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

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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*. The first edition (ISO 248-1978) had 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	USA
Germany, F.R.	Romania	USSR
Hungary	Spain	Yugoslavia

The Member Body of the following country had expressed disapproval of the document on technical grounds :

France

This second edition, which supersedes ISO 248-1978, incorporates draft Amendment 1, circulated to the member bodies in April 1978. This draft amendment has been approved by the member bodies of the following countries :

Australia	India	Spain
Austria	Indonesia	Sri Lanka
Belgium	Korea, Rep. of	Sweden
Brazil	Malaysia	Switzerland
Canada	Mexico	Thailand
Czechoslovakia	Netherlands	Turkey
Egypt, Arab Rep. of	Poland	United Kingdom
France	Romania	USSR
Hungary	South Africa, Rep. of	

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

USA

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Rubbers, raw — Determination of volatile matter content

0 INTRODUCTION

In this second edition of ISO 248, the text has been modified to clarify the application of the test for the determination of volatile hydrocarbon oils.

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.

1.5 The variation to the oven method specified in 5.2.4 is applicable only to visually graded natural rubber, marketed in bales, coated with a powder (for example talc, kaolin, whiting) by application of a bale coating solution.

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 about 250 g from a piece prepared in accordance with ISO 1796.

4.2.2 Adjust the clearance of the mill rolls to 0,25 ± 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.)