
**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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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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Foreword

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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 third edition cancels and replaces the second edition (ISO 21461:2009), which has been technically revised.

- In the reagents, *n*-hexane has been replaced by *n*-heptane and methylene chloride is no longer used.
- The precision data have been improved and transferred to an informative annex (Annex C).

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.

IMPORTANT — The electronic file of this document contains colours which are considered to be useful for the correct understanding of the document. Users should therefore consider printing this document using a colour printer.

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

PAH

polycyclic aromatic hydrocarbon

organic compounds consisting of two or more aromatic rings where certain carbon atoms are common to two or three rings

4 Reagents and materials

All reagents shall be of recognized analytical grade unless specified in a different way.

4.1 Extraction

4.1.1 Acetone.

4.2 Sample preparation reagents

4.2.1 *n*-Heptane, pa grade.

4.2.2 Nitrogen, purity required > 99,9 %, for protecting the extract from oxidation during the drying step.

4.2.3 Hexamethyldisiloxane (HMDS), 99,5 %, NMR grade, or tetramethylsilane (TMS), 99,5 %, NMR grade.