

INCH-POUND
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A-A-56023A

15 February 1994

SUPERSEDING

A-A-56023

10 March 1993

**COMMERCIAL ITEM DESCRIPTION****INSULATING COMPOUND, ELECTRICAL, SILICONE  
RUBBER, ROOM TEMPERATURE VULCANIZING**

~~The General Services Administration has authorized the use of this Commercial Item Description as a replacement for MIL-I-46838 which is cancelled.~~

**Abstract.** This commercial item description covers four types of room temperature vulcanizing, silicone rubber electrical insulating compounds. The compounds are intended for use in potting and encapsulating electrical and electronic components.

**Salient characteristics.** The insulating compounds shall consist of an organo-polysiloxane polymer which, when mixed with catalyst, shall cure to a rubbery solid. Cure shall be affected by catalytic action, not solvent evaporation. The compounds shall have a shelf life of not less than six months when stored in the original unopened containers at a temperature not greater than 26.7° Celsius (C). The glass transition temperature (tg), or softening point, shall be as specified by the manufacturer when tested in accordance with IPC-TM-650/Method 2.4.24-86. The insulating materials shall be homogeneous and free of foreign

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document should be sent to: Commander, U.S. Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270.
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AMSC N/A  
DISTRIBUTION STATEMENT A.  
distribution is unlimited.

FSC 5970  
Approved for public release;

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materials, and shall be packaged in clean well-sealed containers, in capacities specified by the contract. The physical requirements of the uncured insulating compounds are shown in table I; physical and electrical requirements of the cured compounds are shown in table II. Conditioning requirements and test conditions are shown in table III. Test methods are shown in table IV.

TABLE I. Physical requirements, uncured compounds.

Requirement	Conditioning procedure 1/ (see table III)	Requirement values			
		Type I	Type II	Type III	Type IV
UNCATALYZED:					
Viscosity, average, minimum/ maximum, poises	A	200/500	200/600	300/900	80/250
CATALYZED:					
Pot. life, minimum, hours	A	0.5	0.5	0.5	0.5

- 1/ Conditioning procedure A: As received, no special conditioning  
 Conditioning procedure B: Temperature conditioned (see footnote 2, table II)

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TABLE II. Physical/electrical requirements, cured compounds. 1/

Requirement	Conditioning procedure 2/ (see table III)	Requirement values, all types
Hardness shore A, average  minimum/maximum	A	35/70
	E-70/232°C + E-1/-24°C	35/70
	E-1/-54°C + E-1/24°C	35/70
Tensile strength, average, minimum, pounds force per square inch (lbf/in)	A	300
	E-70/232°C + E-1/24°C	150
	E-1/-54°C + E-1/24°C	300
Tear resistance, average minimum, (lbf/in)	A	15
Elongation, average minimum, percent	A	100
	E-70/232°C	75
	E-1/-54°C	100
Dielectric strength, average, minimum, volts per mil, approx. 75 mil sheet	A	350

1/ After curing for 72 hours at 24°C ± 3°C.

2/ Conditioning procedure A: As received, no special conditioning

Conditioning procedure E: Temperature conditioned; encoding definition is a capital letter indicating type of conditioning, a number indicating the duration of the conditioning in hours, and a number indicating the temperature in degrees C. A sequence of conditions is denoted by a "+" sign between conditions (see ASTM D 618).

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TABLE III. Conditioning requirements.

Conditioning procedure	Conditioning tolerances 1/		Testing conditions	
	Time	Temp	Temperature and tolerances	Remarks
E (low temperature)	-0, +6 min.	2.8°C	24° ± 5.6°C or -54° ± 2.8°C as indicated.	Start test immediately after the cycling has been completed.
E (high temperature)	-0, +6 min.	5.6°C	24° ± 5.6°C or 232° ± 5.6°C as indicated.	Start test immediately after the cycling has been completed.

1/ Condition A: As received, no special conditioning

Condition E: Temperature conditioned

TABLE IV. Test methods.

Requirement	Test method
Viscosity	ASTM D 1084, Method B
Pot life	MIL-S-23586
Hardness	ASTM D 2240
Tensile resistance	ASTM D 412
Tear strength	ASTM D 624
Elongation	ASTM D 412
Dielectric strength	ASTM D 149
Glass transition temperature	IPC-TM-650/Method 2.4.24-86

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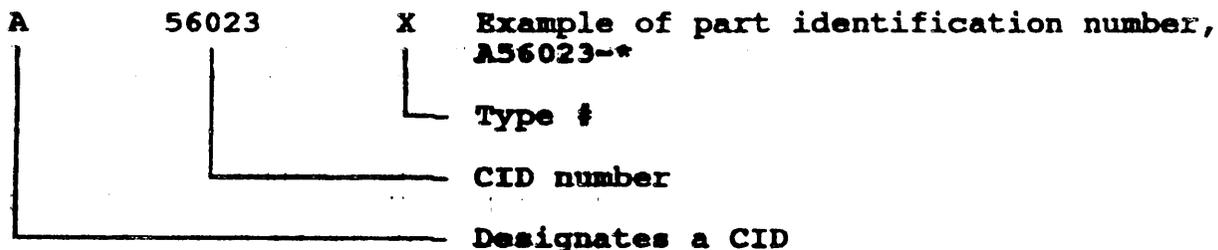
**Contractor certification.** The contractor shall certify and maintain substantiating evidence that the product offered meets the salient characteristics of this Commercial Item Description, and that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices. The government reserves the right to require proof of such conformance prior to first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

**Metric products.** Products manufactured to metric dimensions will be considered on an equal basis with those manufactured using inch-pound units, provided they fall within specified tolerances using conversion tables contained in the latest revision of FED-STD-376, and all other requirements of this Commercial Item Description are met. If a product is manufactured to metric dimensions and those dimensions exceed the tolerances specified in the inch/pound units, a request should be made to the contracting officer to determine if the product is acceptable. The contracting officer has the option of accepting or rejecting the product.

**Regulatory requirements.** The offeror/contractor is encouraged to use recovered materials IAW Public Law 94-580 to the maximum extent practical.

**Preservation, packaging, packing, labeling, and marking.** The preservation, packaging, packing, labeling, and marking shall be as specified in the contract or order.

**CID-based part identification number.** The following part identification number procedure is for government purposes and does not constitute a requirement for the contractor.



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**NOTES:**

a. Types. \* The insulating compounds shall be of the following types, based on viscosity:

Type I	-	200 to 500 poises
Type II	-	200 to 600 poises
Type III	-	300 to 900 poises
Type IV	-	80 to 250 poises.

b. Material safety data sheets. Material safety data sheets shall be prepared for the insulating compounds described herein in accordance with the requirements of FED-STD-313. Contracting officers will identify those activities requiring copies of completed material safety data sheets prepared in accordance with FED-STD-313. The pertinent Government mailing addresses for submission of data are listed in FED-STD-313.

c. Source for referenced documents. Copies of referenced federal and military specifications and standards may be obtained by sending a request for copies to the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094:

FED-STD-313	-	Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities
FED-STD-376	-	Preferred Metric Units for General Use by the Federal Government
MIL-S-23586	-	Sealing Compound, Electrical, Silicone Rubber, Accelerator Required

Copies of referenced ASTMs are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103-1187:

ASTM D 149	-	Standard Test Method for Dielectric Breakdown Voltage and Dielectric Strength of Solid Electrical Insulating Materials at Commercial Power Frequencies
ASTM D 412	-	Standard Test Methods for Rubber Properties in Tension

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ASTM D 618	-	Standard Practice for Conditioning Plastics and Electrical Insulating Materials for Testing
ASTM D 624	-	Standard Test Method for Rubber Property - Tear Resistance
ASTM D 1084	-	Standard Test Methods for Viscosity of Adhesives
ASTM D 2240	-	Standard Test Method for Rubber Property - Durometer Hardness

Copies of IPC-TM-650/Method 2.4.24-86, "Glass Transition Temperature and Z-Axis Expansion by TMA (Thermal Mechanical Analysis) (DoD Adopted), are available from the Institute for Interconnecting and Packaging Electronic Circuits, 7380 N. Lincoln Avenue, Lincolnwood, IL 60646.

d. Acceptable products and part numbers. The products described in this commercial item description are available from Permagine Industries, Inc. (CAGEC 13549), Dow Corning Corporation (CAGEC 71984) and General Electric, Silicone Products Division (CAGEC 01139). Viscosities will vary with the amount of catalyst used, so purchasers should identify the viscosity required when ordering. The following stock numbers are covered by this document:

5970-00-449-5161  
5970-00-689-8832  
5970-00-144-8209  
8030-01-287-7286.

## MILITARY INTERESTS:

Custodian:  
Army - MI

Review Activities:  
Army - MD, MR  
DLA - GS

User Activities:  
Army - ME

Civilian Coordinating Activity:  
GSA - FSS

PREPARING ACTIVITY:  
Army - MI

Project No. 5970-1125

FSC 5970