

	SURFACE VEHICLE RECOMMENDED PRACTICE	SAE J2332 JUL2013
		Issued 1997-04 Revised 2013-07 Superseding J2332 APR1997
Marking of Rubber Parts		

RATIONALE

Document previously referenced supplier trademark names. Other annual publications can be used as a reference for up to date trademark names.

1. SCOPE

This SAE Recommended Practice provides a system for marking thermoset rubber parts to designate the general type of material from which the part was fabricated.

1.1 Purpose

The purpose of this document is to provide information to facilitate the:

- a. Selection of materials and procedures for rubber parts
- b. Collection and handling of parts for subsequent recycling

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 ASTM Publication

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org

ASTM D 1418 Standard Practice for Rubber and Rubber Latices - Nomenclature

2.1.2 ISO Publication

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 1629 Rubber and Latices - Nomenclature

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2013 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
 Tel: +1 724-776-4970 (outside USA)
 Fax: 724-776-0790
 Email: CustomerService@sae.org
 SAE WEB ADDRESS: http://www.sae.org

**SAE values your input. To provide feedback
 on this Technical Report, please visit
http://www.sae.org/technical/standards/J2332_201307**

2.1.3 IISRP Publication

Available from International Institute of Synthetic Rubber Producers, 2077 South Gessner Rd., Suite 133, Houston, TX 77063, Tel: 713-783-7511, www.iisrp.com.

The Synthetic Rubber Manual

2.1.4 VDA Publication

Available from DIN Deutsches Institut für Normung e.V., Burggrafenstrasse 6, 10787 Berlin, Germany, www.din.de.

VDA 260 German Motor Vehicles - Marking of Parts of Polymeric Materials

2.1.5 Rubber World Publications

Rubber World Blue Book:

Online: www.rubberworld.com/bluebook

Hard Copy or Disc: <http://www.rubberworld.com/RWBluebook.asp>

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 1043-1 Plastics - Symbols - Part 1: Basic polymers and their special characteristics

ISO 1043-2 Plastics - Symbols - Part 2: Fillers and reinforcing materials

ISO 11469 Plastics - Generic identification and marking of plastic products

3. DESCRIPTION

3.1 The system is based on standard symbols for terms relating to rubber (ISO 1629). Most commonly used symbols, including some not covered by ISO are shown in Table 1 Symbols for commonly used automotive fillers/reinforcements derived from ISO 1043-2 are shown in Table C1.

3.2 If additional symbols are required to cover new materials, the form in Appendix A shall be completed and submitted to SAE.

TABLE 1 - SYMBOLS FOR MARKING RUBBER PARTS

Elastomeric "Family" Name Chemical Composition of Polymer Chain	Standard Symbol	(Previous) ⁽¹⁾⁽²⁾
Class M		
Copolymers of ethyl or other acrylate and a small amount of monomer which facilitates vulcanization	ACM	
Copolymers of ethyl and other acrylates and ethylene	AEM	EEA
Copolymers of ethyl or other acrylate and acrylonitrile	ANM	
Chloro-polyethylene	CM	
Polychloro-trifluoro-ethylene	CFM	
Chloro-sulfonyl-polyethylene	CSM	
Terpolymer of ethylene, propylene, and a diene with the residual unsaturated portion of the diene in the side chain	EPDM	
Copolymers of ethylene and propylene	EPM	
Copolymers of ethylene and vinyl acetate	EVM	EAM
Copolymer of tetrafluoroethylene and propylene	FEPM	
Perfluoro rubbers of the polymethylene type having all substituent groups on the polymer chain either fluoro, perfluoroalkyl, or perfluoroalkoxy groups	FFKM	
Fluoro rubber of the polymethylene type having substituent fluoro and perfluoroalkyl or perfluoroalkoxy groups on the polymer chain	FKM	
Styrene-ethylene/butylene	SEBM	
Styrene-ethylene/propylene	SEPM	
Class O		
Polychloromethyl oxirane (epichlorohydrin polymer)	CO	
Ethylene oxide (oxirane) and chloromethyl oxirane (epichlorohydrin copolymer)	ECO	
Epichlorohydrin-ethylene oxide-allylglycidylether terpolymer	GECO	
Polypropylene oxide and allyl glycidyl ether	GPO	
Class Q		
Silicone rubber having fluorine, vinyl, and methyl substitute groups on the polymer chain.	FVMQ	
Silicone rubbers having both methyl and phenyl, and vinyl substituent groups on the polymer chain	PMQ	
Silicone rubbers having both methyl and phenyl substituent groups on the polymer chain	PVMQ	
Silicone rubbers having only methyl substituent groups on the polymer chain	MQ	
Silicone rubber having both methyl and vinyl substitute groups on the polymer chain	VMQ	

TABLE 1 - SYMBOLS FOR MARKING RUBBER PARTS (CONTINUED)

Elastomeric "Family" Name Chemical Composition of Polymer Chain	Standard Symbol	(Previous) ⁽¹⁾⁽²⁾
Class R		
Acrylate-butadiene	ABR	
Bromo-isobutene-isoprene	BIIR	
Butadiene	BR	
Chloro-isobutene-isoprene	CIIR	
Chloroprene	CR	
Hydrogenated acrylonitrile-butadiene	HNBR	
Isobutene-Isoprene	IIR	
Isoprene, synthetic	IR	
Acrylonitrile-butadiene	NBR	
Acrylonitrile-chloroprene	NCR	
Acrylonitrile-isoprene	NIR	
Natural rubber	NR	
Vinylpyridine-butadiene	PBR	
Vinylpyridine-styrene-butadiene	PSBR	
Sytrene-butadiene	SBR	
Sytrene-chloroprene	SCR	
Styrene-isoprene rubbers	SIR	
Carboxylic-styrene-butadiene	XSBR	
Carboxylic-acrylonitrile-butadiene	XNBR	
Carboxylic-hydrogenated-acrylonitrile-butadiene	XHNBR	
Class T		
Rubber having either a $-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-$ group or occasionally a -R-group, where R is an aliphatic hydrocarbon between the polysulfide linkages in the polymer chain	OT	
Rubber having either a $-\text{CH}_2-\text{CH}_2-\text{O}-\text{CH}_2-\text{O}-\text{CH}_2-\text{CH}_2-$ group and -R-groups that are usually $-\text{CH}_2-\text{CH}_2-$ but occasionally other aliphatic groups between the polysulfide linkages in the polymer chain	EOT	
Class U		
Terpolymer of tetrafluoroethylene, trifluoronitrosomethane, and nitrosoperfluorobutyric acid	AFMU	
Polyester urethane	AU	
Polyether urethane	EU	

TABLE 1 - SYMBOLS FOR MARKING RUBBER PARTS (CONTINUED)

Elastomeric "Family" Name Chemical Composition of Polymer Chain	Common Name ⁽¹⁾	Standard Symbol	(Previous) ⁽²⁾⁽³⁾
Class Z			
Rubber having a -P=N-chain and having fluoroalkoxy groups attached to the phosphorus atoms in the chain		FZ	
Rubber having a -P=N-chain and having aryloxy (phenoxy and substituted phenoxy) groups attached to the phosphorus atoms in the chain		PZ	

- (Previous) - SAE JXXXX or other commonly used marking parts.
- Symbols listed as ("Previous Symbols") are former designations and should not be used.

4. USE OF MARKING SYMBOLS

- 4.1 In view of the wide variety of parts used in substantially different assembly situations, this document does not prescribe the location, or method of marking; however, the following guidelines should be followed:
- 4.1.1 Proper marking allows suitable recycling procedures to be used at end of life.
- 4.1.2 Wherever practicable, the marking should be located so that it is visible in its "in use" position. Consideration should be given to the use of multiple markings on large or complex-shaped parts.
- 4.1.3 From the standpoint of field service people, marking on the outside surface of the part (in an unobtrusive location from the viewpoint of the owner) is preferred.
- 4.1.4 Markings applied with inks, dyes, or paints, should not bleed, run, smudge, or stain other materials which can come in contact with the marking.
- 4.1.5 Marking should be designed to remain legible during the entire life of the part.
- 4.1.6 Markings which are molded into the part are preferred since they are permanent and do not require separate manufacturing operations as do those applied to the surface of the part after molding. Molded in markings should not create a stress concentration site which could result in premature cracking of the part.
- 4.1.7 The recommended practice for the standard marking symbol (Figure 1) is consistent with ISO 11469 and VDA 260. Dimensions are suggested guidelines. Markings should be proportional to part size.

>NBR< ←(3 mm Letter Height)

FIGURE 1 - STANDARD MARKING SYMBOL

4.1.8 Examples

See Figure 2.

>VMQ<	silicone w. methyl & vinyl gp.
>FKM<	fluoroelastomer
>NBR<	acrylonitrile-butadiene

FIGURE 2 - EXAMPLES OF STANDARD MARKING SYMBOLS

4.1.9 For small parts that cannot accommodate the 3.0 mm letter guidelines, the use of smaller letters should be considered in lieu of not marking the part at all.

4.2 For parts using rubber materials containing 10% or more by mass fibers/ reinforcing materials (see Appendix D list), use the same designation for the "family name" as defined in Table 1 and, in addition, alpha codes from ISO 1043-2, followed by a numeric value representing the nominal percentage of fiber/reinforcer. The polymer family codes shall be separated from the fiber/reinforcement codes and value by use of a hyphen.

4.2.1 Examples

See Figure 3.

>VMQ-Rayon15<
>FKM-Aramid10<
>NBR-(Rayon10+Polyester10)<

FIGURE 3 - EXAMPLES OF STANDARD MARKING SYMBOLS FOR RUBBER WITH FIBER OR REINFORCEMENT LEVELS ³10% BY WEIGHT

4.3 Parts fabricated from a blend of two or more elastomeric materials, some of which are not readily visible, may be marked so the primary visible material is identified first followed by the identification of the other elastomeric material(s) where the individual identification(s) is separated by a comma. Identify the main mass elastomeric component by underlining. A formulation must contain at least 7 parts per hundred rubber (PHR) of any elastomeric component, based on total elastomer content, to be considered a blend. If used, the fiber/ reinforcement referenced in Section 4.2 must be identified regardless of total content.

4.3.1 Examples

For a product made of two components, see Figure 4.

>NR,BR<

FIGURE 4 - EXAMPLES OF STANDARD MARKING SYMBOLS FOR MIXED/BLENDED

5. NOTES

5.1 Additional Information

Appendix C is a cross reference listing designed to assist the user in relating fiber based fillers to their common acronym symbol.

5.2 Marginal Indicia

A change bar (I) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document, including technical revisions. Change bars and (R) are not used in original publications, nor in documents that contain editorial changes only.

APPENDIX A - REQUEST TO ADD NEW MARKING SYMBOLS

A.1 THE FOLLOWING PROCEDURE IS TO BE UTILIZED TO APPLY FOR INCLUSION OF NEW MARKING SYMBOLS INTO SAE J2332.

A.1.1.1 Complete Form A1. See Figure A1.

- Rubber or Rubber Blend "Family" Name _____
- Proposed Marking Symbol _____
- Supplier's Trade Mark Name (for reference) _____
- Name of Submitter _____
- Telephone # and Email Address _____
- Date Submitted _____
- Signature _____

Mail This Form to

SAE

Land & Sea Technical Division

Materials Staff Engineer

400 Commonwealth Drive

Warrendale, PA 15096-0001

SAENORM.COM : Click to view the full PDF of J2332_201307