

INTERNATIONAL STANDARD

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Rubber products — Determination of zinc content — EDTA titrimetric method

*Produits en caoutchouc — Dosage du zinc — Méthode titrimétrique à
l'EDTA*



Reference number
ISO 2454:1995(E)



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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 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 2454 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This third edition cancels and replaces the second edition (ISO 2454:1982), of which it constitutes a minor revision.

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Rubber products — Determination of zinc content — EDTA titrimetric method

WARNING — Persons using this International Standard shall be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies a titrimetric method using ethylenedinitrilotetraacetic acid (EDTA) disodium salt for the determination of the zinc content of all rubber products.

The presence of lead, magnesium, iron, titanium, antimony, silica and silicates in the ash does not interfere with the determination. The method is not applicable, however, if cobalt is present.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard 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 247:1990, *Rubber — Determination of ash*.

ISO 385-1:1984, *Laboratory glassware — Burettes — Part 1: General requirements*.

ISO 9028:1989, *Rubber — Dissolution by acid digestion*.

3 Principle

A test piece is incinerated and the ash dissolved in hydrochloric acid. Silica is extracted by treatment with hydrofluoric and sulfuric acids. Aluminium chloride and aluminium fluoride are added to precipitate calcium and magnesium as hexafluoroaluminates. Interference from iron, titanium and excess aluminium is removed or reduced by the formation of complexes with fluoride ion (interference from large amounts of iron is further reduced by addition of 2,4-pentanedione). The zinc is titrated with a standard volumetric solution of EDTA disodium salt in the presence of dithizone as indicator.

4 Reagents

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

4.1 Acetone.

4.2 2,4-Pentanedione, 10 % (V/V) solution in acetone (4.1).

4.3 Hydrochloric acid, $\rho = 1,18 \text{ Mg/m}^3$.

4.4 Sulfuric acid, $\rho = 1,84 \text{ Mg/m}^3$.

4.5 Hydrofluoric acid, 48 % (m/m) solution.