

# INTERNATIONAL STANDARD

**ISO**  
**6225-2**

Second edition  
1990-12-01

---

---

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

### **Part 2 :** Determination of total ricinoleic acid content by gas chromatography

*Caoutchouc naturel brut — Détermination de la teneur en huile de ricin —*

*Partie 2 : Détermination de la teneur en acide ricinoléique total par chromatographie  
en phase gazeuse*



Reference number  
ISO 6225-2 : 1990 (E)

## 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.

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.

International Standard ISO 6225-2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 6225-2 : 1983), of which it constitutes a minor revision.

ISO 6225 consists of the following parts, under the general title *Rubber, raw, natural* — *Determination of castor oil content*:

- *Part 1: Determination of castor oil glycerides content — Thin layer chromatographic method*
- *Part 2: Determination of total ricinoleic acid content by gas chromatography*

© ISO 1990

All rights reserved. No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

International Organization for Standardization  
Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

## Introduction

Certain grades of natural rubber are treated with castor oil to facilitate crumbing of the rubber during production. 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 % (m/m) to 85 % (m/m), 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.

This document is a preview generated by EVS

This document is a preview generated by EVS

This page intentionally left blank

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

## Part 2 :

## Determination of total ricinoleic acid content by gas chromatography

### 1 Scope

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 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6225. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6225 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1795 : 1974, *Raw rubber in bales — Sampling*.

ISO 3696 : 1987, *Water for analytical laboratory use — Specification and test methods*.

### 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 part of ISO 6225.

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water (grade 3 as defined in ISO 3696) or water of equivalent purity.

#### 4.1 Potassium hydroxide, ethanolic solution.

Carefully dissolve 65 g of potassium hydroxide (KOH) in 1 dm<sup>3</sup> of 95 % (V/V) ethanol.

#### 4.2 Sodium chloride, solution.

Dissolve 10 g of sodium chloride in 100 cm<sup>3</sup> of hot water.

#### 4.3 Hydrochloric acid, $\rho = 1,19$ Mg/m<sup>3</sup>.

#### 4.4 Dichloromethane.

#### 4.5 Toluene.

#### 4.6 Sulfuric acid, methanolic solution.

Carefully mix 4 g of sulfuric acid,  $\rho = 1,84$  Mg/m<sup>3</sup>, with 100 cm<sup>3</sup> of methanol.

#### 4.7 Pyridine/acetic anhydride solution.

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