BS EN 12704:2016

BSI Standards Publication

Adhesives for paper and board, packaging and disposable sanitary products — Determination of foam formation for aqueous adhesives

bsi.

National foreword

This British Standard is the UK implementation of EN 12704:2016. It supersedes BS EN 12704:2012 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/52, Adhesives.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Adhesives for paper and board, packaging and disposable sanitary products - Determination of foam formation for aqueous adhesives

Adhésifs pour papier, carton, emballage et produits sanitaires jetables - Détermination de la formation de mousse des adhésifs aqueux

Klebstoffe für Papier, Verpackung und Hygieneprodukte - Bestimmung der Schaumbildung von wässrigen Klebstoffen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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European foreword

This document (EN 12704:2016) 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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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This document supersedes EN 12704:2012.

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Introduction

SAFETY STATEMENT — Persons using this document should be familiar with the normal laboratory practice, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory conditions.

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At the end of the test, the user of the standard should take care to carry out an appropriate disposal of the wastes, according to local regulation.

1 Scope

This European Standard specifies a test method to determine the foam formation, or air entrainment during rapid stirring of aqueous adhesives with a maximum viscosity of 10 000 MPa·s at room temperature determined in accordance with EN 12092.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 923, *Adhesives - Terms and definitions*

EN 1067, *Adhesives - Examination and preparation of samples for testing*

EN ISO 15605, *Adhesives - Sampling (ISO 15605)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923 apply.

4 Principle

The adhesive is stirred under defined conditions and the foam formation determined from the differences between the initial and final volumes of the adhesive.

5 Apparatus

Specimens shall be conditioned for 24 h at 23 °C and 50 % RH.

5.1 Stirrer motor, capable of driving the stirrer at an adjustable rotary speed up to 3 000 min^{-1}.

5.2 Stirrer, with dimensions as shown in Figure 1.

5.3 Beaker, 2 l, of transparent material of approximately dimensions, h = 230 mm, d = 105 mm.

5.4 Balance, accuracy ± 1,0 g.

5.5 Mechanical system, to secure the stirrer and beaker.

5.6 Timer, accuracy ± 1 s.

5.7 Ruler, accuracy ± 1 mm.

Dimensions in millimetres

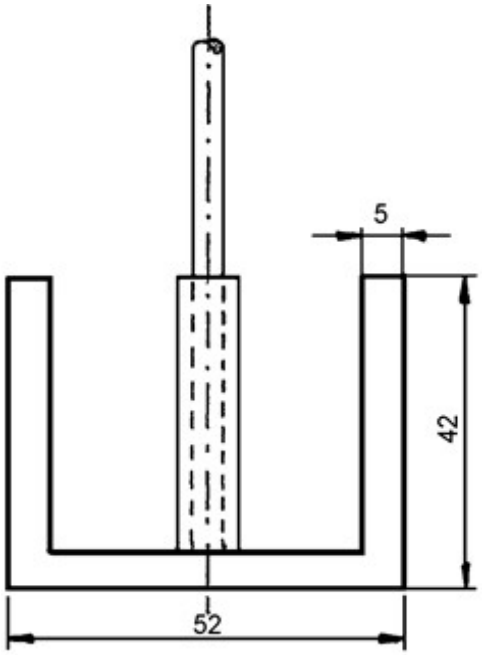

Figure 1 — Stirrer

6 Procedure

6.1 Take the sample in accordance with EN ISO 15605 and prepare the sample in accordance with EN 1067.

Weigh (400 ± 10) g directly into the clean beaker (5.3).

6.2 Position the stirrer (5.2) in the beaker so that it is approximately 1 mm from the bottom and the shaft of the stirrer is in the centre of the beaker, (±1,00 mm).

6.3 Measure the initial height h_i (in millimetres) of the adhesive in the beaker.

6.4 Begin stirring slowly and increase to 2 500 min^{-1} over 10 s.

6.5 Start the timer (5.6) and continue stirring for 5 min.

6.6 Stop stirring and immediately measure the final max height h_f (in millimetres) of the adhesive in the beaker.

6.7 Measure the height of the adhesive also after 1 min and 5 min.

6.8 Carry on minimum of 3 tests, each test consisting of three measurements of adhesive height after stirring (immediately, 1 min and 5 min), as described in 6.6 and 6.7.

NOTE Comparison of the values of adhesive height taken immediately after stirring, after 1 min and after 5 min are an indication of foam stability. Faster decrease in foam height with time means worse foam stability.

7 Expression of results

Calculate the Foam Formation, *f*, as a percentage, calculated from the difference in height of the adhesive before and after stirring, using the following equation:

$$f\,(\%) = \frac{h_{\mathrm{f}} - h_{\mathrm{i}}}{h_{\mathrm{i}}} \times 100 \qquad (1)$$

where

h_{f} final height of adhesive after stirring, in millimetres;

h_{i} initial height of adhesive before stirring, in millimetres;

$f\,(\%)$ foam formation (as %).

In each test, calculate the foam formation as the arithmetic mean of the results of the three measurements of adhesive height carried out immediately after stirring, after 1 min and after 5 min. Express final value of Foam Formation obtained in the last three tests.

8 Test report

Test report shall include:

a) a reference to this European Standard;

b) identification of the adhesive, giving all information for the sample;

c) description of the adhesive (i.e. chemical type, pH, viscosity);

d) number of tests carried out;

e) foam formation;

f) date of test.

Bibliography

EN 12092, *Adhesives - Determination of viscosity*

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