

Paints and varnishes — Determination of flow time by use of flow cups

The European Standard EN ISO 2431:1996 has the status of
a British Standard

ICS 87.040

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee ST1/10, upon which the following bodies were represented:

- British Coatings Federation Ltd.
- Department of the Environment (Building Research Establishment)
- European Resin Manufacturers' Association
- Furniture Industry Research Association
- Health and Safety Executive
- Ministry of Defence
- National Centre of Tribology
- Oil and Colour Chemists Association
- Paint Research Association
- Titanium Pigment Manufacturers Technical Committee

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National foreword

This British Standard has been prepared by Technical Committee ST1/10, and is the English Language version of EN ISO 2431:1996 *Paints and varnishes — Determination of flow time by the use of flow cups*, including technical corrigendum July 1999, published by the European Committee for Standardization (CEN). It is identical with ISO 2431:1993, including its technical corrigendum 1 June 1994 and technical corrigendum 1 April 1999, published by the International Organization for Standardization (ISO). ISO 2431 was produced as a result of international discussions in which the United Kingdom took an active part.

BS EN ISO 2431 supersedes BS EN 535:1991, which is withdrawn.

The principal difference between BS EN ISO 2431:1995 and BS EN 535:1991 is the inclusion of a 5 mm orifice diameter flow cup.

Additional information. In 5.1.4 a procedure is described for calibrating the ISO flow cups using standard oils. Details of oils suitable for this purpose with the required data for temperature dependence of kinematic viscosity may be obtained from the Paint Research Association, Waldegrave Road, Teddington, Middlesex, TW11 8LD.

Note also that in 5.1.4 symbols v and t are not defined: v is the kinematic viscosity in millimetres squared per second, and t is the flow time in seconds.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 14, an inside back cover and a back cover.

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Paints and varnishes — Determination of flow time by use of flow cups

(ISO 2431:1993, including Technical Corrigendum 1:1994)

Peintures et vernis —
Détermination du temps d'écoulement au moyen de
coupes d'écoulement
(ISO 2431:1993, Rectificatif
Technique 1:1994 inclus)

Lacke und Anstrichstoffe —
Bestimmung der Auslaufzeit mit Auslaufbechern
(ISO 2431:1993, einschließlic
Technische Korrektur 1:1994)

This European Standard was approved by CEN on 1995-11-12. 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.

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.

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.

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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

Foreword

The text of the International Standard from Technical Committee ISO/TC 35, Paints and varnishes, of the International Organization for Standardization (ISO) has been taken over as a European Standard by the Technical Committee CEN/TC 139, Paints and varnishes, the secretariat of which is held by DIN.

This European Standard replaces EN 535:1991.

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 October 1996, and conflicting national standards shall be withdrawn at the latest by October 1996.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of 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 and the United Kingdom.

NOTE Normative references to international standards are listed in Annex A (normative).

Introduction

The first edition of this International Standard, published in 1972, specified only one flow cup of orifice diameter 4 mm. The second editions specified three flow cups of orifice diameter 3 mm, 4 mm and 6 mm. The third edition corrected errors in Figure 2 and Figure 4 and the equations for those figures. This fourth edition specifies four flow cups of orifice diameter 3 mm, 4 mm, 5 mm and 6 mm.

As is well known, many countries over the years have developed their own standard flow cups and the difficulty in correlation between them has led to considerable confusion in comparing values. The standardization of an improved design of flow cup has been recommended after careful consideration, by an expert working group, of the role of flow cups for the measurement of flow time of paints, varnishes and related products.

It is recognized that the flow times are reproducible only for products of Newtonian or near-Newtonian flow properties. This effectively limits their practical use. Nevertheless, for checking purposes, these flow cups do serve a useful purpose. Furthermore, the measurement of flow time is often used to confirm the application consistency.

Paints often contain flow-arresting agents to confer increased viscosity. Such paints exhibit anomalous flow properties. Their viscosity during application can only be properly assessed using viscometers operating at high velocity gradients, such as that described in ISO 2884.

Resins and varnishes may exhibit Newtonian or near-Newtonian flow at much higher viscosities than most paints and, where this applies, flow cups can provide a useful means of controlling the consistency. To meet this requirement, this International Standard provides flow cups suitable for viscosities up to about 700 mm²/s.

Recommendations for the use of flow cups for the adjustment of paint consistency are given in Annex A.