هيئة التقييس لدول مجلس التعاون لدول الخليج العربية
STANDARDIZATION ORGANIZATION FOR G.C.C (GSO)

GSO ISO 15528:2007
ISO 15528:2000

الدهانات والورنيشات والمواد الأولية للدهانات والورنيشات ــ
طرق أخذ العينات

Paints and Varnishes and Raw materials for paints and varnishes – Sampling

ICS: 87.040

Paints and Varnishes and Raw materials for paints and varnishes – Sampling

Date of GSO Board of Directors' Approval : 19-05-1428h (05-06-2007)
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تقـــديـــم

هيئة التقييس لدول مجلس التعاون لدول الخليج العربية هيئة إقليمية تضم فـــي عـــضويتها الأجهـــزة الوطنية للمواصفات والمقاييس في دول الخليج العربية ، ومن مهام الهيئة إعداد المواصفات القياســـية الخليجية بواسطة لجان فنية متخصصة .

وقد قامت هيئة التقييس لدول مجلس التعاون لدول الخليج العربية ضمن برنامج عمل اللجنة الفنية رقم (1) " قطاع مواصفات المنتجات الكيميائية والغزل والنسيج " بتحديث المواصفة القياســـية الخليجيـــة رقـــم GSO 796/1997 " الدهانات والورنيشات والمواد الأولية للدهانات والورنيشات ــ طرق أخذ العينات " ، وذلك بتبني المواصفة القياسية الدولية رقـــم ISO 15528:2000 " الدهانات والورنيشات والمواد الأولية للدهانات والورنيشات ــ طرق أخذ العينات " والتي أصدرتها " المنظمة الدولية للتقييس " وذلك بلغتها الأصلية . وقامت (مملكة البحرين) بإعداد مشروع هذه المواصفة.

وقد اعتمدت هذه المواصفة كمواصفة قياسية خليجية بلغتها الأصلية دون إدخال أية تعديلات فنية عليها في اجتماع مجلس إدارة الهيئـــة رقـــم (6) ، الـــذي عقـــد بتـــاريخ 1428/5/19هـــــ ، الموافـــق (2007/6/5) على أن تُلغِي المواصفة رقم (GSO 796/1997) وتَحل محلها.

Foreword

GCC Standardization Organization (GSO) is a regional Organization which consists of the National Standards Bodies of GCC member States. One of GSO main functions is to issue Gulf Standards /Technical regulations through specialized technical committees (TCs).

GSO through the technical program of committee (6) " Technical Committee of Chemical and Textiles Products " has updated the GSO 796/2007 " Paints and Varnishes and Raw materials for paints and varnishes – Sampling " by adoption of the International Standard ISO 15528:2000" Paints and Varnishes and Raw materials for paints and varnishes – Sampling " issued by (International Organization for Standadization) in its original language. The Draft Standard has been prepared by (Kingdom of Bahrain).

This standard has been approved as a Gulf (Standard without any technical modifications by GSO Board of Directors in its meeting No. (6) , held on 19/5/1428H (5/6/2007G) . The approved standard will replace and supersede the GSO standard No. (GSO 796/1997) .

INTERNATIONAL STANDARD

ISO 15528

First edition
2000-07-15

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

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

Reference number
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15528 was prepared by Technical Committee ISO/TC 35, *Paints and varnishes*, Subcommittee SC 9, *General test methods for paints and varnishes*.

It cancels and replaces ISO 842:1984 and ISO 1512:1991.

Sampling depends on the state of aggregation of the product and the size of the container but not on the type of product, e.g. paint, varnish, binder, pigment, extender or solvent. It was therefore decided to combine ISO 842 and ISO 1512. ISO 8130-9:1992, *Coating powders — Part 9: Sampling*, describes methods for the sampling of coating powders from consignments and for the subdivision of the sample into quantities suitable for test methods specified in other parts of ISO 8130. It was decided that ISO 8130-9 should remain a separate standard and not be combined with ISO 842 and ISO 1512 because it is part of a comprehensive series of standards dealing with coating powders. ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing*, 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 having been taken in accordance with ISO 842 and ISO 1512.

Introduction

This International Standard specifies procedures for the sampling of paints and varnishes and of raw materials used in their manufacture. It does not deal with the preparation for testing or reduction of the samples thus taken. This is dealt with in ISO 1513 (see Bibliography).

Correct sampling is a skilled operation and the various procedures need to be carried out with great care by operators 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 that are not given in this International Standard and therefore special vigilance will be necessary on the part of operators to take note of any unusual characteristics exhibited by those products. It is also essential that operators adhere to any special precautions in accordance with product specifications and national safety regulations.

ISO 3165 gives general guidance on safety in the sampling of chemical products for industrial use and is intended to assist those engaged in sampling or in directing the activities of samplers.

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

1 Scope

This International Standard describes manual methods of sampling paints, varnishes and raw materials for paints and varnishes. Such products include liquids and materials which, without undergoing chemical modification, are capable of being liquefied when heated up, and also powdered, granulated and pasty materials. Samples may be taken from containers, e.g. cans, drums, tanks, containers, tank wagons or ships' tanks, as well as from barrels, sacks, big-bags, silos or silo wagons, or from conveyor belts.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 3165:1976, *Sampling of chemical products for industrial use — Safety in sampling*.

ISO 6206:1979, *Chemical products for industrial use — Sampling — Vocabulary*.

3 Terms and definitions

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

3.1
batch
definite quantity of a material which was produced under uniform conditions

3.2
lot
total quantity of material which is to be sampled, which may consist of a number of batches or sampling units

3.3
individual sample
that 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 taken at or near the surface of a material

3.7
bottom sample
individual sample taken at or near the lowest level of a material

3.8
composite sample
individual sample taken from a number of different levels of a material

3.9
intermittent sample
individual sample taken intermittently from a flow of material

3.10
continuous sample
sample taken continuously from a flow of material

3.11
reference sample
individual, average or continuous sample 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 observing the relevant regulations on health and safety, ensuring that emissions are kept to a minimum.

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

Provision shall be made for taking representative samples at a cost which is considered reasonable by the parties concerned, using a procedure which meets the requirements of quality testing and quality management.

Storage of the samples, including the reference samples, shall comply with quality management requirements concerning labelling, traceability and periods of storage.

In the case of particularly sensitive materials, instructions shall be provided with regard to the storage conditions. This is to ensure the quality of, in particular, the reference sample for the entire storage period.

For health and safety information in sampling, see ISO 3165.

5 Sampling equipment

5.1 Sampling devices

5.1.1 General

The choice of sampling device depends on the type of material being sampled, its state of aggregation, the type of container, the level to which the container is filled, the health and safety hazard presented by the material and the sample size required. General requirements for sampling devices include

— easy handling,

— easy cleaning (smooth surfaces),

— commercial availability,

— chemical resistance to the material being sampled.

5.1.2 Scoops

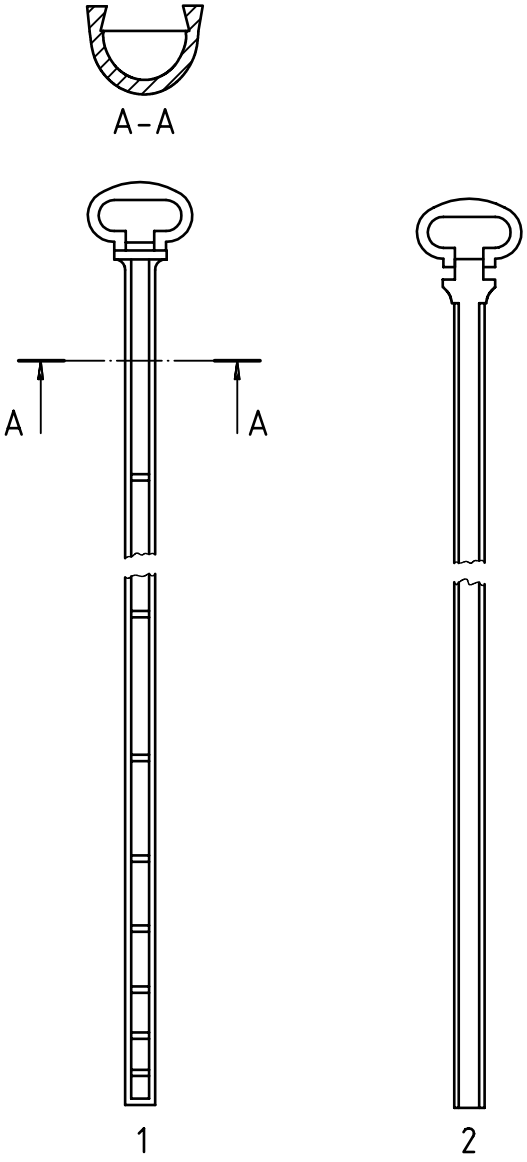
5.1.2.1 **Scoop (ladle)** (see also 5.1.7)

A scoop 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 from 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 of metal, of semicircular or C-shaped cross-section and when inserted bore out a core through the material (see Figure 2).

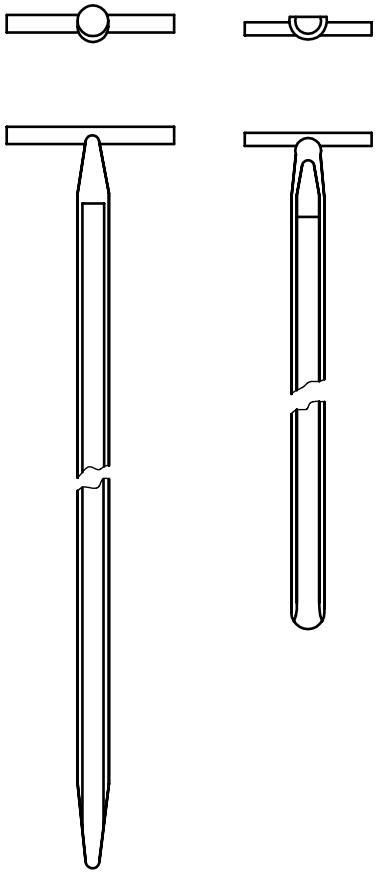


Figure 2 — Sampling scoops for powders

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 20 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 three to ten, 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.

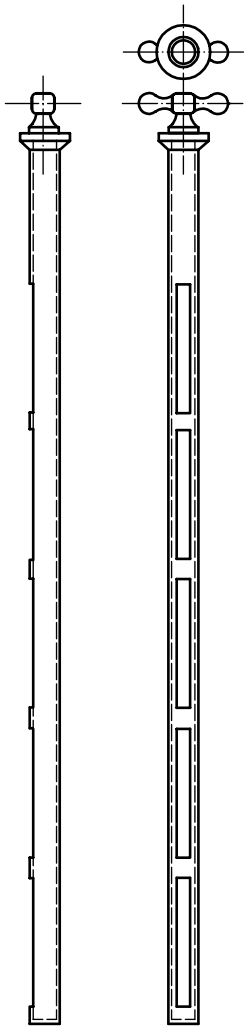


Figure 3 — Sampling tube consisting of two concentric tubes

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 the thumb or 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.

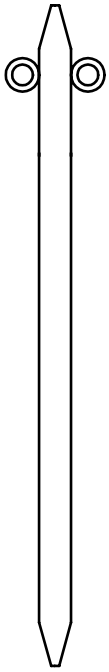
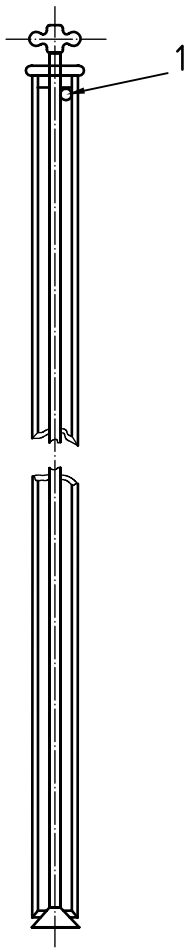


Figure 4 — Sampling tube with single tube

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 previously described 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 or a cleaning device is used. Sampling tubes of various lengths are used, one 2 m long, made of aluminium, being convenient for sampling from road tank vehicles. This instrument, illustrated in Figure 5, is not suitable for use where sediments have accumulated.



Key

1 Air vent

Figure 5 — 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 may 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 (storage tanks, ships' tanks, etc.).

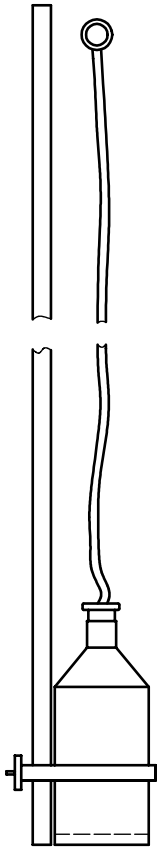


Figure 6 — Sampling can

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.

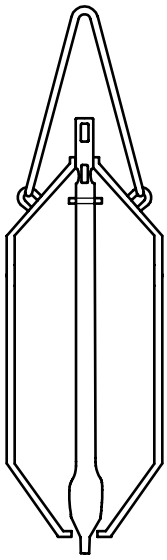


Figure 7 — Bottom or zone sampler (sectional view)

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, e.g. putty.

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, e.g. from storage tanks, tank vehicles or pipelines, and is provided with a shut-off valve.

5.2 Sample containers

Screw-cap jars, bottles, tins or plastic bags are suitable for storing individual samples and reference samples. The container and the lid material shall be selected so that the sample is protected against the action of light and no material can escape from or enter the container.

Metal containers shall be fitted with tight metal closures, shall be free from soldering flux and shall in general not be coated internally with paint or varnish (see note 1).

Glass containers shall be fitted with tight closures that are not affected by the sample (see note 2).

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

NOTE 1 Containers coated internally are however suitable for many water-based products.

NOTE 2 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.

6 Sampling procedure

6.1 General

The minimum size of a sample shall be 2 kg or three to four times the quantity needed to carry out the required tests. For the number of samples to be taken, see Table 1.

6.2 Pre-sampling inspection

Before sampling is carried out, the material, the container and the sampling point shall be inspected for abnormalities. If any abnormalities are observed, they shall be recorded in the sampling report. The operator shall then decide whether a sample shall be taken and if so what type of sample.

6.3 Homogeneity considerations

6.3.1 Homogeneous materials

For homogeneous materials, a single sample is sufficient.

6.3.2 Non-homogeneous materials

6.3.2.1 General

There are two types of non-homogeneity — temporary and permanent.

6.3.2.2 Temporary non-homogeneity

This may result from insufficient mixing, foaming, sedimentation, crystallization, etc., which may give rise to differences in density or viscosity for instance. Such materials may be homogenized by stirring or warming before sampling is carried out.

6.3.2.3 Permanent non-homogeneity

In the case of materials which are neither miscible with each other nor soluble in each other, it shall be decided whether and for what purpose a sample is to be taken.

From small containers, samples shall be taken by means of a sampling tube (5.1.3).

If large containers are to be sampled, at least two samples shall be taken. The upper phase shall be sampled by means of a scoop (5.1.2) and the lower phase by means of a zone sampler (5.1.5) or a suitable dipping bottle or can (5.1.4) (see note), or at the bottom valve if there is one. When preparing a sample, the relative sizes of the two phases shall be taken into account.

NOTE A dipping can with a stopper that can be removed at the desired depth is suitable.

6.4 Container size

6.4.1 Large containers

6.4.1.1 General

Large containers are understood to be tanks, road tank vehicles, silos, silo wagons, railway tank wagons, ships' tanks or reactors having an average height of at least 1 m.

The product, other than those which are permanently non-homogeneous, shall be homogeneous before taking samples. As reproducible sampling of a composite sample, e.g. by means of a dipping can (5.1.4), is generally impracticable in the case of large containers, a top sample shall be taken by means of a scoop (5.1.2) or a sampling tube (5.1.3) as well as a sample at mid-depth using a dipping can (5.1.4), and a bottom sample, at nine-tenths of the depth, by means of a dipping can (5.1.4) or zone sampler (5.1.5). When a large container consists of several compartments, at least one sample shall be taken from each compartment. If the same product is involved, then several individual samples (3.3) may be combined into one average sample.

In the case of permanent non-homogeneity, use the procedures given in 6.3.2.3.

6.4.1.2 Liquids

A top sample may be taken from a liquid or liquefied product by means of a scoop (5.1.2). For sampling at other levels, the dipping can (5.1.4) is the most suitable means, and the zone sampler (5.1.5) is particularly suitable for taking a bottom sample.

Other possible sampling procedures include the taking of an individual sample from a bleed point, taking care to allow sufficient liquid to run off first, or in the case of pumped liquids by means of a branch pipe (5.1.8) during circulating, discharging or loading. In the case of pumping operations, a continuous sample may be taken from a bypass line by using a suitable branch pipe.

6.4.1.3 Products in paste form

A top sample may be taken from pastes by using a spatula (5.1.6), a scoop (5.1.2.1) or, in certain cases, a sampling tube (5.1.3).

6.4.1.4 Solids

In the case of solids in powdered form, as granules or rough grains, it is generally only possible to take a top sample by means of a scoop (5.1.2), spatula (5.1.6) or shovel (5.1.7).

Intermittent samples may be taken when containers are being filled or emptied, using a conveyor belt or a worm conveyor, for instance.

A sampling tube (5.1.3) may also be used in certain cases.

6.4.2 Small containers

6.4.2.1 General

Small containers include barrels, drums, sacks and other, similar, containers. Taking one sample from each container to be sampled generally suffices. Where a delivery consists of several containers, the statistically correct number of samples to be taken is given in Table 1; if fewer samples are taken, this shall be noted in the sampling report.

Table 1 — Minimum number of containers to be sampled

Total number of containers N	Minimum number of containers to be sampled n
1 to 2	all
3 to 8	2
9 to 25	3
26 to 100	5
101 to 500	8
501 to 1000	13
thereafter at the rate	$n = \sqrt{N/2}$

If the delivery consists of containers from different batches, then containers from every batch shall be sampled.

6.4.2.2 Liquids

Individual samples may be taken as top samples by means of a scoop (5.1.2). Samples from each level, composite samples or bottom samples may also be taken by means of sampling tubes (5.1.3).

6.4.2.3 Products in paste form

Sampling of products in paste form shall be performed as described in 6.4.1.3.

6.4.2.4 Solids

Sampling of solids shall be performed as described in 6.4.1.4.

6.5 Reduction in sample size

Thoroughly mix the whole sample, taken in accordance with the appropriate procedure.

Mix liquids in a clean, dry container, preferably made of stainless steel. As soon as possible, take at least three uniform samples (final samples) of at least 400 ml, or three to four times the quantity needed to carry out the required tests, and place in containers complying with 5.2.

For solids, quarter the gross sample by means of a rotary sample divider (riffle divider). Take three samples of 500 g, or three to four times the quantity needed to carry out the required tests, and place in containers complying with 5.2.

6.6 Labelling

After a sample has been taken, it shall be labelled in such a way that it can be traced in accordance with the quality management requirements.

The label shall include the following minimum information:

— the sample designation;

— the trade name and/or code;

— the date of sampling;

— the sample number and/or batch number;

— the location of sampling, e.g. plant, consignee or vendor;

— the batch or lot number where applicable;

— the name of the person taking the sample;

— any hazard symbols necessary.

6.7 Storage

The reference samples shall be stored under suitable storage conditions in an airtight container and, where required, protected from light and moisture for the period specified and in accordance with all relevant safety regulations.

6.8 Sampling report

The sampling report, which may be stored in electronic form, shall include, in addition to the labelling information given in 6.6, the following information:

— a reference to this International Standard (ISO 15528);

— the sampling device used;

— the type of container sampled, e.g. road tank vehicle, railway tank wagon, ship's compartment, drum, sack, tank, product stream;

— any remarks concerning the condition of the container packaging and/or consignment;

— any other remarks, e.g. first drum, container to be returned, etc.;

— the depth from which the sample was taken.

Bibliography

Other International Standards concerning sampling:

[1] ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing*.

[2] ISO 8130-9:1992, *Coating powders — Part 9: Sampling*.

[3] ISO 8213:1986, *Chemical products for industrial use — Sampling techniques — Solid chemical products in the form of particles varying from powders to coarse lumps*.

ICS 87.040

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