BRITISH STANDARD

BS EN ISO 8781-2:1995

Incorporating Amendment No. 1

Pigments and extenders — Methods of assessment of dispersion characteristics —

Part 2: Assessment from the change in fineness of grind

The European Standard EN ISO 8781-2:1995 has the status of a British Standard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Pigments, Paints and Varnishes Standards Policy Committee (PVC/-) to Technical Committee PVC/1, upon which the following bodies were represented:

Aluminium Powder and Paste Association
British Cement Association
British Railways Board
Chemical Industries' Association
Oil and Colour Chemists Association
Paintmakers' Association of Great Britain Ltd.
Titanium Pigment Manufacturers Technical Committee
Zinc Development Association

This British Standard, having been prepared under the direction of the Pigments, Paints and Varnishes Standards Policy Committee, was published under the authority of the Standards Board and comes into effect on 30 April 1991

The following BSI references relate to the work on this standard:
Committee reference PVC/1
Draft for comment 86/52359 DC

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Amendments issued since publication

Amd. No.	Date	Comments
8530	August 1995	Indicated by a sideline in the margin

Contents

National foreword

This Part of BS 3483 has been prepared under the direction of the Pigments, Paints and Varnishes Standards Policy Committee. It is identical with ISO 8781-2:1990 "*Pigments and extenders — Methods of assessment of dispersion characteristics — Part 2: Assessment from the change in fineness of grind*", published by the International Organization for Standardization (ISO).

In 1994 the European Committee for Standardization (CEN) accepted ISO 8781-2:1990 as European Standard EN ISO 8781-2:1995. As a consequence of implementing the European Standard this British Standard is renumbered as BS EN ISO 8781-2 and any reference to BS 3483-E2 should be read as a reference to BS EN ISO 8781-2.

An introduction is included in ISO 8781-2:1990 which reads as follows.

> The change of fineness of grind of a pigment in a dispersion is dependent on the amount of work done in the preparation of the dispersion of the pigment in a binder system. The ease with which ultimate fineness of grind is achieved may therefore be used to assess the dispersion characterisitics of that pigment. Thus, if the ultimate fineness of grind can be attained easily, the pigment is considered to be readily dispersible.

Cross-references

International Standard	Corresponding British Standard
ISO 1524:1983	BS 3900 *Methods of test for paints* Part C6:1983 *Determination of fineness of grind* (Identical) BS 3483 *Methods for testing pigments for paints*
ISO 8780-1:1990	Part D1:1991 *Methods of dispersion for assessment of dispersion characteristics* (Introduction) (Identical)
ISO 8780-2:1990	Part D2:1991 *Method of dispersion for assessment of dispersion characteristics using an oscillatory shaking machine* (Identical)
ISO 8780-3:1990	Part D3:1991 *Method of dispersion for assessment of dispersion characteristics using a high-speed impeller mill* (Identical)
ISO 8780-4:1990	Part D4:1991 *Method of dispersion for assessment characteristics using a bead mill* (Identical)
ISO 8780-5:1990	Part D5:1991 *Method of dispersion for assessment of dispersion characteristics using an automatic muller* (Identical)
ISO 8780-6:1990	Part D6:1991 *Method of dispersion for assessment of dispersion characteristics using a triple-roll mill* (Identical)

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, pages 2 to 6, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 8781-2

March 1995

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Descriptors: Paints, pigments, extenders, tests, determination, dispersibility

English version

Pigments and extenders — Methods of assessment of dispersion characteristics — Part 2: Assessment from the change in fineness of grind

(ISO 8781-2:1990)

Pigments et matières de charge — Méthodes d'évaluation de la dispersibilité — Partie 2: Evaluation à partir de la variation de la finesse de broyage (ISO 8781-2:1990)

Pigmente und Füllstoffe — Verfahren zur Beurteilung des Dispergierverhaltens — Teil 2: Bestimmung der Änderung der Mahlfeinheit (Körnigkeit) (ISO 8781-2:1990)

This European Standard was approved by CEN on 1994-10-17. 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

This European Standard has been taken over by the Technical Committee CEN/TC 298, Pigments and extenders, from the work of ISO/TC 35, Paints and varnishes, of the International Organization for Standardization (ISO).

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 September 1995, and conflicting national standards shall be withdrawn at the latest by September 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 and United Kingdom.

NOTE Normative references to international publications are given in Annex ZA (normative).

Contents

1 Scope

This part of ISO 8781 specifies a method for assessing, on the basis of fineness of grind, the dispersion characteristics of pigments which have been dispersed by one of the methods of dispersion described in ISO 8780. It should be read in conjunction with ISO 8780-1.

The method is of general use for comparing similar pigments, for example a test pigment against an agreed reference pigment.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8781. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8781 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1524:1983, *Paints and varnishes — Determination of fineness of grind.*

ISO 8780-1:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 1: Introduction.*

ISO 8780-2:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 2: Dispersion using an oscillatory shaking machine.*

ISO 8780-3:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 3: Dispersion using a high-speed impeller mill.*

ISO 8780-4:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 4: Dispersion using a bead mill.*

ISO 8780-5:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 5: Dispersion using an automatic muller.*

ISO 8780-6:1990, *Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 6: Dispersion using a triple-roll mill.*

3 Principle

The pigment under test and, if provided, the agreed reference pigment are each dispersed in stages under specified conditions in an agreed binder system. After each incremental dispersion stage, a portion of the mill base is taken and its fineness of grind is determined as described in ISO 1524. The fineness-of-grind values are plotted graphically as a function of the dispersion work done (expressed as time, number of revolutions, etc.). From the graph, the work necessary to obtain an agreed fineness of grind is determined.

4 Required supplementary information

For any particular application, the test method specified in this part of ISO 8781 needs to be completed by supplementary information. The items of supplementary information are given in Annex A.

5 Apparatus

Ordinary laboratory apparatus and glassware, together with the following:

5.1 *Fineness-of-grind gauge,* complying with the requirements of ISO 1524 [maximum depth of groove(s) 50 µm or 100 µm, depending on the pigment or extender and the resulting fineness of grind, but preferably 50 µm].

5.2 *Spatula*

6 Procedure

6.1 Dispersion

Disperse each pigment sample in the agreed binder system at the agreed concentration using one of the methods described in ISO 8780. Carry out the dispersion of the mill base in at least four stages and select the intermediate stages such that they are approximately in geometric progression.

The final stage should be selected so that the fineness of grind of the pigment sample is better than or equal to that agreed. The intermediate stages should correspond to successive halving of the period required to attain the final stage.

If the ease of dispersion of the pigment to be tested under the given conditions is not known and thus the maximum dispersion effort to be used cannot be defined, then it should be determined in initial exploratory tests. For this, it is recommended that the fineness of grind of the pigment for at least two dispersion stages is determined. These fineness-of-grind values are plotted using logarithmic scales for both axes and the line joining these plotted values is extrapolated to a suitable target level of dispersion. Suitable intermediate dispersion levels are then selected.

NOTE 1 A fineness of grind of 5 µm may be found to be a suitable target dispersion level, although for less easily dispersed pigments 10 µm to 20 µm may be acceptable.

6.2 Determination of fineness of grind

Using the spatula (**5.2**), take small samples from the mill base after each of the specified dispersion stages, and determine the fineness of grind in each case using the method described in ISO 1524.

If the fineness of grind agreed as a target level is not attained after the last of the specified dispersion stages, proceed as instructed in **7.2**.

7 Expression of results

7.1 Plot the fineness-of-grind readings, in micrometres, obtained in **6.2** as a function of the incremental dispersion stages (which may be expressed as time, number of revolutions, etc.), using a logarithmic scale for both axes. Connect the points with a smooth curve.

NOTE 2 Generally, nearly linear curves are obtained in this way, thus aiding interpolation.

Determine the work necessary to attain the target fineness of grind, by interpolation, from the graph, expressing the result as milling time, number of revolutions of an automatic muller, etc.

7.2 In cases where the agreed fineness of grind cannot be attained, report the fineness measured after the final dispersion stage as the highest practically attainable fineness of grind.

8 Test report

The test report shall contain at least the following information:

a) all details necessary to identify the product tested;

b) a reference to this part of ISO 8781 and the relevant part of ISO 8780;

c) the items of supplementary information referred to in Annex A;

d) the dispersion work done (see **7.1**) and the corresponding target level of fineness of grind or, if the agreed target level was not achieved, the highest practically attainable fineness of grind together with the work required to reach it (see **7.2**);

e) the graph representing the development of fineness of grind (see **7.1**);

f) any deviation from the procedure specified;

g) the date(s) of the test.

Annex A (normative)
Required supplementary information

The items of supplementary information listed in this annex shall be supplied as appropriate to enable the method to be carried out.

The information required should preferably be agreed between the interested parties and may be derived, in part or totally, from an international or national standard or other document related to the product under lest.

a) Method of dispersion (see ISO 8780).

b) Type and designation of the binder.

c) A particular fineness of grind as a target level.

d) Reference pigment (if any).

Annex ZA (normative)
Normative references to international publications with their relevant European publications

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 (including amendments).

Publication	Year	Title	EN	Year
ISO 1524	1983	*Paints varnishes — Determination of fineness of grind*	EN 21524	1991
ISO 8780-1	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 1: Introduction*	EN ISO 8780-1	1995
ISO 8780-2	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 2: Dispersion using an oscillatory shaking machine*	EN ISO 8780-2	1995
ISO 8780-3	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 3: Dispersion using a high-speed impeller mill*	EN ISO 8780-3	1995
ISO 8780-4	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 4: Dispersion using a bead mill*	EN ISO 8780-4	1995
ISO 8780-5	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 5: Dispersion using an automatic muller*	EN ISO 8780-5	1995
ISO 8780-6	1990	*Pigments and extenders — Methods of dispersion for assessment of dispersion characteristics — Part 6: Dispersion using a triple-roll mill*	EN ISO 8780-6	1995

Publication(s) referred to

See national foreword.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

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