

35
ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION
R 787

GENERAL METHODS OF TEST FOR PIGMENTS

SECOND SERIES

Parts 8 to 11

1st EDITION

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BRIEF HISTORY

relating to the Second series

The ISO Recommendation R 787, *General methods of test for pigments – Second series*, was drawn up by Technical Committee ISO/TC 35, *Paints and varnishes*, the Secretariat of which is held by the Nederlands Normalisatie-Instituut (NNI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1251, which was circulated to all the ISO Member Bodies for enquiry in November 1968. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Australia	Israel	Sweden
Austria	Italy	Switzerland
Denmark	Netherlands	Turkey
Germany	Peru	U.A.R.
Greece	Poland	United Kingdom
India	Portugal	U.S.S.R.
Iran	South Africa, Rep. of	
Ireland	Spain	

The following Member Body approved Parts VIII, IX, X and XI of the Draft and abstained from voting on Part XII :

France

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as ISO Recommendation R 787, Second series.

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.

ISO Recommendation R 787, *General methods of test for pigments – First series*, was published in 1968 and includes the following methods :

- Part I : Comparison of colour
- Part II : Determination of matter volatile at 105 °C
- Part III : Determination of matter soluble in water (Hot extraction method)
- Part IV : Determination of acidity or alkalinity of the aqueous extract
- Part V : Determination of oil absorption value
- Part VI : Determination of residue on sieve (Oil method)
- Part VII : Determination of residue on sieve (Water method)

This ISO Recommendation R 787, *General methods of test for pigments – Second series*, includes the following methods :

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GENERAL METHODS OF TEST FOR PIGMENTS

PART VIII

DETERMINATION OF MATTER SOLUBLE IN WATER (COLD EXTRACTION METHOD)

INTRODUCTION

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

1. SCOPE

- 1.1 Part VIII of this ISO Recommendation describes a general method of test for determining the percentage by mass of matter soluble in cold water, in a sample of pigment.
- 1.2 Part III of this ISO Recommendation describes a method for determining the percentage by mass of matter soluble in water after hot extraction. For most pigments, these two test methods will give different results, and it is therefore essential to state clearly in a specification which method is to be used, and in the test report which method has been used.

NOTE. – When this general method is applicable to a given pigment, a cross-reference to it should simply 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 neither of the general methods is applicable to a particular pigment should a special method for determination of water-soluble matter be specified.

2. REAGENT

Distilled water, freshly boiled and cooled, of pH 6 to 7, or water otherwise prepared of at least equal purity.

3. APPARATUS

- 3.1 *One-mark volumetric flask* of 250 ml.
- 3.2 *Filter paper*, fine-textured, or *diaphragm*, or *colloid filter*.
- 3.3 *Evaporating dish*, flat-bottomed, of glass, platinum, glazed porcelain or silica.
- 3.4 *Oven*, capable of being maintained at a temperature of 105 ± 2 °C.
- 3.5 *Balance*, sensitivity 1 mg or better.
- 3.6 *Desiccator*.

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

Weigh 2 to 20 g of the sample, to the nearest 0.01 g, into a beaker.

NOTE. — The mass of pigment used should be chosen according to the amount of water-soluble matter in the pigment. This is particularly important for pigments that contain large amounts of water-soluble matter.

5.2 Determination

Wet the pigment in the beaker with a few millilitres of water or other suitable liquid.

NOTE. — If the pigment does not disperse easily in water, a wetting agent should be used. In the case of pigments not soluble in ethanol, 5 ml of ethanol may be used; in the case of pigments soluble in ethanol, a non-ionic wetting agent such as 10 ml of a 0.01 % solution of a polyethylene oxide condensate should be used. If the wetting agent is non-volatile under the conditions of test an appropriate correction should be made to the final water-soluble matter figure after carrying out a blank determination.

Add 200 ml of freshly distilled water (2) (cooled to room temperature) and stir continuously for 1 hour at room temperature. Transfer to the volumetric flask (3.1) and dilute to the mark with the distilled water. Mix thoroughly by shaking and inversion and filter through the filter paper (3.2) or, in the case of pigments which are difficult to filter, through a diaphragm or colloid filter (3.2), returning the filtrate to the filter until it runs clear. If these methods of obtaining a clear filtrate do not prove satisfactory, use a decantation, centrifugal or other method which will do so. Evaporate 100 ml of the perfectly clear filtrate to dryness in the previously weighed evaporating dish (3.3) on a water bath.

Dry the residue in the oven (3.4) at $105 \pm 2^\circ\text{C}$, cool in the desiccator (3.6) and weigh to the nearest 1 mg. Repeat the heating and cooling until the results of the two last weighings, at an interval including at least 30 minutes heating, do not differ by more than 10 % of the final figure obtained for the water-soluble matter.

6. EXPRESSION OF RESULTS

Calculate the water-soluble matter (cold extraction method), as a percentage by mass, by the following formula

$$\frac{250 m_1}{m_0}$$

where

m_0 is the mass, in grammes, of the test portion;

m_1 is the mass, in grammes, of residue.

Take the mean of two determinations not differing by more than 10 % (of the mean) and report the result to one decimal place.

7. TEST REPORT

The test report should include the following information :

- (a) a reference to ISO Recommendation R 787, Part VIII, 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 procedure described above;
- (d) the result of the test as indicated in section 6;
- (e) the date of the test.