UDC 667.61 : 620.1

Ref. No. : ISO/R 1515-1970 (E)

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1515

PAINTS AND VARNISHES

DETERMINATION OF VOLATILE AND NON-VOLATILE MATTER

1st EDITION

July 1970

For each individual country the only valid standard is the national standard of that country.

Printed in Switzerland

Also issued in French and Russian. Copies to be obtained through the national standards organizations.

BRIEF HISTORY

The ISO Recommendation R 1515, *Paints and varnishes – Determination of volatile and non-volatile matter,* 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. 1515 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	Ireland	Spain
Austria	Israel	Sweden
Denmark	Italy	Switzerland
France	Netherlands	Turkey
Germany	Peru	U.A.R.
Greece	Poland	United Kingdom
India	Portugal	U.S.S.R.
Iran	South Africa, Rep. of	

No Member Body opposed the approval of the Draft.

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

ISO Recommendation | R 1515 | July 1970

PAINTS AND VARNISHES

DETERMINATION OF VOLATILE AND NON-VOLATILE MATTER

INTRODUCTION

This ISO Recommendation is one of a series dealing with the sampling and testing of paints, varnishes and related products. It should be read in conjunction with ISO Recommendation R 1512, *Paints and varnishes – Sampling*, and R 1513, *Paints and varnishes – Examination and preparation of samples for testing*.

1. SCOPE

This ISO Recommendation describes a standard procedure for determining the content of both "volatile matter" and "non-volatile matter" in paints, varnishes and related products for any specified temperature and period of heating.

NOTE. – The volatile matter content of a product (and consequently the non-volatile matter content also) is not an absolute quantity, but depends upon the temperature and period of heating used for the test. The temperature and period of heating recommended herein – i.e. 105 ± 2 °C and 3 hours respectively – are suitable for most purposes. If these conditions are unsuitable, for example because the product is likely to decompose at 105 °C, they should be varied by agreement between the parties to the test.

2. DEFINITIONS

2.1 *Volatile matter.* The loss in mass when the product is heated under the prescribed conditions of test.

2.2 *Non-volatile matter.* The residue left when the product is heated under the prescribed conditions of test.

3. APPARATUS

3.1 *Flat-bottomed dish,* of glass, tinplate or aluminium, approximately 75 mm in diameter.

3.2 *Thin glass rod,* approximately 100 mm in length.

3.3 *Air oven,* capable of maintaining the specified temperature.

4. SAMPLING

A representative sample of the product to be tested should be taken as described in ISO Recommendation R 1512, *Paints and varnishes – Sampling.* The sample should then be examined and prepared for testing as described in ISO Recommendation R 1513, *Paints and varnishes – Examination and preparation of samples for testing.*

5. PROCEDURE

5.1 Test portion

Dry the glass, tinplate, or aluminium dish (3.1) and the glass rod (3.2) in the oven (3.3) at 105 ± 2 °C (or other agreed temperature) and allow to cool at room temperature in a desiccator. Weigh, to the nearest milligramme, the dish containing the glass rod, and then weigh into the dish, to the same accuracy, approximately 2 ± 0.2 g (or by agreement any other convenient quantity) of the product under test, making sure that it is evenly distributed over the surface of the dish. If the product contains a highly volatile solvent, or in the case of a reference test, weigh it by difference from a stoppered weighing bottle into the dish, then heat the dish gently on a hot water bath until most of the solvent has been driven off.

5.2 Determination

Place the dish with the rod and the test portion (5.1) in the air oven previously adjusted at 105 ± 2 °C (or other agreed temperature), and leave it in the oven at this temperature for 3 hours (or other agreed period).

Remove the dish from the oven after a short period of heating, stir the material with the glass rod to break up any surface skin, and replace the dish and rod in the oven.

5.3 When the specified period of heating is completed, transfer the dish and rod to a desiccator, allow to cool to room temperature and re-weigh to the nearest milligramme.

5.4 Perform at least two determinations on the same prepared sample.

6. EXPRESSION OF RESULTS

6.1 Calculation

Calculate the content of volatile matter or of non-volatile matter as a percentage, by mass, of the product tested, by the following formulae :

$$V = 100\frac{(m_1 - m_2)}{m_1}$$

$$NV = 100\frac{m_2}{m_1}$$

where

V is the content of volatile matter, as a percentage by mass;

NV is the content of non-volatile matter, as a percentage by mass;

m_1 is the mass, in milligrammes, of the test portion before heating;

m_2 is the mass, in milligrammes, of the test portion after heating under the specified conditions.

Report the result as the arithmetic mean (to the nearest 0.1) of two determinations, complying with the requirement of clause 6.2.

6.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same analyst should not be greater than 1 % (i.e. 1 g per 100 g of sample).

6.3 Reproducibility

The difference between the results of two repeated determinations carried out at different times by different analysts and/or in different laboratories should not be greater than 2 % (i.e. 2 g per 100 g of sample).