



SLOVENSKI STANDARD
SIST EN 827:1998

01-februar-1998

Lepila - Določevanje suhega ostanka in suhega ostanka po sušenju do konstantne mase

Adhesives - Determination of conventional solids content and constant mass solids content

Klebstoffe - Bestimmung des Feststoffgehaltes nach Vereinbarung und bis zur Massekonstanz

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Adhésifs - Détermination de l'extrait sec conventionnel et de l'extrait sec a masse constante

[SIST EN 827:1998](#)

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Ta slovenski standard je istoveten z: EN 827:1994

ICS:

83.180

Lepila

Adhesives

SIST EN 827:1998

en

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EUROPEAN STANDARD

EN 827

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 1994

ICS 83.180

Descriptors: Adhesives, chemical analysis, determination of content, dry matter, drying, high temperature tests, testing conditions

English version

**Adhesives - Determination of conventional solids
content and constant mass solids content**

Adhésifs - Détermination de l'extrait sec conventionnel et de l'extrait sec à masse constante Klebstoffe / Bestimmung des Feststoffgehaltes nach Vereinbarung und bis zur Massekonstanz

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist 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, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

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

Foreword

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

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of an identical text or by endorsement, at the latest by May 1995, and conflicting national standards shall be withdrawn at the latest by May 1995.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

1 Scope

This European Standard describes a method for the determination of conventional solids content and, where possible, constant mass solids content.

It is applicable to dispersion, emulsion and solvent based adhesives.

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.

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|------------|--|
| EN 1066 1) | Adhesives : Sampling |
| EN 1067 1) | Adhesives : Examination and preparation of samples for testing |

3 Definitions

For the purposes of this standard, the following definitions apply :

3.1 solids content : Solids content is the ratio to the initial mass, expressed as a percentage, of the residue obtained after evaporation of the volatile components in a given quantity of product under heating conditions which are specified in terms of temperature and time.

NOTE : the required temperature varies according to the type of product under test and depends in particular on the risk of heat degradation, volatility of the solvents and the possibility of reactions such as polycondensations.

1) In course of preparation.



3.2 conventional solids content : The solids content is defined as "conventional" when it is obtained by heating for a specific time.

3.3 constant mass solids content : The solids content is defined as constant mass when it is obtained by heating for successive intervals until the volatile components have evaporated and the residue reaches a constant mass.

4 Apparatus

4.1 Oven with natural ventilation capable of keeping the test temperature constant to within ± 1 °C.

4.2 Oven with forced ventilation capable of keeping the test temperature constant to within ± 1 °C.

4.3 Analytical balance accurate to within 0,1 mg.

4.4 Flat bottomed thin metal container, e.g. metal lid, diameter as indicated in 6.6.1.

4.5 Desiccator, with appropriate dessicant.

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5 Sampling

Take a representative sample of the adhesives to be tested, in accordance with EN 1066 and EN 1067.

6 Procedure

WARNING : During the test dangerous volatile products (toxic, harmful, flammable) might be evolved. Particular attention should be paid to protect the operators, using suitable equipment such as extraction fans.

The following procedure shall be carried out in triplicate :

6.1 Place the clean container (4.4) in the oven at the test temperature for 30 minutes then let it cool in the desiccator (4.5) for at least 15 minutes.

6.2 Weigh the container (4.4) to the nearest 0,1 mg and let m_1 be the mass in grams.

6.3 Transfer accurately a test portion of 1 g to 5 g according to 6.6.1 of adhesive into the container (4.4) and weigh to the nearest 0,1 mg and let m_2 be the mass in grams.

6.4 Place the container in the oven (4.1 or 4.2 according to 6.6.1) and dry at the temperature and for the time specified in 6.6.

6.5 Remove the container, cool in a desiccator (4.5) for at least 15 minutes, and weigh to the nearest 0,1 mg and let m_3 be the mass in grams.

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6.6 Oven drying conditions

6.6.1 Determination of conventional solids content

Types of adhesives	Test condition				
	Quantity sample (g)	Diameter metal container (mm)	Temp. 3) (°C)	Times (min)	Type of oven
Water based Adhes.					
- Adhesives of vegetable origin	2 ± 0.2	60 ± 5	105 ± 1	120 ± 1	Forced ventil. (4.2)
- Adhesives of animal origin	2 ± 0.2	60 ± 5	105 ± 1	120 ± 1	Forced ventil. (4.2)
- Synthetic adhe. Phenolic resins 1)	4 ± 0.4	60 ± 5	135 ± 1	180 ± 1	Natural ventil. (4.1)
- Phenolic resins for particle board 1)	4 ± 0.4	35 ± 5	120 ± 1	120 ± 1	"
- Amino resins	1 ± 0.1	35 ± 5	120 ± 1	120 ± 1	"
- Vinyls (polyvinyl alcohols)	2 ± 0.2	60 ± 5	105 ± 1	120 ± 1	"
Aqueous dispersion adhesives (e.g.)					
- Vinyl polymers and copolymers	1 ± 0.1	60 ± 5	105 ± 1	60 ± 1	natural ventil. (4.1)
- Acrylate polymers and copolymers	1 ± 0.1	60 ± 5	105 ± 1	60 ± 1	"
- Miscellaneous synthetics	1 ± 0.1	60 ± 5	105 ± 1	60 ± 1	"
- Natural rubbers for latex	1 ± 0.1	60 ± 5	105 ± 1	60 ± 1	"
- Polyurethanes	1 ± 0.1	60 ± 5	105 ± 1	60 ± 1	"
- Plasticized polymers	1 ± 0.1	60 ± 5	80 ± 1	60 ± 1	"
Organic solvent based adhesives					
- Inert adhesives	1 ± 0.1	60 ± 5	105 ± 1	120 ± 1	Forced ventil. (4.2)
- Reactive adh. 2)	Test conditions shall be agreed in advance between the parties.				
1)	It may be necessary to dilute certain adhesives based on phenolic resins with alcohol so that the test portion will spread readily.				
2)	Unlike the other organic solvent based adhesives the components of reactive products are in the intermediate state between monomer and polymer. These adhesives may have a significant vapour pressure at 105 °C which may result in a loss of active ingredient ; under normal conditions of use, therefore, these active ingredients are an integral part of the solids content. Under these circumstances the determination of the solids content of such adhesives is uncertain.				
3)	It is essential that the required temperature tolerance is achieved. Ovens used shall therefore be examined to ensure that the internal temperature distribution is such that these requirements are fully complied with.				

6.6.2 Determination of the constant mass solids content

This procedure does not give reproducible result with phenolic resins and amino resins.

Continue drying for two hours at the temperature shown in 6.6.1.

Weigh the container after conditioning in a desiccator (4.5) to the nearest 0,1 mg.

Dry for further successive intervals of 30 minutes. When successive weighings do not differ by more than 2 mg, the lower of the two shall be taken as m_4 (in grams).

If constant mass is not achieved after 5 cycles, this method is considered unsuitable for measuring the solids content of the product under test.

7 Expression of results

7.1 **Conventional solids content (C1)**. Express the result of each of the three test as a percentage by mass using the following equation 1 :

$$C1 = \frac{m_3 - m_1}{m_2 - m_1} \times 100 \quad (1)$$

Calculate the arithmetic mean to the first decimal place.

The difference between each measurement and the mean shall be less than 1 % of this mean ; otherwise repeat the test.

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7.2 **Constant mass solids content (C2)**. Express the mean of three results of the test as a percentage by mass using the following equation 2 :

$$C2 = \frac{m_4 - m_1}{m_2 - m_1} \times 100 \quad (2)$$

The difference between each measurement and the mean shall be less than 2 % of this mean ; otherwise repeat the test.

8 Test report

The test report shall include the following information :

- a) a reference to this European Standard ;
- b) the type and designation of the adhesive tested ;