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SUPERSEDING

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MILITARY STANDARDIZATION HANDBOOK
RUBBER PRODUCTS: RECOMMENDED SHELF LIFE



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FSC 5330

DEPARTMENT OF DEFENSE
WASHINGTON, DC

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Rubber Products: Recommended Shelf Life

1. This standardization handbook was developed by the Department of Defense with the assistance of recognized technical societies in accordance with established procedure.

2. This publication was approved on 27 March 1985 for printing and inclusion in the military standardization handbook series.

3. This handbook provides guidance as to the time periods during which elastomeric products may be stored without deterioration. The handbook covers elastomeric products of Military, Federal and recognized industry specifications. The handbook is not intended to be referenced in purchase specifications except for informational purposes, nor shall it supersede any specification requirements.

4. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to Director, US Army Materials and Mechanics Research Center, ATTN: AMXMR-SMS, Watertown, MA 02172 by using the self-addressed Standardization Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

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PREFACE

This handbook is one of a group which cover metallic and nonmetallic materials used in the design and construction of military equipment. The purpose of this handbook is to provide current technical information and design of direct usefulness to engineers and designers of military equipment.

This handbook provides information on the expected shelf life of elastomeric products described by Military, Federal and recognized industry specifications and standards. This handbook is intended as a guide only. Overage items should be carefully evaluated for possible use as originally intended before being discarded based on the suggested shelf life.

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1. SCOPE

1.1 Purpose - This handbook establishes guidelines for time periods for the expected life of elastomeric products during shelf storage. The use of the expected shelf storage lives listed herein is NOT MADE MANDATORY by this handbook. The decision as to whether or not a product shall have a limit placed upon the time that it may remain in storage is a function of the agency responsible for the product's ultimate use.

1.2 Scope - The handbook covers only those elastomeric products which are described by Government specifications and standards or by nationally recognized technical society specifications and standards. The documents defining the items covered by this handbook were selected from the following sources:

(a) Department of Defense Index of Specifications and Standards (DODISS) (available from the Naval Publications and Forms Center, NPFC 105, 5801 Tabor Avenue, Philadelphia, PA 19120).

(b) Aerospace Materials Specifications (AMS) Index and the Society of Automotive Engineers (SAE) Handbook (both available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096).

(c) National Aerospace Standards (NAS) (published and distributed by the Aerospace Industries Association, 1725 DeSales Street N.W., Washington, DC 20036).

(d) American Society for Testing and Materials (ASTM) Specifications (available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103).

1.2.1 Products included - The types of elastomeric products covered by this handbook are as follows:

(a) Products fabricated solely from rubber. These include solid rubber, cellular rubber and hard rubber (ebonite) items.

(b) Composites in which the rubber is present as a discrete phase. Examples are cables, fabric reinforced gaskets, hose, rubber coated fabrics, shock mounts and tires.

1.2.2 Products excluded - The types of products excluded from this handbook are as follows:

(a) Rubber-base adhesives, coatings, sealers and liquid rubber materials packaged in cans or tubes.

(b) Rubber tapes.

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(c) Unvulcanized rubber, such as tread repair stock and tank lining sheet stock.

(d) Composites in which the rubber is in admixture with other ingredients, for example, rubber-asbestos packings and rubber-cork gaskets.

(e) Subassemblies, assemblies and systems which contain elastomeric items as component parts, such as small arms, weapons, vehicles, aircraft, missiles and space vehicles. Age controls of elastomeric material for aerospace applications are covered in MIL-STD-1523.

(f) Products fabricated from flexible materials which are not elastomeric, for example, some plastics.

1.3 Application - The information contained in this handbook is intended as a guide for use by those agencies whose responsibility it is to place control requirements on rubber products, as well as by those activities whose responsibility it is to control the age of products stocked in Government storage facilities. The handbook is not intended for use in controlling the age of rubber products prior to their acceptance by the Government or by Government contractors. The handbook does not make mandatory the disposition of rubber products which have been in storage longer than the periods recommended. The decision as to whether or not to dispose of "overage" products is a function of the storage, supply or using facilities. Responsible activities should make every attempt to limit the procurements of rubber products to the extent that large volumes of "overage" products will not be accumulated in storage. Where feasible and economically practical, "overage" products should be tested to determine whether or not they meet the requirements of the applicable specifications. Procurement documents should require the mold marking of the cure date, such as the year and month on the rubber product (or on its package) and that careful records be kept of the cure date of all stored rubber products. When age limitations of the detail specification listed herein conflict with the requirements herein, the requirements of the detail specification shall govern.

2. DEFINITIONS

2.1 Age resistance - Resistance to deterioration in storage by environmental factors, such as heat, light and ozone.

2.2 Cure date - The date the rubber is fully cured. Two methods in expressing the cure date are as follows:

(a) Shelf life to a maximum of three years. Cure date stated in terms of month of calendar year and the year, i.e., 6-83.

(b) Shelf life in excess of three years. Cure date stated in terms of the quarter of calendar year and the year, i.e., 2Q-83.

2.3 Shelf life - The maximum period of time, from cure date, to the date the elastomeric product is used as a component part in subassemblies, assemblies and systems. During the shelf life time, the stored elastomeric product is expected to retain its characteristics as originally specified.

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3. GENERAL REQUIREMENTS

3.1 Introduction - The most important factors involved in the shelf life of rubber products are (1) the initial quality level of the product, (2) the quality assurance provisions of the specification under which the item was procured, and (3) the age resistance of the rubber from which the product was fabricated. The relative importance of these factors is difficult to assess, especially because the age resistance of the raw rubber does not always correspond to the age resistance of the finished product. For example, consider two items both fabricated from the same nitrile base polymer, one meeting a specification having comprehensive requirements; the other meeting a specification with loose requirements. In the first instance, it is quite probable that good age resistance will be "built in" to the product by virtue of the optimum compounding ingredients and fabrication techniques which must be employed in order to manufacture the high quality product required by the specification. In the latter instance, it is likely that the product will have lesser resistance, consistent with the minimal demands of the specification.

3.2 Basis for detailed requirements - The following guidelines were used to establish the expected shelf life periods listed.

(a) It was assumed that each rubber product met the initial requirements of the applicable specification.

(b) It was assumed that each rubber product was packaged and stored in the manner prescribed, in order to minimize deterioration due to such factors as temperature, humidity, ozone, sunlight, oils, solvents, corrosive liquids and fumes, insects and rodents.

(c) The severity of the specification requirements for an item was considered, especially those requirements which related to age resistance, such as resistance to accelerated air aging, resistance to ozone, compression set and cyclic performance at temperature extremes.

(d) The type of rubber from which the item was fabricated was one of the most important criteria used in assigning the expected shelf life value.

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4. DETAILED REQUIREMENTS

Table I indicates the age resistance generally associated with products based on various types of rubber. Tables II through VIII, inclusive, give the expected shelf storage life for rubber products defined by military, government and technical society specifications and standards. The shelf life of rubber products which contain two or more different types of rubber (such as the tube and jacket of a wire cable) is generally based on the least age resistant rubber.

Custodians:

Army - MR
Navy - SH
Air Force - 99

Preparing Activity:

Army - MR
Project No. 9320-0434

Review Activities:

Army - GL, CR, MI, ME, AR
Navy - AS
Air Force - 11
DLA - GS

User Activities:

Navy - YD, OS

(KBWP# ID-0417A/DISK 0013A FOR AMMRC USE ONLY)

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TABLE I. Age resistance generally associated with products fabricated from various rubbers.

Type of Rubber	Common or Trade Name	ASTM D1418 Abbreviation	ASTM D2000 Abbreviation	MIL-STD-417 Designation
Maximum (Up to 20 Years)				
Silicone	Silicone	Q	FE	TA
Fluorosilicone	Silastic LS	FVMQ	FK	TA
Polysulfide	Thiokol	T	BK	SA
Fluorocarbons	Fluorel, Viton	FKM	HK	-
Polyacrylate	Acrylic	ACM, ANM	DF, DH	TB
Fluorophosphonitrilic	PNF	FZ	--	TB
Average (5 to 10 Years)				
Chlorosulfonated polyethylene	Hypalon	CSM	CE	-
Isobutylene/Isoprene	Butyl	IIR	AA, BA	RS
Polychloroprene	Neoprene	CR	BC, BE	SC
Polyether Urethane	Urethane	EU	BG	-
Polypropylene oxide	Propylene oxide	GPO	-	-
Ethylene/propylene diene	Ethylene propylene terpolymer	EPDM	BA, CA	-
Ethylene/propylene	Ethylene propylene copolymer	EPM	BA, CA	-
Epichlorohydrin homopolymer	Hydrin 100, Herclor H	CO	-	-
Epichlorohydrin ethylene oxide	Hydrin 200, Herclor C	ECO	-	-
Minimum (3 to 5 Years)				
¹ Butadiene/acrylonitrile	Nitrile, NBR	NBR	BF, BG, BK, CH	SB
Butadiene/styrene	SBR	SBR	AA, BA	RS
Cis-polybutadiene	Butadiene	BR	AA	RN
Cis 1, 4, polyisoprene	Natural, pale crepe	NR	AA	RN
Cis 1, 4, polyisoprene	Synthetic natural	IR	AA	RN
Polyester urethane	Urethane	AU	-	-

¹NBR, when compounded for o-ring seals, may have a shelf life as high as 10 years when aging resistance requirements are specified in the specification.

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TABLE II. Military Specifications.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-C-17	Cables, Radiofrequency; Coaxial, Dual Coaxial, Twin Conductor, & Twin Lead Core Dielectric: Types D, E and H Type J Type L Jacket: Type IV Type VI Type VIII	- IIR Q CR Q CR	- - - - - -	3 10 20 8 20 8
MIL-H-370	Hose and Hose Assemblies, Non- Metallic; Rubber Liquid Fuel, Non Collapsible Types I and 2	NBR (Tube)	-	3 3
MIL-W-432	Gasket Nonmetallic, Synthetic Rubber	-	NBR	3
MIL-C-442	Cable, (Wire), Two Conductor, Parallel (Ripcord) Types IV, V and VI	SBR SBR	- -	3 3
MIL-L-741	Leads, Electrical, Arc Welding	SBR	-	3
MIL-O-836	Overshoe, Rubber (Man's, 5 Buckle Type) Type I and II	NR or SYN ³	-	3
MIL-C-882	Cloth, (Cotton Duck), Laminated, Synthe- tic Rubber Impregnated, Oil Resistant Class I Class II	CR NBR	- -	5 3
MIL-R-900	Rubber Gasket Material, 45 Durometer Hardness	-	SBR	3

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

3 SYN = synthetic (for other abbreviations see Table I).

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-M-910	Mats, Floor, Standing	-	-	3
MIL-C-915	Cable and Cord, Electrical for Shipboard Use, (Gen. Spec. for)			
	Type CVSF	SYN & CR		5
	Type DCOP	SYN & CR		5
	Type DHOF	IIR & CR		8
	Type DSS	SYN & CR		5
	Type DLT	NR & CR		5
	Type FSCF	IIR & CR		8
	Type FHOE	IIR & CR		8
	Type FSS	SYN & CR		5
	Type JAS	IIR & CR		8
	Type MCSC	SYN & CR		5
	Type MCOS	CR		8
	Type MSS	SYN & CR		5
	Type SDU	IIR & CR		8
	Type SSF	SYN & CR		5
	Type TCOP	SYN & CR		5
	Type THOF	IIR & CR		8
	Type TRF	SYN & CR		5
	Type TRXF	CR		8
	Type TSS	SYN & CR		5
MIL-G-1086	Gasket Material, Synthetic Rubber (For Bolted Steel & Aluminum Tanks)			
	Type I	-	CR	8
	Type II	-	NBR	3
MIL-R-1149	Gasket Material Synthetic Rubber, 50 and 65 Durometer Hardness			
	Class 1 - Types I & II	CR		8
	Class 2 - Types I & II	SBR		3
	Class 3 - Types I & II	IIR		10
	Class 5 - Types I & II	NBR		3
MIL-R-1229	Rubber Sheet Packing, Solid, Wire Cloth Inserted Symbol 2354	-	SBR	3

NOTES:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-R-1832	Rubber Band, Parachute Suspension Line Type I	NR	-	3
MIL-T-1956	Tarpaulin, Waterproof, Special Purpose, 10 Feet Long by 8 Feet Wide All Classes	-	-	3
MIL-H-2217	Hose Assemblies, Wire-Reinforced Rubber, Submarine Rescue Chamber	NR (Tube)	-	3
MIL-C-2486	Cable, Special Purpose, Electrical WM-46/U	SBR	-	3
MIL-P-2693	Packing Material, Cold Storage Door Gasketing, Nonwatertight Type A Type B	- - -	CR NR (core) NBR	8 2 3
MIL-R-2765	Rubber Sheet, Strip, Extruded, & Molded Shapes, Synthetic, Oil Resistant	-	-	3
MIL-H-2815	Hose Assemblies, Rubber, Diver's Breath- ing Air and Gas Supply Joint Sealing Packing Types I & II - Classes 1 & 2	NR (Tube)	-	3
MIL-J-2829	Boots, Firemen's Packing Assembly, Hydraulic, Conical & V Types	NR or SYN	CR - -	8 3 3
MIL-B-2885	Synthetic Rubber Compound, Acid & Oil Resistant (For Lining Battery Compart- ments on Submarines)	-	-	5
MIL-P-2911	Class 1 - Types I & II Class 2 - Types I & II Disks, Rubber (Cellular, Hard)	CR NBR	- -	3 3
MIL-S-2912	Type A Type B - Class a Type B - Class b Grommets - Elastic, Hot-Oil & Coolant- Resistant	Reclaim SBR NBR	- - -	3 3 3
MIL-D-2921	Rubber, Fabricated Products (see MIL-STD-417)	-	NBR	3

NOTES:

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-W-3100	Wheels, Solid Elastomer Tired, for Track Laying Vehicles	-	SBR	5
MIL-C-3133	Cellular Elastomeric Materials, Molded or Fabricated Parts (See MIL-STD-670)	-	-	3
MIL-D-3377	Diaphragms, Synthetic Rubber	-	-	3
MIL-C-3432	Cable, (Power and Special Purpose) and Wire, Electrical (300 and 600 volts)	-	-	3
	Class C	SBR	-	3
	Class O	SBR (insulator)	-	3
	Class L	SBR	-	3
	Class D	SBR (insulator)	-	3
MIL-R-3533	Rubber, Synthetic: Sheet, Strip & Molded Types I & II - Classes 1 & 2	-	NBR	3
MIL-C-3702	Cables, Power, Electrical: Ignition, High-Tension	-	-	20
	Grade B	-	Q	10
	Grade C	-	CSM	20
	Grade D	-	Q	3
MIL-R-3842	Rubber Stamp Kit, Food Inspection	-	-	3
MIL-C-3849	Cord, Electrical (Tinsel) (See MIL-I-3930)	-	-	3
MIL-H-3868	Hose Assemblies, Nonmetallic: Grease Gun, High & Low Pressure	-	-	3
MIL-C-3885	Cable Assemblies & Cord Assemblies, Electrical (For Use in Electronic, Communication & Associated Electrical Equipment)	NR or SYN (Jacket)	-	3

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-I-3930	Insulating & Jacketing Compounds, Electrical (For Cables, Cords & Wires)			
	Type IS	SBR	-	3
	Type IS-L	SBR	-	3
	Type IR	NR	-	3
	Type IL	NR	-	3
	Type IJ-S	SBR	-	3
	Type IL-H	NR	-	3
	Type IL-RN	NR	-	3
	Type JS	SBR	-	3
	Type JS-L	SBR	-	3
	Type JR	NR	-	3
	Type JN	CR	-	8
	Type JN-L	CR	-	5
MIL-H-3992	Hose & Hose Assembly, Rubber: Air & Vacuum Brake, Automotive			
	All Types & Classes	-	-	3
MIL-H-4495	Hose Assembly, Rubber, Aerial Refueling	-	-	3
MIL-H-4497	Hose, Cotton, Rubber Lined, Water, Braided Construction With Couplings	-	-	3
MIL-H-4536 ³	Hose, Rubber Bromochloromethane Resistant	-	-	3
MIL-B-4792	Bumpers, Rubber Duplex Round			
	Type I	-	SBR (core)	3
	Type II	MIL-R-6130, Type II Grade A (core)		3
MIL-I-4997	Insulating & Jacketing Compounds for Use in Cords, Cordages & Cables			
	Insulation	NR	-	3
	Jacket	CR	-	8
MIL-R-5001	Rubber; Cellular Sheet Molded & Hand-built Shapes; Latex Foam			
	Composition 1	NR	-	3
	Composition 2	NR	-	3

NOTES:

- 1 If no elastomer is listed, none is required by the specification.
- 2 If no elastomer is listed, the elastomer commonly used is unknown.
- 3 Cancelled no replacement.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-T-5014	Inner Tube, Pneumatic Tire, Aircraft	-	-	5
MIL-T-5041	Tires, Pneumatic, Aircraft	-	NR & SYN	5
MIL-C-5136 ³	Cable, Power, Electrical, Polychloro- prene Sheathed, Buna Compound Insulated	SBR (insulation)	-	5
MIL-P-5315	Packing, Preformed, Hydrocarbon Fuel Resistant	-	NBR	10
MIL-B-5423	Boots, Dust & Water Seal (For Toggle & Pushbutton Switches & Rotary Actuated Parts), General Specification For All Types & Styles	Q	-	20
MIL-A-5498	Accumulators, Aircraft Hydropneumatic Pressure	-	NBR	3
MIL-P-5510	Type I Packing, Preformed, Straight Thread Tube Fitting Boss	-	NBR	10
MIL-P-5516 ⁴	Packing, Preformed Petroleum Hydraulic Fluid Resistant, 160°F	-	NBR	8
MIL-T-5579	Tanks; Self-Sealing Oil Aircraft	-	NBR	4
MIL-H-5593	Hose; Aircraft, Low-Pressure Flexible Cord; Elastic, Exerciser & Shock Absorber for Aeronautical Use	NR	-	3
MIL-W-5664	All Types Webbing, Textile, Elastic, Cotton	-	-	3
MIL-C-5756	Cable & Wire, Power, Electric, Portable	NR or SYN	-	8
MIL-H-6000	Hose, Rubber (Fuel, Oil, Coolant Water and Alcohol)	-	-	4
MIL-R-6130	Rubber, Cellular, Chemically Blown Grade A - Types I & II Conditions Soft, Medium & Firm Grade B - Types I & II Conditions Soft, Medium & Firm Grade C - Types I & II Conditions Soft, Medium & Firm	-	CR	5
MIL-C-6166	Cord: Headset-Microphone, CX ⁴ 1301/AR	-	SBR	3
		-	NR	3
		-	-	3

NOTES:

1If no elastomer is listed, none is required by the specification.

2If no elastomer is listed, the elastomer commonly used is unknown.

3Cancelled no replacement.

4Class A inactive for new design. Class B cancelled, use MIL-P-25732 or MIL-P-83461.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-B-6362	Boots, Extreme Cold Weather, N-lB	NR	-	5
MIL-H-6399	Hose, Rubber, Wire-Wound, Synthetic, Ice Eliminating System	-	-	3
MIL-H-6439	Hose, Rubber, Aircraft Paint Finish Remover	-	-	3
MIL-H-6615	Hose Assemblies, Rubber, Fuel and Water with Reattachable Couplings, Low Temperature	CR	-	5
MIL-N-6748	Nipple, Electrical Terminal	Q	-	20
MIL-R-6855	Rubber; Synthetic, Sheets, Strips, Molded or Extruded Shapes			
	Class 1 - All Grades	-	NBR	10
	Class 2 - All Grades	-	CR	10
	Class 3 - All Grades	-	SBR	3
	Class 4 - All Grades	-	CR	10
	Class 5 - All Grades	-	SBR	3
MIL-R-6891 ³	Rubber, Anodic	-	NR	3
MIL-H-7061	Hose, Rubber, Aircraft, Self-Sealing, Aromatic Fuel	-	-	8
MIL-R-7362	Rubber, Synthetic, Solid Sheet & Fab- ricated Parts, Oil Resistant			
	Type I	-	NBR	10
	Type II	-	NBR	3
MIL-H-7365	Hose, Air Duct, For Ground Heaters	-	-	3
MIL-M-7585 ⁴	Mask, Oxygen			
MIL-C-7637	Cloth, Coated, Chloroprene, Fiberglass	Q	-	20
	Types I & II			
MIL-H-7938	Hose, Rubber, Flame-Resistant	CR	-	5
MIL-C-7966 ³	Cloth, Coated, Rubber, Nylon Base Varieties S & P	NBR (Tube)	-	4
MIL-C-8068	Cloth, Coated, Nylon, Rubber-Coated, Fuel Resistant	NR or SYN	-	3
	Type I	-	NBR	3
	Type II	-	-	3

NOTES:

- ¹If no elastomer is listed, none is required by the specification.
- ²If no elastomer is listed, the elastomer commonly used is unknown.
- ³Cancelled no replacement.
- ⁴Cancelled, use MIL-M-27274.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-C-8603	Clamps, Loop Type, Support Type II, Classes A & B Type III	-	NBR	3
	Type IV, Classes A & B	Q	-	20
MIL-W-8777	Wire, Electrical, Silicone-Insulated, Copper, 600 Volt, 200 C	CR	-	8
		Q	-	20
MIL-H-8788	Hose, Hydraulic High Pressure	-	-	8
MIL-H-8790	Hose Assembly, Rubber, Hydraulic, High Pressure (3,000 psi)	-	-	8
MIL-H-8794	Hose, Rubber, Hydraulic, Pneumatic, Fuel and Oil Resistant	-	-	8
MIL-H-8795	Hose Assembly, Rubber, Hydraulic, Fuel & Oil Resistant	-	-	8
MIL-H-8796	Hose, Airduct, Flexible, Aircraft	-	-	5
MIL-A-8897	Accumulators, Hydraulic, Cylindrical 3,000 psi	-	-	5
	Aircraft, Type II Systems	-	-	3
MIL-C-9074	Cloth, Laminated, Sateen, Rubberized	NR or SYN	-	3
MIL-P-10018	Pail, Collapsible, 10 Quart Capacity	SYN	-	3
MIL-C-10065	Cables, Special Purpose, Electrical (Multipair Audio Frequency)	SBR	-	3
MIL-F-10135	Faceblanks, Field Protective Mask, Natural Rubber, General Specification	NR	-	3
MIL-C-10351	Cloth, Laminated & Coated for Waterproof Containers			
	Types I & II	NR or SYN	-	3
MIL-C-10369	Cables, Telephone, Field, For Rapid Payout (MX-306 A/G)	-	SBR	3
MIL-C-10392	Cables, Electrical (Audio, Miniature)	SBR	-	3
MIL-C-10797	Cloth, Coated, Glass, Silicone Rubber- Coated	Q	-	20

NOTE:

¹If the elastomer is not listed, none is required by the specification.

²If the elastomer is not listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-H-10868	Hose Assembly, Rubber, Utility, Gasoline (1/4 Inch Inside Diameter)	ECO (Tube)	-	5
MIL-B-11040	Belt, V: Engine Accessory Drive	NR or SYN	-	6
MIL-C-11097	Cable, Telephone (W-50-A)	SBR (insulation)	-	5
MIL-C-11390	Cloth, Laminated: Cotton, Balloon, 3-Ply, Air Retaining, Chloroprene	CR	-	5
MIL-H-11588	Hose Assembly, Rubber, Synthetic, Liquid Petroleum Fuels, Dispensing, Collapsible			
	All Types			
MIL-P-11719	Packing, Preformed; Pneumatic Hose Couplings, Universal	NBR (Tube) CR	- -	3 5
MIL-T-11891	Track Shoe Assemblies, Track Shoe Pads and Track Shoe Sets, Vehicular: Rubberized			
	Types I & II			
MIL-C-11997	Cord Assembly, Electrical CX-3151()/U Retractile	NR (insulation)	SBR NR or BR	3 3
MIL-S-12100	Shock Mounts M-447, M-448, M-449 & Bracket FT-512	NR or CR	-	3
MIL-C-12189	Cloth, Coated, Butyl Coated, Toxicological Agents, Protective All Types & Classes			
	Gloves Toxicological Agents, Protective	IIR	-	10
MIL-G-12223	Eraser, Rubber-Pumice (For Testing)	IIR	-	10
MIL-E-12397	Coated Optical Elements)	-	NR	3
MIL-P-12420	Plastic Material Cellular, Elastomeric All Types & Classes	Vinyl, NBR or other rubber	-	3
MIL-C-12423	Cable, Telephone WD-33/U		SBR (insulation)	5
MIL-T-12459	Tire, Pneumatic: For Military Ground Vehicles	NR or SYN	-	5

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-M-12863	Mounts, Vibration (Vibration Mounts MT-1177 ()/U, MT-1178 ()/U & MT-1179 ()/U)	NR or CR	-	3
MIL-W-13075	Wire, Electrical (Wire W-124, W-125 & W-128)	SBR	-	3
MIL-C-13077	Cable, Special Purpose, Electrical (Cordage CO-212 & Cable, Special Purpose, Electrical WD-32/U)	SBR	-	3
MIL-W-13169	Wire, Electrical (For Instrument Test Leads)	SBR	-	3
MIL-C-13210	Gaskets, Rubber	NR or SYN	-	3
MIL-C-13273	Cord, Electrical (Retractable, 2, 3 & 4 Conductor, WD-9/U, WF-2/U, WF-4/U)	NR (insulation)	-	3
MIL-H-13444	Hose Rubber: & Hose Assembly Rubber: Fuel & Oil (For Automotive Application)	-	NBR (Tube)	3
MIL-C-13486	Cable, Special Purpose Electrical: Low-Tension, Heavy Duty, Single Conductor & Multiconductor Types I & II	-	-	3
MIL-H-13531	Hose, Rubber & Hose Assemblies: Hydraulic, Flexible	NBR (Tube)	CR (Jacket)	5
MIL-H-13719	Hose Assembly, Rubber; Hydraulic Brake	SBR or CR (Tube)	-	3
MIL-C-13892	Cable, Telephone (Flexible)(Cords & Cordage, Multipair)	NR or SBR	-	3
MIL-C-14055	Cup, Hydraulic Brake Actuating	SBR	-	3
MIL-R-14328	Cylinder: Synthetic Rubber Rubber, Synthetic, Medium Soft, General Purpose Gasket Material (For Extreme Climatic Conditions)	-	SBR	3
MIL-R-14364	Rollers, Rubberized, Pneumatic: Bridge Erection	CR	-	5
MIL-C-14366	Cloth, Coated Nylon Twill, One Side Coated	NBR	-	3

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-T-14398	Tanks, Fabric Collapsible: Water, Nylon Rubber-Coated	EPDM	-	5
MIL-P-14401	Pads, Cushioning; Personnel-Protection, Vehicular	-	SBR	3
	Types I & II, Class CS	Vinyl	-	3
	Types I & II, Class VS	-	NR or CR	3
	Type I, Class FR	-	-	5
MIL-C-14505	Cloth, Nylons Polychloroprene Coated (For Pneumatic Floating Equipment)	CR	-	3
MIL-I-14511	Insulation Sheet, Cellular, Plastic, Thermal	-	-	3
MIL-P-14574	Packing (Wiper Ring), Synthetic Rubber Cloth Insertion	-	CR or NBR	5
MIL-C-14625	Curing Bags & Tubes, Tire Repair, Recapping and Retreading	-	-	3
	Type I, Classes 1 & 2	NR (no marking)	-	10
	Type II; Classes 1 & 2	IIR (blue stripe)	-	
MIL-S-15058	Rubber, Shaft Covering Materials (For Marine Propeller Shafts)	-	-	5
	Types I, II & III	CR	-	3
	Class I	SBR	-	3
	Class II	NBR	-	3
	Class III	-	-	
MIL-H-0015100	Hose, Rubber, Wire-Reinforced (Oil & Gasoline, Suction & Discharge Smooth- Bore)	-	-	3
	Types A & B	NBR (Tube)	-	3
MIL-C-15104	Cloth, Coated, Fire Resistant, Berth & Bedding Cover	-	-	3
MIL-H-15217	Hose, Rubber, Sandblast	NR or SYN (Tube)	-	3
MIL-M-15562	Matting or Sheet, Floor Covering Insulating for High Voltage Application	SYN or Reclaim	-	3

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life, Years
MIL-R-15624	Rubber Gasket Materials 50 Durometer Hardness (Maximum)			
	Class I	CR	-	8
	Class II	SBR	-	3
	Class III	NBR	-	3
DOD-P-15816	Parts, Hard Rubber for Use with Sub- marine Storage Batteries	NR or SYN	-	10
DOD-P-15817	Parts, Synthetic Rubber, For Use with Batteries or In Battery Compartments of Submarines	-	SBR	3
MIL-C-15987	Cable Assemblies, Power, Electrical (With Grounding for 440-Volt Portable Equipment)	IIR	-	8
MIL-R-16402	Raincoat, Man, Nylon Rubber Coated, Green	NBR	-	3
MIL-I-16562	Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form)	-	-	3
MIL-C-16839	Cable, Special Purpose, Electrical (Underwater Use)	NR	-	3
MIL-R-16920	Rubber Facing (For Rammer Heads)	NR or SYN	-	3
MIL-M-17191	Mounts, Resilient; Portsmouth Bonded Spool Type	CR or SBR	-	3
MIL-C-17415	Cloth, Coated & Webbing, Inflatable Boat & Miscellaneous Use			
	Natural Coatings	NR	-	3
	Synthetic Coatings	CR	-	5
MIL-H-17505	Hose & Hose Assembly, Rubber Oil & Gasoline, Suction & Discharge	NBR (Tube)	-	3
MIL-M-17508	Mounts, Resilient; Types 6E2000, 6E900, 7E450, 6E150 & 6E100 Types 6E200, 6E900, & 7E450 Types 6E150 & 6E100	CR or NBR NR	- -	3 3

NOTES:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-D-17650	Disk, Valve, Rubber, Insert Type	-	-	3
MIL-C-17694	Cable & Cable Assemblies, Special Purpose, Electrical, Magnetic Minesweeping (Quad Cable)	insulation/ SBR or CSM Jacket/ CR or CSM	-	5
MIL-B-17901	Bearing Components, Bonded Synthetic Rubber, Water Lubricated	-	-	3
MIL-H-17902	Hose Assemblies, Rubber, Aircraft Fueling, Collapsible Type	-	-	
	Class I	CR	-	8
	Class II	NBR (Tube)	-	3
MIL-G-17927	Gasket, Asbestos-Metallic Cover, Rubber Core	-	-	3
MIL-W-17965	Webbing, Textile, Knitted, Nylon, Elastic, 4-1/4 Inch Width	NR	-	3
MIL-I-18057	Insulation Sleeving, Electrical, Flexible, Glass Fiber, Silicon Rubber Treated	Q	-	20
MIL-H-18158	Hose Assembly, Air Duct, Low Pressure, Fabric, Wire Stiffened, Retractable, Naval Shipboard Portable Ventilating Set Use	CR	-	5
MIL-M-18351	Mattresses & Mattress Ticks, Berth, Synthetic Cellular Rubber, Naval Shipboard All Types	-	-	
MIL-E-18648 ³	Eye Guards, Rubber, for Optical Instruments	CR	-	3
MIL-B-18799 ³	Bulbs, Flush, Water Closet Tank Cloth, Coated, & Tape, Coated Cloth - Chloroprene on Nylon Pneumatic Life Preserver	-	NR or SYN	3
MIL-C-19002	Type I	-	-	
MIL-M-19018	Mats, Floor, Rubber or Plastic, Light Gray, For Shipboard Shower Stalls	CR	-	5
		-	-	3

NOTES:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

³Cancelled, no replacement.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-P-19152	Packings, Hydraulic, High Pressure (for Hydropneumatic Systems)	-	NBR	5
MIL-I-19254 ⁴	Insulation Blanket, Electrical, 20,000 Volts Rating, with, Eyelets	NR or SYN	-	3
MIL-M-19379	Mounts, Resilient, Mare Island Types Types 11M15, 11M25, & 10M50	CR or NBR	-	3
MIL-M-19417	Mask, Oxygen & Smoke, Full Face	-	-	3
MIL-C-19635	Cloth, Coated, Non-Slip Table Covering	-	-	3
MIL-H-19639 ⁵	Hose Assemblies, Rubber, Paint Spray Equipment			
	Class I	CR	-	8
	Class II	SBR or NBR (Tube)	-	3
	Class III	CR (Cover)	-	5
MIL-C-19654	Cable, Telephone; Submarine	SBR or SYN (Insulation)	-	5
MIL-C-19699	Cloth, Coated (Nylon Taffeta)	CR	-	5
MIL-C-19759	Cloth, Coated, Twill Nylon, (Low Count)	CR	-	5
MIL-G-19769	Gaskets, Synthetic Rubber, Oil Resist- ant, Slide Valve (For 21-Inch Sub- merged Torpedo Tubes)	NBR	-	3
MIL-C-19787	Cable, Electric, Torpedo, 65 Conductor (For Torpedo Control, Electric Setting)	CR (Sheath)	-	5
MIL-M-19863	Mount, Resilient, Type 5B5000	NR	-	3
MIL-P-19918	Packing, V Ring	-	NBR	3
MIL-H-19992 ³	Hose Assemblies, Flexible (Pneumatic), High Pressure Oil Resistant	-	NBR	3
MIL-G-20078	Gaskets, Metal Inserted Rubber, Armored Hatch Type B	MIL-R-900	SBR	3

NOTES:

1If no elastomer is listed, none is required by the specification.

2If no elastomer is listed, the elastomer commonly used is unknown.

3Cancelled, no replacement.

4Cancelled: Use ASTM D1048.

5Cancelled: Use ZZ-H-521.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-R-20092	Rubber Sheets and Assembled and Molded Shapes, Cellular Synthetic, Open Cell (Foamed Latex)			
	Class 1 - Types I & II All Conditions	CR	-	3
	Class 3 - Types I & II All Conditions	CR	-	3
MIL-H-20176	Hose & Hose Assembly, Rubber, Non-collapsible, Smooth Bore, Light Weight, Sewage Discharge and Oily Waste Discharge Bladders, Floation (Navy)	NR or SYN	NBR	3
MIL-B-20278	Cloth, Coated, Nylon Waterproof			
MIL-C-20696	Types I & II, Classes 1 & 3	CR	-	5
MIL-C-21109	Cloth, Coated, Nylon Raft Bottom	NR	-	3
MIL-R-21252	Rubber Sheet, Solid, Synthetic, Ship-board Water Evaporator Gasketing	SBR	-	3
MIL-H-21291	Hose Assembly, Non Collapsible, For Aviation Fuels			
	Class I	CR	-	8
	Class II	NBR (Tube)	-	3
MIL-S-21558	Seals, Oil, Plain or Plain Encased			
MIL-G-21569	Gaskets, Cylinder Liner Seal Synthetic Rubber		NBR	5
	Class I	NBR	-	3
	Class II	Q	-	20
MIL-G-21610	Gaskets, Heat Exchanger, Various Cross Section Ring, Synthetic Rubber			
	Type I	NBR	-	3
	Type II	Q	-	20
MIL-M-21649	Mount, Resilient, Type 5M10,000-H	NR	-	3
MIL-S-21923	Synthetic Rubber Compound, Butadiene-Styrene Type, Ozone Resistant, For Low Temperature Service	SBR	-	3
MIL-W-21985	Wheel, Cushion Tread (Semi-Pneumatic) for Mobile Ground Support Equipment		-	5

NOTES:

1 If no elastomer is listed, none is required by the specification.

2 If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-G-22050	Gasket & Packing Material, Rubber For Use with Polar Fluids, Steam and Air at Moderately High Temperatures	-	IIR	10
MIL-H-22240	Hose, Rubber, Petroleum Based Fuels and Water Services, Discharge Only, Smooth Bore, Lightweight Buoyant Type			
MIL-H-22279	Type A & B Hose Assemblies, Rubber, Aircraft Fuel- ing Collapsible by Negative Pressure	NBR (Tube) CR	-	3
MIL-M-22322 ³	Mounts, Resilient, Shear (For Use in Shipping Containers)	NR or SYN	-	8
MIL-C-22524 ⁴	Cloth, Coated, Fire, Water, Mildew & Weather Resistant	CSM	-	3
MIL-D-22706	Duct and Scuff Cover, Pneumatic, Flexible	-	-	10
MIL-C-22731 ³	Cables, Controlled Mine	SBR (insulation)	-	3
MIL-C-23020	Cable, Coaxial (For Submarine Use)	CR (Jacket)	-	3
MIL-I-23053/1	Insulation sleeving, Electrical, Heat Shrinkable, Polychloroprene, Flexible	CR	-	5
MIL-I-23053/10	Insulation sleeving, Electrical Heat Shrinkable Silicone Rubber Flexible	Q	-	5
MIL-C-23070	Cloth, Laminated, & Tape Coated Cloth Polyisoprene, Natural or Synthetic on Nylon	NR or IR	-	20
MIL-R-23074	Rubber Tile, Rubber-Air-Lead-Type (RAL)	CR	-	3
MIL-I-23578	Insulation Hose, Electrical & Insulation Hoods, Insulator	NR or SYN	-	8
MIL-G-23621	Guard, Splash, Wheel	NR or SYN	-	3
MIL-G-23652 ⁵	Gasket & Packing Material, Petroleum & Phosphate Ester Fluid Resistant, Types I & II	-	FKM	3
MIL-C-23962 ³	Cloth Coated & Laminated Polychloroprene on Nylon & Tape Polychloroprene, Unsupport	CR	-	20

NOTES:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

³Cancelled, no replacement.

⁴Cancelled, use MIL-C-43006.

⁵Cancelled, use MIL-R-83248.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-G-23983	Gasket & Packing Materials Oil Resistant Rubber, Access Hull Applications	-	CR	5
MIL-H-24520	Hose & Hose Assembly for Water Cooling of Electronic Equipment	EPDM	-	5
MIL-H-24580	Hose Assemblies Synthetic Rubber, Non-collapsible, Fire Fighting			
	Types A & B	EPDM	-	5
MIL-H-25579	Hose Assembly, Tetrafluoroethylene, High Temperature Medium Pressure, General Requirements for	IIR (Cover)	-	10
MIL-P-25732	Packing Preformed Petroleum Hydraulic Fluid Resistant, Limited Service at 275°F (135°C)	-	NBR	10
MIL-R-258973	Rubber, Fluorocarbon Elastomer, High Temperature, Fluid Resistant	FKM	-	20
MIL-R-25988	Rubber, Fluorosilicone Elastomer, Oil & Fuel Resistant, Sheets Strips, Molded Parts and Extruded Parts	FVMQ	-	20
MIL-D-26124	Duct and Duct Assembly, Pneumatic, Flexible	-	-	3
MIL-T-26385	Hose, Oxygen and Pressurization, Ozone Resistant	-	-	3
MIL-P-26514	Polyurethane Foam, Rigid or Flexible for Packaging, Type I	AU	-	3
MIL-H-26521	Hose & Hose Assembly, Nonmetallic, Fuel, Collapsible, Low Temperature, With Reattachable Couplings	CO, CR	-	8
MIL-H-26633	Hose Assembly, Polytetrafluoroethylene, Oxygen	CR (Cover)	-	8
MIL-H-26666	Hose Assembly, Pneumatic, High Pressure	CR (Cover)	-	5
MIL-C-26712	Cloth, Coated, Nylon, Chloroprene-Coated	CR	-	5
MIL-C-26861	Cushioning Material, Resilient Type, General	-	-	3
MIL-H-26894	Hose Assembly, Rubber, Gasoline, Refueling, Low Temperature	-	NBR	3
MIL-C-27212	Cable, Power, Electrical, Airport Lighting Control (insulation)	NR	-	3

NOTES:

- ¹If no elastomer is listed, none is required by the specification.
²If no elastomer is listed, the elastomer commonly used is unknown.
³Cancelled, use MIL-R-83248.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-M-27274	Mask, Oxygen, MBU-5/P	Q	-	20
MIL-S-27332	Seat Cushion Insert, Polyurethane Foam Plastic, General Spec For	AU, EU	-	3
MIL-C-27347	Cloth, Coated, Glass, Aluminum Face, Silicone Rubber Back	Q	-	20
MIL-H-27508 ³	Hose Assembly, Rubber GRK-6/E32R-1	NBR (Tube)	-	3
MIL-H-27516	Hose and Hose Assembly, Nonmetallic, Suction and Discharge	NRB (Tube)	-	8
MIL-H-28523	Hose Assembly, Rubber, Hydraulic Pneu- matic, Jetting (400 psi Working Pressure)	-	-	3
MIL-H-28596	Hose Assembly, Rubber, Wire Reinforced 200 psig Saturated Steam Service	-	IIR, CR, EPDM	10
MIL-H-29210	Hose Assembly, Rubber, Metal Lined, Wire Reinforced, 250 psig, Standard and Superheated Steam Service	IIR or EPDM (Tube)	-	5
MIL-T-36966	Tubing, Nonmetallic, Rubber	NR	-	3
MIL-C-38149	Cloth, Coated, Chlorobutyl, Meta-Aramid Fuel & Oxidizer Resistant	IIR	-	10
MIL-S-40000 ⁴	Shoes, Gymnasium (Men's & Women's)	NR (outersole)	-	3
MIL-M-40024	Mattress, Bed: Foam-Rubber, Ambulance Stretcher	NR	-	3
MIL-S-40043	Soles, Rubber, Shoe Classes 1, 2 and 5 Classes 3, 4 and 6	NR or SYN NR or SYN	-	3 3
MIL-B-41816	Boots, Insulated, Cold Weather, Rubber (Wet-Cold/Dry-Cold)	NR	-	5
MIL-A-41829	Apron, Utility, Impermeable, Rubber Coated Fabric (General Purpose)	CR	-	5
MIL-S-43002	Shield, Pipe, Space Heater	Q	-	20
MIL-C-43006	Cloth and Strip, Laminated, Vinyl Nylon, High Strength, Flexible	CSM	-	10
MIL-C-43062	Cloth Coated, Cotton, Resin Modified Butyl Coated, Acid & Fuel Resistant	IIR	-	8

NOTES:

- 1 If no elastomer is listed, none is required by the specification.
- 2 If no elastomer is listed, the elastomer commonly used is unknown.
- 3 Cancelled, use MIL-H-26521.
- 4 Cancelled, use MIL-S-43961.

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TABLE II. Military Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-C-43285	Cloth Coated (Chloroprene Base Coated, Chlorosulphonated Polyethylene Top Coated)	CR & CSM	-	10
MIL-C-43303	Cord, Elastic, Cotton	NR	-	3
MIL-C-433793	Cover Hawk Missile Transport & Launcher	CR or CSM	-	10
MIL-C-43473	Cloth Coated Nylon Polyurethane Coated	AU or EU	-	3
MIL-C-43619	Cloth, Netting, Cotton, Elasticized, Raschel Knit	NR or SYN	-	3
MIL-C-43656	Cloth, Coated, Polyester, Silicone Rubber Q Coated	NR or SYN	-	20
MIL-S-43961	Shoes, Gymnasium, Heavy Duty	NR or SYN	-	-
MIL-M-43968	Mattress Pneumatic, (Insulated) Classes 1 & 2	NR or SYN	-	3
MIL-S-45005	Seal, Plain & Seal, Plain, Encased: Fluid, Radial Single & Multiple Lip Seal	-	NBR	5
MIL-R-45036	Rubber, Hard (Ebonite) Natural or Syn- thetic, Sheet, Strip, Rod, Tubing & Molded Parts	NR or SYN	-	20
MIL-B-45326	Grades A, B, C & D Boot, Dust & Moisture Seal: Hydraulic Brake Cylinder, Synthetic Rubber	-	SBR	3
MIL-M-45907	Mount, Shipping Container, Resilient: Shock & Vibration Damping	NR	-	3
MIL-H-46089	Rubber Sponge, Silicone (Closed Cell)	Q	-	20
MIL-W-467594	Wheel, Solid, Rubber, Tire, Rebuild of Rubber, Synthetic, Heat Shrinkable	SYN	SBR	3
MIL-R-46846	Type I Type II Type III Type IV Type V Type VI	CR Q FKM IIR EPM EPDM	- - - - - -	5 20 20 5 20 20

NOTES:

1If no elastomer is listed, none is required by the specification.

2If no elastomer is listed, the elastomer commonly used is unknown.

3Cancelled, no replacement.

4Cancelled, superseded by MIL-W-3100.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-B-50015	Bulb, Aspirator	NR	-	3
MIL-F-50070	Faceblank, C17	NR	-	3
MIL-H-51059	Hose, Fuel, Flame Thrower, M8	NBR (Tube)	-	5
MIL-F-51109	Faceblank, Protective Mask C12R4	NR	-	3
MIL-H-52079	Hose, Preformed: Semi-Flexible, Reinforced	-	-	3
MIL-H-52262	Hose Assembly, Rubber, Lightweight, Collapsible, 4-inch	NBR (Tube) SYN (Cover)	-	3
MIL-C-52286	Cable & Assemblies, Power, Electrical (with Molded on Terminations)	-	-	
MIL-H-52471	Hose & Hose Assemblies, Rubber, Hydrau- lic Pressure Type (Gen. Spec. for)	NBR (Tube) CR (Cover)	-	3
MIL-H-52544	Hose Rubber, Oil Suction, Wire Reinforced	CR (Tube) NBR (Cover)	-	3
MIL-C-55036	Cable, Telephone, WM-130 ()/G	CR (Cover)	-	5
MIL-C-55040	Cable, Special Purpose, Electrical (Retractable)	CR (Jacket)	-	5
MIL-C-55479 ³	Cable, Assembly CX-162 & CX-163	-	CR	8
MIL-C-55480	Cable, Telephone WC-534	-	CR	8
MIL-C-55483	Cable Power Electrical Flat Three Conductor	CR	-	8
MIL-T-62118	Tread, Rubber, Strip Form Stock For Retreading Pneumatic Tires	NR, IR, SBR, BR	-	3
MIL-T-62129	Tire, Pneumatic, For Truck, Logistical Type	-	-	3
MIL-W-62136	Wheel & Tire Assemblies, Foam Inflated Low Speed Highway & Off-Road	-	-	3
MIL-T-62157	Tire, Pneumatic, With Flap, 1400-20 Run Flat	-	-	3
MIL-R-81090 ³	Rubber, Electrically Conductive Fuel Resistant	-	NBR	3
MIL-H-81581	Hose Assembly, Breathing Oxygen & Air	Q	-	20
MIL-P-81716	Packing, Preformed, Straight Thread Tube Fitting Boss, Type II Hydraulic (Minus 65 F to Plus 275 F)	-	-	10

NOTES:

¹If no elastomer is listed, none is required by the specification.²If no elastomer is listed, the elastomer commonly used is unknown.³Cancelled, no replacement.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-R-81828	Rubber, Chlorosulfonated Polyethylene Elastomer, Sheet & Molded Shapes, Ozone Resistant	CSM	-	10
MIL-H-82127	Hose Assembly, Rubber (Synthetic): Fuel, Discharge, Collapsible	SYN	-	3
MIL-H-82142	Hood, Rain, Woman's: Nylon, Rubber Coated Green	NBR	-	3
MIL-R-82190	Raincoat, Woman's, Nylon, Rubber Coated Green	NBR	-	3
MIL-G-82242	Glove Shells, Radioactive Contaminants, Protective	NR	-	3
MIL-C-82255	Cloth, Coated, Synthetic Rubber (Nitrile & Polychloroprene) Types I, II, IV Type III	CR NBR NR or IR	-	5 3 3
MIL-S-82258	Swim Fins, Rubber	CR	-	3
MIL-T-82270	Trousers, Wet Suit (Chloroprene Foam)	CR	-	3
MIL-M-82272	Mittens, Wet Suit (Chloroprene Foam)	CR	-	3
MIL-C-830083	Cloth, Coated, Cotton & Nylon, Polyurethane (Microporus) Coated	AU or EU	-	3
MIL-R-83248	Rubber, Fluorocarbon Elastomer; High Temperature Fluid & Compression Set Resistant	FKM	-	20
MIL-R-83285	Rubber, Ethylene-Propylene, General Purpose	EPDM	-	5
MIL-R-83322	Rubber, Carboxy-Nitroso; Nitrogen Tetroxide (N2O4) Resistant	SYN	-	5
MIL-R-83397	Rubber, Polyurethane, Castable, Humidity Resistant	AU or EU	-	3
MIL-C-83398	Cloth, Coated, Stretch, Polychloroprene Knitted Nylon	CR	-	5
MIL-R-83412	Rubber, Ethylene-propylene, Hydrazine Resistant	EPDM	-	5
MIL-P-83461	Packing, Preformed, Petroleum Hydraulic Fluid Resistant, Improved Performance at 275 F (135 C)	-	-	10

NOTES:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

³Cancelled, no replacement.

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TABLE II. Military specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
MIL-R-83485	Rubber, Fluorocarbon Elastomer, Improved Performance at Low Temperature	FKM	-	20
MIL-P-87175	Packing, Preformed, Petroleum Hydraulic Fluid Resistant, Phosphonitrilic Fluoroelastomer	FZ	-	20

NOTES:

- ¹If no elastomer is listed, none is required by the specification.
²If no elastomer is listed, the elastomer commonly used is unknown.
³Cancelled, no replacement.

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TABLE III. Military standards.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years	
MIL-STD-4173	Classification System and Tests for Solid Elastomeric Materials				
	Rubber Compositions, Vulcanized General Purpose Solid				
	Class RN with Suffix A	NR	-	3	
	Class RS with Suffixes A1 C1	-	IIR or SBR	5	
	Class SA	-	T	20	
	Class SB	-	NBR	3	
	Class SC	-	CR	8	
	Class TA	-	Q	20	
Class TB	-	ACM	20		
MIL-STD-670	Classification System & Tests for Cellular Elastomeric Materials				
	Type R - Styles C, E, O & U	-	NR or SBR	3	
	Class SB - Styles E & O	-	NBR	3	
	Class SC - Styles E & O	-	CR	3	
	Types T - Styles E & O	-	Q	20	
	Types U - Styles C & U	-	AU or EU	3	
	Type V - Styles C, E, O & U	-	Vinyl	3	

NOTE:

- 1If elastomer is not listed, none is required by the specification.
2If elastomer is not listed, the elastomer commonly used is unknown.
3Inactive for new design. For new design use ASTM D2000.

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TABLE IV. Federal specifications.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
J-C-96	Cable, Telephone (W-108-B)	SBR (insulation)	-	5
J-C-175	Cable Assembly, Power, Electrical, For 125-Volt, 250-Volt, and 125/250-Volt, 50-6-Hz. Equipment	-	CR	3
J-C-580	Cord, Flexible, & Wire, Fixture (Elec- trical, 0 to 600-Volt Service) Types C, K, P, P-2, PD, PO-2, PW PW-2, S, SO, SJ, SJO, SP-2, AFS, HC, HPD, HS, HSJ, HSJO, HSO, HPN, SP-3, SV, SVO, E, EO, SRD, SRDT, RF-2, FF-2, RFH-2 and FFH-2 Types SF-2 & SFF-2	CR (Outer Jacket)	-	3
J-L-231	Lead, Storage - Battery Type II	Q	-	20
L-H-520	Hose & Hose Assemblies, (Nonmetallic, Rubber, Plastic)	NR or SYN	-	3
L-P-386	Plastic Material, Cellular, Urethane Flexible	AU, EU	-	3
DD-B-599	Bottle, Stopper, Vaccine, Round & Stop- per, Bottle, Rubber	-	NR	3
GG-C-846 ³	Cup Set, Polishing, Dental Handpiece (Rubber)	NR or SYN	-	3
GG-P-655	Printing Set, Rubber Type	NR or SYN	-	3
GG-S-727 ³	Stamp Set, Rubber, Anatomical	-	-	3
HH-F-341	Filler, Expansion Joint: Bituminous (Asphalt & Tar) and Nonbituminous (Non- extruding & Preformed for Concrete) Type II, Class A	NR or SYN	-	3
HH-G-156	Gaskets Material, General Purpose; Rubber Sheets Strips & Special Shapes	NR or SYN	-	3
HH-I-573	Insulation, Thermal, (Flexible Unicell- ular Sheet & Pipe Covering)	-	EU, AU	3

NOTE:

¹If elastomer is not listed, none is required by the specification.

²If elastomer is not listed, the elastomer commonly used in unknown.

³Cancelled, no replacement.

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TABLE IV. Federal specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
HH-P-151	Packing; Rubber Sheet, Cloth Insert			
	Class 1	NR or SYN	-	3
	Class 2	CR	-	3
	Class 3	SBR	-	3
	Class 4	NBR	-	3
JJ-W-155	Webbing, Textile, (Cotton, Elastic)			
	Types I & II, All Classes	NR or SYN	-	3
RR-T-650	Tread, Metallic & Nonmetallic, Nonskid			
	Type A	NR or SYN	-	3
TT-I-600	Inking Pad, Rubber Stamp			
	Type III	NR or SYN	-	3
ZZ-B-71	Bags, Politzer			
	Class A	NR or SYN	-	3
	Class B	NR, IIR, CR, or SBR	-	3
ZZ-B-101	Bandages, Rubber	CR	-	5
ZZ-B-117	Band, Ligature, Dental, Rubber	NR	-	3
ZZ-B-190	Belt, V, Engine-Accessory-Drive, Minus 40°F (Gen. Spec. For)	NR	-	3
ZZ-B-206 ³	Belting, Flat, Conveyor; Rubber All Types	NR or SYN	-	6
ZZ-B-215	Belt, V, Light Duty or Fractional Horsepower	NR, IIR, CR, or SBR	-	5
ZZ-B-220 ⁴	Belting, V, Adjustable Link Type I	NR or SYN	-	6
ZZ-B-225	Belt, V, Industrial (Multiple Drive)	NR	-	6
ZZ-B-530	Boots, Knee & Hip (Rubber) Type I & II	-	-	6
ZZ-B-586	Bags, Ice and Hot Water	NR or SYN NR, CR, or SBR	-	3 3

NOTE:

- ¹If elastomer is not listed, none is required by the specification.
- ²If elastomer is not listed, the elastomer commonly used is unknown.
- ³Cancelled, use MIL-B-52761.
- ⁴Cancelled, no replacement.

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TABLE IV. Federal specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ZZ-B-616	Bowl, Plaster of Paris Mixing	NR or SYN	-	3
ZZ-C-101	Catheters, Urethral, Rubber All Types	NR	-	3
ZZ-C-450	Cloth, Coated (Rubber & Plastic) & Plastic Sheeting for Hospital Use Type I	NR or SYN	-	3
ZZ-C-766	Cushions, Chair and Stool	NR or SYN	-	3
ZZ-C-796	Cushions; Ring, Inflatable	NR or SYN	-	3
ZZ-C-811	Cushion (Underlay), Carpet & Rug, Sponge Rubber and Synthetic Rubber Types I & II	NR or SYN	-	3
ZZ-D-800	Dustpan (Rubber)	NR or SYN	-	10
ZZ-E-661	Erasers, Rubber & Rubber Substitute Types I, II, III & IV a	NR or SYN	-	3
ZZ-F-375	Finger Pads, Rubber Grade A . Grade B	NR NR or SYN	- -	3 3
ZZ-F-1299	Finger Cot, Surgical Disposable	NR	-	3
ZZ-G-100	Gloves, Rubber, Autopsy Class 1 Class 2	NR CR	- -	3 5
ZZ-G-381	Gloves, Rubber, Industrial Type I Type II & III	NR or SYN -	- NR	3 3 3
ZZ-G-401	Gloves, Rubber (For) Electrical Workers (For Use in Connection with Apparatus or Circuits not Exceeding 5,000 Volts to Ground)	-	-	3
ZZ-H-130 ³	Heel, Orthopedic, Cast	NR or SYN	-	3
ZZ-H-141	Heel, Rubber Classes 1, 2, 3, 5 & 6	NR or SYN	-	3
ZZ-H-421	Hose and Hose Assembly, Chemical (Industrial & Fire Fighting)	-	NR	3

NOTE:

¹If elastomer is not listed, none is required by the specification.²If elastomer is not listed, the elastomer commonly used is unknown.³Cancelled, no replacement.

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TABLE IV. Federal specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ZZ-H-428	Hose Nonmetallic and Hose Preformed, (For The Coolant Systems of Auto- motive and other liquid Cooled Engines)	-	NBR	3
	Class 1	-	CR	8
	Class 2	-	EPDM	10
	Class 3	-	IIR	10
	Class 4	-		
ZZ-H-451	Hose, Fire Woven Jacketed Rubber or Latex or Rubber Coated Fabric Lined, with Couplings	-	-	3
ZZ-H-461	Hose and Hose Assembly, Rubber, Gas (Acetylene, Hydrogen, Air and Oxygen)	-	-	
	All Grades & Types	SBR	-	3
ZZ-H-466	Hose Assembly, Metal, (Rubber Covered), Hydrocarbon Conveying	NR or SYN	-	3
ZZ-H-500	Hose, Rubber & Hose Assemblies, Rubber Pneumatic (Yarn or Fabric Reinforced)	-	CR	8
ZZ-H-515	Hose, Rubber (Sleeve, Dredging)	-	-	3
ZZ-H-521	Hose and Hose Assemblies, Nonmetallic, Spray	NR or SYN	-	3
ZZH-561	Hose, Rubber, and Hose Assemblies, Rubber, Smooth Bore, Water Suction and Discharge	-	CR	5
ZZ-H-601	Hose and Hose Assemblies, Rubber (Wrapped or Braided, Water Service)			
	Grade 1	EPDM	-	10
	Grade 2	EPDM	-	10
	Grade 3	-	-	3
ZZ-H-617	Hose, Rubber, Windshield Wiper Type I	-	-	3
	Type II	NR or SYN	-	3
ZZ-I-550	Inner Tube, Pneumatic Tire			
	All Classes & Groups	NR or IIR	-	5
ZZ-M-42	Mats, Floor, Dental-Chair, Rubber	NR or SYN	-	3

NOTE:

1 If elastomer is not listed, none is required by the specification.

2 If elastomer is not listed, the elastomer commonly used is unknown.

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TABLE IV. Federal specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ZZ-M-46	Mats, Floor (Link-Type) Classes 1, 2, 3 & 4	NR or SYN	-	3
ZZ-M-71	Matting, Rubber and Vinyl All Classes & Styles	SYN or Reclaim	-	3
ZZ-M-81	Matting, Rubber & Plastic (Special Dielectric)	-	-	3
ZZ-M-85	Classes A & B Matting Floor, Rubber, Sponge Base Anti-Fatigue	-	-	3
ZZ-M-91	Mattress, Bed, Latex Foam	NR or SYN	-	3
ZZ-M-001033	Matting Floor, Rubber, Aperture Surface	NR or SYN	-	3
ZZ-P-463	Pads, Operating Table (Sectional)	NR or SYN	-	3
ZZ-P-75	Pads, Typewriter, Sponge Rubber	NR or SYN	-	3
ZZ-P-3513	Pillows: Air, Rubber	NR or IIR	-	3
ZZ-R-006753	Rubber Band, Four Way	NR or SYN	-	3
ZZ-R-690	Rubber Dam, Dental	-	NR	3
ZZ-R-710	Rubber Gasket Material 35 Durometer Hardness	-	-	3
ZZ-R-765	Rubber Silicone	Q	-	20
ZZ-R-768	Rubber for Mountings (Unbonded-spool & Compression Types)	NBR	-	3
ZZ-R-785 ³	Rubber Sheet, Cellular Hardboard	SYN or Reclaim	-	3
ZZ-R-800	Rubber Stamp, Band Type	NR or SYN	-	3
ZZ-R-804	Rubber Stamp, Fixed Type	NBR, NR or SYN	-	3
ZZ-R-001207	Rubber Stamp, Fixed Type, Pre-inked	NR or SYN	-	3
ZZ-R-1415	Rubber Band	NR, SBR, IR or SYN	-	3
ZZ-S-666	Squeegees, Floor & Window	NR or SYN	-	3
ZZ-S-751	Stoppers, Bottle, Rubber All Types & Grades	NR or SYN	-	3
ZZ-T-351	Tips, Cane and Crutch, Rubber	NR or SYN	-	3

NOTE:

¹If elastomer is not listed, none is required by the specification.²If elastomer is not listed, the elastomer commonly used is unknown.³Cancelled, no replacement.

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TABLE IV. Federal specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ZZ-T-381	Tires, Pneumatic, Vehicular (Highway) All Types, Groups & Classes	NR or SYN	-	5
ZZ-T-401	Tire, Pneumatic; Inner Tube, Pneumatic Tire; (Bicycle)	NR or SYN	-	5
	Tires, Classes A & B	IIR	-	10
ZZ-T-410	Tires, Pneumatic, Industrial Tires	NR or SYN	-	5
ZZ-T-441	Tire, Pneumatic: Retreaded & Repaired All Types & Classes	NR or SYN	-	3
ZZ-T-721	Tube, Inner, Pneumatic, for Tires (Auto- mobiles, Trucks, Motorcycles, and Other Ground Vehicles)	IIR	-	10
ZZ-T-751 ³	Tubes; Colon, Surgical	NR or SYN	-	3
ZZ-T-791	Tube, Stomach, Surgical (Formerly Tubes, Lavage & Stomach)	NR or SYN	-	3
ZZ-T-831	Tubing, Rubber and Plastic Grade A	NR or SYN	-	3
	Grade B	SYN	-	3
	Grade C & L	NR	-	3
	Grade D	NR or SYN	-	3
ZZ-T-1083	Tire, Pneumatic, Low Speed, Off Highway	NR or SYN	-	3
BBB-C-606 ³	Coats & Trousers, Rubber-Coated (Foul- Weather-Clothing)	NR or SYN	-	3
GGG-R-00620	Roller, Hand (Rubber Roller)	NR or SYN	-	3

NOTE:

¹If elastomer is not listed, none is required by the specification.

²If elastomer is not listed, the elastomer commonly used is unknown.

³Cancelled, no replacement.

TABLE V. Aerospace Materials Specifications

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 3193	Silicone Rubber Sponge, Closed Cell, Medium, Extreme Low Pressure	Q	-	20
AMS 3194	Silicone Rubber Sponge, Closed Cell, Firm, Extreme Low Temperature	Q	-	20
AMS 3195	Sponge, Silicone Rubber, Closed Cell, Medium	Q	-	20
AMS 3196	Sponge, Silicone Rubber, Closed Cell, Firm	Q	-	20
AMS 3197	Sponge, Chloroprene-Rubber, Soft	CR	-	3
AMS 3198	Sponge, Chloroprene-Rubber, Medium	CR	-	3
AMS 3199	Sponge, Chloroprene-Rubber, Firm	CR	-	3
AMS 3200	Rubber Nitrile, Petroleum Base Hydraulic Fluid Resistant (55-65)	NBR	-	3
AMS 3201	Rubber Nitrile, Dry Heat Resistant (35-45)	NBR	-	3
AMS 3202	Rubber Nitrile, Dry Heat Resistant (55-65)	NBR	-	3
AMS 3204	Rubber Synthetic, Low Temperature Resistant (25-35)	-	NBR	3
AMS 3205	Rubber Synthetic, Low Temperature Resistant (45-55)	-	NBR	3
AMS 3207	Chloroprene Rubber, Weather Resistant, (25-35)	CR	-	8
AMS 3208	Chloroprene Rubber, Weather Resistant, (45-55)	CR	-	8
AMS 3209	Chloroprene Rubber, Weather Resistant, (65-75)	CR	-	8
AMS 3210	Chloroprene Rubber, Electrical Resistant, (65-75)	CR	-	8
AMS 3212	Nitrile Rubber, Aromatic Fuel Resistant (55-65)	NBR	-	5
AMS 3213	Nitrile Rubber, Aromatic Fuel Resistant (75-85)	NBR	-	5
AMS 3214	Acrylonitrile Butadiene (NBR) Rubber, Aromatic Fuel Resistant (35-45)	NBR	-	5

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE V. Aerospace Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 3215	Nitrile Rubber, Aromatic Fuel Resistant (65-75)	NBR	-	5
AMS 3216	Fluorocarbon Rubber - Fuel & Oil Resistant	FKM	-	20
AMS 3220	Synthetic Rubber General Purpose, Fluid Resistant (55-65)	-	CR	5
AMS 3222	Synthetic Rubber, Hot Oil Resistant, High Swell (45-55)	-	CR	5
AMS 3226	Acrylonitrile Butadiene (NBR) Rubber, Hot Oil & Coolant Resistant, Low Swell (45-55)	NBR	-	3
AMS 3227	Acrylonitrile Butadiene (NBR) Rubber, Hot Oil & Coolant Resistant, Low Swell (55-65)	NBR	-	3
AMS 3228	Acrylonitrile Butadiene (NBR) Rubber, Hot Oil & Coolant Resistant (65-75)	NBR	-	3
AMS 3229	Acrylonitrile Butadiene (NBR) Rubber, Hot Oil Resistant, Low Swell (75-85)	NBR	-	3
AMS 3237	Butyl Rubber, Phosphate Ester Resistant (35-45)	IIR	-	10
AMS 3238	Butyl Rubber, Phosphate Ester Resistant (65-75)	IIR	-	10
AMS 3239	Butyl Rubber, Phosphate Ester Resistant (85-95)	IIR	-	10
AMS 3240	Chloroprene Rubber, Weather Resistant, Type (35-45)	CR	-	8
AMS 3241	Chloroprene Rubber, Weather Resistant, Type (55-65)	CR	-	8
AMS 3242	Chloroprene Rubber, Weather Resistant, Type (75-85)	CR	-	8
AMS 3243	Chloroprene Rubber, Flame Resistant, Type (55-65)	CR	-	8
AMS 3244	Chloroprene Rubber, Flame Resistant, Type (65-75)	CR	-	8

NOTE:

¹If no elastomer is listed, none is required by the specification.²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE V. Aerospace Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 3248	Synthetic Rubber, Phosphate Ester Resistant	EPDM	-	8
	Ethylene Propylene Type (55-65)			
AMS 3249	Synthetic Rubber, Hydrazine Base Fluid Resis- tant Ethylene Propylene Type (75-85)	EPDM	-	8
AMS 3260	Rubber, Ethylene-Propylene-Diene, EPDM Type	EPDM	-	8
AMS 3270	Chlopprene Rubber Sheet, Cotton Fabric Rein- forced, Weather Resistant	CR	-	5
AMS 3273	Chlopprene Rubber Sheet, Nylon Fabric Rein- forced, Weather Resistant	CR	-	5
AMS 3274	Nitrile Rubber Sheet, Nylon Fabric Rein- forced, Aromatic Fuel Resistant	NBR	-	3
AMS 3301	Silicone Rubber, General Purpose (35-45)	Q	-	20
AMS 3302	Silicone Rubber, General Purpose (45-55)	Q	-	20
AMS 3303	Silicone Rubber, General Purpose (55-65)	Q	-	20
AMS 3304	Silicone Rubber, General Purpose (65-75)	Q	-	20
AMS 3305	Silicone Rubber, General Purpose (75-85)	Q	-	20
AMS 3307	Silicone Rubber, Low Compression Set, Non- Oil Resistant (65-75)	Q	-	20
AMS 3315	Silicone Rubber Sheet, Glass Fabric Rein- forced, VMQ Type	Q	-	20
AMS 3320	Silicone Rubber Sheet, Glass Fabric Rein- forced, Heat & Weather Resistant (60-80)	Q	-	20
AMS 3325	Silicone Rubber, Fuel & Oil Resistant (55-65)	FVMQ	-	20
AMS 3326	Silicone Rubber, Fuel & Oil Resistant (50-65)	FVMQ	-	20
AMS 3327	Silicone Rubber, High Temperature Fuel & Oil Resistant (70-80)	FVMQ	-	20
AMS 3332	Silicone Rubber, Extreme Low Temperature Resistant (15-30)	Q	-	20
AMS 3334	Silicone Rubber, Extreme Low Temperature Resistant (35-45)	Q	-	20

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE V. Aerospace Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 3335	Silicone Rubber, Extreme Low Temperature Resistant (45-55)	Q	-	20
AMS 3336	Silicone Rubber, Extreme Low Temperature	Q	-	20
AMS 3337	Silicone Rubber, High & Extreme Low Temperature Resistant (65-75)	Q	-	20
AMS 3338	Silicone Rubber, Extreme Low Temperature Resistant (75-85)	Q	-	20
AMS 3344 ³	Silicone Rubber - 1800 psi (45-55)	Q	-	20
AMS 3345	Silicone Rubber - 1000 psi (45-55)	Q	-	20
AMS 3346	Silicone Rubber - 1000 psi (55-65)	Q	-	20
AMS 3347	Silicone Rubber, 1200 psi, High Modulus (45-55)	Q	-	20
AMS 3348	Silicone Rubber, 1150 psi, High Resiliency	Q	-	20
AMS 3349	Silicone Rubber, 1100 psi, High Resilience (65-75)	Q	-	20
AMS 3356	Silicone Rubber, Lubricating Oil & Compression Set Resistant Electrical Grade (55-65)	Q	-	20
AMS 3357	Silicone Rubber, Lubricating Oil & Compression Set Resistant (65-75)	Q	-	20
AMS 3386	Hose, Synthetic Rubber, Aircraft Fueling, Textile Reinforced Collapsing	-	NBR	3
AMS 3387	Hose, Nitrile Rubber, Aircraft Fueling, Textile Reinforced, Chloroprene Covered Noncollapsing	NBR	-	3
AMS 3388	Hose, Synthetic Rubber, Aircraft Fueling, Single Wire Braid Reinforced, Noncollapsing	-	NBR	3
AMS 3389	Hose, Synthetic Rubber, Aircraft Fueling Double Wire Braid Reinforced, Noncollapsing	-	NBR	3
AMS 3570	Foam, Flexible Polyurethane Open Cell, Medium Flexibility	AU, EU	-	3
AMS 7259	Rings, Sealing, Fluorocarbon Rubber, High-Temperature-Fluid Resistant, Very Low Compression Set (85-95)	FKM	-	20

NOTE:

- ¹If no elastomer is listed, none is required by the specification.
- ²If no elastomer is listed, the elastomer commonly used is unknown.
- ³Standard inactive for design purposes.

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TABLE V. Aerospace Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 7260	Rings, Packing, Nitrile Rubber - Fuel & Low Temperature Resistant (70-80)	NBR	-	8
AMS 7261	Rings, Phosphonitrilic Fluoroelastomer High-Temperature-Fluid Resistant	FZ	-	20
AMS 72633	Rings, Packing, Synthetic Rubber - Phosphate Ester Hydraulic Fluid Resistant (85-95)	IIR	-	10
AMS 7266	Butyl Type Rings, Sealing, Fluorosilicone Rubber, General Purpose, High Temperature, Fuel & Oil Resistant (65-75)	FVMQ	-	20
AMS 7267	Rings, Sealing, Silicone Rubber-Heat Resistant Low Compression Set (70-80)	Q	-	20
AMS 7268	Rings, Sealing Silicone Rubber Low Compression Set, Non-Oil Resistant (65-75)	Q	-	20
AMS 7269	Rings, Sealing, Silicone Rubber-Low Out Gassing, Space & Vacuum Service (45-55)	Q	-	20
AMS 7270	Rings, Sealing, Nitrile Rubber-Fuel Resistant (65-75)	NBR	-	8
AMS 7271	Rings, Sealing, Nitrile Rubber-Fuel & Low Temperature Resistant (60-70)	NBR	-	8
AMS 7272	Rings, Sealing, Nitrile Rubber-Synthetic Lubricant Resistant (65-75) Buna-N Type	NBR	-	8
AMS 7273A	Rings, Sealing, Fluorosilicone Rubber, High Temperature Fuel & Oil Resistant (70-80)	FVMQ	-	20
AMS 7274	Rings, Sealing, Synthetic Rubber-Oil Resistant (65-75)	-	NBR	8
AMS 72754	Rings, Sealing, Synthetic Rubber-Synthetic Lubricant Resistant (65-85) Fluorocarbon Type	FKM	-	20
AMS 7276	Rings, Sealing, Fluorocarbon Rubber, High Temperature Fluid Resistant, Very Low Compression Set, FKM Type (70-80)	FKM	-	20

NOTE:

- 1 If no elastomer is listed, none is required by the specification.
- 2 If no elastomer is listed, the elastomer commonly used is unknown.
- 3 Non-current (Jul 81) use AMS 7261.
- 4 Cancelled, no replacement.

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TABLE V. Aerospace Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
AMS 72773	Rings, Sealing, Synthetic Rubber Phosphate Ester Hydraulic Fluid Resistant (70-85) Butyl Type	IIR	-	10
AMS 72784	Rings, Sealing, Synthetic Rubber High Temperature Fluid Resistant (70-80) Fluorocarbon Type	FKM	-	20
AMS 72795	Rings, Sealing, Synthetic Rubber High Temperature Fluid Resistant (85-95) Fluorocarbon Type	FKM	-	20
AMS 72806	Rings, Sealing, Fluorocarbon Rubber, High Resistant, Low Compression Set, FKM Type (70-80)	FKM	-	20

NOTE:

- 1 If no elastomer is listed, none is required by the specification.
- 2 If no elastomer is listed, the elastomer commonly used is unknown.
- 3 Non-current (Jul 81), no replacement.
- 4 Non-current (Jan 82), use AMS 7276.
- 5 Non-current (Jul 83), use AMS 7259.
- 6 Inactive for new design, use AMS 7276.

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TABLE VI. American Society for Testing and Materials Specifications.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ASTM C443	Joints For Circular Concrete Sewer & Culvert Pipe, Using Rubber Gaskets	NR or SYN	-	3
ASTM D178	Rubber Insulating Matting	-	-	3
ASTM D296	Rubber-Lined Fire Hose with Woven Jacket	-	-	3
ASTM D353	Natural Rubber Performance Insulation for Wire & Cable 60 C Operation	NR	-	3
ASTM D469	Natural Rubber Heat-Resisting Insulation for Wire & Cable, 75 C Operation	NR	-	3
ASTM D532	Natural Rubber Jacket For Wire & Cable	NR	-	3
ASTM D574	Ozone-Resisting Insulation for Wire & Cable	-	-	3
ASTM D752	Heavy-Duty Black Polychloroprene for Wire & Cable	CR	-	8
ASTM D753	General Purpose Polychloroprene for Wire & Cable	CR	-	8
ASTM D754	Synthetic Rubber Insulation for Wire & Cable 75 C Operation	-	-	3
ASTM D755	Synthetic Rubber Insulation for Wire & Cable 60 C Operation	-	-	3
ASTM D866	Styrene-Butadiene (SBR) Synthetic Rubber Jacket for Wire & Cable	SBR	-	3
ASTM D1048	Rubber Insulating Blankets	NR or IR	-	3
ASTM D1050	Rubber Insulating Line Hose	-	-	3
ASTM D1055	Flexible Cellular Materials - Latex Foam Grades RC & RU	-	NR	3
ASTM D1056	Flexible Cellular Materials-Sponge or Expanded Type R - Classes O & E Type SB - Classes O & E Type SC - Classes O & E	-	NR NBR CR	3 3 3
ASTM D1330	Sheet Rubber Gaskets Grades I & II	NR or SYN	-	3

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

TABLE VI. American Society for Testing and Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ASTM D1352	Ozone-Resisting Butyl Rubber Insulation for Wire & Cable	IIR	-	10
ASTM D1520	Synthetic Rubber Heat or Moisture Resisting Insulation for Wire & Cable	-	-	3
ASTM D1521 ³	Synthetic Rubber Performance, Moisture Resisting Insulation for Wire & Cable	-	-	3
ASTM D1523	Synthetic Rubber Insulation for Wire & Cable 90 C Operation	-	-	3
ASTM D1564 ⁴	Flexible Urethane Foam			
ASTM D1565	Grades US & UU Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Open-Cell Foam) Grades VC, VU & VO	AU, EU	-	3
ASTM D1667	Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Vinyl)	Vinyl	-	3
ASTM D1679	Synthetic Rubber Heat & Moisture Resisting Insulation for Wire & Cable, 75 C Operation	-	-	3
ASTM D1764	Rubber Latex Products for Automotive Applications			
	Type LR	-	NR	3
	Class LSB	-	NBR	3
	Class LSC	-	CR	5
ASTM D1869	Rubber Rings for Asbestos - Cement Pipe	NR or SYN	-	3
ASTM D1931	Fully Cured Silicone Rubber-Coated Glass Fabric & Tapes for Electrical Insulation	Q	-	20

NOTE:

- ¹If no elastomer is listed, none is required by the specification.
- ²If no elastomer is listed, the elastomer commonly used is unknown.
- ³Cancelled, no replacement.
- ⁴Cancelled, use ASTM D3574.

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TABLE VI. American Society for Testing and Materials Specifications (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ASTM D2000	Rubber Products In Automotive Applications, Classification System for			
	Material Designation AA with Suffix A13	-	NR, SBR or IIR	3
	Material Designation AK	-	T	20
	Material Designation BA with Suffixes A14 & C12	-	SBR or IIR	3
	Material Designation BC	-	CR	8
	Material Designation BE	-	CR	8
	Material Designation BF	-	NBR	3
	Material Designation BG	-	AU, EU	3
	Material Designation BK	-	T	20
	Material Designation CE	-	CSM	10
	Material Designation CH	-	NBR	3
	Material Designation DH	-	ACM	20
	Material Designation FC	-	Q	20
	Material Designation FK	-	FVMQ	20
	Material Designation GE	-	Q	20
	Material Designation HK	-	FKM	20
ASTM D2903	Neoprene, Heat Shrinkable Tubing	CR	-	5
ASTM D3574	Flexible Cellular Materials-Slab, Bonded, and Molded Urethane Foams	AU, EU	-	3

NOTE:

¹If no elastomer is listed, none is required by the specification.²If no elastomer is listed, the elastomer commonly used is unknown.

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TABLE VII. National Aerospace Standards.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
NAS 113	Valve Assembly - Flapper	AMS 3212	NBR	3
NAS 2443	Cap - Rigid Tube or Hose Fitting Synthetic	AMS 3208 (CR)	-	8
NAS 4863	Hose - Oil & Coolant	-	CR	8
NAS 6173	Packing, Preformed, String Thread Tube Fitting Boss, Synthetic Lubricant Resistant	MIL-R-7362 Comp. A	NBR	3
NAS 1369	Duct, Air, Flexible & Semi-Rigid Type A	Glass Fabric impreg with CR Glass Fabric impreg with Q	-	5
NAS 1370 thru	Type B			20
NAS 1379	Duct, Air, Flexible, Helix Wire Supported -65 to +275 F	Fiberglass impreg with CR Fiberglass impreg with Q	-	5
	-75 to +500 F			20
NAS 1515	Washers - Plastic & Synthetic Rubber Code Letter A	ZZ-R-765 (Q)	-	20
	Code Letter B	ZZ-R-765 (Q)	-	20
	Code Letter C	MIL-R-6855 Class I	NBR	3
	Code Letter D	MIL-R-6855 Class II	CR	8
	Code Letter E	MIL-R-6855 Class IV	CR	8
	Code Letter F	MIL-R-7362 Comp A	NBR	3
	Code Letter J	AMS 3209 (CR)	-	8
	Code Letter K	AMS 3238 (IIR)	-	10
	Code Letter L	AMS 3650 (FKM)	-	10
	Code Letter M	AMS 3651 (FKM)	-	10

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

³Inactive for new design.

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TABLE VII. National Aerospace Standards (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
NAS 15703	Gasket - Junction Box	MIL-G-6183 Class I	NBR	3
NAS 15773	Gasket, Switch Fitting Box	MIL-G-6183 Class I	NBR	3
NAS 15933	Packing, Preformed - MIL-R-25897 Rubber, 75 Shore "O" Ring	MIL-R-25897	FKM	20
NAS 15943	Packing, Preformed - MIL-R-27897 Rubber, 90 Shore "O" Ring	MIL-R-25897	FKM	20
NAS 15953	Packing, Preformed Straight Thread Tube Fitting Boss, MIL-R-25897 Rubber, 75 Shore "O" Ring	MIL-R-25897	FKM	20
NAS 15963	Packing, Preformed Straight Thread Tube Fitting Boss, MIL-R-25897 Rubber, 90 Shore "O" Ring	MIL-R-25897	FKM	20
NAS 15983	Washer - Sealing Code Y	MIL-R-7362 Comp A	NBR	3
NAS 1611	Packing, Preformed O-Ring Phosphate Ester Resistant (-65 F to +160 F)	MIL-R-25988 AMS 3238 (IIR)	FVMQ	20
NAS 1612	Packing, Preformed, Straight Thread Tube Fitting Boss, Phosphate Ester Resistant (-65 F to +160 F)	-	EPDM	10
NAS 1613	Packing, O-Ring, Phosphate Ester Resistant Classes I & II	-	EPDM	10

NOTE:

¹If no elastomer is listed, none is required by the specification.²If no elastomer is listed, the elastomer commonly used is unknown.³Inactive for new design.

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TABLE VIII. Society of Automotive Engineers Standards.

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
ARP 6103	Synthetic or Natural Rubber Lined Pneumatic Hose Assemblies, Aircraft	-	-	3
	Class I	-	-	3
	Class II	-	NR	3
SAE J143	Specifications for Elastomer Compounds for Automotive Applications	-	NR, SBR or IIR	3
	Type R	-	T	20
	Type S, Class SA	-	NBR	3
	Type S, Class SB	-	CR	8
	Type S, Class SC	-	Q	20
	Type T, Class TA	-	ACM	20
	Type T, Class TB	-		
SAE J153	Flexible Foams Made from Polymers or Copoly- mers of Vinyl Chloride	-		
	Grades VC, VU & VO	Vinyl	-	3
SAE J17	Latex Foam Rubbers	-	NR	3
	Grades RC & RU	-		
SAE J18	Sponge & Expanded Cellular Rubber Products	-	NR	3
	Type R, Classes O & E	-	NR	3
	Type S, Class SB, Classes O & E	-	NBR	3
	Type S, Class SC, Classes O & E	-	CR	3
SAE J19	Latex Dipped Goods & Coatings for Automotive Applications	-		
	Type LR	-	NR	3
	Type LR, Class LSB	-	NR	3
	Type LR, Class LSC	-	CR	5

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

³Cancelled, no replacement.

TABLE VIII. Society of Automotive Engineers Standards (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
SAE J20	Coolant - System Hoses	-	Q	20
	Class A	-	NBR	3
	Class B	-	CR	8
	Class C	-	EPDM	10
	Class D	-		
SAE J30	Fuel & Oil Hoses	-	NR (Tube)	3
	SAE 30R1, 30R2, 30R3 & 30R5	-	-	3
SAE J50	Windshield Wiper Hose	-	NBR	3
SAE J51	Automotive Air Conditioning Hose	-		
SAE J60 ³	Rubber Cups for Hydraulic Activating Cylinders SAE 60R1 & SAE 60R2	-	NR or SBR	3
SAE J80 ⁴	Automotive Rubber Matts - All Types	-	-	3
SAE J120	Rubber "O" Rings for Automotive Seal & Pack- ing Applications	-		
	Classes 1 & 2	-	NBR	5
SAE J188	Power Steering Pressure Hose-High Volumetric Expansion Type	SYN		3
SAE J189	Power Steering Return Hose-Low Pressure	SYN		3
SAE J190	Power Steering Pressure Hose-Wire Braid	SYN		3
SAE J200	Rubber Materials for Automotive Applications: Classification System			
	Material Designation AA with Suffix A13	-	NR, SBR or IIR	3
	Material Designation AK	-	T	20
	Material Designation BA with Suffixes A14 & C12	-	SBR or IIR	3
	Material Designation BC	-	CR	8
	Material Designation BE	-	CR	8
	Material Designation BF	-	NBR	3

NOTE:

- ¹If no elastomer is listed, none is required by the specification.
²If no elastomer is listed, the elastomer commonly used is unknown.
³SAE J60 series rubber replaced by SAE J1600 series.
⁴Cancelled, no replacement.

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TABLE VIII. Society of Automotive Engineers Standards (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
SAE J200	Rubber Materials for Automotive Applications: Classification System (continued)			
	Material Designation BG	-	AU, EU	3
	Material Designation BK	-	T or NBR	20
	Material Designation CA	-	EPDM	10
	Material Designation CE	-	CSM	10
	Material Designation CH	-	NBR	3
	Material Designation DH	-	ACM	20
	Material Designation FC	-	Q	20
	Material Designation FE	-	Q	20
	Material Designation FK	-	FVMQ	20
	Material Designation GE	-	Q	20
	Material Designation HK	-	FKM	20
SAE J515	Hydraulic "O" Ring Type I Type II	-	NBR IIR	3 10
SAE J517	Hydraulic Hose - All Types	-	-	3
SAE J557	High Tension Ignition Cable Type H ₁ LR, H ₂ THR, H ₃ TS, & H ₄ TB	NR (insulation)	-	3
SAE J560	Seven Conductor Electrical Conductor for Truck-Trailer Jumper Cable	-	-	3
SAE J654	Seals-Lathe Cut	-	NBR or ACM	3
SAE J1010	Emission Control Hose	EPDM	-	5
SAE J1037	Windshield Washer Tubing Type 1 Type 2	CR SYN	-	5 3
SAE J1401	Road Vehicle - Hydraulic Brake Hose Assemblies for Use with Non-Petroleum Base Hydraulic Fluids	-	-	3

NOTE:

¹If no elastomer is listed, none is required by the specification.²If no elastomer is listed, the elastomer commonly used is unknown.

TABLE VIII. Society of Automotive Engineers Standards (cont'd).

Number	Title	Elastomers ¹ Required	Elastomers ² Commonly Used	Expected Shelf Storage Life Years
SAE J1402	Automobile Air Brake Hose and Hose Assemblies	CR	-	3
SAE J1403	Vacuum Brake Hose Class A Class B	- -	SYN NR or SYN	3 3
SAE J1603	Rubber Seals for Hydraulic Disc Brake Cylinders	SYN	-	3
SAE J1604	Rubber Boots for Drum Type Hydraulic Brake Wheel Cylinders	SYN	-	3
SAE J1605	Brake Master Cylinder Reservoir Diaphragm Gaskets	SYN	-	3

NOTE:

¹If no elastomer is listed, none is required by the specification.

²If no elastomer is listed, the elastomer commonly used is unknown.

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APPENDIX

Related Documents

Documents prepared by the Government or by the Government contractors, pertaining to overall aspects of age control of rubber products, are listed here for reference purposes:

1. Defense Industrial Supply Center, Instruction DISC-HSI 4140.60, Identification Control and Utilization of Shelf-Life Items, 16 July 1971.
2. Department of the Air Force Technical Manual T.O. 00-20K-1, Inspection and Age Control of USAF Shelf Life Equipment, 15 June 1983.
3. Department of the Air Force Technical Manual AFML-TR-67-235, Literature Survey on the Effects of Long-Term Shelf Aging of Elastomer Materials, March 1968.
4. Department of the Army Supply Bulletin SB-740-60, Storage, Inspection & Shelf-Life Information for Deteriorating Items.
5. Department of Defense MIL-STD-1523, Age Control of Age-Sensitive Elastomeric Materials, 1 February 1984.
6. Defense Documentation Center Report AD 601284, Bibliography on Aging of Natural and Synthetic Rubber and Rubber Products, 23 May 1961.
7. International Standard ISO 2230-1973 (E), Vulcanized Rubber-Guide to Storage.
8. Lockheed Aircraft Corporation Specification OS10674B, Age Control of Rubber, 2 October 1967.
9. Marshall Space Flight Center Standard 105A, Synthetic Rubber, Age Control Of, 21 December 1962.
10. The American Society of Mechanical Engineers Paper No. 61-AV-25, Missile System Elastomers - Predicting Field Life Expectancies, (Prepared by Chrysler Corporation, Missile Division) March 1961.

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

*(See Instructions - Reverse Side)*1 DOCUMENT NUMBER
MIL-HDBK-695C2 DOCUMENT TITLE
Rubber Products: Recommended Shelf Life

3a. NAME OF SUBMITTING ORGANIZATION

4 TYPE OF ORGANIZATION (Mark one)

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b ADDRESS (Street, City, State, ZIP Code)

5 PROBLEM AREAS

a. Paragraph Number and Wording

b Recommended Wording

c Reason/Rationale for Recommendation

6 REMARKS

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