

MIL-I-49456
5 September 1984

MILITARY SPECIFICATION

INSULATION SHEET, ELECTRICAL, SILICONE RUBBER,
THERMALLY CONDUCTIVE, FIBERGLASS REINFORCED

This specification is approved for use by all
Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification describes a fiberglass reinforced elastomeric sheet material which exhibits good electrical insulating properties and high thermal conductivity for transferring heat generated by semiconductor devices to external heat sinks.

1.2 Classification. The material shall be of the following types and classes, as specified:

- Type I - Filled silicone rubber, glass reinforced.
- Type II - Filled silicone rubber, glass reinforced, pressure sensitive adhesive coating on one surface.
- Type III - Filled silicone rubber, glass reinforced, pressure sensitive adhesive coating on both surfaces.
- Class 1 - Thermal interface impedance¹ of less than 0.25°C/Watt.
- Class 2 - Thermal interface impedance¹ of 0.25°C/Watt to 0.50°C/Watt.
- Class 3 - Thermal interface impedance¹ of greater than 0.50°C/Watt and less than 1.00°C/Watt.

¹ Thermal impedance values apply to 1 in² TO-3 samples, tested under transistors.

 Beneficial comments (recommendations, additions, deletions) and any pertinent
 *data which may be of use in improving this document should be addressed to: *
 *U. S. Army Electronics Research and Development Command (ER), Industrial *
 Engineering & Development Div., ATTN: DELET-R-S, Fort Monmouth, NJ 07703, by
 *using the self-addressed Standardization Document Improvement Proposal (DD *
 *Form 1426) appearing at the end of this document or by letter. *

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1.2.1 Material identification. The material identification number shall consist of the "B" prefix and specification number followed by a two-digit dash number from Table I and a two digit dash number indicating sheet thickness in mils as shown in the following example:

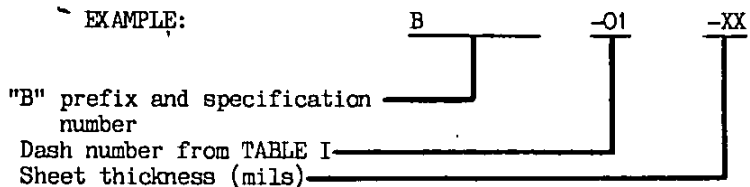


TABLE I

Dash Numbers

<u>Dash Number</u>	<u>Type</u>	<u>Class</u>
01	I	1
02	I	2
03	I	3
04	II	1
05	II	2
06	II	3
07	III	1
08	III	2
09	III	3

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation form a part of this specification to the extent specified herein.

STANDARDS

FEDERAL

FED. TEST METHOD STD. NO. 191 - Federal Standard for Textile Test Methods

MILITARY

MIL-STD-105 - Sampling Procedures and Tables For Inspection by Attributes

MIL-STD-129 - Marking for Shipment and Storage

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(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the Contracting Officer.)

• 2.1.2 Other Government documents and publications. The following other Government documents and publications form a part of this specification to the extent specified herein.

LAWS AND REGULATIONS

U. S. POSTAL SERVICE MANUAL

(Copies of the manual may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, DC 20402.)

PUBLICATIONS

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA SP-R-0022 - Vacuum Stability Requirements of
Polymeric Material for Spacecraft
Application

(Application for copies should be addressed to National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Houston, TX 77058.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. The issues of the documents which are indicated as DoD adopted shall be the issue listed in that issue of the DoDISS specified in the solicitation or contract.

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification

(Application for copies should be addressed to American Trucking Association, ATTN: Traffic Department, 1616 P Street, NW, Washington, DC 20036.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification

(Application for copies should be addressed to the Uniform Classification Committee, Tariff Publishing Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM D149 - Dielectric Breakdown Voltage and Dielectric
Strength of Electrical Insulating Materials
at Commercial Power Frequencies, Test for
(DOD Adopted)

ASTM D150 - A-C Loss Characteristics and Permittivity,
(Dielectric Constant) of Solid Electrical
Insulating Materials, Test for (DOD Adopted)

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ASTM D257	- D-C Resistance or Conductance of Insulating Materials, Test for (DOD Adopted)
ASTM E595	- Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment, Test for
ASTM D618	- Conditioning Plastics and Electrical Insulating Materials for Testing, Standard Methods of (DOD Adopted).
ASTM D792	- Specific Gravity and Density of Plastics by Displacement, Test for (DOD Adopted)
ASTM D1458	- Fully Cured Silicone Rubber-Coated Glass Fabric and Tapes for Electrical Insulation, Test for
ASTM D2137	- Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics, Test for (DOD Adopted)
ASTM D2240	- Rubber Property - Durometer Hardness, Test for (DOD Adopted)
ASTM D3330	- Peel Adhesion of Pressure-Sensitive Tape at 180-Degree Angle, Test for (DOD Adopted)
ASTM D3951	- Standard Practice for Commercial Packaging (DoD Adopted)
ASTM STP470	- Manual on the Use of Thermocouples in Temperature Measurement (DoD Adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Industry association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS

3.1 First article. When specified, samples shall be subjected to first article inspection (see 4.3 and 6.2).

3.2 Material. The sheet shall be fabricated of a single-ply of woven glass fabric, impregnated with and bonded between two essentially equal thickness layers of a silicone elastomer binder with filler providing thermal and electrical performance characteristics, molded or calendered, and suitably cured to produce a product meeting the requirements of this specification. Sheet material shall be inherently non-nutritious to fungus.

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3.3 Performance and product characteristics. The performance and product characteristics of the glass reinforced silicone rubber insulating material shall be as specified in Table II.

3.3.1 Sheet dimensions. Sheet thickness shall be as specified by the material identification number (see 1.2.1.) in the solicitation or contract (see 6.2). Sheet thickness variations within the inspection lot defined by 4.4.1.1 shall not deviate from the specified sheet thickness by more than plus or minus 10 percent. Unless otherwise specified (see 6.2), the width and length of sheets shall be 16 inches. Tolerance for width and length shall be $\pm 1/32$ inch.

3.3.2 Adhesive coating. For types II and III the adhesive coating shall consist of a low tack dimethyl silicone pressure sensitive adhesive or an acrylic pressure sensitive adhesive. Adhesive peel strength shall be as specified in Table II. All adhesive coatings shall be provided with protective liners of clear polyethylene, polypropylene, or polyester film. Thickness of types II and III shall be measured with protective liners removed.

TABLE II

REQUIREMENTS

Specific gravity	1.35 to 3.20
Hardness, shore <u>A</u> +7	85
Breaking strength, lb/in. (min)	
Fill direction	65
Warp direction	100
Continuous-use temperatures, °C	-55 to 200
Dielectric breakdown voltage, V/mil (min)	
<u>Normal</u>	250
<u>Moist</u>	125
Dielectric constant (max)	
@ 100 HZ & 100V	4.2
@ 1.0 MHZ & 100V	4.5
Thermal vacuum weight loss,	
percent (max)	1.0%
(Type I only)	
Volatile condensable material,	
percent (max)	0.1%
(Type I only)	

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Volume resistivity, megohm-cm (min)

Normal	1×10^9
Moist	1×10^6

Thermal interface impedance, °C/Watt $\frac{1}{\text{psi}}$
(Required mounting pressure: 250 \pm 30 psi)

Class 1	Less than 0.25
Class 2	0.25 to 0.50
Class 3	Greater than 0.50 and less than 1.00

Adhesive peel strength,
grams/mm \pm 3
(Types II & III only)

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Flame Resistance

Flame, sec (max)	10
Flame & Glow, sec (max)	20
Char, percent (max)	30%

Color

Optional

$\frac{1}{\text{psi}}$ Thermal impedance values apply to 1 in² TO-3 samples, tested under transistors.

3.3.3 Thermal vacuum weight loss and volatile condensable material content. Type I shall conform to the requirements of NASA SP-R-0022 when tested in accordance with 4.5.8.

3.3.4 Flame resistance. When tested in accordance with 4.5.12, the material shall meet the requirements of Table II for flame resistance.

3.4 Workmanship. The workmanship shall be such as to provide a product which is uniform and free of voids, contamination, ruptured glass, or other defects that would affect the properties of the material.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

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4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).

4.2.1 Inspection conditions.

4.2.1.1 Temperature. Unless otherwise specified herein or in an applicable test method referenced herein, all inspections shall be performed at a temperature of 23°C plus or minus 5°C.

4.2.1.2 Conditioning specimens prior to test. Unless otherwise specified herein or in an applicable test method referenced herein, specimens of the material shall be conditioned in accordance with ASTM D618, Procedure A, prior to test.

4.3 First article inspection. When required (see 3.1 and 6.2), two (2) insulation sheet samples shall undergo all of the examinations and tests of 4.5. The sheets for first article inspection shall be selected at random from the first twenty (20) production sheets. Test report of first article inspection results shall be submitted in accordance with the written instructions of the Contracting Officer. Failure of insulation sheet specimens to meet requirements of Section 3 when examined and tested in accordance with 4.5 shall be cause for rejection of first article.

4.4 Quality conformance inspection. Quality conformance inspections shall be as specified in Table III. The contractor shall maintain objective records of all inspections and tests and, upon request, the contractor shall make these records available for review by the Contracting Officer or his authorized representative.

TABLE III

<u>INSPECTION OR TEST</u>	<u>REQUIREMENT</u>	<u>TEST METHOD</u>
Dimensions	3.3.1	4.5.1
Specific Gravity	TABLE II	4.5.2
Hardness	TABLE II	4.5.3
Breaking Strength	TABLE II	4.5.4
Thermal Interface Impedance	TABLE II	4.5.10
Peel Strength (Types II & III)	TABLE II	4.5.11
Visual	3.4	4.5.13

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4.4.1 Sampling plan. Sampling for the examinations and tests of 4.4 shall be performed in accordance with MIL-STD-105. The inspection level shall be special inspection level S-3 and the acceptable quality level (AQL), expressed in terms of defects per hundred sheets of insulation sheet, shall be 4.0.

4.4.1.1 Inspection lot. The inspection lot shall consist of that quantity of material which has been subjected to physical mixing or chemical processing as a batch at one time and processed under essentially the same conditions to achieve a product with uniform characteristics.

4.4.1.2 Sample unit. The unit of sample shall be one sheet of the finished product. Each unit of sample (sheet) selected in accordance with 4.4.1 shall undergo the inspections and tests of Table III.

4.5 Examination and test.

4.5.1 Thickness. Sheet thickness shall be determined in accordance with ASTM D1458, Section 5. Width and length shall be determined using a steel scale or other method of acceptable accuracy.

4.5.2 Specific gravity. Specific gravity shall be measured in accordance with ASTM D792.

4.5.3 Hardness. Hardness shall be measured in accordance with ASTM D2240.

4.5.4 Breaking strength. Breaking strength shall be measured in accordance with ASTM D1458.

4.5.5 Temperature.

4.5.5.1 High temperature. A specimen of at least 6 square inches in surface area shall be clamped finger-tight between aluminum plates and conditioned for seventy (70) hours ± 0.25 hour at $200^{\circ}\text{C} \pm 3^{\circ}\text{C}$. Examination for decomposition shall be made immediately upon removal from the oven. Within one (1) hour after removal from oven and cooling to $23^{\circ}\text{C} \pm 3^{\circ}\text{C}$, the dielectric breakdown voltage of the specimen shall be measured in accordance with ASTM D149, Short Time Test, to determine compliance with the 250 V/mil requirement of Table II. Rate of voltage rise shall not be less than 500 V/S.

4.5.5.2 Low temperature brittleness. Low temperature brittleness shall be determined in accordance with ASTM D2137, procedure B, at a temperature of $-55^{\circ}\text{C} \pm 1^{\circ}\text{C}$. Breaking or cracking of any specimen shall result in failure of this test.

4.5.6 Dielectric breakdown voltage. Dielectric breakdown voltage shall be measured in accordance with ASTM D149, Short-Time Test. Rate of voltage rise shall not be less than 500 V/S. Five tests shall be performed with insulation sheet specimens conditioned in accordance with 4.2.1.2 (normal). Five tests shall also be performed with insulation sheet specimens which have been conditioned in accordance with ASTM D618, Procedure D, (moist).

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4.5.7 Dielectric constant. The dielectric constant of the insulation sheet shall be measured in accordance with ASTM D150. Three specimens shall be tested. The average dielectric constant shall be determined from the three results and used for determining compliance with the requirement of Table II.

4.5.8 Thermal vacuum weight loss and volatile condensable material content for Type I. The thermal vacuum weight loss and volatile condensable material content of Type I sheet material shall be measured in accordance with ASTM E595. Test pressure shall be 1×10^{-6} torr or less.

4.5.9 Volume resistivity. The volume electrical resistivity shall be measured in accordance with ASTM D257. Specimens for the moist condition test shall be conditioned prior to test in accordance with ASTM D618, Method D.

4.5.10 Thermal interface impedance. Five insulation sheet specimens shall be prepared from each insulation sheet selected in accordance with 4.3 or 4.4.1., as applicable. Specimens shall have dimensions as shown in Figure 1. Any specimen that fails to meet the applicable requirement of Table II for thermal interface impedance shall be considered a defect for sampling inspection of 4.4.1. Any specimen that fails to meet the applicable requirement of Table II for thermal interface impedance for first article inspection shall be cause for failure of first article.

4.5.10.1 Equipment List of basic equipment required for determination of thermal interface impedance is as follows:

- 1 - Regulated DC power supply 0-40V, 0-8A
- 1 - Constant current source (regulator)
- 1 - Multimeter
- 1 - Recording potentiometer
- 2 - Thermocouples, Type J
- 1 - Test enclosure, 1.0 ft. min. per side
- 1 - Heat sink for TO-3 case style, 86 sq. in. surface area
- 1 - Torque screw driver, range: 0 to 6.0 inch-pounds, accuracy: $\pm 3\%$, min graduations: 1/2 in-lb.
- 5 - Transistors, TO-3 case

4.5.10.2 Equipment Set-Up. Prepare insulation sheet specimen with dimensions as shown in Figure 1. Select TO-3 case style transistor with base area configuration suitable for use with the given insulator dimensions. Tap hole into base of transistor and install thermocouple. Tap hole in heat sink and install thermocouple as shown in Figure 2. Clean heat sink and transistor of grease, dirt, and loose particles. Assemble insulator specimen and transistor to heat sink surface area using #6 screws tightened to 3-4 in. -lbs. torque. Place assembly into test enclosure. Apply regulated DC power to transistor. DC power supplied to the transistor shall not deviate from the value specified by more than $\pm 1/2$ watt during test. Adjust power supplied to transistor as follows:

$$I = 3A \quad E = 10V \quad W = 30W$$

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4.5.10.3 Measurement Procedures. Allow heat sink and transistor assembly temperature to stabilize. Record temperature of transistor case and heat sink. Calculate thermal impedance as follows:

$$\frac{T_{c1} - T_{c2}}{\text{Watts}} = \text{ }^{\circ}\text{C/W}$$

T_{c1} : Temperature of transistor case in $^{\circ}\text{C}$.
T_{c2} : Temperature of heat sink in $^{\circ}\text{C}$.

4.5.10.4 Calibration and accuracy. Thermocouples and equipment utilized for temperature measurements shall be calibrated prior to test in order to yield an accuracy of $+1^{\circ}\text{C}$ for the temperatures recorded in accordance with 4.5.10.3. Thermocouple calibrations shall be performed using the guidance of ASTM STP470. Measurement apparatus for determination of power supplied to the transistor shall be calibrated to yield an accuracy of $+1/4$ watt prior to test. Reference standards utilized for calibrations shall have calibrations which are traceable to the National Bureau of Standards (NBS) or which have been derived from accepted values of natural physical constants.

4.5.10.5 Transistor replacement. Replace transistor after every fifteen (15) thermal interface impedance determinations. Transistor replacement shall be performed on a rotational basis among the five (5) transistors specified in 4.5.10.1.

4.5.11 Peel strength. The peel strength shall be measured in accordance with ASTM D3330, Method A.

4.5.12 Flame Resistance. The flame resistance of the insulation sheet material shall be determined in accordance with FED. TEST METHOD STD. NO. 191, Method 5905.

4.5.13 Visual Examination. The material shall be visually examined for conformance to 3.4. Unless otherwise specified, visual examination shall be conducted with the unaided eye, except for normal corrected vision.

4.6 Examination of Preservation, Packaging, Packing, and Marking. An examination shall be made to determine that preservation, packaging, packing, and marking comply with Section 5 requirements and the specifications, standards, regulations, and publications referenced therein or as otherwise specified in the acquisition document (see 6.2). Sampling for this inspection shall be performed in accordance with MIL-STD-105. Unit of sample shall be defined as one shipping container fully prepared for delivery. The lot size shall be the number of containers offered for delivery at one time. The inspection level shall be 2.5 defects per hundred units. Examinations shall be in accordance with the list below.

<u>Examine</u>	<u>Defect</u>
Marking	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Workmanship	Inadequate application of components, such as incomplete closure of container flaps, loose strapping or taping, inadequate stapling. Bulged or distorted container.
Materials	Not in accordance with applicable specifications, standards, regulations and publications referenced in Section 5.

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5. PACKAGING

5.1 Preservation and packaging. The insulation sheets shall be preserved and packaged in accordance with ASTM D3951 in a manner which will insure adequate protection against deterioration and damage during shipment from the supply source to the first receiving activity for immediate use.

5.2 Packing. The insulation sheets packaged as specified in 5.1 shall be packed in containers which will insure acceptance by common carrier at the lowest rates and safe delivery at destination. Packing shall comply with U. S. Post Service Manual, Uniform Freight or National Motor Freight Classification Rules and Regulations, as applicable.

5.3 Marking. In addition to any marking specified in the contract or order, unit packages and shipping cartons shall be marked in accordance with MIL-STD-129 and shall include the following:

- a. This specification number and revision level.
- b. Material identification number (see 1.2.1).
- c. Manufacturer's name and address.
- d. Manufacturer's designation.
- e. Lot or batch number.
- f. Date of manufacture.
- g. Date of shipment from manufacturer.
- h. Material size, thickness, and number of sheets.
- i. Purchase order number.
- j. Test report number.

6. NOTES

6.1 Intended use. This material is intended to provide an electrically insulating but thermally conductive path, without the use of thermal grease, between heat-generating electrical or electronic parts and their heat sinks. Type I is intended for use in both aerospace and ground based equipments. Types II and III are intended only for use in ground based equipments. This material is not for use on electronic assemblies that will be subsequently conformally coated with nonsilicone materials. Nonsilicone coatings will not adhere to the insulation sheet and thus, dielectric debris could be generated.

6.2 Ordering data. Acquisition documents and requests for bid, or quotation, shall specify the following:

- a. Title, number, and date of this specification.
- b. First article inspection, if required (see 3.1).
- c. Material identification number (see 1.2.1).
- d. Number of sheets required.

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- e. Any special markings required.
- f. Preservation and packaging, if other than as specified (see 5.1 and 5.2).
- g. Sheet width and length, if other than as specified (see 3.3.1).
- h. Color, if required (see Table II).

6.3 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL), the data requirements identified below shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL incorporated into the contract. When the provisions of DAR 7-104.9 (n) (2) are invoked and the DD Form 1423 is not used, the data specified below shall be delivered by the contractor in accordance with the contract or purchase order requirements. Deliverable data required by this specification is cited in the following paragraphs.

Paragraph No.	Data Requirement Title	Applicable DID No.	Option
4.3	Report, First Article Test	UDI-T-23790	None

(Data item descriptions related to this specification, and identified in section 6 will be approved and listed as such in DoD 5000.19L., Vol. II, AMSDL. Copies of data item descriptions required by the contractors in connection with specific acquisition functions should be obtained from the Naval Publications and Forms Center or as directed by the contracting officer.)

6.3.1 Waiver of data requirements. The data requirements of 6.3 and any task in sections 3, 4 or 5 of the specification required to be performed to meet a data requirement may be waived by the contracting/acquisition activity upon certification by the offeror and accepted by the Government under a previous contract for identical item acquired to this specification. This does not apply to specific data which may be required for each contract regardless of whether an identical item has been supplied previously (for example, test reports).

6.4 First article inspection. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection as to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.5 Definitions.

6.5.1 Batch. A batch shall be defined as that quantity of material, which has been subjected to unit chemical processing or physical mixing or both, at the same time, designed to produce a product with uniform characteristics.

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6.6. Mounting pressure. The recommended mounting pressure for optimum results is 200 to 300 psi. The torque required to achieve this pressure varies depending on the size and number of fasteners and surface area of the device in contact with the pad. The formula to determine this is:

$$P = \frac{(T) \times (N)}{(0.2) \times (D) \times (A)}$$

P = Pressure in psi

T = Torque in in-lbs.

N = Number of Fasteners

D = Fastener Diameter (inches)

A = Contact Surface Area (sq. inches)

6.7. Hazards. This specification may involve hazardous materials, operations, and equipment. This specification does not purport to address the safety problems associated with its use. It is the responsibility of the insulation sheet supplier or test activity to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations which may apply.

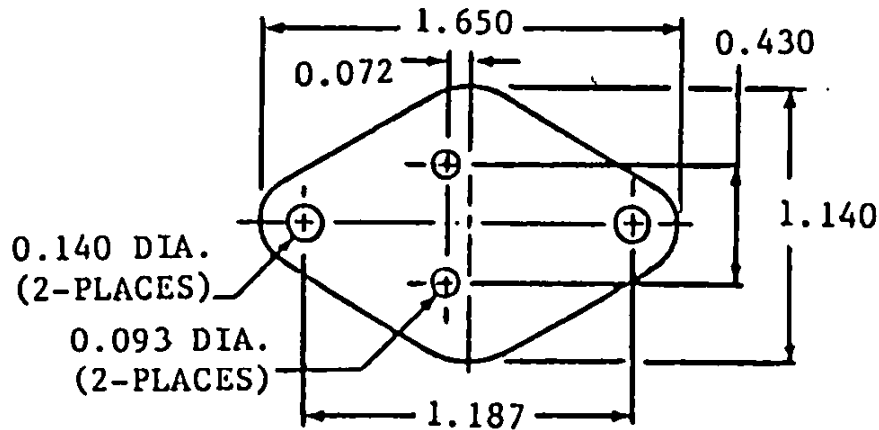


FIGURE 1

(Dimensions are in inches.)

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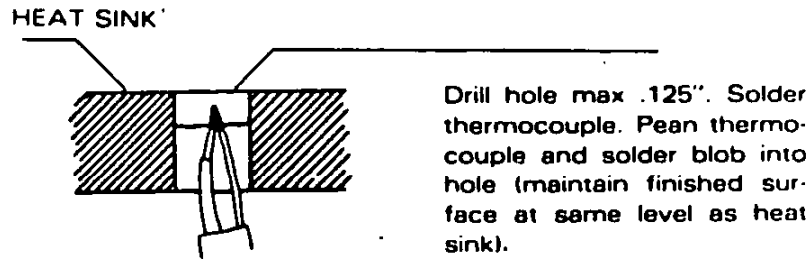


FIGURE 2

Custodians:

Army - ER
Navy - EC
Air Force - 85

Preparing activity:

Army - ER

Review activities:

DLA-GS
Army - ER
Navy - EC
Air Force - 85

(Project 5970-0595)

Agent:

DLA-GS

INSTRUCTIONS: In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and mailed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

NOTE: This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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DEPARTMENT OF THE ARMY

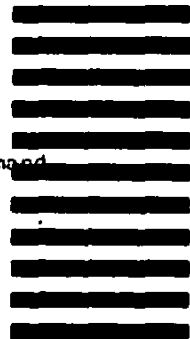


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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL <i>(See Instructions - Reverse Side)</i>	
1. DOCUMENT NUMBER <i>MIL-I-49456</i>	2. DOCUMENT TITLE
3a. NAME OF SUBMITTING ORGANIZATION	4. TYPE OF ORGANIZATION (Mark one) <input type="checkbox"/> VENDOR <input type="checkbox"/> USER <input type="checkbox"/> MANUFACTURER <input type="checkbox"/> OTHER (Specify): _____
3b. ADDRESS (Street, City, State, ZIP Code)	
5. PROBLEM AREAS	
a. Paragraph Number and Wording:	
b. Recommended Wording:	
c. Reason/Rationale for Recommendation:	
6. REMARKS	
7a. NAME OF SUBMITTER (Last, First, MI) - Optional	7b. WORK TELEPHONE NUMBER (Include Area Code) - Optional
8. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional	8. DATE OF SUBMISSION (YYMMDD)