
INTERNATIONAL STANDARD



248

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Rubbers, raw — Determination of volatile matter content

Caoutchoucs bruts — Détermination des matières volatiles

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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.

International Standard ISO 248 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in September 1975.

It has been approved by the member bodies of the following countries :

Australia	India	Sri Lanka
Belgium	Italy	Sweden
Brazil	Malaysia	Switzerland
Bulgaria	Mexico	Turkey
Canada	Netherlands	United Kingdom
Czechoslovakia	Poland	U.S.A.
Germany	Romania	U.S.S.R.
Hungary	Spain	Yugoslavia

The member body of the following country expressed disapproval of the document on technical grounds :

France

This International Standard cancels and replaces ISO Recommendation R 248-1962, of which it constitutes a technical revision.

A revised wording for sub-clause 5.2.4 of this International Standard is being submitted for ISO member body ballot. This action follows objections to the present wording raised at a meeting of ISO/TC 45 by experts from several countries.

Rubbers, raw – Determination of volatile matter content

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard specifies two methods, a hot-mill method and an oven method, for the determination of moisture and other volatile matter content in raw rubbers.

1.2 These methods are suitable for the determination of the volatile matter content in the "R"¹⁾ group of rubbers listed in ISO 1629. They may also be used for other rubbers, but in these cases it is necessary to prove that the change in mass is due solely to loss of original volatile matter and not to rubber degradation.

1.3 The hot-mill method is not applicable to natural and synthetic isoprene rubbers or to rubbers too difficult to handle on a hot mill.

1.4 The two test methods do not necessarily give identical results. Therefore, in case of dispute the oven method shall be the reference method.

2 REFERENCES

ISO 1629, *Rubbers and latices – Nomenclature.*

ISO 1796, *Rubber, raw – Sample preparation.*²⁾

ISO 2393, *Rubber test mixes – Preparation, mixing and vulcanization – Equipment and procedures.*

3 PRINCIPLE OF METHODS

3.1 Hot-mill method

Sheeting out of a test portion on a heated mill until all the volatile matter is driven off. Calculation of the loss in mass during milling and expression as volatile matter content.

3.2 Oven method

Weighing of a test portion of a piece prepared in accordance with ISO 1796. Sheeting out of the test portion on a laboratory mill or comminution by hand. Drying in an oven

to constant mass. Calculation of the volatile matter content as the mass lost during this procedure, together with the mass lost during homogenization of the piece.

4 HOT-MILL METHOD

4.1 Apparatus

4.1.1 **Mixing mill**, complying with the requirements of ISO 2393.

4.2 Procedure

4.2.1 Weigh, to the nearest 0,1 g, a test portion of at least 250 g from a piece prepared in accordance with ISO 1796.

4.2.2 Adjust the clearance of the mill rolls to $0,25 \pm 0,05$ mm, using lead strips as specified in ISO 2393. Maintain the surface temperature of the rolls at 100 ± 5 °C.

4.2.3 Pass the test portion repeatedly through the mill (4.1.1) for 4 min. Do not allow the test portion to band and take care to prevent any loss of rubber. Weigh the test portion to the nearest 0,1 g. Pass the test portion through the mill for an additional 2 min and re-weigh. If the masses at the end of the 4 and 6 min periods differ by less than 0,1 g, calculate the volatile matter content; if not, continue passing the test portion through the mill for 2 min periods until the mass does not decrease by more than 0,1 g in successive weighings. Before each weighing, allow the rubber to cool to room temperature in a desiccator.

4.3 Expression of results

The volatile matter content is given, as a percentage by mass, by the formula

$$\frac{m_1 - m_2}{m_1} \times 100$$

where

m_1 is the mass, in grams, of the test portion before milling;

m_2 is the mass, in grams, of the test portion after milling.

1) Rubbers having an unsaturated carbon chain, for example natural rubber and synthetic rubbers derived at least partly from diolefins.

2) At present at the stage of draft. (Revision of ISO 1796-1972.)