BS ISO 4645:2022

BSI Standards Publication

Rubber and rubber products — Identification of antidegradants — Thin layer chromatographic methods

Documents
Document Sharing Hub

Full document details: BS ISO 4645:2022

National foreword

This British Standard is the UK implementation of ISO 4645:2022. It supersedes BS 6630:1985, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/22, Testing and analysis of rubber.

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

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 16797 9

ICS 83.060

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 June 2022.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: BS ISO 4645:2022

INTERNATIONAL STANDARD

ISO 4645

Second edition
2022-05-20

Rubber and rubber products — Identification of antidegradants — Thin layer chromatographic methods

Caoutchouc et produits à base de caoutchouc — Identification des agents de protection — Méthodes par chromatographie en couche mince

Reference number
ISO 4645:2022(E)

Documents
Document Sharing Hub

© ISO 2022

Full document details: BS ISO 4645:2022

COPYRIGHT PROTECTED DOCUMENT

© ISO 2022, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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

© ISO 2022 – All rights reserved

Documents
Document Sharing Hub

Full document details: BS ISO 4645:2022

Contents

Page

Foreword ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Principle ... **1**
5 Reagents ... **2**
5.4 Solvents ... 2
5.4.1 Propanol. ... 2
5.4.4 Toluene. ... 2
5.4.5 Ethyl acetate. ... 2
5.4.6 *n*-Hexane. ... 2
5.4.7 *n*-Heptane. ... 2
5.4.8 Cyclohexane. ... 2
5.4.9 Diethylamine. ... 2
5.4.11 Ethanol. ... 3
5.4.12 Acetone. ... 3
5.5 Developing solvents: ... 3
5.5.1 For method A: ... 3
5.5.2 For method B: ... 3
5.6 Colour development and spray reagents ... 3
5.6.3 Special for colour development of phenols(optional) ... 4
6 Apparatus ... **4**
6.9 Rotary vacuum evaporator (optional). ... 5
6.10 Short liquid-solid chromatographic column(optional). ... 5
6.11 Spray apparatus. ... 5
6.13 Ultrasonic extraction apparatus. ... 5
7 Preparation of developing tank and plates ... **5**
7.1 Preparation of developing tank ... 5
7.2 Preparation of plates ... 5
7.3 Preparation of pre-coated plates ... 6
8 Preparation of test portion ... **6**
9 Plate spotting ... **6**
9.1 General ... 6
9.2 Quantity of solution to apply ... 6
9.3 Spotting technique ... 6
10 Plate development ... **7**
10.1 Method A ... 7
10.2 Method B ... 7
11 Colour development on the plate ... **7**
12 Expression of results ... **7**
12.1 Method A ... 7
12.1.1 For amine type antidegradants ... 7
12.1.2 For phenolic type antidegradants ... 8
12.2 Method B ... 8
12.3 Confirmation tests ... 8
13 Standard chromatograms ... **8**
14 Test report ... **9**
Annex A (informative) **Preliminary spot tests** ... **10**

AVA Documents
Document Sharing Hub

© ISO 2022 – All rights reserved

Full document details: BS ISO 4645:2022

Annex B (informative) **Example procedure when oil is present** **12**

© ISO 2022 – All rights reserved
Documents
Document Sharing Hub
Full document details: BS ISO 4645:2022

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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 2, *Testing and analysis.*

This second edition cancels and replaces the first edition (ISO 4645:1984), which has been technically revised. It also incorporates the Technical Corrigendum ISO 4645:1984/Cor.1:1991.

The main changes are as follows:

— the description of the principle has been improved;

— method A has been modified.

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.

© ISO 2022 – All rights reserved

Documents
Document Sharing Hub
Full document details: BS ISO 4645:2022