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DEPARTMENT OF DEFENSE

HANDBOOK

RUBBER PRODUCTS: RECOMMENDED SHELF LIFE

THIS HANDBOOK IS FOR GUIDANCE ONLY
DO NOT CITE THIS HANDBOOK AS A REQUIREMENT

AMSC: N/A **FSC 9320**

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FOREWORD

1. This handbook is developed by the Department of Defense with the assistance of recognized technical societies in accordance with established procedure. This handbook is approved for use by all Departments and Agencies of the Department of Defense (DOD).

2. This handbook is for guidance only. If cited as a requirement, the contractor does not have to comply. The handbook covers elastomeric products of Military, Federal, and recognized industry specifications. It provides guidance as to the time periods during which these elastomeric products may be stored without deterioration.

3. Beneficial comments (recommendations, additions, deletions) and any pertinent data, which may be of use in improving this document, should be addressed to ASC/ENOI, Bldg 560, 2530 Loop Road West, Wright-Patterson Air Force Base OH 45433-7101 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

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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 will 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 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 Defense Automated Printing Service (DAPS), ATTN: DODSSP, Code NPP-9, Bldg. 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

b. *Aerospace Materials Specifications* (AMS) Index and *Society of Automotive Engineers* (SAE) Handbook (both available from Society of Automotive Engineers (SAE), 400 Commonwealth Drive, Warrendale, PA 15096-0001).

c. *National Aerospace Standards* (NAS) (published and distributed by Aerospace Industries Association of America, Inc., 1250 I Street NW, Suite 1100, Washington DC 20005-3924).

d. *American Society for Testing and Materials* (ASTM) Specifications (available from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959).

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, non-aerospace hose, rubber coated fabrics, shock mounts and tires.

c. Kits, accessories and outfits. The shelf life for these items should be determined by the component with the earliest expiration date.

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.

c. O-rings and other molded seals. Refer to *SAE ARP5316* for recommended shelf lives.

d. Aerospace hoses and hose assemblies. Consult *SAE AS1933A* for age limits for acceptance of aerospace hoses and hose assemblies.

e. Unvulcanized rubber, such as tread repair stock and tank lining sheet stock.

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

g. Subassemblies, assemblies and systems which contain elastometric items as component parts, such as small arms, weapons, vehicles, aircraft, missiles and space vehicles.

h. Products fabricated from flexible materials that 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 that 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 careful records 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 will govern.

2. APPLICABLE DOCUMENTS

2.1 General.

The documents listed below are not necessarily all of the documents referenced herein, but are needed to fully understand the information provided by this handbook.

2.2 Government documents.

Department of Defense Index of Specifications and Standards (DODISS) (available from Defense Automated Printing Service (DAPS), ATTN: DODSSP, Code NPP-9, Bldg. 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

2.3 Non-Government publications.

The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents that are DoD adopted are those listed in the latest issue of the DoDISS, and supplement thereto.

SAE AS 1933	Age Controls for Hose Containing Age-Sensitive Elastomeric Material
SAE ARP 5316	Storage of Aerospace Elastomeric Seals and Seal Assemblies Which Include an Elastomer Element Prior to Hardware Assembly

(Application for copies should be addressed to the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

3. DEFINITIONS

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

3.2 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 3 years. Cure date stated in terms of month of calendar year and the year, i.e., 6-83.

b. Shelf life in excess of 3 years. Cure date stated in terms of the quarter of calendar year and the year, i.e., 2Q-83.

3.3 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.

3.4 Acceptance Life - This is the maximum life at the age at acceptance. The age limit at acceptance for hoses and hose assemblies is 32 quarters. See SAE AS1933 for aerospace hoses.

3.5 Service Life - A general term used to quantify the average or mean life of an item while in use. Service life, which is depicted in years, is the number of years of economical service reasonably expected of equipment as established in applicable DoD, Service, and/or Agency manuals, bulletins, regulations, instruction manuals, and/or the technical judgement of the item and/or equipment manager.

4. GENERAL REQUIREMENTS

4.1 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 that 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.

4.2 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 that 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.

5. 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 that 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.

6. NOTES

(This Section contains information of a general or explanatory nature that may be helpful.)

6.1 Intended use.

This handbook is intended to establish guidelines for time periods for the expected shelf life of rubber products during storage. The information contained in this handbook is intended as a guide for use by those agencies whose responsibility is to place control requirements on rubber products, as well as those activities whose responsibility is to control the age of products stocked in Government storage facilities.

6.2 Subject term (key word) listing.

Age control
Elastomeric seal
Rubber products
Shelf life

6.3 Changes from previous issue.

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:
Army - MR
Navy - SH
Air Force - 11

Review Activities:
Army - GL, CR, MI, CR4, AR
Navy - AS, YD, OS
DLA - GS, IS
Air Force - 99

Preparing Activity:
Air Force - 11

Project No. 9320-0032

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
		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
Perfluorcarbon	KALREZ	FFKM	-	-
		5 to 10 Years		
[1]Butadiene/ acrylonitrile	Nitrile, NBR	NBR	BF, BG, CH	SB
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		
		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, poly-isoprene	Natural, pale crepe	NR	AA	RN
Cis 1, 4, poly-isoprene	Synthetic natural	IR	AA	RN
[2]Polyester urethane	Urethane	AU	-	-

[1]See *table II* through *VIII*.
[2]Some polyester urethanes have very poor resistance to water and humidity.

TABLE II. Military specifications.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-17		Cables, Radio frequency; Coaxial, Dual Coaxial, Twin Conductor, & Twin Lead:			
		Core Dielectric			
		Types D, E and H	-	-	3
		Type J	IIR	-	10
		Type L		-	20
		Jacket:		-	
		Type IV	CR	-	8
		Type VI	Q	-	20
		Type VIII	CR	-	8
MIL-G-432	Inactivated 1998	Gasket Nonmetallic, Synthetic Rubber		NBR	3
MIL-C-442	Inactivated 1997	Cable, (Wire), Two Conductor, Parallel (Ripcord)			
		Types IV, V and VI	SBR	-	3
MIL-L-741	Cancelled 1991	Leads, Electrical, Arc Welding (see *J-L-2744*)	SBR	-	3
MIL-O-836	Cancelled 1995	Overshoe, Rubber (Man's, 5 Buckle Type)			
		(see *A-A-50362*)	NR or SYN[3]	-	3
		Type I and II			
MIL-C-882		Cloth, (Cotton Duck), Laminated, Synthetic Rubber Impregnated, Oil Resistant			
		Class I	CR	-	5
		Class II	NBR	-	3
MIL-PRF-900		Rubber Gasket Material, 45 Durometer Hardness	SBR	-	3

NOTES:

[1]If no elastomer is listed, none is required by the specification.
[2]1f no elastomer is listed, the elastomer commonly used is unknown.
[3]SYN - synthetic (for other abbreviations see Table I).

TABLE II. Military specifications (cont'd).

Number	Status	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 (see *MIL-C-24643*)	SYN & CR	-	5
		Type DHOF	IIR & CR	-	8
		Type DSS	SYN & CR	-	5
		Type DLT	NR & CR	-	5
		Type FSCF	IIR & CR	-	8
		Type FHOF	IIR & CR	-	8
		Type FSS	SYN & CR	-	5
		Type JAS	IIR & CR	-	8
		Type MCSC	SYN & CR	-	5
		Type MCOS (see *MIL-C-24643*)	CR	-	8
		Type MSS	SYN & CR	-	5
		Type SDU	IIR & CR	-	8
		Type SSF (see *MIL-C-24643*)	SYN & CR	-	5
		Type TCOP (see *MIL-C-24643*)	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	Cancelled 1992	Gasket Material, Synthetic Rubber (For Bolted Steel & Aluminum Tanks) (see *MIL-R-6855*)			
		Type I	-	CR	8
		Type II	-	NBR	3
MIL-PRF-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	Cancelled 1987	Rubber Sheet Packing, Solid, Wire Cloth Inserted Symbol 2354 (no superseding document)	-	SBR	3

NOTES:

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

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-R-1832	Cancelled 1997	Rubber Band, Parachute Suspension Line			
		Type I (no superseding document)	NR	-	3
MIL-T-1956		Tarpaulin, Waterproof, Special Purpose, 10 Feet Long by 8 Feet Wide			
		All Classes	-	-	3
MIL-C-2486	Inactivated 1997	Cable, Special Purpose, Electrical WM-46/U	SBR	-	3
MIL-P-2693	Cancelled 1986	Packing Material, Cold Storage Door Gasketing, Nonwatertight (no superseding document)			
		Type A	-	CR	8
		Type B	-	NR (core)	2
MIL-J-2829	Cancelled 1986	Joint Sealing Packing (no superseding document)			
		Types I & II - Classes 1 & 2	-	CR	8
MIL-B-2885	Cancelled 1995	Boots, Firemen's (see *A-A-50371*)	NR or SYN		3
MIL-P-2911	Cancelled 1993	Packing Assembly, Hydraulic, Conical & V Types (no superseding document)	-	-	3
MIL-PRF-2912		Synthetic Rubber Compound, Acid & Oil Resistant (For Lining Battery Compartments on Submarines)			
		Class 1 - Types I & II	CR	-	5
		Class 2 - Types I & II	NBR	-	3
MIL-D-2921	Cancelled 1988	Disks, Rubber (Cellular, Hard) (no superseding document)			
		Type A	Reclaim	-	3
		Type B - Class a	SBR	-	3
		Type B - Class b	NBR	-	3
MIL-G-3036	Cancelled 1998	Grommets - Elastic, Hot-Oil & Coolant-Resistant (see *NASM 3036*)		NBR	3
MIL-R-3065		Rubber, Fabricated Products (see *MIL-STD-417*)			
MIL-DTL-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	Cancelled 1986	Diaphragms, Synthetic Rubber	-	-	3
MIL-I-3190		Insulation Sleeving, Electrical, Flexible, Coated, General Specification for			

NOTES:

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

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-3432		Cable, (Power and Special Purpose) and Wire, Electrical (300 and 600 volts)			
		Class C	SBR	-	3
		Class 0		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			
		Grade B		Q	20
		Grade C		CSM	10
		Grade D		Q	20
MIL-R-3842	Cancelled 1993	Rubber Stamp Kit, Food Inspection (no superseding document)	-	-	3
MIL-C-3849	Inactivated 1991	Cord, Electrical (Tinsel) (See *MIL-I-3930*)			
MIL-H-3868	Cancelled 1994	Hose Assemblies, Nonmetallic: Grease Gun, High & Low Pressure (see *SAE-J516 & J517*)	-	-	3
MIL-C-3885	Inactivated 1999	Cable Assemblies & Cord Assemblies, Electrical (For Use in Electronic, Communication & Associated Electrical Equipment)	NR or SYN (jacket)	-	3
MIL-I-3930	Inactivated 1999	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

NOTES:

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

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-H-4497	Cancelled 1996	Hose, Cotton, Rubber Lined, Water, Braided Construction With Couplings (no superseding document)			3
MIL-H-4536	Cancelled 1966	Hose, Rubber Bromochloromethane Resistant	-	-	3
MIL-B-4792	Inactivated 1997	Bumpers, Rubber Duplex Round			
		Type I		SBR (core)	3
		Type II	*MIL-R-6130*, Type 11, Grade A (core), (superseded by *SAE-AMS-R-6130*)		3
MIL-I-4997	Inactivated 1997	Insulating & Jacketing Compounds for Use in Cords, Cordages & Cables			
		Insulation	NR	-	3
		Jacket	CR	-	8
MIL-R-5001	Cancelled 1998	Rubber; Cellular Sheet Molded & Hand-built Shapes; Latex Foam (see *SAE-AMS-R-5001*)			
		Composition 1	NR	-	3
		Composition 2	NR	-	3
MIL-T-5014		Inner Tube, Pneumatic Tire, Aircraft			5
MIL-PRF-5041		Tires, Pneumatic, Aircraft		NR & SYN	5
MIL-C-5136		Cable, Power, Electrical, Polychloroprene Sheathed, Buna Compound Insulated	SBR (insulation)		5
MIL-B-5423		Boots, Dust & Water Seal (For Toggle Pushbutton Switches & Rotary Actual Parts), General Specification For All Types & Styles	Q		20
MIL-A-5498	Inactivated 1996	Accumulators, Aircraft Hydropneumatic Pressure			
		Type I	-	NBR	3
MIL-T-5579	Cancelled 1987	Tanks; Self-Sealing Oil Aircraft (no superseding document)	-	NBR	8
MIL-C-5651		Cord; Elastic, Exerciser & Shock Absorber for Aeronautical Use			
		All Types	NR	-	3
MIL-W-5664		Webbing, Textile, Elastic, Cotton	-		3
MIL-C-5756		Cable & Wire, Power, Electric, Portable	NR or SYN	-	8
MIL-DTL-6000		Hose, Rubber (Fuel, Oil, Coolant Water and Alcohol)	-	-	4
MIL-R-6130	Cancelled 1998	Rubber, Cellular, Chemically Blown (see SAE-AMS-R-6130)			
		Grade A - Types I & II Conditions Soft, Medium & Firm	-	CR	5
		Grade B - Types I & II Conditions Soft, Medium & Firm	-	SBR	3
		Grade C - Types I & II Conditions Soft, Medium & Firm	-	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.

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life, Years
MIL-DTL-6000		Hose, Rubber (Fuel, Oil, Coolant Water and Alcohol)	-	-	4
MIL-R-6130	Cancelled 1998	Rubber, Cellular, Chemically Blown (see SAE-AMS-R-6130)			
		Grade A - Types I & II Conditions Soft, Medium & Firm	-	CR	5
		Grade B - Types I & II Conditions Soft, Medium & Firm	-	SBR	3
		Grade C - Types I & II Conditions Soft, Medium & Firm	-	NR	3
MIL-C-6166	Cancelled 1993	Cord: Headset-Microphone, CX-1301/AR (no superseding document)	-	-	3
MIL-C-6183	Cancelled 1998	Cork and Rubber Composition Sheet, for Aromatic Fuel and Oil Resistant Gaskets (see AMS-C-6183)			
MIL-B-6362		Boots, Extreme Cold Weather, N-1B	NR	-	5
MIL-H-6399	Cancelled 1999	Hose, Rubber, Wire-Wound, Synthetic, Ice Eliminating System (use SAE-AS-6399)	-	-	3
MIL-H-6439		Hose, Rubber, Aircraft Paint Finish Remover	-	-	3
MIL-DTL-6615		Hose Assemblies, Rubber, Fuel and Water with Reattachable Couplings, Low Temperature	CR	-	5
MIL-N-6748	Cancelled 1996	Nipple, Electrical Terminal (no superseding document)	Q		20
MIL-R-6855	Cancelled 1998	Rubber; Synthetic, Sheets, Strips, Molded or Extruded Shapes (see *SAE-AMS-R-6855*)			
		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	Cancelled 1950	Rubber, Anodic		NR	3
MIL-H-7365		Hose, Air Duct, For Ground Heaters			3
MIL-M-7585	Cancelled 1983	Mask, Oxygen (use *MIL-M-27274*, Inactivated 1996)	Q	-	20
MIL-C-7637	Cancelled 1988	Cloth, Coated, Chloroprene, Fiberglass Types I & II (see *AMS 3783*)	CR	-	5
MIL-H-7938	Cancelled 1992	Hose, Rubber, Flame-Resistant (no superseding document)	NBR (Tube)		4
MIL-C-7966	Cancelled 1999	Cloth, Coated, Rubber, Nylon Base Varieties S & P	NR or SYN	-	3
MIL-C-8068		Cloth, Coated, Nylon, Rubber-Coated, Fuel Resistant			
		Type I	-	NBR	3
		Type II	-	-	3
MIL-C-8603	Inactivated 1997	Clamps, Loop Type, Support			
		Type II, Classes A & B		NBR	3
		Type III	Q	-	20
		Type IV, Classes A & B	CR	-	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.

TABLE II. Military specifications (cont'd)

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-W-8777	Inactivated 1998	Wire, Electrical, Silicone-Insulated Copper, 600 Volt, 200 C	Q	-	20
MIL-A-8897	Cancelled 1987	Accumulators, Hydraulic, Cylindrical 3,000 psi			
		Aircraft, Type II Systems (see *MIL-A-5498*, Inactivated 1996)	-	-	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	Inactivated 1997	Cables, Special Purpose, Electrical (Multipair Audio Frequency)	SBR	-	3
MIL-F-10135	Cancelled 1995	Faceblanks, Field Protective Mask, Natural Rubber, General Specification (no superseding document)	NR	-	3
MIL-C-10351	Cancelled 1999	Cloth, Laminated & Coated for Waterproof Containers			
		Types I & II	NR or SYN		3
MIL-C-10369	Inactivated 1998	Cables, Telephone, Field, For Rapid Payout (MX-306 A/G)		SBR	3
MIL-C-10392	Inactivated 1997	Cables, Electrical (Audio, Miniature)	SBR	-	3
MIL-C-10797	Cancelled 1998	Cloth, Coated, Glass, Silicone Rubber-Coated (see *A-A-55280*)	Q	-	20
MIL-H-10868	Cancelled 1995	Hose Assembly, Rubber, Utility, Gasoline (1/4 Inch Inside Diameter) (no superseding document)	ECO (Tube)	-	5
MIL-B-11040		Belt, V: Engine Accessory Drive	NR or SYN	-	6
MIL-C-11097	Cancelled 1991	Cable, Telephone (W-50-A) (no superseding document)	SBR (insulation)	-	5
MIL-C-11390		Cloth, Laminated: Cotton, Balloon, 3-Ply, Air Retaining, Chloroprene	CR	-	5
MIL-PRF-11588		Hose Assembly, Rubber, Synthetic, Liquid Petroleum Fuels, Dispensing Collapsible			
		All Types	NBR (Tube)	-	3
MIL-P-11719	Cancelled 1997	Packing, Preformed; Pneumatic Hose Couplings, Universal (no superseding document)	CR	-	5
MIL-DTL-11891		Track Shoe Assemblies, Track Shoe Pads and Track Shoe Sets, Vehicular Rubberized			
		Types I & II		SBR NR or BR	3
MIL-C-11997	Inactivated 1999	Cord Assembly, Electrical CX-3151()/U Retractile	NR (insulation)	-	3
MIL-S-12100	Cancelled 1996	Shock Mounts M-447, M-448, M-449 & Bracket FT-512 (no superseding document)	NR or CR	-	3
MIL-C-12189		Cloth, Coated, Butyl Coated, Toxicological Agents, Protective			
		All Types & Classes	IIR	-	10

NOTE:

[1]If the elastomer is not listed, none is required by the specification.
[2]1f the elastomer is not listed, the elastomer commonly used is unknown.

TABLE II. Military specifications (cont'd)

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-G-12223		Gloves Toxicological Agents Protective	IIR	-	10
MIL-E-12397		Eraser, Rubber-Pumice (For Testing Coated Optical Elements)		NR	3
MIL-P-12420	Cancelled 1996	Plastic Material Cellular, Elastomeric All Types & Classes (no superseding document)	Vinyl, NBR or other rubber	-	3
MIL-C-12423	Inactivated 1997	Cable, Telephone WD-33/U	-	SBR (insulation)	5
MIL-T-12459	Cancelled 1997	Tire, Pneumatic: For Military Ground Vehicles (see *SAE-J2014*)	NR or SYN	-	5
MIL-M-12863	Cancelled 1996	Mounts, Vibration (Vibration Mounts MT-1177 ()/U, MT-1178 ()/U & MT-1179 ()/U (no superseding document)	NR or CR	-	3
MIL-W-13075	Inactivated 1991	Wire, Electrical (Wire W-124, W-125 & W-128)	SBR	-	3
MIL-C-13077	Inactivated 1997	Cable, Special Purpose, Electrical (Cordage CO-212 & Cable, Special Purpose, Electrical WD-32/U)	SBR	-	3
MIL-W-13169	Inactivated 1997	Wire, Electrical (For Instrument Test Leads)	SBR	-	3
MIL-G-13210	Inactivated 1996	Gaskets, Rubber	NR or SYN	-	3
MIL-C-13273	Inactivated 1997	Cord, Electrical (Retractile, 2, 3 & 4 Conductor, WD-9/U, WT-2/U, WF-4/U	NR (insulation)	-	3
MIL-DTL-13444		Hose Rubber: & Hose Assembly Rubber: Fuel & Oil (For Automotive Application)			
		Types I & II	-	NBR (Tube)	3
MIL-C-13486		Cable, Special Purpose Electrical: Low- Tension, Heavy Duty, Single Conductor & Multiconductor			5
		Types I & II		CR (Jacket)	
MIL-DTL-13531		Hose, Rubber & Hose Assemblies: Hydraulic, Flexible	NBR (Tube)	-	3
MIL-PRF-13719		Hose Assembly, Rubber; Hydraulic Brake	SBR or CR (Tube)	-	3
MIL-C-13892	Inactivated 1991	Cable, Telephone (Flexible)(Cords & Cordage, Multipair)	NR or SBR	-	3
MIL-C-14055	Inactivated 1999	Cup, Hydraulic Brake Actuating Cylinder: Synthetic Rubber	SBR	-	3
MIL-R-14328	Cancelled 1997	Rubber, Synthetic, Medium Soft, General Purpose Gasket Material (For Extreme Climatic Conditions) (no superseding document)		SBR	3
MIL-R-14364	Cancelled 1996	Rollers, Rubberized, Pneumatic: Bridge Erection (no superseding document)	CR		5
MIL-C-14366	Cancelled 1999	Cloth, Coated Nylon Twill, One Side Coated	NBR		3
MIL-T-14398	Cancelled 1991	Tanks, Fabric Collapsible: Water, Nylon Rubber-Coated (See *MIL-T-53048*, Inactivated 1998)	EPDM		5

NOTES:

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TABLE II. Military specifications (cont'd)

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-P-14401	Cancelled 1993	Pads, Cushioning; Personnel-Protection, Vehicular (see *A-A-52430*)			
		Types I & II, Class CS	-	SBR	3
		Types I & II, Class VS	Vinyl	-	3
		Type I, Class FR	-	NR or CR	3
MIL-C-14505		Cloth, Nylons Polychloroprene Coated (For Pneumatic Floating Equipment)	CR	-	5
MIL-I-14511	Cancelled 1992	Insulation Sheet, Cellular, Plastic, Thermal (see *A-A-52404*)	-	-	3
MIL-P-14574	Cancelled 1997	Packing (Wiper Ring), Synthetic Rubber Cloth Insertion (no superseding document)	-	CR or NBR	5
MIL-C-14625	Cancelled 1990	Curing Bags & Tubes, Tire Repair, Recapping and Retreading (no superseding document)			
		Type I, Classes 1 & 2	NR (no marking)	-	3
		Type II; Classes 1 & 2	IIR (blue stripe)	-	10
MIL-S-15058	Cancelled 1987	Rubber, Shaft Covering Materials (For Marine Propeller Shafts) (no superseding document)			
		Types I, II & III			
		Class I	CR	-	5
		Class II	SBR	-	3
		Class III	NBR	-	3
MIL-H-0015100	Cancelled 1997	Hose, Rubber, Wire-Reinforced (Oil & Gasoline, Suction & Discharge Smooth-Bore) (no superseding document)			
		Types A & B	NBR (Tube)	-	3
MIL-C-15104		Cloth, Coated, Fire Resistant, Berth & Bedding Cover	-	-	3
MIL-H-15217	Cancelled 1997	Hose, Rubber, Sandblast (see *ISO 3861*)	NR or SYN (Tube)	-	3
MIL-DTL-15562		Matting or Sheet, Floor Covering Insulating for High Voltage Application	SYN or Reclaim	-	3
MIL-PRF-15624		Rubber Gasket Materials 50 Durometer hardness (Maximum)			
		Class I	CR	-	8
		Class II	SBR	-	3
		Class III	NBR	-	3
DOD-P-15816	Cancelled 1989	Parts, Hard Rubber for Use with Submarine Storage Batteries (no superseding document)	NR or SYN	-	10
DOD-P-15817	Cancelled 1989	Parts, Synthetic Rubber, For Use with Batteries or In Battery Compartments of Submarines (no superseding document)	-	SBR	3

NOTES:

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

TABLE II. Military specifications (cont'd)

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-15987		Cable Assemblies, Power, Electrical (With Grounding for 440-Volt Portable Equipment)	IIR	-	8
MIL-R-16402	Cancelled 1985	Raincoat, Man, Nylon Rubber Coated, Green	NBR	-	3
MIL-I-16562	Cancelled 1996	Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form) (no superseding document)	-	-	3
MIL-C-16839		Cable, Special Purpose, Electrical (Underwater Use)	NR	-	3
MIL-R-16920	Cancelled 1990	Rubber Facing (For Rammer Heads) (no superseding document)	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-DTL-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	CR or NBR	-	3
		Types 6E150 & 6E100	NR	-	3
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-G-17927		Gasket, Asbestos-Metallic Cover, Rubber Core	-	-	3
MIL-W-17965	Cancelled 1987	Webbing, Textile, Knitted, Nylon, Elastic, 4-1/4 Inch Width (no superseding document)	NR	-	3
MIL-I-18057	Cancelled 1986	Insulation Sleeving, Electrical, Flexible, Glass Fiber, Silicon Rubber Treated (see *MIL-I-3190*)	Q	-	20
MIL-H-18158	Inactivated 1999	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	CR	-	3
		All Types			
MIL-E-18648	Cancelled 1955	Eye Guards, Rubber, for Optical Instruments (no superseding document)	-	-	3

NOTES:

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TABLE II. Military specifications (cont'd)

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-B-18799	Cancelled 1977	Bulbs, Flush, Water Closet Tank (no superseding document)	-	NR or SYN	3
MIL-C-19002		Cloth, Coated, & Tape, Coated Cloth Chloroprene on Nylon Pneumatic Life Preserver			
		Type I	CR	-	5
MIL-M-19018	Cancelled 1987	Mats, Floor, Rubber or Plastic, Light Gray, For Shipboard Shower Stalls (no superseding document)	-	-	3
MIL-P-19152	Inactivated 1998	Packings, Hydraulic, High Pressure (for Hydropneumatic Systems)	-	NBR	5
MIL-I-19254	Cancelled 1974	Insulation Blanket, Electrical, 20,000 Volts Rating, with, Eyelets (see *ASTM D1048*)	NR or SYN	-	3
MIL-M-19379		Mounts, Resilient, Mare Island Types, Types 11M15, 11M25, & 10M50	CR or NBR	-	3
MIL-M-19417	Inactivated 1997	Mask, Oxygen & Smoke, Full Face	-	-	3
MIL-C-19635		Cloth, Coated, Non-Slip Table Covering	-	-	3
MIL-H-19639	Cancelled 1956	Hose Assemblies, Rubber, Paint Spray Equipment (see *ZZ-H-521*)			
		Class I	CR	-	8
		Class II	SBR or NBR (Tube)	-	3
		Class III	CR (Cover)	-	5
MIL-C-19654	Cancelled 1989	Cable, Telephone; Submarine (no superseding document)	SBR or SYN (insulation)	-	5
MIL-C-19699		Cloth, Coated (Nylon Taffeta)	CR	-	5
MIL-PRF-19759		Cloth, Waterproof	CR	-	5
MIL-G-19769	Inactivated 1995	Gaskets, Synthetic Rubber, Oil Resistant, Slide Valve (For 21-Inch Submerged Torpedo Tubes)	NBR	-	3
MIL-C-19787	Inactivated 1998	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	Cancelled 1996	Packing, V Ring (no superseding document)	-	NBR	3
MIL-H-19992	Cancelled 1975	Hose Assemblies, Flexible (Pneumatic), High Pressure Oil Resistant (no superseding document)	-	NBR	3
MIL-G-20078		Gaskets, Metal Inserted Rubber, Armored Hatch			
		Type B	MIL-R-900	SBR	3

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TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-PRF-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-DTL-20176		Hose & Hose Assembly, Rubber, Non-collapsible, Smooth Bore, Light Weight, Sewage Discharge and Oily Waste Discharge		NBR	3
MIL-B-20278	Inactivated 1995	Bladders, Floation (Navy)	NR or SYN	-	3
MIL-PRF-20696		Cloth, Coated, Nylon Waterproof			
		Types I & II, Classes 1 & 3	CR	-	5
		Cloth, Coated, Nylon Raft Bottom	NR	-	3
MIL-R-21252		Rubber Sheet, Solid, Synthetic, Shipboard Water Evaporator Gasketing	SBR	-	3
MIL-S-21558	Inactivated 1995	Seals, Oil, Plain or Plain Encased	-	NBR	5
MIL-G-21569		Gaskets, Cylinder Liner Seal Synthetic Rubber			
		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	Cancelled 1996	Synthetic Rubber Compound, Butadiene-Styrene Type, Ozone Resistant, For Low Temperature Service (no superseding document)	SBR	-	3
MIL-W-21985	Cancelled 1998	Wheel, Cushion Tread (Semi-Pneumatic) for Mobile Ground Support Equipment (see *SAE-AS21985*)	-	-	5
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			
		Type A & B	NBR (Tube)	-	3
MIL-M-22322	Cancelled 1964	Mounts, Resilient, Shear (For Use in Shipping Containers) (no superseding document)	NR or SYN		3
MIL-C-22524	Cancelled 1968	Cloth, Coated, Fire, Water, Mildew & Weather Resistant (see *MIL-C-43006*)	CSM	-	10
MIL-DTL-22706		Duct and Scuff Cover, Pneumatic, Flexible	-	-	3
MIL-C-22731	Cancelled 1964	Cables, Controlled Mine (no superseding document)	SBR (insulation)		3

NOTES:

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TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-23020	Inactivated 1997	Cable, Coaxial (For Submarine Use)	CR (Jacket)	-	5
MIL-DTL-23053/1	Cancelled 1999	Insulation sleeving, Electrical, Heat Shrinkable, Polychloroprene, Flexible (use SAE-AMS-DTL-25053/1)	CR		5
MIL-DTL-23053/10	Cancelled 1999	Insulation sleeving, Electrical Heat Shrinkable Silicone Rubber Flexible (use SAE-AMS-DTL-25053/10)	Q	-	20
MIL-C-23070		Cloth, Laminated, & Tape Coated Cloth Polyisoprene, Natural or Synthetic on Nylon	NR or IR	-	3
MIL-R-23074	Inactivated 1998	Rubber Tile, Rubber-Air-Lead-Type (RAL)	CR	-	8
MIL-I-23578	Cancelled 1983	Insulation Hose, Electrical & Insulation Hoods, Insulator (see *ASTM D1049 & D1050*)	NR or SYN	-	3
MIL-G-23621	Cancelled 1992	Guard, Splash, Wheel (see *A-A-52402)*	NR or SYN		3
MIL-G-23652	Cancelled 1984	Gasket & Packing Material, Petroleum & Phosphate Ester Fluid Resistant (see *MIL-R-83248*, Inactivated 1997)			
		Types I & II		FKM	20
MIL-C-23962	Cancelled; no replacement	Cloth Coated & Laminated Polychloroprene on Nylon & Tape Polychloroprene, Unsupport	CR		5
MIL-G-23983	Cancelled 1999; no replacement	Gasket & Packing Materials Oil Resistant Rubber, Access Hull Applications	-	CR	5
MIL-H-24520	Cancelled 1989d	Hose & Hose Assembly for Water Cooling of Electronic Equipment (no superseding document)	EPDM		5
MIL-H-24580		Hose Assemblies Synthetic Rubber, Noncollapsible, Fire Fighting			
		Types A & B	EPDM		5
MIL-H-25579		Hose Assembly, Terafluoroethylene, High Temperature Medium Pressure, General Requirements for	IIR (Cover)		10
MIL-R-25897	Cancelled 1970	Rubber, Fluorocarbon Elastomer, High Temperature Fluid Resistant (see *MIL-R-83248*, Inactivated 1997)	FKM	-	20
MIL-D-26124	Cancelled 1990	Duct and Duct Assembly, Pneumatic, Flexible (see *MIL-DTL-22706*)	-	-	3
MIL-PRF-26385		Hose, Oxygen and Pressurization, Ozone Resistant	-	-	3
MIL-PRF-26514		Polyurethane Foam, Rigid or Flexible for Packaging, Type I	AU	-	3
MIL-DTL-26521		Hose & Hose Assembly, Nonmetallic, Fuel, Collapsible, Low Temperature, With Non-reusable Couplings	CO, CR	-	8
MIL-H-26633		Hose Assembly, Polytetrafluoroethylene, Oxygen	CR (Cover)	-	8
MIL-DTL-26666		Hose Assembly, Pneumatic, High Pressure	CR (Cover)	-	5
MIL-C-26712		Cloth, Coated, Nylon, Chloroprene-Coated	CR	-	5
MIL-C-26861	Cancelled 1995	Cushioning Material, Resilient Type, General *	-	-	3
MIL-DTL-26894		Hose Assembly, Rubber, Gasoline, Refueling, Low Temperature	-	NBR	3

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*Future acquisition see: *A-A-59135* Cancelled 1997, *PPP-C-850, PPP-C-1120, PPP-C-1752, PPP-C-1797, MIL-PRF-26514*, or *MIL-PRF-83671*

TABLE II. Military specifications (cont'd).

Number	Status	itle	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-27212		Cable, Power, Electrical, Airport Lighting Control	NR (insulation)	-	3
MIL-M-27274	Inactivated 1996	Mask, Oxygen, MBU-5/P	Q	-	20
MIL-S-27332	Inactivated 1997	Seat Cushion Insert, Polyurethane Foam Plastic, General Spec For	AU, EU	-	3
MIL-C-27347	Cancelled 1988	Cloth, Coated, Glass, Aluminum Face, Silicone Rubber Back (see *AMS 36730*)	Q	-	20
MIL-H-27508	Cancelled 1978	Hose Assembly, Rubber GRK-6/E32R-1 (see *MIL-DTL-26521*)	NBR (Tube)	-	3
MIL-DTL-27516		Hose and Hose Assembly, Nonmetallic, Suction and Discharge	NRB (Tube)		8
MIL-PRF-28523		Hose Assembly, Rubber, Hydraulic Pneumatic, Jetting (400 psi Working Pressure)	-	-	3
MIL-H-28596	Cancelled 1998	Hose Assembly, Rubber, Wire Reinforced 200 psig Saturated Steam Service (see *A-A-59159*)	-	IIR, CR, EPDM	10
MIL-DTL-29210		Hose Assembly, Rubber, Metal Lined, Wire Reinforced, 250 psig, Standard and Superheated Steam Service	IIR or EPDM (Tube)	-	5
MIL-T-36966	Cancelled 1990	Tubing, Nonmetallic, Rubber (see *A-A-53848*)	NR	-	3
MIL-C-38149	Cancelled 1997	Cloth, Coated, Chlorobutyl, Metra-Aramid Fuel & Oxidizer Resistant (no superseding document)	IIR	-	10
MIL-S-40000	Cancelled 1979	Shoes, Gymnasium (men's & Women's) (use *MIL-S-43961*, cancelled 1989) (see *A-A-50137*)	NR (outersole)	-	3
MIL-M-40024	Cancelled 1990	Mattress, Bed: Foam-Rubber, Ambulance Stretcher (see *A-A-51305*)	NR	-	3
MIL-S-40043		Soles, Rubber, Shoe			
		Classes 1, 2 and 5	NR or SYN	-	3
		Classes 3, 4 and 6	NR or SYN	-	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
MIL-C-43285		Cloth Coated (Chloroprene Base Coated, Chlorosulphonated Polyethylene Top Coated)	CR & CSM	-	10

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TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-C-43303		Cord, Elastic, Cotton	NR	-	3
MIL-C-43379	Cancelled 1969	Cover Hawk Missile Transport & Launcher (use *MIL-DTL-26521*)	CR or CSM	-	10
MIL-PRF-43473		Cloth Coated Nylon Polyurethane Coated	AU or EU	-	3
MIL-C-43619	Cancelled 1987	Cloth, Netting, Cotton, Elasticized, Raschel Knit	NR or SYN	-	3
MIL-C-43656	Cancelled 1999	Cloth, Coated, Polyester, Silicone Rubber Coated (no superseding document)	Q	-	20
MIL-S-43961	Cancelled 1989	Shoes, Gymnasium, Heavy Duty (see *A-A-50137*)	NR or SYN	-	
MIL-M-43968		Mattress Pneumatic, (Insulated)			3
		Classes 1 & 2	NR or SYN	-	
MIL-S-45005	Cancelled 1995	Seal, Plain & Seal, Plain, Encased: Fluid, Radial Single & Multiple Lip Seal (see *A-A-52524*)	-	NBR	5
MIL-R-45036	Cancelled 1996	Rubber, Hard (Ebonite) Natural or Synthetic, Sheet, Strip, Rod, Tubing & Molded Parts (no superseding document)			
		Grades A, B, C & D	NR or SYN	-	20
MIL-B-45326	Cancelled 1993	Boot, Dust & Moisture Seal: Hydraulic Brake Cylinder, Synthetic Rubber (see *A-A-52410*)	-	SBR	3
MIL-M-45907	Cancelled 1994	Mount, Shipping Container, Resilient: Shock & Vibration Damping (see *A-A-52486*)	NR	-	3
MIL-H-46089	Cancelled 1999	Rubber Sponge, Silicone (Closed Cell) (use ASTM-D1056)	Q	-	20
MIL-W-46759	Cancelled 1974	Wheel, Solid, Rubber, Tire, Rebuild of (See *MIL-DTL-3100*)	SYN	SBR	3
MIL-PRF-46846		Rubber, Synthetic, Heat Shrinkable			
		Type I	CR	-	5
		Type II	Q	-	20
		Type III	FKM	-	20
		Type IV	IIR	-	5
		Type V	EPM	-	20
		Type VI	EPDM	-	20
MIL-B-50015	Inactivated 1996	Bulb, Aspirator	NR	-	3
MIL-F-50070	Cancelled 1995	Faceblank, C17 (no superseding document)	NR	-	3
MIL-H-51059	Cancelled 1996	Hose, Fuel, Flame Thrower, M8 (no superseding document)	NBR (Tube)	-	5
MIL-F-51109	Inactivated 1996	Faceblank, Protective Mask C12R4	NR	-	3
MIL-H-52079	Cancelled 1996	Hose, Preformed: Semi-Flexible Reinforced (see *A-A-52546*)	-	-	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-DTL-52471		Hose & Hose Assemblies, Rubber, Hydraulic Pressure Type (Gen. Spec. for)	NBR (Tube)	-	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.

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-H-52544	Cancelled 1993	Hose Rubber, Oil Suction, Wire Reinforced (see *A-A-52413*)	CR (Tube) NBR (Cover)	-	3
MIL-B-52761	Cancelled 1983	Belting, Flat: Conveyor, Rubber Industrial Synthetic Reinforcement (no superseding document)	NR-SYN	-	3
MIL-C-55036		Cable, Telephone, WM-130 ()/G	CR (Jacket)	-	5
MIL-C-55040		Cable, Special Purpose, Electrical (Retractile)l	-	-	5
MIL-C-55479	Cancelled 1967	Cable, Assembly CX-162 & CX-163	-	CR	8
MIL-C-55480	Cancelled 1984	Cable, Telephone WC-534 (no superseding document)	-	CR	8
MIL-C-55483		Cable Power Electrical Flat Three Conductor	CR	-	8
MIL-T-62118	Cancelled 1986	Tread, Rubber, Strip Form Stock For Retreading Pneumatic Tires (see ZZ-T-416, cancelled 1995) (see *A-A-52518*)	NR, IR, SBR BR	-	3
MIL-T-62129	Cancelled 1997	Tire, Pneumatic, For Truck, Logistical (no superseding document)	-	-	3
MIL-PRF-62136		Wheel & Tire Assemblies, Foam Inflated Low Speed Highway & Off-Road	-	-	3
MIL-T-62157	Cancelled 1992	Tire, Pneumatic, With Flap, 1400-20 Run Flat (no superseding document)	-	-	3
MIL-R-81090	Inactivated 1995	Rubber, Electrically Conductive Fuel Resistant (no superseding document)	-	NBR	3
MIL-H-81581	Inactivated 1997	Hose Assembly, Breathing Oxygen & Air	Q	-	20
MIL-H-82127	Inactivated 4/5/99	Hose Assembly, Rubber (Synthetic): Fuel, Discharge, Collapsible	SYN	-	3
MIL-H-82142	Cancelled 1985	Hood, Rain, Woman's: Nylon, Rubber Coated Green (no superseding document)	NBR	-	3
MIL-R-82190	Cancelled 1985	Raincoat, Woman's, Nylon, Rubber Coated Green (see *MIL-C-29381*)	NBR	-	3
MIL-G-82242		Glove Shells, Radioactive Contaminants, Protective	NR	-	3
MIL-C-82255	Cancelled 1999	Cloth, Coated, Synthetic Rubber (Nitrile & Polychloroprene) (no superseding document)			
		Types I, II, IV	CR	-	5
		Type III	NBR	-	3
MIL-S-82258	Cancelled 1988	Swim Fins, Rubber (no superseding document)	NR or IR	-	3
MIL-T-82270	Cancelled 1989	Trousers, Wet Suit (Chloroprene Foam) (no superseding document)	CR	-	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.

TABLE II. Military specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-M-82272	Cancelled 1989	Mittens, Wet Suit (Chloroprene Foam) (no superseding document)	CR	-	3
MIL-C-83008	Cancelled 1975	Cloth, Coated, Cotton & Nylon, Polyurethane (Microporus) Coated (no superseding document)	AU or EU	-	3`
MIL-R-83285	Inactivated 1997	Rubber, Ethylene-Propylene, General Purpose	EPDM	-	5
MIL-R-83322	Cancelled 1988	Rubber, Carboxy-Nitroso; Nitrogen Tetroxide (N204) Resistant (no superseding document)	SYN	-	5
MIL-C-83398	Cancelled 1988	Cloth, Coated, Stretch, Polychloroprene Knitted Nylon (no superseding document)	CR	-	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 III. Military standards

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
MIL-STD-417	Cancelled 1995	Classification System and Tests for			
		Solid Elastomeric Materials			
		Rubber Compositions, Vulcanized General			
		(no superseding document)			
		Purpose Solid	NR	-	3
		Class RN with Suffix A	-	IIR or SBR	5
		Class RS with Suffices A_1 C_1	-	T	20
		Class SA	-	NBR	3
		Class SB	-	CR	8
		Class SC	-	Q	20
		Class TA	-	ACM	20
		Class TB			
MIL-STD-670	Cancelled 1995	Classification System & Tests for			
		Cellular Elastomeric Materials (no superseding document)			
		Type R - Styles C, E, 0 & U	-	NR or SBR	3
		Class SB - Styles E & 0	-	NBR	3
		Class SC - Styles E & 0	-	CR	3
		Types T - Styles E & 0	-	Q	20
		Types U - Styles C & U	-	AU or EU	3
		Type V - Styles C, E, 0 & U	-	Vinyl	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.

TABLE IV. Federal specifications.

Number	Status	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 (Electrical, 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	CR (Outer Jacket)	-	3
		Types SF-2 & SFF-2	Q	-	20
J-L-231	Cancelled 1998	Lead, Storage - Battery (see *A-A-59215*)			
		Type II	-	-	3
L-H-520	Cancelled 1998	Hose & Hose Assemblies, (Nonmetallic, Rubber, Plastic) (see *A-A-59270*)	NR or SYN	-	3
L-P-386		Plastic Material, Cellular, Urethane Flexible	AU, EU	-	3
DD-B-599		Bottle, Stopper, Vaccine, Round & Stopper, Bottle, Rubber	-	NR	3
GG-C-846	Cancelled 1958	Cup Set, Polishing, Dental Handpiece (Rubber) (no superseding document)	NR or SYN	-	3
GG-P-655	Cancelled 1996	Printing Set, Rubber Type (see *A-A-2991*)	NR or SYN	-	3
GG-S-727	Cancelled 1953	Stamp Set, Rubber, Anatomical (no superseding document)	-	-	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	Cancelled 1983	Insulation, Thermal, (Flexible Unicellular Sheet & Pipe Covering) (see *ASTM-C-534*)	-	EU, AU	3
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		

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.

TABLE IV. Federal specifications.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
RR-T-650		Tread, Metallic & Nonmetallic, Nonskid			
		Type A	NR or SYN	-	3
TT-1-600		Inking Pad, Rubber Stamp			
		Type III	NR or SYN		
ZZ-B-71	Cancelled 1993	Bags, Politzer (no superseding document)			
		Class A	NR, IIR, CR, or SBR	-	3
		Class B	CR	-	5
ZZ-B-101	Cancelled 1944	Bandages, Rubber (no superseding document)	NR	-	3
ZZ-B-117	Cancelled 1989	Band, Ligature, Dental, Rubber (no superseding document)	NR	-	3
ZZ-B-190	Cancelled 1993	Belt, V, Engine-Accessory-Drive, Minus 40°F (Gen. Spec. For) (see *A-A-52155*)	NR or SYN	-	6
ZZ-B-206	Cancelled 1966	Belting, Flat, Conveyor; Rubber All Types (see *MIL-B-52761*, cancelled - no superseding document)	NR, IIR, CR, or SBR	-	5
ZZ-B-215	Cancelled 1994	Belt, V, Light Duty or Fractional Horsepower (see *A-A-52490*)	NR or SYN	-	6
ZZ-B-220	Cancelled 1968	Belting, V, Adjustable Link (no superseding document)			
		Type I	NR	-	6
ZZ-B-225	Cancelled 1995	Belt, V, Industrial (Multiple Drive) (see *A-A-52160*)	-	-	6
ZZ-B-530	Cancelled 1990	Boots, Knee & Hip (Rubber) (see *A-A-50063*)			
		Type I & II	NR or SYN	-	3
ZZ-B-586	Cancelled 1989	Bags, Ice and Hot Water (see *A-A-50982 & A-A-51294*)	NR, CR, or SBR	-	3
ZZ-B-616	Cancelled 1990	Bowl, Plaster of Paris Mixing (see *A-A-50908*)	NR or SYN	-	3
ZZ-C-101	Cancelled 1988	Catheters, Urethral, Rubber			
		All Types (no superseding document)	NR	-	3
ZZ-C-450	Cancelled 1997	Cloth, Coated (Rubber & Plastic) % Plastic Sheeting for Hospital Use (no superseding document)			
		Type I	NR or SYN	-	3
ZZ-C-766	Cancelled 1993	Cushions, Chair and Stool (see *A-A-2800*)	NR or SYN	-	3
ZZ-C-796	Cancelled 1991	Cushions; Ring, Inflatable (see A-A-54367, cancelled 1992) (no superseding document))	NR or SYN	-	3
ZZ-C-811	Cancelled 1998	Cushion (Underlay), Carpet & Rug Rubber and Synthetic Rubber (no superseding document)			
		Types I & II	NR or SYN	-	3
ZZ-D-800	Cancelled 1987	Dustpan (Rubber) (no superseding document)	NR or SYN	-	10
ZZ-E-661	Cancelled 1986	Erasers, Rubber & Rubber Substitute (see *A-A-132*)			
		Types I, II, III & IV a	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.

TABLE IV. Federal specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
ZZ-F-375	Cancelled 1986	Finger Pads, Rubber (see *A-A-134*)			
		Grade A	NR	-	3
		Grade B	NR or SYN	-	3
ZZ-F-1299	Cancelled 1991	Finger Cot, Surgical Disposable (see *A-A-50855*)	NR	-	3
ZZ-G-100		Gloves, Rubber, Autopsy			
		Class 1	NR	-	3
		Class 2	CR	-	5
ZZ-G-381		Gloves, Rubber, Industrial			
		Type I	NR or SYN	-	3
		Type II & III	-	-	3
ZZ-G-401	Cancelled 1990	Gloves, Rubber (For) Electrical Workers (For Use in Connection with Apparatus or Circuits not Exceeding 5,000 Volts to Ground) (see *ASTM-D120*)	-	NR	3
ZZ-H-130	Cancelled 1958	Heel, Orthopedic, Cast (no superseding document)	NR or SYN	-	3
ZZ-H-141	Cancelled 1995	Heel, Rubber (see *A-A-55204*)			
		Classes 1, 2, 3, 5 & 6	NR or SYN	-	3
ZZ-H-421	Cancelled 1983	Hose and Hose Assembly, Chemical (Industrial & Fire Fighting) (no superseding document)	-	NR	3
ZZ-H-428		Hose Nonmetallic and Hose Preformed, (For The Coolant Systems of Automotive and other liquid Cooled Engines)			
		Class 1		NBR	3
		Class 2		CR	8
		Class 3		EPDM	10
		Class 4		IIR	10
ZZ-H-451	Cancelled 1998	Hose, Fire Woven. Jacketed Rubber or Latex or Rubber Coated Fabric Lined, with Couplings (see *A-A-59226*)	-	-	3
ZZ-H-461	Cancelled 1997	Hose and Hose Assembly, Rubber, Gas (Acetylene, Hydrogen, Air and Oxygen (see *RMA IP-7 & CGA-E1*)			
		All Grades & Types	SBR	-	3
ZZ-H-466	Cancelled 1993	Hose Assembly, Metal, (Rubber Covered), Hydrocarbon Conveying (no superseding document)	NR or SYN	-	3
ZZ-H-500		Hose, Rubber & Hose Assemblies, Rubber Pneumatic (Yarn or Fabric Reinforced)		CR	8
ZZ-H-515	Cancelled 1969	Hose, Rubber (Sleeve, Dredging) (no superseding document)	-	-	3
ZZ-H-521		Hose and Hose Assemblies, Nonmetallic, Spray	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.

TABLE IV. Federal specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
ZZ-H-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	Cancelled 1990	Mats, Floor, Dental-Chair, Rubber (no superseding document)	NR or SYN	-	3
ZZ-M-46	Cancelled 1997	Mats, Floor (Link-Type)			
		Classes 1, 2, 3 & 4 (see *A-A-2854*)	NR or SYN	-	3
ZZ-M-71	Cancelled 1997	Matting, Rubber and Vinyl			
		All Classes & Styles (no superseding document)	SYN or Reclaim	-	3
ZZ-M-81	Cancelled 1984	Matting, Rubber & Plastic (Special Dielectric)			
		Classes A & B (no superseding document)	-	-	3
ZZ-M-85	Cancelled 1990	Matting Floor, Rubber, Sponge Base Anti-Fatigue (no superseding document)	-	-	3
ZZ-M-91	Cancelled 1995	Mattress, Bed, Latex Foam (no superseding document)	NR or SYN	-	3
ZZ-M-001033	Cancelled 1984	Matting Floor, Rubber, Aperture Surface (no superseding document)	NR or SYN	-	3
ZZ-P-46	Cancelled 1978	Pads, Operating Table (Sectional) (no superseding document)	NR or SYN	-	3
ZZ-P-75	Cancelled 1990	Pads, Typewriter, Sponge Rubber (see *A-A-2704*)	NR or SYN	-	3
ZZ-P-351	Cancelled 1944	Pillows: Air, Rubber (no superseding document)	NR or IIR	-	3
ZZ-R-00675	Cancelled 1964	Rubber Band, Four Way (no superseding document)	NR or SYN	-	3
ZZ-R-690	Cancelled 1989	Rubber Dam, Dental (see *A-A-53986*)	-	NR	3
ZZ-R-710		Rubber Gasket Material 35 Durometer Hardness	-	-	3
ZZ-R-768		Rubber for Mountings (Unbonded-spool & Compression Types)	NBR	-	3
ZZ-R-785	Cancelled 1968	Rubber Sheet, Cellular Hardboard (no superseding document)	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

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.

TABLE IV. Federal specifications (cont'd).

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
ZZ-R-001207	Cancelled 1996	Rubber Stamp, Fixed Type, Pre-inked (no superseding document)	NR or SYN	-	3
ZZ-R-1415		Rubber Band	NR, SBR, IR or SYN	-	3
ZZ-S-666	Cancelled 1995	Squeegees, Floor & Window (no superseding document)	NR or SYN	-	3
ZZ-S-751	Cancelled 9/7/90	Stoppers, Bottle, Rubber			
		All Types & Grades (see *A-A-54194*)	NR or SYN	-	3
ZZ-T-351	Cancelled 1990	Tips, Cane and Crutch, Rubber (see *A-A-30081*)	NR or SYN	-	3
ZZ-T-381	Inactivated 1998	Tires, Pneumatic, Vehicular (Highway)			
		All Types, Groups & Classes	NR or SYN		5
ZZ-T-401	Cancelled 1961	Tire, Pneumatic; Inner Tube, Pneumatic Tire; (Bicycle) (no superseding document)			
		Tires, Classes A & B	NR or SYN		5
		Tubes	IIR		10
ZZ-T-410	Inactivated 1998	Tires, Pneumatic, Industrial Tires	NR or SYN		5
ZZ-T-441	Inactivated 1998	Tire, Pneumatic: Retreaded & Repaired			3
		All Types & Classes	NR or SYN		
ZZ-T-721	Cancelled 1957	Tube; Inner, Pneumatic, for Tires (Automobiles, Trucks, Motorcycles, and Other Ground Vehicles) (no superseding document)	IIR	-	10
ZZ-T-751	Cancelled 1961	Tubes; Colon, Surgical	NR or SYN	-	3
ZZ-T-791	Cancelled 1988	Tube, Stomach, Surgical (Formerly Tubes, Lavage & Stomach) (see *A-A-51779*)	NR or SYN	-	3
ZZ-T-831	Cancelled 1993	Tubing, Rubber and Plastic (see *A-A-52047*)			
		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	Cancelled 1946	Coats & Trousers, Rubber-Coated (Foul-Weather-Clothing) (no superseding document)	NR or SYN	-	3
GGG-R-00620	Cancelled 1996	Roller, Hand (Rubber Roller) (see *A-A-3034*)	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.

TABLE V. Aerospace Materials Specifications.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
AMS 3193		Silicone Rubber Sponge, Closed Cell, Medium, Extreme Low Pressure			20
AMS 3194		Silicone Rubber Sponge, Closed Cell, Firm, Extreme Low Temperature			20
AMS 3195		Sponge, Silicone Rubber, Closed Cell, Medium			20
AMS 3196		Sponge, Silicone Rubber, Closed Cell, Firm			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 3210		Chloroprene Rubber, Electrical Resistant, (65-75)	CR		8
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 3228	Cancelled	Acrylonitrile Butadiene (NBR) Rubber, Hot Oil & Coolant Resistant (65-75) (no superseding document)	NBR	-	3
AMS 3270		Chloroprene Rubber Sheet, Cotton Fabric Reinforced, Weather Resistant	CR	-	5
AMS 3273		Chloroprene Rubber Sheet, Nylon Fabric Reinforced, Weather Resistant	CR	-	5
AMS 3274		Nitrile Rubber Sheet, Nylon Fabric Reinforced, Aromatic Fuel Resistant	NBR	-	3
AMS 3315		Silicone Rubber Sheet, Glass Fabric Reinforced, VMQ Type		-	20
AMS 3320		Silicone Rubber Sheet, Glass Fabric Reinforced, Heat & Weather Resistant (60-80)	Q	-	20
AMS 3332		Silicone Rubber, Extreme Low Temperature Resistant (15-30)	Q	-	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.

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

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
AMS 3344	Cancelled 1970	Silicone Rubber - 1800 psi (45-55) (no superseding document)	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 3650		Packing, Preformed, AMS 3650, Seal	PCTFE		
AMS-C-6183		Cork and Rubber Composition Sheet, for Aromatic Fuel and Oil Resistant Gaskets		NBR	
AMS-R-6855		Elastomer, Synthetic, Sheets, Strips, Molded or Extruded Shapes		NBR, CR, SBR	5
AMS 7261		Rings, Phosphonitrilic Fluororelastomer High-Temperature-Fluid Resistant	FZ		20
AMS 7263		Rings, Packing, Synthetic Rubber - Phosphate Ester Hydraulic Fluid Resistant (85-95) Butyl Type (Reference document)	IIR		10
AMS 7275	Cancelled	Rings, Sealing, Synthetic Rubber-Synthetic Lubricant Resistant (65-85) Fluorocarbon Type (no superseding document)	FKM		20
AMS 7277	Cancelled	Rings, Sealing, Synthetic Rubber Phosphate Ester Hydraulic Fluid Resistant (70-85) Butyl Type (no superseding document)	IIR		10
AMS 7278	Cancelled	Rings, Sealing, Synthetic Rubber High Temperature Fluid Resistant (70-80) Fluorocarbon Type (see *AMS 7276* referenced in *SAE ARP5316*)	FKM		20
AMS 7279	Cancelled	Rings, Sealing, Synthetic Rubber High Temperature Fluid Resistant (85-95) Fluorocarbon Type (see *AMS 7259* referenced in *SAE ARP5316*)	FKM		20
AMS 7280	Inactivated	Rings, Sealing, Fluorocarbon Rubber, High Temperature Fluid Resistant, Low Compression Set, FKM Type (70-80) (see *AMS 7276* referenced in *SAE ARP5316*)	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.

TABLE VI. American Society for Testing and Materials Specifications.

Number	Status	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		
ASTM D178		Rubber Insulating Matting			
ASTM D296	Cancelled 1984	Rubber-Lined Fire Hose with Woven Jacket			
ASTM D353	Cancelled 1995	Natural Rubber Performance Insulation for Wire & Cable 60 C Operation	NR		
ASTM D469	Cancelled 1995	Natural Rubber Heat-Resisting Insulation for Wire & Cable, 75 C Operation	NR		
ASTM D532		Natural Rubber Jacket For Wire & Cable			
ASTM D574	Cancelled 1984	Ozone-Resisting Insulation for Wire & Cable			
ASTM D752	Cancelled 1984	Heavy-Duty Black Polychloroprene for Wire & Cable (see *ASTM D4247*)	C		8
ASTM D753	Cancelled 1984	General Purpose Polychloroprene for Wire & Cable (see *ASTM D4247*)	C		8
ASTM D754	Cancelled 1984	Synthetic Rubber Insulation for Wire & Cable 75 C Operation (no superseding document)	-	-	3
ASTM D755	Cancelled 1984	Synthetic Rubber Insulation for Wire & Cable6 0 C Operation (no superseding document)	-	-	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 0 & E	-	NR	3
		Type SB - Classes 0 & E	-	NBR	3
		Type SC - Classes 0 & E	-	CR	3
ASTM D1330		Sheet Rubber Gaskets			
		Grades I & II	NR or SYN	-	3
ASTM D1352		Ozone-Resisting Butyl Rubber Insulation for Wire & Cable	IIR	-	10
ASTM D1520	Cancelled 1984	Synthetic Rubber Heat or Moisture Resisting Insulation for Wire & Cable (see *ASTM D1679*)	-	-	3
ASTM D1521	Cancelled 1976	Synthetic Rubber Performance, Moisture Resisting Insulation for Wire & Cable (no superseding document)	-	-	3
ASTM D1523		Synthetic Rubber Insulation for Wire & Cable 90 C Operation	-	-	3

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.

TABLE VI. American Society for Testing and Materials Specifications.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
ASTM D1564	Cancelled 1979	Flexible Urethane Foam (see *ASTM D3574*)			
		Grades US & UU	AU, EU	-	3
ASTM D1565	Cancelled 1998	Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Open-Cell Foam) (no superseding document)			
		Grades VC, VU & VO	Viny	-	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
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 Suffices 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:

[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 VII. National Aerospace Standards.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
NAS 11	Inactivated 1957	Valve Assembly - Flapper	*AMS 3212*	NBR	3
NAS 244	Inactivated 1947	Cap - Rigid Tube or Hose Fitting Synthetic	*AMS 3208* (CR)	-	8
NAS 485	Inactivated 1951	Hose -Oil & Coolant	-	CR	8
NAS 617		Packing, Preformed, String Thread Tube Fitting Boss, Synthetic Lubricant Resistant	*MIL-R-7362* Comp. A (Inactivated)	NBR	3
NAS 1369		Duct, Air, Flexible & Semi-Rigid			
		Type A	Glass Fabric impreg with CR	-	5
		Type B	Glass Fabric impreg with Q	-	20
NAS 1370 thru NAS 1379		Duct, Air, Flexible, Helix Wire Supported			
		-65 to +275 F	Fiberglass impreg with CR		5
		-75 to +500 F	Fiberglass impreg with		20
NAS 1515		Washers - Plastic & Synthetic Rubber			
		Code Letter A	*ZZ-R-765* (Referenced in *SAE ARP5316*)		20
		Code Letter B	*ZZ-R-765* ***(***Referenced in ***SAE ARP5316***)		20
		Code Letter C	*MIL-R-6855* Class I Cancelled (see SAE-AMS-R-6855)	NBR	3
		Code Letter D	*MIL-R-6855* Class II Cancelled (see SAE-AMS-R-6855)	CR	8
		Code Letter E	*MIL-R-6855* Class IV Cancelled (see SAE-AMS-R-6855)	CR	8

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.

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

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
		Code Letter F	*MIL-R-7362* Comp A (Inactivated 1997)	NBR	3
		Code Letter J	*AMS 3209* (Referenced in *SAE ARP5316*)(CR)		8
		Code Letter K	*AMS 3238* (Referenced in *SAE ARP5316*) (IIR)		10
		Code Letter L	*AMS 3650* (FKM)		10
		Code Letter M	*AMS 3651* (FKM) Cancelled (no superseding document)		10
NAS 1570	Inactivated 1981	Gasket - Junction Box	*MIL-C-6183* (Cancelled 1998) (see AMS-C-6183) Class I	NBR	3
NAS 1577	Inactivated 1981	Gasket, Switch Fitting Box	*MIL-C-6183* (Cancelled 1998) (see AMS-C-6183) Class I	NBR	3
NAS 1593	Inactivated 1973	Packing, Preformed - *MIL-R-25897* Rubber, 75 Shore "0" Ring	*MIL-R-25897* (Cancelled 1970) (see MIL-R-83248, Inactivated 1997)	FKM	20
NAS 1594	Inactivated 1973	Packing, Preformed - *MIL-R-25897* Rubber, 90 Shore "0" Ring	*MIL-R-25897* (Cancelled 1970) (see MIL-R-83248, Inactivated 1997)	FKM	20
NAS 1595	Inactivated 1973	Packing, Preformed Straight Thread Tube Fitting Boss, *MIL-R-25897* Rubber, 75 Shore “0” Ring	*MIL-R-25897* (Cancelled 1970) (see MIL-R-83248, Inactivated 1997)	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.

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

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
NAS 1596	Inactivated 1973	Packing, Preformed Straight Thread Tube Fitting Boss, *MIL-R-25897* Rubber, 90 Shore if 0 to Ring	*MIL-R-25897* (Cancelled 1970) (see MIL-R-83248, Inactivated 1997)	FKM	20
NAS 1598	Inactivated 1997	Washer - Sealing			
		Code Y	*MIL-R-7362* Inactivated 1997 Comp A	NBR	3
		Code R	*MIL-R-25988* Inactivated 1997	FVMQ	20
		Code N	*AMS 3238* Referenced in *SAE ARP5316* (IIR)		10

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.

TABLE VIII. Society of Automotive Engineers Standards.

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
ARP 610	Cancelled 1969	Synthetic or Natural Rubber Lined Pneumatic Hose Assemblies, Aircraft (no superseding document)			
		Class I	-	-	3
		Class II	-	NR	3
SAE J14	Cancelled 1980	Specifications for Elastomer Compounds for Automotive Applications (see *SAE J200*)			
		Type R	-	NR, SBR or IIR	3
		Type S, Class SA	-	T	20
		Type S, Class SB	-	NBR	3
		Type S, Class SC	-	CR	8
		Type T, Class TA	-	Q	20
		Type T, Class TB	-	ACM	20
SAE J15	Cancelled 1978	Flexible Foams Made from Polymers or Copolymers of Vinyl Chloride (no superseding document)			
		Grades VC, VU & VO	Vinyl		3
SAE J17	Cancelled 1990	Latex Foam Rubbers (no superseding document)			
		Grades RC & RU	-	NR	3
SAE J18		Sponge & Expanded Cellular Rubber Products			
		Type R, Classes 0 & E	-	NR	3
		Type S, Class SB, Classes 0 & E	-	NBR	3
		Type S, Class SC, Classes 0 & 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
SAE J20		Coolant - System Hoses			
		Class A	-	Q	20
		Class B	-	NBR	3
		Class C	-	CR	8
		Class D	-	EPDM	10
SAE J30		Fuel & Oil Hoses			
		SAE 30R1, 30R2, 30R3 & 30R5	-	NR (Tube)	3

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.

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

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
SAE J50	Cancelled 1987	Windshield Wiper Hose (no superseding document)	-	-	3
SAE J51		Automotive Air Conditioning Hose	-	NBR	3
SAE J60	Cancelled 1977	Rubber Cups for Hydraulic Activating (see *SAE J1601)*			
		Cylinders SAE 60Rl & SAE 60R2	-	NR or SBR	3
SAE J80		Automotive Rubber Mats - All Types	-	-	3
SAE J120		Rubber "0" Rings for Automotive Seal & Packing Applications			
		Classes 1 & 2	-	NBR	5
SAE J188		Power Steering Pressure Hose-High Volumetric Expansion			3
		Type	SYN	-	
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 Suffices 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 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

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.

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

Number	Status	Title	Elastomers[1] Required	Elastomers[2] Commonly Used	Expected Shelf Storage Life Years
SAE J515		Hydraulic "0" Ring			
		Type I	-	NBR	3
		Type II	-	IIR	10
SAE J517		Hydraulic Hose - All Types	-	-	3
SAE J557	Cancelled 1990	High Tension Ignition Cable (see *SAE J2031)*	-	-	
		Type HTLR, HTHR, HTS, & HTB	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	Cancelled 1983	Emission Control Hose (no superseding document)	EPDM	-	5
SAE J1037		Windshield Washer Tubing			
		Type 1	CR	-	5
		Type 2	SYN	-	3
SAE J1401		Road Vehicle - Hydraulic Brake Hose Assemblies for Use with Non-Petroleum Base Hydraulic Fluids	-	-	3
SAE J1402		Automobile Air Brake Hose and Hose Assemblies	CR	-	3
SAE J1403		Vacuum Brake Hose			
		Class A		SYN	3
		Class B		NR or SYN	3
SAE J1601		Rubber Cups for Hydraulic Actuating Cylinders			
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
SAE J2031		High Tension Ignition Cable			

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.

APPENDIX A

RELATED DOCUMENTS

A.1 SCOPE

A.1.1 Scope.

This appendix provides related documents prepared by the Government or by the Government contractors. The listed documents pertain to overall aspects of age control of rubber products.

A.2 APPLICABLE DOCUMENTS

A.2.1 General.

The following list of documents is provided 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.

11. Electric Power Research Institute Report *NP-6408*, Guidelines for Establishing, Maintaining, and Extending the Shelf Life Capability of Limited Life Items (NCIG-13), May 1992.

12. Electric Power Research Institute Report *NP-6608*, Shelf Life of Elastomeric Components, May 1994

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INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-HDBK-695D	22 November 1999

3. DOCUMENT TITLE

RUBBER PRODUCTS: RECOMMENDED SHELF LIFE

4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON *(If applicable)*	e. DATE SUBMITTED *(YYMMDD)*

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c. ADDRESS *(Include Zip Code)* 2530 LOOP ROAD WEST WRIGHT-PATTERSON AFB OH 45433-7101	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	