimum size of 30 mm x 15 mm, for exposure.
The masks shall tightly cover the unexposed part of the specimen so that a sharp borderline is produced between the unexposed and the exposed parts.
In order to avoid adhesion of the adhesive coat to the test specimen it is useful to coat the surface of the cover mask in direct contact with the specimen with an inert release agent (e.g. a poly fluoro hydrocarbon).

6.5.6 Black panel temperature sensor, for measuring the temperature of the surface of the test specimens when tested.

6.5.7 Radiation measuring device, allowing to measure the intensity (W/m^2) and/or the dosage of radiation (J/m^2) on the level of the test specimens.

NOTE: For assessing the dosage of radiation the Blue Wool Reference Standard specified in ISO 105-B02 should be used.

7 Test specimens

7.1 Preparation of the test specimens

Take a sample of the adhesive to be tested in accordance with EN 1066 and examine and prepare it in accordance with EN 1067.

Pour a test portion of this sample on a sheet of cardboard (see 6.1) and spread the adhesive using a coating device (see 6.3) to give coats of size (100 mm x 30 mm).

During coating use a generous quantity of adhesive of thickness (0,1 ± 0,02) mm after complete evaporation of all volatile adhesive constituent (e.g. water, solvents, etc.).

The dry coat shall be of uniform thickness, have uniform surface structure and shall not contain any bubbles.

To fulfil these requirements, the adhesive to be tested shall be applied on cardboard (see 6.1) or on a glass sheet (see 6.2), if necessary after dilution with a suitable solvent, in several coat (always after drying the preceding coat).

If the cardboard (see 6.1) is deformed or damaged by the application of the adhesive, prepare an adhesive film by coating the adhesive on a glass sheet (see 6.2) and attach the film in full contact to the cardboard (see 6.1) forming a test specimen.

A suitable release agent shall be used in a required amount to facilitate or to allow separation of the adhesive film from the glass sheet.

Care shall be taken when attaching the adhesive film to the cardboard to ensure that the surface covered with the release agent is brought into contact with the cardboard.

7.2 Number of test specimens

Unless otherwise indicated, prepare and use for each test five test specimens.

NOTE: Some adhesive coats can also change their colour during storage in the dark.

In such a case a reference test specimen should be stored in the dark to determine the colour change during the test period in accordance with this standard and this should be recorded in the test report.