

INTERNATIONAL STANDARD



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Paints and varnishes — Sampling

Peintures et vernis — Échantillonnage

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1512 replaces ISO Recommendation R 1512-1970 drawn up by Technical Committee ISO/TC 35, *Paints and varnishes*.

The Member Bodies of the following countries approved the Recommendation :

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

No Member Body expressed disapproval of the Recommendation.

Paints and varnishes — Sampling

0 INTRODUCTION

This International Standard is one of a series dealing with sampling and testing of paints, varnishes and related products. It does not deal with procedures for the sampling of raw materials used in the manufacture of paints and varnishes; these are specified in ISO 842.

Correct sampling is a skilled operation and the various procedures must be carried out with great care by samplers having the required knowledge and experience. The general instructions in this International Standard are intended to supplement this knowledge and experience and are applicable to most situations; however, some products may require special sampling precautions not specified in this International Standard and therefore special vigilance is required on the part of samplers to take note of unusual characteristics exhibited by the products. It is also essential that samplers adhere to any special precautions in accordance with manufacturers' instructions and safety regulations.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies methods for sampling paints, varnishes and related products, which aim at obtaining uniform samples of convenient size and adequately representative of the product being sampled. The sample or samples so obtained are suitable for examination and preparation prior to testing in accordance with ISO 1513.

2 REFERENCES

ISO 842, *Raw materials for paints and varnishes — Sampling*.

ISO 1513, *Paints and varnishes — Examination and preparation of samples for testing*.

3 TYPES OF PAINTS, VARNISHES AND RELATED PRODUCTS

The sampling procedures appropriate for use with paints, varnishes and related products depend on the nature and the physical properties of the products. The following types of product may conveniently be distinguished.

Type A : Fluid products consisting of a single homogeneous liquid phase, such as varnishes and thinners.

Type B : Fluid products consisting of two liquid phases, such as emulsions.

Type C : Fluid products consisting of one or two liquid phases together with one or more solid phases. Such products are normally called "paints" and include "emulsion" paints.

Type D : Viscous products (which usually consist of one or more solid phases with small amounts of a liquid phase) such as putties, mastics, lutes, cements, and pigment pastes in oil or varnish. This type also includes very viscous resinous materials.

Type E : Products in powder form.

4 SAMPLING EQUIPMENT

4.1 General

The sampling tools in general use for sampling raw materials, which are described in ISO 842, may also be used for sampling finished products. Sampling equipment is required for two separate operations :

- a) mixing the product to make it as homogeneous as possible;
- b) taking a truly representative sample.

4.2 Materials and design

All sampling equipment shall be made of material not subject to deterioration, unaffected by the products being sampled and incapable of contaminating the sample. The design of the equipment shall take into account convenience in use and ease of cleaning (for example any grooves, acute internal angles, or areas which are inaccessible or difficult to inspect for cleanness, shall be avoided).

4.3 Apparatus for mixing

Broad-bladed stirrers of suitable length to reach the bottom of the container being sampled. Mechanical stirrers may be used.

NOTE — In certain circumstances, when stirring a product of low flash point or where an explosive hazard exists, the only metal permitted is bronze.

4.4 Apparatus for taking samples (drawings of suitable designs are given in ISO 842).

4.4.1 Sampling tubes of glass or metal.

4.4.2 Small dip cans.

4.4.3 Weighted sampling cans, with valve closures, for taking samples at all levels.

4.4.4 Scoops, triers or spatulas.

4.5 Sample containers

New containers of suitable size and with large apertures shall be used. These may be

- a) metal containers of which the interior is not coated with varnish and which are fitted with tight metal closures;
- b) glass containers which can be tightly closed with closures which are not affected by the sample. Amber glass provides a partial protection against the action of light and the contents can be further shielded, if necessary, by an external opaque covering or packaging.

4.6 Labels

Suitable labels or other means of marking or identifying samples shall be provided.

4.7 Cleaning of sampling equipment

Strict cleanliness must always be observed. All sampling apparatus must be dry and free from residue, so as not to contaminate the sample. After each use, the apparatus shall

be thoroughly cleaned with the aid, if necessary, of a brush or clean cotton rag, and shall then be rinsed with a suitable solvent.

5 SAFETY PRECAUTIONS

A number of hazards may arise in the course of sampling. Many volatile products which are flammable or toxic may be present and hazards may arise from sparking or static electricity. The samplers must always be informed (this must be stated on the labels or packaged products) of the dangers arising from the nature of the products and must handle them with due care, using protective equipment if required.

All local and general regulations concerning safety and hygiene shall be complied with.

6 TYPES OF SAMPLING

There are two main types of sampling, which may be carried out corresponding to the following stages :

- a) when the manufacture of the product has been completed but the product is still in the final manufacturing vessels, or when it is being transferred into the delivery containers (cans, drums, barrels, etc.);
- b) when sampling from the delivery containers which may also be bulk transport containers. Such sampling shall take place at the manufacturer's premises unless, by special agreement between purchaser and vendor, sampling is permitted at the purchaser's premises, in which case the product after receipt must not have been treated in any way.

7 METHOD OF SAMPLING

7.1 When the type of sampling specified in 6 a) is required, the following procedures are applicable :

7.1.1 For fluid products (Types A, B and C)

When the sample is to be taken directly from the final manufacturing vessel, the product shall first be thoroughly stirred¹⁾ and the sample taken by means of a weighted sampling can from different levels²⁾ in the vessel. When the sample is to be taken in the course of transferring the product into the delivery containers, it shall be made up from small sub-samples taken at regular intervals during the filling process. In the former case, it is important to strain the sample before filling the sample container, using the same procedure as normally used when filling the delivery containers.

1) Clear varnishes and similar products in settling tanks shall not be stirred before sampling.

2) An additional safeguard is to check the relative densities of samples taken from different levels and, if these are not within the agreed tolerances, to continue stirring until the agreed tolerances are met.

7.1.2 For viscous or powdery products (Types D and E)

The product shall be inspected in the final manufacturing vessel and, if uniform in appearance, the sample shall be taken from various parts of the bulk using a sampling tube, scoop or trier. Alternatively, a number of small samples can be taken at regular intervals during filling of the delivery containers.

7.2 When the type of sampling specified in 6 b) is required, the following procedures are applicable :

7.2.1 For fluid products (Types A, B and C)

If the product is supplied in a bulk container, the same procedure applies as in 7.1.1 for sampling from the final manufacturing vessel. However, in the absence of a circulating pump or other means of agitation, it is usually necessary to take approximately equal size samples at different levels¹⁾ in order to obtain a representative sample of the whole.

If the product is supplied in a consignment of containers, the total number of containers shall be noted and then a selection made at random of the containers for sampling. It is recommended that approximately $\sqrt{n/2}$ containers should be sampled, where n is the total number of containers in the consignment; as a guide, see the table below. Only sound, unopened containers shall be chosen for sampling, unless it is desired specifically to examine damaged or opened containers.

TABLE

Number of containers in consignment	Number of containers to be sampled
2 to 10	2
11 to 20	3
21 to 35	4
36 to 50	5
51 to 70	6
71 to 90	7
91 to 125	8
126 to 160	9
161 to 200	10
and thereafter one container for every additional 50 containers.	

The following procedures shall then be adopted (see ISO 1513) :

- Each selected container shall be opened in turn and examined for the presence of surface skin, separation of the contents (for example, water or solvent) or the presence of foreign matter.

- After completing the removal of any surface skin if present, the stirrer shall be inserted into the container and the extent and type of settling, i.e. soft, hard or hard-dry, shall be noted. The presence or absence of a gel shall also be noted, care being taken not to confuse gelling and thixotropy²⁾.

- Any settled pigment shall be redispersed with the stirrer and the ease of redispersion noted. The closure shall then be replaced securely, the container shall be inverted and left inverted while the other containers are examined. Finally, the containers shall be shaken and rolled to effect complete redispersion and reincorporation of the pigment, preferably using mechanical means.

- The containers shall be re-opened and examined for uniformity. Successive stirring, shaking and rolling shall then be continued until the contents are homogeneous, the bottom end of the stirrer being examined for undispersed pigment from time to time during the stirring. The time required to attain uniformity shall be noted.

- When the contents of the containers have become homogeneous, they shall be sampled, using the small dip can to transfer the product to the sample container, which shall be filled so that there is an ullage (air-space) of about 5 %. The container sampled and the sample container shall be closed and the sample container shall be cleaned on the outside and immediately labelled in accordance with 8.1.

7.2.2 For viscous products (Type D)

These products are normally supplied in wide-aperture containers. Examine the condition of all the containers and select at random for sampling an appropriate number in accordance with the table in 7.2.1. Open each of the selected containers, remove any protective covering and inspect the contents for homogeneity or separation of phases (for example phases of oil, solvent or water). If the product appears homogeneous, or is made so by stirring, take a sample from the whole depth of the product in each selected container, using a suitable metal sampling tube or other suitable equipment, and place it in a suitable sample container which shall be filled so that there is an ullage (air-space) of about 5 %. Close the sample container and label it in accordance with 8.1.

7.2.3 For powdery products (Type E)

These products are normally supplied in sacks, paper or plastics bags, drums, barrels or plywood containers. Examine the condition of all the packages and select at random for sampling an appropriate number in accordance with the table in 7.2.1. Open each of the selected packages and take, from various parts of each package, small portions

1) An additional safeguard is to check the relative densities of samples taken from different levels and, if these are not within the agreed tolerances, to continue stirring until the agreed tolerances are met.

2) Both thixotropic and gelled paints and varnishes have a jelly-like consistency, but whereas the consistency of the former is markedly reduced by stirring or shaking, the consistency of a gelled paint or varnish cannot be reduced in this way.

of the product by means of a suitable sampling instrument and close the packages. Place these portions in a suitable sample container, close the container, mix the contents thoroughly by shaking, and label in accordance with 8.1.

8 LABELLING AND SEALING OF SAMPLES

8.1 Labelling

The containers shall be labelled as soon as the samples are taken; the labels shall bear all the necessary information to enable the samples to be identified without dispute. The labels and marking ink used shall be capable of withstanding moisture and any solvents contained in the sample. The label shall not be attached to the stopper, but to the neck or body of the containers.

It is recommended that the following particulars, at least, should be given on the label :

- a) the name of the manufacturer and a description of the product;
- b) the quality and particulars of the consignment;
- c) the reference number of the batch, storage tank, barrel, etc.;
- d) the dates of manufacture and of sampling;
- e) the total number of samples taken from the consignment;
- f) the designation and reference number of the sample (where the samples are drawn from a certain number of selected containers, the latter shall be numbered);
- g) the consignor;
- h) the place of sampling;
- i) the name of the sampler.

8.2 Sealing

After a sample container has been closed and labelled, it shall be sealed in such a way that the contents and label cannot be removed without breaking the seal.

9 SAMPLING REPORT

The sampling report shall include all the information necessary to identify the sample as well as all details which may be useful to those handling it. This report shall include a reference to this International Standard or an equivalent national standard, and information on any abnormalities such as :

- container defects;
- any visible foreign matter;
- abnormal odour;
- abnormal colour;
- marking errors;
- non-homogeneity, including presence of surface skin (if any) before sampling and any straining procedure used before filling the sample container;
- difficulty in reincorporation, etc.

10 STORAGE AND USE OF SAMPLES

10.1 It is recommended that samples should be examined as soon as possible after they have been taken. Some products, in particular those containing water, may deteriorate after they have been stored under extreme temperature conditions; the samples shall therefore be stored according to the instructions of the product manufacturer.

10.2 The samples shall be examined and prepared for testing in accordance with ISO 1513.