
**Paints, varnishes and raw materials
for paints and varnishes — Sampling**

*Peintures, vernis et matières premières pour peintures et vernis —
Échantillonnage*

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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 General requirements	2
5 Sampling equipment	3
5.1 Sampling devices.....	3
5.1.1 General.....	3
5.1.2 Scoops.....	3
5.1.3 Sampling tubes for liquids.....	5
5.1.4 Sampling bottle or can.....	8
5.1.5 Bottom or zone sampler.....	9
5.1.6 Spatula.....	10
5.1.7 Shovel.....	10
5.1.8 Branch pipe.....	10
5.2 Sample containers.....	10
6 Sampling procedure	11
6.1 General.....	11
6.2 Pre-sampling inspection.....	11
6.3 Taking samples from containers.....	11
6.3.1 Number of samples and homogeneity.....	11
6.3.2 Liquids.....	11
6.3.3 Products in paste form.....	11
6.3.4 Solids.....	11
6.4 Reduction in sample size.....	11
6.5 Labelling.....	12
6.6 Storage.....	12
6.7 Sampling report.....	12
Bibliography	13

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 139, *Paints and varnishes*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 15528:2013) and ISO 8130-9:1992, which have been technically revised. The main changes compared to the previous edition are as follows:

- sampling of powder coatings from ISO 8130-9 has been included in the scope;
- all information on sample dividing of coating powders originally in ISO 8130-9 has been deleted;
- the text has been editorially revised and the normative references have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Sampling depends on the product and the size of the container but not on the type of product, for example paint, varnish, coating powder, binder, pigment, extender or solvent. ISO 1513 specifies both the procedure for preliminary examination of a single sample as received for testing and the procedure for preparing a test sample by blending and reduction of a series of samples representative of a consignment of paint, varnish or related product. The samples of the product to be tested have been taken in accordance with this document.

Correct sampling forms the basis for the subsequent tests and their results. The various sampling procedures need to be carried out with great care by operators having the required knowledge and experience. The general instructions in this document are intended to supplement this knowledge and experience and are applicable to most situations. However, some products might require special sampling precautions that are not given in this document; therefore, special vigilance will be necessary on the part of operators to take note of any unusual characteristics exhibited by those products. Operators should be aware of product specifications and national safety regulations which could require special precautions.

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Paints, varnishes and raw materials for paints and varnishes — Sampling

1 Scope

This document specifies procedures for the sampling of paints and varnishes, including coating powders, and raw materials used in their manufacture. Such products include liquids and materials which, without undergoing chemical modification, are capable of being liquefied when heated up, and powdered, granulated and pasty materials. Samples can be taken from containers, for example cans, drums, tanks, tank wagons or ships' tanks, as well as from barrels, sacks, big-bags, silos or silo wagons or conveyor belts.

This document does not deal with the sample preparation for testing or reduction of the samples thus taken, which is dealt with in ISO 1513.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 4618, *Paints and varnishes — Terms and definitions*

ISO 6206, *Chemical products for industrial use — Sampling — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4618 and ISO 6206 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

batch

definite quantity of a material produced under uniform conditions

3.2

lot

total quantity of material to be sampled

Note 1 to entry: A lot can consist of a number of *batches* (3.1).

3.3

individual sample

part of a product taken from a bulk material by one sampling operation

3.4

representative sample

sample which complies, within the precision of the test methods used, in all of its characteristic features with the material sampled

- 3.5
average sample**
mixture of equivalent portions of *individual samples* (3.3)
- 3.6
top sample**
individual sample (3.3) taken at or near the surface of a material
- 3.7
middle sample**
individual sample (3.3) taken at a level corresponding to approximately half of the total volume below the surface
- 3.8
bottom sample**
individual sample (3.3) taken at or near the lowest level of a material
- 3.9
all-layer sample**
individual sample (3.3) taken through the total height of the material, so that all layers are collected proportionately
- 3.10
composite sample**
individual sample (3.3) taken from a number of different levels of a material
- 3.11
intermittent sample**
individual sample (3.3) taken intermittently from a flow of material
- 3.12
continuous sample**
sample taken continuously from a flow of material
- 3.13
storage sample**
individual sample (3.3), *average sample* (3.5) or *continuous sample* (3.12) which is taken and stored for a specified period for reference purposes

4 General requirements

Sampling, the labelling and storage of samples and the preparation of the associated documentation shall be carried out by skilled personnel. After selection of a clean sampling device of a suitable type and size, sampling shall be performed taking into consideration the relevant regulations on environment, health and safety.

The sampling method used shall take into account both the physical and the chemical characteristics of the material concerned, for example its sensitivity to light and oxidation, its tendency to undergo surface reactions (skin formation) and its hygroscopic, physiological and toxicological characteristics.

Storage of the samples, including the storage samples, shall take into consideration relevant regulations on environment, health and safety, and the quality management requirements concerning labelling, traceability and periods of storage.

5 Sampling equipment

5.1 Sampling devices

5.1.1 General

The choice of sampling device depends on the type of material being sampled, the type of container, the level to which the container is filled and the sample size required. General requirements for sampling devices include:

- easy handling;
- easy cleaning (smooth surfaces);
- chemical resistance to the material being sampled.

5.1.2 Scoops

5.1.2.1 Scoop (ladle)

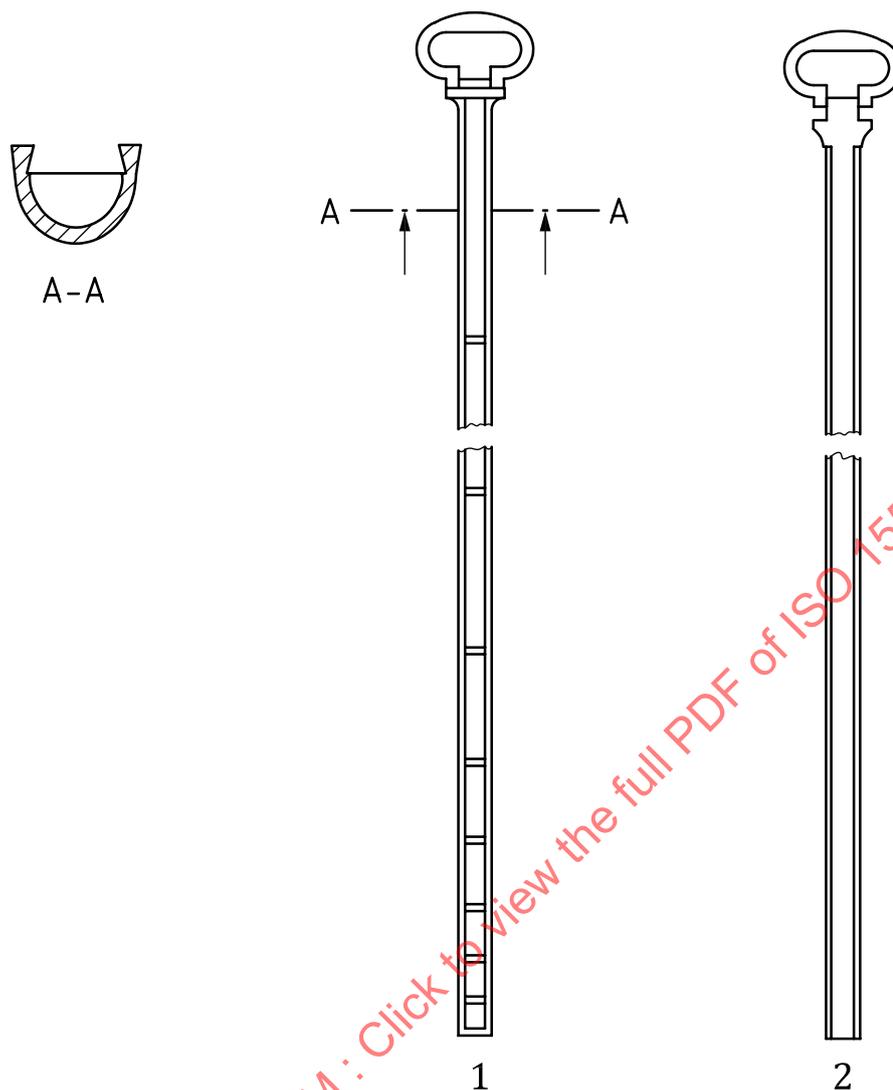
(See also [5.1.7](#).)

A scoop shall consist of a material which is not altered by the product to be tested. It is primarily used for taking top samples of solid materials.

5.1.2.2 Scoop for liquids

This instrument consists of a D-shaped metal trough divided into compartments along its length, and a shutter that moves vertically along the entire length to open and close compartments (see [Figure 1](#)). It is normally 25 mm to 50 mm in diameter.

The instrument is inserted closed and the shutter pulled out to admit the liquid; the scoop is then closed and withdrawn.



- Key**
- 1 trough
 - 2 shutter

Figure 1 — Sample scoop for liquids

5.1.2.3 Scoops for powders

Such scoops are open instruments intended for use with solids in powder form. They are metal, of semicircular or C-shaped cross-section and when inserted bore out a core through the material (see [Figure 2](#)).

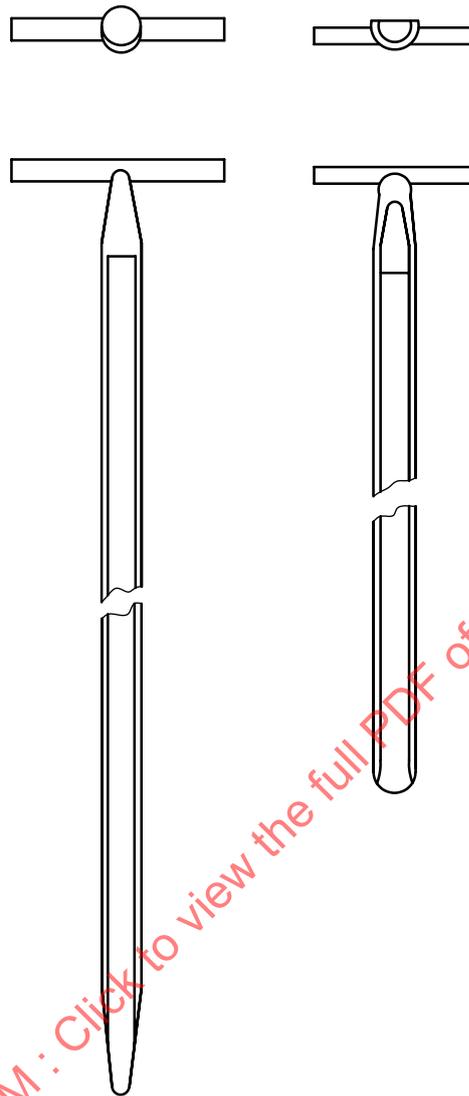


Figure 2 — Sampling scoops for powders

5.1.3 Sampling tubes for liquids

5.1.3.1 Concentric tubes

These consist of two concentric metal tubes which fit closely one inside the other along their entire length, so that one tube can be rotated within the other. A longitudinal opening or series of openings of about one-third of the circumference is cut in both tubes. In one position the tube is open and admits the liquid; by turning the inner tube it becomes a sealed container (see [Figure 3](#)).

The inner tube is normally 30 mm to 40 mm in diameter. It may be undivided along its length, in which case the two tubes are provided with V-shaped ports at their lower ends, placed so that liquid contained in the instrument can be drained through them when the longitudinal opening is open.

Alternatively, the inner tube may be divided transversely into a number of compartments, normally from 3 to 10, in which case the bottom V-shaped ports are omitted. Such an arrangement enables separate samples of liquid to be withdrawn from different depths in the container.

The tube should be of sufficient length to reach the bottom of the container. It is inserted closed, then opened to admit the liquid and finally closed and withdrawn.

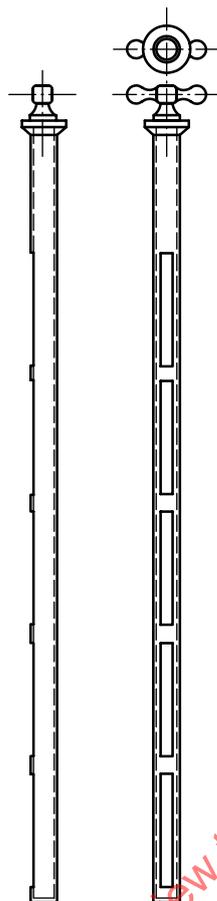


Figure 3 — Sampling tube consisting of two concentric tubes

5.1.3.2 Single tube

A single-tube sampler, an example of which is shown in [Figure 4](#), may be used where the liquid to be sampled is known to be homogeneous in character. It consists of a metal or thick-walled glass tube which may vary from 20 mm to 40 mm in diameter and from 400 mm to 800 mm in length. The upper and lower ends are conical and narrow down to about 5 mm to 10 mm. At the upper end there are two rings to assist in handling

To take an individual sample, the tube is first closed at the top with a stopper and lowered until the desired depth is reached. It is opened for a short time to admit the liquid and then closed and withdrawn.

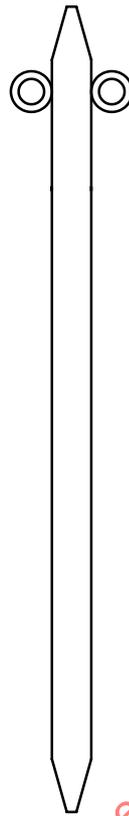
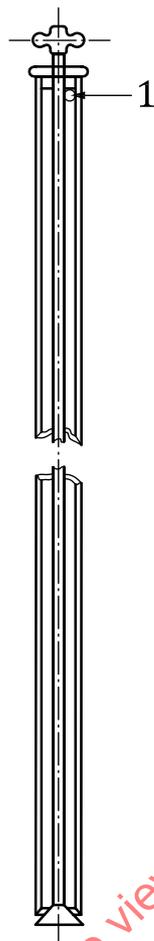


Figure 4 — Example of a sampling tube with single tube

5.1.3.3 Valve sampling tube

A valve sampling tube, an example of which is shown in [Figure 5](#), consists of a metal tube with a valve at the base connected by a central rod to a screw handle at the top. When the handle is screwed down the valve is closed. It differs from the tubes described previously in that it is introduced into the liquid with the valve open, allowing the liquid to enter as the tube dips below the surface while the displaced air passes through an air-vent at the top of the tube. When the base of the tube touches the bottom of the container, the valve automatically closes. The handle is then screwed tight so as to keep the valve shut and the tube containing the sample is withdrawn. The outside of the tube is wiped clean. Sampling tubes of various lengths are used. The valve sampling tube, illustrated in [Figure 5](#), is not suitable for use where sediments have accumulated.



Key

1 air vent

Figure 5 — Example for a valve sampling tube

5.1.4 Sampling bottle or can

The sampling bottle or can is also called a dipping bottle or can (see [Figure 6](#)). It consists of a sufficiently heavy supporting frame made of spark-proof metal which is attached to a chain made of stainless steel or any other suitable material, and on which is mounted a bottle made of glass or any other suitable material. A dipping can may be, for example:

- an open bottle;
- a bottle with a stopper fitted with two glass tubes of different lengths (by adjusting the inner diameters of the tubes, a sample can be obtained which corresponds to the depth in the container and the viscosity of the sample material);
- a bottle with a stopper which can be removed at the desired depth by means of a second chain.

The dipping can is particularly suitable for taking samples from large containers (e.g. storage tanks, ships' tanks).

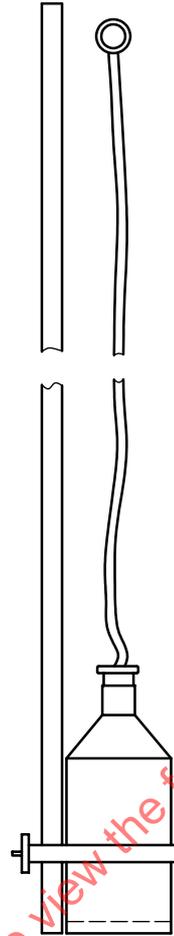


Figure 6 — Sampling can

5.1.5 Bottom or zone sampler

A bottom or zone sampler (see [Figure 7](#)) consists of a cylindrical vessel having a spindle valve made of spark-proof metal. It is attached to a dipping chain made of stainless steel or any other suitable material. An additional chain may be attached to the upper end of the valve spindle to allow the valve to be opened at a particular depth. The valve opens automatically when it touches the bottom of the container, so that the zone sampler is particularly suitable for taking bottom samples from large containers.

The bottom sampler and dipping chain should have a scale indicating the depth where the sample is taken.

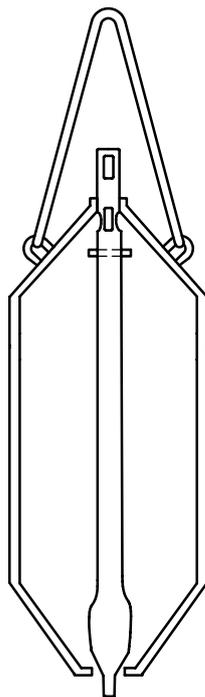


Figure 7 — Bottom or zone sampler (sectional view)

5.1.6 Spatula

A spatula may be of any convenient shape or size. The blade is made of a suitable material such as stainless steel or plastic. The spatula is particularly useful for taking individual samples of pasty materials.

5.1.7 Shovel

(See also [5.1.2.1](#).)

A sampling shovel is made of a suitable material, such as stainless steel or plastic, and has raised sides and a short handle. It is primarily used for taking samples from solid materials in granular or powder form.

5.1.8 Branch pipe

A branch pipe is suitable for taking individual or continuous samples, for example from storage tanks, tank vehicles or pipelines, and is provided with a shut-off valve.

5.2 Sample containers

Sample containers (e.g. screw-cap jars, coated or uncoated tins or plastic bags) for small samples and storage samples shall be selected depending on the product to be sampled so that the sample is protected against the action of light and no material can escape from or enter the container.

Glass containers shall be fitted with tight closures that are not affected by the sample.

NOTE Dark glass provides partial protection against the action of light and the contents can be further shielded, if necessary, by an external opaque covering or packaging.

Galvanized and aluminium containers shall not be used for sampling alcoholic materials.