

Prüfung von Kautschuk und Elastomeren  
**Künstliche Alterung**

**DIN**  
**53508**

ICS 83.060

Ersatz für Ausgabe 1993-10

Testing of rubber — Accelerated ageing

Essai du caoutchouc et des élastomères — Vieillessement accéléré

**Vorwort**

Der Arbeitsausschuß NMP 434 „Prüfung der physikalischen Eigenschaften von Kautschuk und Elastomeren“ hat die vorliegende Norm erarbeitet.

ISO 188 : 1993 „Rubber, vulcanized or thermoplastic — Accelerated ageing and heat-resistance tests“ weicht in folgenden Punkten von der vorliegenden Norm ab:

- Beim Wärmeschrank mit zwangsläufiger Durchlüftung sind unterschiedliche Strömungsgeschwindigkeiten vorgegeben;
- es fehlt die Festlegung, daß bestimmte Eigenschaften vorzugsweise am Schufenstab 5/2 zu messen sind;
- es fehlen vorzugsweise anzuwendende Prüfbedingungen;
- es fehlen Formeln für die Berechnung der Standardabweichung und Hinweise dazu sowie zur Berechnung des Variationskoeffizienten und des Vertrauensbereiches.

**Änderungen**

Gegenüber Ausgabe Oktober 1993 wurden folgende Änderungen vorgenommen:

- Unfallverhütungsvorschriften im Zusammenhang mit der Druckkammer präzisiert.

**Frühere Ausgaben**

DIN DVM 3508 = DIN 53508: 1939-02, 1954-12, 1960-05, 1977-07, 1993-10

**1 Zweck und Anwendungsbereich**

Das Verfahren der künstlichen Alterung dient dazu, durch verschärfte Bedingungen die durch Alterung<sup>1)</sup> der Elastomere bei ihrem praktischen Einsatz hervorgerufenen Eigenschaftsänderungen beschleunigt herbeizuführen.

Die Verschärfung der Alterungsbedingungen erfolgt durch Wärmelagerung bei erhöhter Temperatur und teilweise zusätzlich durch Verstärkung der Einwirkung von Sauerstoff.

Durch einen Vergleich von vor und nach der künstlichen Alterung an Probekörpern bei Standard-Laboratoriums-Temperatur gemessenen Eigenschaftswerten wird eine bedingte Aussage über die Alterungsbeständigkeit im Vergleich zu anderen Elastomeren gewonnen. Dazu werden die relative (prozentuale) oder die absolute Änderung einer oder mehrerer ausgewählter Eigenschaften angegeben.

Zur Beurteilung der Alterungsbeständigkeit ist es erforderlich, daß bei der Prüfung der vorgesehene Anwendungsfall berücksichtigt wird. Daher sollen die Prüfbedingungen so gewählt werden, daß sie den unter Gebrauchsbedingun-

gen verlaufenden Alterungsprozeß zwar beschleunigen, aber nicht verändern. Ferner sollen die für den praktischen Gebrauch entscheidenden Eigenschaften herangezogen werden. In den meisten Fällen werden Reißfestigkeit, Reißdehnung sowie Spannungswerte nach DIN 53504 und die Härte nach DIN 53505 oder nach DIN 53519-1 geeignete Eigenschaftswerte sein, die daher empfohlen werden.

Es sind nur Beständigkeitswerte vergleichbar, die an Probekörpern gleicher Abmessungen erhalten wurden.

Bei Verwendung verschiedener Typen von Wärmeschränken (zwangsläufige oder natürliche Durchlüftung) für die Wärmelagerung muß davon ausgegangen werden, daß die Ergebnisse der Alterungsprüfungen, insbesondere bei Langzeitprüfungen, nicht miteinander vergleichbar sind.

Durch die in dieser Norm beschriebenen Prüfverfahren wird die Alterung von Elastomeren durch Licht und Ozon nicht erfüllt.

<sup>1)</sup> Mit der Alterung zusammenhängende Begriffe siehe DIN 50035-1 und DIN 50035-2.

Fortsetzung Seite 2 bis 5.

Normenausschuß Materialprüfung (NMP) im DIN Deutsches Institut für Normung e.V.  
 Normenausschuß Kautschuktechnik (FAKATK) im DIN

# Din 53508

**Holm Altenbach, Michael Johlitz, Markus  
Merkel, Andreas Öchsner**

## **Din 53508:**

**Physical Testing of Rubber** R. P. Brown, 1992 Reasons for testing rubber materials and products fall into four categories quality control provision of design data prediction of service performance and investigation of failure Test methods have been standardised for almost all properties likely to be relevant to rubbers and the appropriate standards are listed in this report An additional indexed section containing several hundred abstracts from the Rapra Polymer Library database provides useful references for further reading

**Automotive Handbook** Robert Bosch GmbH, 2022-05-02 The latest edition of the leading automotive engineering reference In the newly revised Eleventh Edition of the Bosch Automotive Handbook a team of accomplished automotive experts delivers a comprehensive and authoritative resource for automotive engineers designers technicians and students alike Since 1936 the Bosch Automotive Handbook has been providing readers with of the moment coverage of the latest mechanical and research developments in automotive technology from detailed technical analysis to the newest types of vehicles This newest edition is packed with over 2 000 pages of up to date automotive info making it the go to reference for both engineers and technicians It includes detailed and simple explanations of automotive technologies and offers over 1 000 diagrams illustrations sectional drawings and tables Readers will also find 200 pages of new content including the electrification of the powertrain Additional coverage on new driver assistance systems and the automated detection of vehicles surroundings Updates on the on board power supply for commercial vehicles New discussions of autonomous vehicles as well as additional contributions from experts at automotive manufacturers universities and Bosch GmbH Perfect for design engineers mechanics and technicians and other automotive professionals the latest edition of the Bosch Automotive Handbook will also earn a place on the bookshelves of car enthusiasts seeking a quick and up to date guide to all things automotive

**Durability of Building Sealants** J.C. Beech, A.T. Wolf, 2013-09-13 This book presents the papers given at the RILEM Seminar held at the Building Research Establishment Garston UK in October 1994 The book provides an opportunity for researchers to review up to date progress towards the achievement of the objectives of the standardisation of laboratory techniques of sealants in the variety of service conditions to which they are exposed

NBS Special Publication , 1968

**Hydraulic Rubber Dam** Sabu Thomas, Ajay Vasudeo Rane, Abitha VK, Krishnan Kanny, Aastha Dutta, 2018-11-30 Hydraulic Rubber Dam An Effective Water Management Technology is the go to source for information on the materials manufacture mechanics and functional benefit of rubber dams in water management Readers will find a detailed background on water conservation and coverage how inflatable rubber dam technology contributes to the picture and information on the proper manufacture and use of rubber dams to increase water storage for release and delivery during drought In addition the book presents tactics on the even distribution of water across populations how to increase water use efficiency conservation and how to prevent flooding In particular this book details specialist manufacturing techniques including the development of rubber compounds and fabric the bonding and

anchoring systems which hold the rubber dam to the underlying concrete structure and inflation and deflation mechanisms for rubber dams The book provides a holistic lifecycle assessment of rubber dams to give additional insight to readers looking to deploy rubber dam technology Demonstrates the proper use of rubber dams in water management especially in flood prevention and water conservation during drought Includes guidance on the materials engineering of rubber and technical fabrics involved in the construction of dams bonding and anchoring systems and inflation and deflation mechanisms Presents thorough coverage of modelling and stress analysis along with lifecycle assessment of inflatable rubber dams World

Index of Plastics Standards Leslie H. Breden, United States. National Bureau of Standards, 1971 **Science and**

**Technology of Building Seals, Sealants, Glazing, and Waterproofing** Jerome M. Klosowski, 1998 **Lectures Notes on Advanced Structured Materials** Holm Altenbach, Michael Johlitz, Markus Merkel, Andreas Öchsner, 2022-12-02 The book on advanced structured materials is designed to facilitate teaching and informal discussion in a supportive and friendly environment The book provides a forum for postgraduate students to present their research results and train their presentation and discussion skills Furthermore it allows for extensive discussion of current research being conducted in the wider area of advanced structured materials Doing so it builds a wider postgraduate community and offers networking opportunities for early career researchers In addition to focused lectures the book provides specialized teaching overview lectures from experienced senior academics The 2022 Postgraduate Seminar entitled Advanced Structured Materials Development Manufacturing Characterization Applications was held from February 28th till March 4th 2022 in Malta The book that presented postgraduate lectures had a strong focus on polymer mechanics composite materials and additive manufacturing

**Durability of Building Sealants** Andreas T. Wolf, 2004-03-01 This volume contains the proceedings of the Second International Symposium on Durability of Building Sealants held under the joint auspices of the British Building Research Establishment Ltd BRE and the International Union of Testing and Research Laboratories for Buildings and Structures RILEM Technical Committee 139 DBS The twelve contributions in this volume reflect the wide spectrum of current research and provide for the development of an International Standard on Sealant Durability *The ICI*

*Polyurethanes Book* George Woods, 1990-12-11 User friendly even for those with limited knowledge of chemistry it contains clear details of processing applications and safety New to this edition is an appendix covering the considerable progress that has taken place since 1987 including the development of alternatives for chlorofluorocarbons CFCs and the advent of polyurea elastomers *Castable Polyurethane Elastomers* I.R. Clemitson, 2015-05-13 This second edition of a bestseller is a practical guide to the production of castable polyurethane articles The book shows the progression from raw materials to prepolymer production including the chemistry and functionality of the processes It provides a comprehensive look at various problem solving and processing techniques examining the selection of different systems on both the micro and macro levels

Reorganized for better flow this edition describes new processing methods expands coverage of health and safety aspects

and brings all standards up to date      **Lightweight and Sustainable Materials for Automotive Applications** Omar Faruk, Jimi Tjong, Mohini Sain, 2017-06-01 Automotive manufacturers are required to decrease CO2 emissions and increase fuel economy while assuring driver comfort and safety In recent years there has been rapid development in the application of lightweight and sustainable materials in the automotive industry to help meet these criteria This book provides critical reviews and the latest research results of various lightweight and sustainable materials in automotive applications It discusses current applications and future trends of lightweight materials in the automotive area While there are a few books published mainly focusing on automotive applications of metallic lightweight materials to date there is no available book focusing on a broad spectrum of lightweight materials including metal plastic composites bio fiber bio polymer carbon fiber glass fiber nanomaterials rubber materials and foaming materials as this work does The book also includes case studies of commercial lightweight automotive parts from sustainable lightweight materials providing an invaluable resource to those involved in this in demand research and commercialization area      *Annual Book of ASTM Standards* ASTM International, American Society for Testing and Materials, 2003      **International Polymer Science and Technology** , 2000

PRO 10: 3rd International RILEM Symposium on Durability of Building and Construction Sealants Andreas T. Wolf, 1999

*Fördergurte in der Praxis* Thomas Ziller, Peter Hartlieb-Wallthor, 2010      **Die Wasserversorgung** Joseph Brix, Hermann Heyd, Ernst Gerlach, 2019-10-08 Dieser Titel aus dem De Gruyter Verlagsarchiv ist digitalisiert worden um ihn der wissenschaftlichen Forschung zugänglich zu machen Da der Titel erstmals im Nationalsozialismus publiziert wurde ist er in besonderem Maße in seinem historischen Kontext zu betrachten Mehr erfahren Sie hier      *Fertigungsmeßtechnik* H.-J. Warnecke, Wolfgang Dutschke, 2013-11-21      *Elastisch Kleben* Manfred Pröbster, 2013-07-01 Eine Einführung in das Elastische Kleben für den Praktiker Neben den Grundlagen werden Kenntnisse der wichtigsten Gruppen der elastischen Klebstoffe dargestellt Der Schwerpunkt dieses Fachbuchs liegt auf praktischen Hinweisen die zu langzeitstabilen Klebungen führen und die der Fehlervermeidung dienen Zahlreiche Anwendungen erfolgreicher elastischer Klebungen aus der Fahrzeugtechnik dem Fassaden und Metallbau illustrieren das Konzept      Stahlbau-Kalender 2015 Ulrike Kuhlmann, 2015-05-26 Der Stahlbau Kalender ist ein Wegweiser für die richtige Berechnung und Konstruktion im gesamten Stahlbau er dokumentiert und kommentiert vertikal den aktuellen Stand der Stahlbau Regelwerke Zur bauaufsichtlichen Einführung von Eurocode 3 werden seit der Ausgabe 2011 systematisch alle Teile der Norm mit ihren Nationalen Anhängen kommentiert In diesem Jahr sind neben der Aktualisierung zum Teil 1 8 Anschlüsse auch Praxisbeispiele für die Bemessung von plattenförmigen Bauteilen nach DIN EN 1993 Teil 1 5 enthalten Mit der Fertigungsnormenreihe EN 1090 und mit der Bauproduktenverordnung sind neue Anforderungen an die Stahlbaufertigung eingeführt worden Neuigkeiten mit gleichen Schwierigkeiten bei der Umsetzung der Norm sowie Ansätze zur Problemlösung werden aufgezeigt Für den Stahlwasserbau gibt es eine Neufassung von DIN 19704 für die Berechnung bauliche Durchbildung und Herstellung welche kommentiert und

erläutert wird Eine europäische Norm für den Konstruktiven Glasbau ist im Entstehen die Normenmacher aus Deutschland stellen vor wie die deutsche Vorlage DIN 18008 2013 fortentwickelt wird Der Stahlbau ist in grundlegender Weise mit dem Leichtbau und in Mischbauweise auch mit dem Holzbau verbunden Beide Themengebiete werden in diesem Jahrgang behandelt

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2 naf 1 cl<sub>2</sub> 2 h<sub>2</sub> 1 o<sub>2</sub> Æ 2 h<sub>2</sub>o pb oh 2 2 hcl Æ 2 h<sub>2</sub>o 1 pbcl<sub>2</sub> albr<sub>3</sub> 3 k<sub>2</sub>so<sub>4</sub> Æ 6 kbr 1 al<sub>2</sub> so<sub>4</sub> 3 ch<sub>4</sub> 2 o<sub>2</sub> Æ 1 co<sub>2</sub> 2 h<sub>2</sub>o  
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web mar 14 2023 the key to balancing chemical equations the ultimate goal for balancing chemical equations is to make both sides of the reaction the reactants and the products equal in the number of atoms per element this stems from the universal law of the conservation of mass which states that matter can neither be created nor destroyed

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