INTERNATIONAL STANDARD 212

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Essential oils — Sampling

First edition — 1973-12-15

UDC 668.5.001.4

Ref. No. ISO 212-1973 (E)

Descriptors : essential oils, sampling.

Price based on 3 pages

Preisgr. C

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, Technical Committee ISO/TC 54 has reviewed ISO Recommendation R 212 and found it suitable for transformation. International Standard ISO 212 therefore replaces ISO Recommendation R 212-1961.

ISO Recommendation R 212 was approved by the Member Bodies of the following countries :

Australia	Israel	Romania
Belgium	Italy	Sweden
Burma	Japan	Turkey
Chile	Mexico	United Kingdom
Czechoslovakia	Netherlands	U.S.S.R.
France	New Zealand	Yugoslavia
Germany	Poland	
India	Portugal	

The Member Bodies of the following countries have subsequently approved this Recommendation :

Philippines
South Africa, Rep. of

Printed in Switzerland

Essential oils — Sampling

0 INTRODUCTION

The difficulties encountered in sampling are often considerable and depend upon such factors as the number and capacity of the containers, the physical state of the substance, the presence of solid natural constituents and separated impurities.

In order to obtain a representative sample, the procedure may have to be varied considerably. Sampling should consequently be entrusted to experienced personnel able to cope with unforeseen circumstances.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies procedures for sampling consignments of essential oils for the purpose of determining their organoleptic, physical and chemical characteristics.

2 DEFINITION

For the purposes of this International Standard, the following definition applies :

sampling : The collecting of a small portion (called the sample) representative of the properties and composition of the consignment of the sampled essential oil.

3 IMPLEMENTS

All implements intended for the preparation of samples shall be washed and dried before use and shall be, if possible, of standard types.

The implements shall be made of a material that is not attacked by the essential oil to be sampled.

Examples of suitable implements are :

3.1 Implements for liquid essential oils

3.1.1 Agitators

3.1.2 Syringes

3.1.3 Thiefs

3.1.4 Core samplers

3.1.5 Zone samplers

3.1.6 Cocks

3.1.7 Pumps

3.1.8 Siphons

3.2 Implements for solid or pasty essential oils

3.2.1 Spatulas

3.2.2 Triers

3.2.3 Half-round triers

3.3 Containers for samples

Glass containers shall be used, and shall be protected from breakage and light. These containers shall be of such capacity that they may be filled as specified in 4.5. They shall be hermetically sealed with a cork suitably protected, if necessary, by tinfoil or by parchment.

For pasty or solid substances, the containers shall have wide necks.

4 PROCEDURE

4.1 Inspection

The first operation of the sampling procedure is inspection of the consignment.

The physical consistency of essential oils can be one of the following :

- liquid (occurring most frequently);
- solid;
- a mixture of liquid and solid;
- pasty.

It is desirable, where possible, to ascertain whether the material in each of the containers of the consignment is uniform in appearance and, in the case of a liquid, whether any or all of the consignments contain separated solids, water or other impurities. When, owing to the nature of the

container, this cannot be done directly, portions of the material shall be withdrawn by means of an appropriate implement (see 3.1), so that specimens from the surface and from the bottom can be examined. If the container has a cock or bung-hole at the bottom, specimens from the lower part may be withdrawn through this.

4.2 Homogenization

It is necessary to ensure that the sample taken from each container is a fair average of its contents. Homogenization is obtained as follows :

4.2.1 In the case of liquid products, it is sufficient to shake the container, to use some form of agitator (3.1.1) or to homogenize by injection of nitrogen or deoxygenated air.

4.2.2 In the case of essential oils in a solid or pasty condition or composed of mixed solid and liquid phases, these are mixed, when possible, by shaking and by exposing the container to a higher temperature, or by warming it artificially until the contents are liquefied. The maximum limit of the heating temperature, if necessary, will be specified in the individual standard for the essential oil.

When total liquefaction cannot be attained, a series of partial samples shall be withdrawn by means of an appropriate implement (see 3.2) and in the manner indicated in 4.3.

The partial samples shall be bulked and homogenized. From this bulk three representative samples shall be drawn.

4.3 Sampling

4.3.1 *Large capacity containers* (tanks, tankcars, etc.)

Five partial samples shall be withdrawn from each container, at depths from the upper surface approximately equal to :

a) 10 % of the total depth,

b) one-third of the total depth,

c) half of the total depth,

d) two-thirds of the total depth,

e) 90 % of the total depth.

For each container, the five partial samples shall be bulked and homogenized. From this bulk three representative samples shall be drawn.

Should there be impurities or water at the bottom or at the surface of the essential oil, a sample of such a layer shall be withdrawn separately, thoroughly mixed and divided into three similar portions (see 4.1).

These specimens shall not be added to the five partial samples referred to above, but shall be retained and marked separately so that the nature of the impurities can be ascertained.

4.3.2 *Other containers* (drums, jugs, carboys, flasks, bottles, etc)

The essential oil shall be sampled at random, in accordance with the following table :

Total number of containers in the consignment	Minimum number of containers to be sampled
1 to 3	each container
4 to 20	3
21 to 60	4
61 to 80	5
81 to 120	6
above 120	one in every twenty

If inspection reveals no impurities or water, one partial sample shall be withdrawn from each container, the contents having first been homogenized.

If inspection reveals the presence of impurities or water near the bottom or at the surface, specimens containing such foreign matter shall be withdrawn separately from each container, as specified in the last paragraph of 4.3.1. Such specimens shall be kept and marked separately. More than one partial sample may have to be withdrawn from the bulk, the number of such samples and the depth from which they are withdrawn depending upon the size of the container. Partial samples shall not be withdrawn from distances from the upper surface or bottom less than 10 % of the total depth.

In every case, the partial samples taken from all the containers shall be bulked and homogenized. From this bulk three representative samples shall be drawn.

4.3.3 *Observations concerning costly essential oils*

Small containers are generally used for packing costly essential oils.

The bulk sampling depends on the number of containers used : the combined partial samplings, however, shall not exceed the quantities necessary for a normal analysis. The interested parties shall agree in advance as to the size of the bulk sample and the manner in which it shall be done.

4.4 Representative samples

The minimum quantity of each representative sample will be indicated in the individual International Standard for each essential oil.

Three representative samples shall always be taken, namely

— one for analysis,

— one for the owner of the merchandise, in case he should require a check analysis, and

— one which will be retained by the sampler to replace either of the other two in the case of loss or for other valid reasons.

4.5 Packing and labelling

The representative samples shall be packed in hermetically stoppered containers (see 3.3) which shall be fastened and sealed with the seals of the owner and sampler. To avoid spoilage of the samples, sealing wax shall under no circumstances be applied direct to the cork.

In order to comply with international agreements on the carriage of dangerous products, the head space shall be between 5 and 10 % of the volume of the container, depending on the method of transport adopted.

All containers shall bear labels showing at least the following minimum information to guarantee the authenticity and identity of the sample :

a) sample number;

b) nature and quantity of the essential oil;

c) name of the owner or his authorized representative;

d) date of sampling;

e) number, kind and marking of containers;

f) signatures and names and, if necessary, addresses of the interested parties or their authorized representatives;

g) signature and name of the sampling supervisor.

5 TRANSPORT AND STORAGE OF SAMPLES

All samples shall be transported with special care.

Samples for analysis shall be sent to the laboratory as soon as possible after they have been taken.

The samples retained by the other parties shall be stored in a cool place and protected from light, excessive variations of temperature and the possibility of breakage.

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