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BS ISO 21461:2012



BSI Standards Publication

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

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This British Standard is the UK implementation of ISO 21461:2012. It supersedes BS ISO 21461:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/23, Test methods for rubber and non-black compounding ingredients.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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).

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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.