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**Rubber — Determination of the  
aromaticity of oil in vulcanized rubber  
compounds**

*Caoutchouc — Détermination de l'aromaticité des huiles dans les  
mélanges vulcanisés*



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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.

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The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 21461 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 3, *Raw materials (including latex) for use in the rubber industry*.

This second edition cancels and replaces the first edition (ISO 21461:2006), to which a new annex (Annex C) has been added describing a procedure for the preparation of clean samples from the various components of a tyre.

ISO 21461 is referenced in European regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) as the method used to measure and calculate bay protons.

# Rubber — Determination of the aromaticity of oil in vulcanized rubber compounds

**WARNING** — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all 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.

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## 1 Scope

This International Standard provides a method for the selective determination of polyaromaticity of oil in vulcanized rubber compounds. The method is based on nuclear magnetic resonance (NMR) spectrometry.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1407, *Rubber — Determination of solvent extract*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

**polycyclic aromatic hydrocarbon**

**PAH**

organic compound consisting of two or more aromatic rings, certain carbon atoms of which are common to two or three rings

## 4 Reagents and materials

All reagents shall be of recognized analytical grade unless otherwise specified.

### 4.1 Extraction solvent

4.1.1 Acetone.

### 4.2 Sample preparation reagents

4.2.1 *n*-Hexane.