
International Standard



6225/2

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

**Rubber, raw, natural — Determination of castor oil content —
Part 2 : Determination of total ricinoleic acid content —
Gas chromatographic method**

Caoutchouc naturel brut — Détermination de la teneur en huile de ricin — Partie 2 : Détermination de la teneur en acide ricinoléique total — Méthode par chromatographie en phase gazeuse.

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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 developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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 6225/2 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in August 1982.

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

Austria	India	South Africa, Rep. of
Belgium	Indonesia	Spain
Canada	Italy	Sri Lanka
Czechoslovakia	Korea, Rep. of	Sweden
Denmark	Malaysia	Thailand
Egypt, Arab Rep. of	Netherlands	Turkey
Germany, F. R.	Poland	
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The member body of the following country expressed disapproval of the document on technical grounds :

USA

Rubber, raw, natural — Determination of castor oil content —

Part 2 : Determination of total ricinoleic acid content —

Gas chromatographic method

0 Introduction

Certain grades of natural rubber are treated with castor oil to facilitate crumbing of the rubber during production. This part of ISO 6225 is intended to facilitate estimation of the amount of castor oil remaining in the rubber.

The principal constituent of castor oil, making up about 80 to 85 % by mass, is the triglyceride of ricinoleic acid. This glyceride may partly hydrolyse to ricinoleic acid and glycerol. Provided the rubber is stored under normal conditions, determination of the castor oil glycerides content will give a good indication of the amount of castor oil added to the rubber.

ISO 6225/1 specifies a method for the determination of the castor oil and castor oil glycerides content of raw rubber.

1 Scope and field of application

This part of ISO 6225 specifies a gas chromatographic method for the determination of the total ricinoleic acid content of raw rubber. The result may be expressed in terms of ricinoleic acid or of castor oil glycerides.

It is applicable to all grades of natural rubber.

2 References

ISO 1795, *Raw rubber in bales — Sampling.*

ISO 1796, *Rubber, raw — Sample preparation.*

ISO 6225/1, *Rubber, raw, natural — Determination of castor oil content — Part 1 : Determination of castor oil and castor oil glycerides content — Thin layer chromatographic method.*¹⁾

3 Principle

Extraction of any free ricinoleic acid and conversion to the acetate of methyl ricinoleate.

Extraction of any castor oil glycerides also present, hydrolysis to ricinoleic acid, and conversion to the corresponding acetate of methyl ricinoleate.

Determination of the total acetate of methyl ricinoleate by gas chromatography by comparison either with a ricinoleic acid standard, or with ricinoleic acid prepared by hydrolysis of a castor oil standard.

4 Reagents

All recognized health and safety precautions shall be taken when carrying out the procedure specified in this International Standard.

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Potassium hydroxide, ethanolic solution.

Carefully dissolve 65 g of potassium hydroxide (KOH) in 1 dm³ of 95 % (V/V) ethanol.

4.2 Sodium chloride, solution.

Dissolve 10 g of sodium chloride in 100 cm³ of hot water.

4.3 Hydrochloric acid, $\rho = 1,19$ Mg/m³.

4.4 Dichloromethane.

4.5 Toluene.

4.6 Sulfuric acid, methanolic solution.

Carefully mix 4 g of sulfuric acid, $\rho = 1,84$ Mg/m³, with 100 cm³ of methanol.

4.7 Pyridine/acetic anhydride solution.

Carefully mix equal volumes of acetic anhydride (minimum purity 97 %) and pyridine (boiling range 113 to 117 °C).

4.8 Castor oil reference solution.

Weigh, to the nearest 0,1 mg, 0,05 to 0,10 g of castor oil (pharmaceutical grades have been found satisfactory) and place it in a flask containing 70 cm³ of the ethanolic potassium hydroxide solution (4.1).

1) At present at the stage of draft.