Nederlandse

norm

Ontwerp

NEN-EN-ISO 14678

prEN ISO 14678

Publikatie uitsluitend voor commentaar

Lijmen. Bepaling van de weerstand tegen uitlopen (zakvorming) (ISO/DIS 14678:1995)

Adhesives. Determination of resistance to flow (sagging) (ISO/DIS 14678:1995)

juli 1995
UDC 621.792.052:620.1

Commentaar voor 1 november 1995

De European Committee for Standardization (CEN), waarin de nationale normalisatie-instituten van 18 Europese landen samenwerken, heeft gepubliceerd het Europese normontwerp:

prEN ISO 14678 Adhesives. Determination of resistance to flow (sagging) (ISO/DIS 14678:1995)

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Normcommissie 310 193 "Lijmen"

Prijsklasse 30

Nederlands Normalisatie-instituut
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DRAFT
prEN ISO 14678

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPÄISCHE NORM

May 1995

ICS

Descriptors :

English version

Adhesives - Determination of resistance to flow (sagging) (ISO/DIS 14678:1995)

Adhésifs - Détermination de la résistance au fluage (coulure) (ISO/DIS 14678:1995)

Klebstoffe - Bestimmung des Widerstandes gegen Fließen ("Sagging") (ISO/DIS 14678:1995)

This draft European Standard is submitted to the CEN members for parallel enquiry. It has been drawn up by Technical Committee CEN/TC 193 .

If this draft becomes a European Standard, 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.

This draft European Standard was established by CEN 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.

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CEN

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

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

Ref. No. prEN ISO 14678:1995 E

Foreword

This draft European Standard was prepared by CEN TC 193 "Adhesives", the secretariat of which is held by AFNOR.

The CEN/TC 193 has decided to submit this draft European Standard to the CEN Enquiry and also to the DIS Enquiry in ISO following agreement of ISO/TC 61/SC1 under 5.2 of the guidelines for implementation of the Vienna Agreement

0 Introduction

When an adhesive joint is prepared, it is important that the applied adhesive does not flow away from the area of the joint. Flow can occur before the joint has been assembled, eg before solvent or water has evaporated, or after the joint has been closed, but before the adhesive has set, eg during the curing, solidification, or drying process.

The flow of an applied adhesive will be influenced by the stress applied and the duration and temperature of the bonding process. The extent of flow of an adhesive will also be influenced by the surface energies involved and the degree of roughness of the adherents. The occurrence of flow under gravity is called sagging (see clause 3).

This draft European Standard describes three types of test for the assessment of sagging. In the first type of test, which simulates the conditions before joint assembly, the extent of flow of an adhesive down a surface which is either vertical (methods 1, 2 and 3) or at 60 to the horizontal (method 4) is measured. In the second type of test, which simulates conditions after assembly (methods 5 and 6), the flow of adhesive from a hole or slot is observed. The third type of test simulates conditions during the cure cycle for structural film adhesives (method 7). The method appropriate to the type of adhesive and its consistency should be selected.

1 Scope

This draft European standard describes 7 methods for the assessment of the flow characteristics of adhesives after application at room temperature and during cure, by the measurement of sag. These methods may be used both for specifying an adhesive or for quality control purposes.

2 Normative references

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

EN 1066 Adhesives : Sampling[1)]

EN 1067 Adhesives : Examination and Preparation of samples for testing[1)].

[1)] In course of preparation

EN [193 WI 003] Structural adhesives - Guidelines for the surface preparation of metal [1)]

3 Definitions

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

Flow : Deformation of an adhesive or adhesive layer.

Sagging : A downward movement of an adhesive film between the time of application and setting resulting in an uneven coating having a thick lower edge.

NOTE :The resulting sag is usually restricted to a local area of a vertical surface.

4 Guidance : typical applications for the 7 test methods :

* Method 1 : Use of an applicator to apply a wet film for applying strips of adhesives - resistance to flow after application.

* Method 2 : Use of a plug former - resistance to sagging after application.

* Method 3 : Use of a scraper to apply wet film for applying adhesive - resistance to flow after application during cure.

* Method 4 : Use of test blocks to measure static flow of adhesives and sealants after application and during cure.

* Method 5 : Flow from a lap joint - resistance to flow after application.

* Method 6 : Flow of adhesive through a hole - resistance to dripping after application.

* Method 7 : Flow of structural adhesive films - resistance to flow during the cure cycle.

5 Sampling

Take a significant sample of the adhesive to be tested according to EN 1066. Homogenize as described in EN 1067, where applicable, depending on which of the seven test methods is to be employed.

[1)] In course of preparation - Revision of ISO 4588

6 Test methods

6.1 Method 1 : use of an applicator to apply a wet film

6.1.1 Principle

A wet film of the adhesive of defined thickness and shape is applied to a flat horizontal surface of a substrate using an applicator. After application the test panel is placed vertically in the test atmosphere for a specified time. The extent of sag of the applied adhesive is measured (using the top edge of the test panel as a reference).

6.1.2 Supplementary information

This method of test requires the following supplementary information which shall be specified when the method is called up :

a) a description of the test substrate ;

b) the procedure for preparation of the test surface ;

c) details of the conditioning atmosphere ;

d) details of the test atmosphere ;

e) the method of application of the adhesive and applicator gap size.

NOTE : The wet film thickness given by an applicator is generally less than the depth of the gap.

f) The duration of test.

6.1.3 Apparatus

6.1.3.1 Test panel(s), of glass or other specified material. Dimensions of (300 x 200) mm are convenient. Sufficient panels to allow for three strips of adhesive of similar thickness are required.

6.1.3.2 Applicator(s), of different gap sizes (or stencils and suitable applicators, if the nature of the adhesive requires this apparatus).

6.1.3.3 Enclosure(s), to provide the specified conditioning and/or test atmospheres.

6.1.4 Conditioning and pretreatment

Cut test panels as required. Thoroughly clean each panel and carry out any specified pretreatment. Condition the adhesive and the prepared test panels (if required) in the specified conditioning atmosphere.

NOTE : If not otherwise specified the recommended conditions are (23 ± 2) °C and (50 ± 5) % RH.

6.1.5 Procedure

Place a prepared test panel in a horizontal position and apply strips of the adhesive parallel to the longer edge (see figure 1). Mark one of the longer edges as the reference edge and as expeditiously as possible measure the distance in millimetres of the further edge of each strip from it.

Method 1 : Use of an applicator to apply a wet film

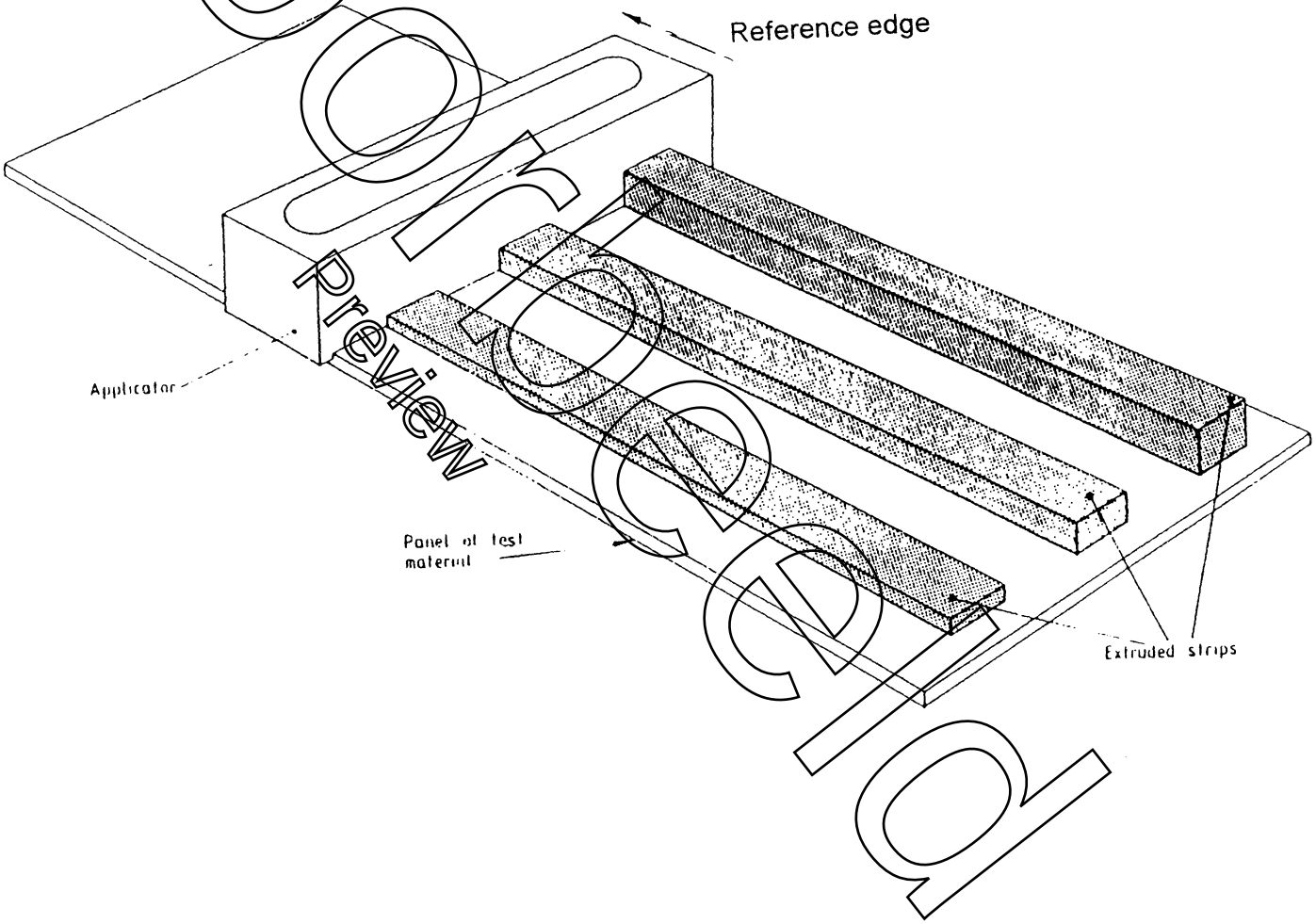

Figure 1 : Applicator for preparing adhesive strips

Taking care to avoid vibration, mount the test panel with 2 of the vertical so that the strips are horizontal and the reference edge is at the top (see figure 2). Place the panel in the test atmosphere for the specified time and then determine the sag of the adhesive by measuring the maximum distance of flow of each strip from the reference edge.

Method 1 : Use of an applicator to apply a wet film

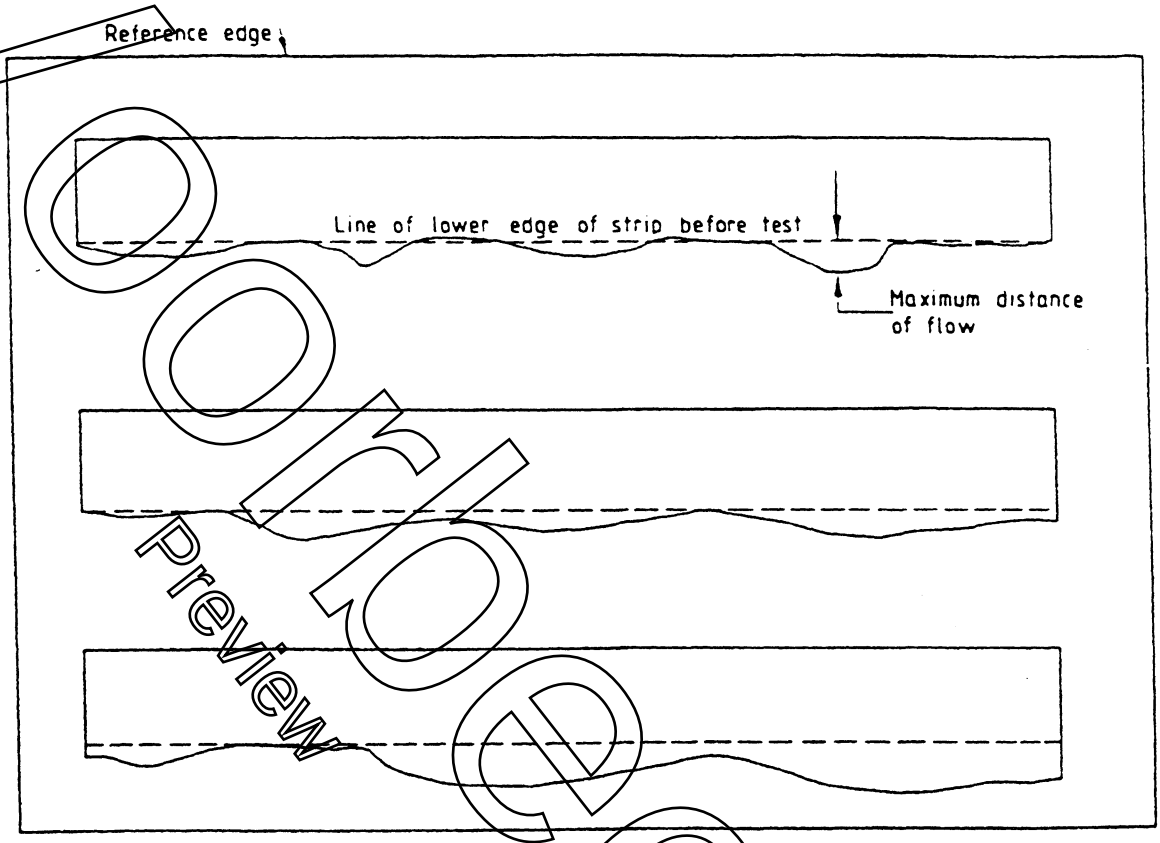

Figure 2 : Flow of adhesive strips

NOTE : The test panel may be reused only if the surface condition in the actual bonding process can be reproduced in the test.

Repeat the test for at least three strips at each applicator gap size.

6.1.6 Expression of results

For each strip calculate the sag as the difference in millimetres between the distance of the further edge of the strip from the reference edge before and after the test.

Express the result as the mean sag in millimetres of the repeated tests at each specified applicator gap size.

6.1.7 Test report

The report shall state the following :

a) a reference to this European Standard ;

b) the designation of the adhesive giving all information required for complete identification of the sample ;

c) the items of supplementary information given in 6.1.2 ;

d) the result for each applicator gap depth;

e) that the method of test complied with the requirements of this standard, ie. method 1, or if it did not, the respects in which it did not comply ;

f) the date of the test.

6.2 Method 2 : use of a plug former

6.2.1 Principle

The adhesive is used to fill a cavity of known dimensions. The adhesive plug is then extruded and the apparatus is placed vertically in the test atmosphere for the specified time and the degree of sag measured.

6.2.2 Supplementary information

This method of test requires the following supplementary information which shall be specified when the method is called up :

a) details of the test atmosphere ;

b) details of the conditioning atmosphere ;

c) duration of the test.

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