BS ISO 11235:2023

BSI Standards Publication

Rubber compounding ingredients — Sulfenamide accelerators — Test methods

National foreword

This British Standard is the UK implementation of ISO 11235:2023. It supersedes BS ISO 11235:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/50, Raw materials (including latex) for use in the rubber industry.

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

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INTERNATIONAL STANDARD

ISO 11235

Third edition
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Rubber compounding ingredients — Sulfenamide accelerators — Test methods

Ingrédients de mélange du caoutchouc — Accélérateurs de type sulfénamide — Méthodes d'essai

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document 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 11235:2016), which has been technically revised.

The main changes are as follows:

— errors in Formula (1) and Formula (2) have been corrected;

— the CAS Registry Number® [1] has been added for each chemical;

— the usage of auto titrator with electrode has been added in Clause 5;

— Annex A has been changed from “normative” to “informative”.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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INTERNATIONAL STANDARD **ISO 11235:2023**

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WARNING — Persons using this document should be familiar with normal laboratory practice. This document 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 determine the applicability of any other restrictions.

1 Scope

This document specifies the methods to be used for the evaluation of sulfenamide accelerators:

— MBTS: benzothiazyl disulphide;

— CBS: *N*-cyclohexylbenzothiazole-2-sulfenamide;

— TBBS: *N*-*tert*-butylbenzothiazole-2-sulfenamide;

— DIBS: *N*,*N*'-diisopropylbenzothiazole-2-sulfenamide;

— DCBS: *N*,*N*'-dicyclohexylbenzothiazole-2-sulfenamide;

— MBS: *N*-oxydiethylenebenzothiazole-2-sulfenamide.

NOTE 1 Although MBTS is not a sulfenamide, it is the primary decomposition product of these accelerators and quantitatively determined by the method specified in 5.2.

The analytical methods are applicable for most commercial sulfenamide accelerators:

— sulfenamides of primary amines (type I);

— sulfenamides of unhindered secondary amines (type II);

— sulfenamides of hindered secondary amines (type III).

NOTE 2 Classification and key properties of sulfenamide accelerators are described in Annex A.

The method (5.2) to determine purity by high performance liquid chromatography (HPLC) is the preferred method.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 1772, *Laboratory crucibles in porcelain and silica*

ISO 3819, *Laboratory glassware — Beakers*

ISO 4788, *Laboratory glassware — Graduated measuring cylinders*

ISO 4793, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation*