

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION R 787

GENERAL METHODS OF TEST FOR PIGMENTS

FIRST SERIES

1 to VII

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BRIEF HISTORY

relating to the First Series

The ISO Recommendation R 787, *General methods of test for pigments*, was drawn up by Technical Committee ISO/TC 35, *Paints, varnishes and related products and their raw materials*, the Secretariat of which is held by the Nederlands Normalisatie-instituut (NNI).

Work on this question by the Technical Committee began in 1950 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In October 1965, this Draft ISO Recommendation (No. 832) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Czechoslovakia	Spain
Australia	India	Switzerland
Austria	Iran	U.A.R.
Belgium	Ireland	United Kingdom
Brazil	Israel	U.S.S.R.
Canada	Japan	Yugoslavia
Chile	Netherlands	
Colombia	Portugal	

In addition, the Member Body of Denmark disapproved Part 2, the Member Body of France disapproved Part 1, the Member Body of Italy disapproved Parts 6 and 7 and the Member Body of Sweden disapproved Part 4.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council which decided, in July 1968, to accept it as an ISO RECOMMENDATION.

FOREWORD

The purpose of this ISO Recommendation is to establish a series of general test methods for pigments which are suitable for all or many of the individual pigments for which specifications might be required. In such cases, a cross-reference to the general method should be included in the ISO Recommendation relating to that pigment, with a note of any detailed modifications which might be needed in view of the special properties of the pigment in question.

Committee ISO/TC 35 decided that all the general methods should be published in convenient groups as they become available, as parts of a single ISO Recommendation, in order to emphasize the relationship of each to the whole series.

The Committee also decided that, where two or more procedures were widely used for determining the same or a similar characteristic of a pigment, there would be no objection to including more than one of them in the ISO series. In such cases it will, however, be essential to state clearly in a specification which method is to be used, and in the test report, which method has been used.

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GENERAL METHODS OF TEST FOR PIGMENTS

PART I

COMPARISON OF COLOUR

INTRODUCTION

This document is a part of ISO/R 787, *General methods of test for pigments*.

1. SCOPE

- 1.1 Part I of this ISO Recommendation describes a general method of test for comparing the colour of a coloured pigment with that of an agreed sample of the pigment.
- 1.2 Either of the procedures described in section 5 is acceptable, but whenever an automatic muller is available, its use is recommended.

NOTE. — When this general method is applicable to a given pigment, only a cross-reference to it need be included in the ISO Recommendation relating to that pigment, with a note of any detailed modification which may be needed in view of the special properties of the pigment in question. Only when this general method is not applicable to a particular pigment should a special method for comparison of colour be specified.

2. REAGENT

- 2.1 *Refined linseed oil*, complying with ISO Recommendation R 150, *Raw, refined and boiled linseed oil*, and having an acid value of 5.0 to 7.0 mg of KOH per gramme.

3. APPARATUS

- 3.1 *Palette knife*, steel knife with a tapered blade of the approximate dimensions 140 to 150 mm long, 20 to 25 mm wide at its widest point and not less than 12.5 mm wide at its narrowest point.
- 3.2 *Glass slide*, clear and colourless, 150 mm × 50 mm or other suitable size.
- 3.3 *Burette*, with a delivery such that 35 drops equal 1 ml of refined linseed oil.
- 3.4 *Automatic muller*, plates with a diameter of about 20 cm, speed of rotation about 120 rev/min. Alternatively, there may be used either a hand muller with a diameter of 70 to 75 mm or a palette knife complying with clause 3.1.
- 3.5 *Plate*, of ground-glass or marble, for use when an automatic muller is not available.

4. SAMPLING

The sample of pigment used for the test should be taken in accordance with the provisions of ISO Recommendation R 842, *Sampling raw materials for paints and varnishes*.

5. PROCEDURE

5.1 Test portion

The quantity of pigment taken for the test should be that indicated in the Table below, the oil absorption value of the pigment having been determined in accordance with Part V of this ISO Recommendation.

TABLE

Oil absorption value of pigment ml/100g	Mass of the test portion g
25 or less	1.00
26 to 65	0.30
66 upward	0.10

5.2 Procedure using automatic muller

Weigh, to the nearest milligramme, the amount indicated in the Table above of the pigment under test, and transfer it to the clean lower plate of the automatic muller (3.4). Add by means of the palette knife blade (3.1) the number of drops of refined linseed oil sufficient to obtain a satisfactory dispersion so that, when mixed, a smooth pigment-oil paste is obtained. When the pigment has been wetted, spread the paste in a circle of approximately 50 mm in diameter around the centre of the lower plate and clean the palette knife by drawing it across the top plate. Close the muller plates, apply a pressure of 68 kgf and grind the paste in four stages of fifty revolutions for each stage, picking up the paste with the same palette knife and transferring it to the centre of the plate after each stage.

When the grinding has been completed, add a further number of drops of the oil sufficient to obtain a suitable painting consistency, close the muller plates and grind the paste for a further twenty-five revolutions, then remove the paint from the plate and store it on a palette.

Prepare a paint immediately from the agreed sample of the pigment, using the same procedure. Compare the colour of the test portion with that of the agreed sample by spreading the two mixtures so prepared in the same direction on the glass slide (3.2) in opaque strips not less than 25 mm wide with touching edges not less than 40 mm long. Make the colour comparison by examining the strips in diffused daylight through the glass, and on the surface, immediately after application. Where good daylight is not available make the comparison in artificial daylight. By agreement between purchaser and vendor, a suitable colorimeter may also be used for making the comparison.

5.3 Procedure using hand muller or palette knife

Weigh, to the nearest milligramme, the amount indicated in the Table of the pigment under test, and transfer it to the glass or marble plate (3.5). Collect, on the end of the palette knife (3.1), the number of drops of oil sufficient to obtain a suitable consistency for spreading out with the palette knife, and mix it with the pigment on the plate (3.5).

When the pigment has become uniformly wetted with oil, start rubbing with the palette knife (3.1) or hand muller (3.4), using a backwards and forwards motion. Rubbing should spread the mixture over an area approximately 200 mm × 75 mm. After one hundred rubs (one rub consists of one forward plus one backward stroke of the knife), scrape the pigment-oil mixture into a heap at the centre of the plate, making sure that any unground pigment is removed from the knife blade outside the area which has been in contact with the plate.

Repeat the rubbing-out operation using a further hundred rubs; after which add a further number of drops of oil sufficient to obtain a suitable painting consistency. Mix well until the mixture is homogeneous, then transfer the mixture to one corner of the plate and clean the rest of the plate thoroughly.

Rub out the agreed sample of the pigment in the same way, using the same rubbing consistency as that used in treating the test portion, even though this may involve adding a larger or smaller number of drops of oil than used with the test portion to bring the agreed sample to the required consistency.

NOTE. — In each case, a total of between ten and forty-five drops of oil will be required to produce a consistency which allows the mixture to be painted out.

Compare, as described in clause 5.2, the colour of the test portion with that of the agreed sample of the pigment.

6. TEST REPORT

The test report should include the following information :

- (a) A reference to ISO Recommendation R 787, Part I, or to a corresponding national standard.
 - (b) Type and identification of the pigment under test.
 - (c) Any deviation, by agreement or otherwise, from the test procedures described above.
 - (d) The procedure used (automatic muller, hand muller or palette knife).
 - (e) The result of the test (equal to, or better or worse than, the agreed sample of pigment).
 - (f) The date of the test.
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