

HH-P-46E
March 3, 1975
SUPERSEDING
Int. Fed. Spec. HH-P-0046D (NAVY-Ships)
July 27, 1973 and
Fed. Spec. HH-P-46C
May 26, 1966
(See 6.7 and 6.8)

FEDERAL SPECIFICATION

PACKING, ASBESTOS, SHEET, COMPRESSED

This specification was approved by the Commission, Federal Supply Service, General Service Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers two classes of compressed asbestos sheet packing materials for use in pipe joints.

1.2 Classification. Asbestos sheet packing materials shall be of the following classes, as specified (see 6.2):

Class 1 - For gasket joint sealing material for steam, hot and cold water, except potable water, or brine, air and gases (other than halocarbon refrigerant), and oil.

Class 2 - For gasket joint sealing material for halocarbon refrigerant systems (R11, R12, R22, and R114).

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein:

FEDERAL SPECIFICATIONS:

VV-L-825 - Lubricating Oil, Refrigerant Compressor.
PPP-B-576 - Boxes, Wood, Cleated, Veneer, Paper Overlaid.
PPP-B-585 - Boxes, Wood, Wirebound.
PPP-B-591 - Boxes, Fiberboard, Wood-Cleated.
PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-636 - Boxes, Wood, Mailed and Lock-Corner.
PPP-B-640 - Boxes, Fiberboard, Corrugated, Triple-Wall.
PPP-B-1055 - Barrier Material, Waterproofed, Flexible.

FEDERAL STANDARD:

Fed. Std. No. 123 - Marking for Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal Specifications and Standards as outlined under General Information in the Index of Federal Specifications and Standards and at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification and other Federal specifications required by activities outside the Federal Government for bidding purposes are

available without charge at the General Services Administration Regional Offices in Boston, New York, Washington, DC, Atlanta, Chicago, Kansas City, MO, Fort Worth, Denver, San Francisco, Los Angeles, and Seattle, WA.)

(Federal Government activities may obtain copies of Federal Specifications and Standards and the Index of Federal Specifications and Standards from established distribution points in their agencies.)

FSC 5330

MILITARY SPECIFICATIONS:

- MIL-L-10547 - Liners, Case, and Sheet, Overwrap; Water-Vaporproof or Waterproof Flexible.
- MIL-F-20670 - Flanges, Pipe, Carbon Steel, 150 P.S.I.; W.S.P. (For Naval Shipboard Use).

MILITARY STANDARDS:

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-147 - Palletized Unit Loads for 40" X 48" Pallets.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on data of invitation for bids or request for proposal shall apply.

Uniform Classification Committee, Agent:
Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, Room 1106, 222 South Riverdale Plaza, Chicago, Illinois 60606.)

National Motor Freight Traffic Association, Inc., Agent:
National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associates, Inc., ATTN: Tariff Order Section, 1616 P Street, N.W., Washington, DC 20036.)

AMERICAN SOCIETY FOR TESTING AND MATERIALS (astm)

- D471 - Change in Properties of Elastomeric Immersion in Liquids, Test for.
- F36 - Compressibility and Recovery of Gasket Materials, Test for.
- F39 - Compressed Asbestos Sheet Packing, Testing.

(Copies may be obtained from the American Society for Testing and Materials, 1916 Race Street, Philadelphia 19103.)

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

3. REQUIREMENTS

3.1 Qualification. Compressed asbestos sheet furnished under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.4).

3.2 Material. The Compressed asbestos sheet will be made of asbestos fiber, natural or synthetic elastomer, or a mixture of the two, vulcanizing agent and suitable mineral fillers.

3.2.1 Asbestos fiber. The asbestos fiber shall be chrysotile and shall

contain not less than 12 percent water of crystallization (see 4.5.1).

3.2.2. Solvents. The finished sheet shall be free of gasoline or other solvents used in the process of manufacture (see 4.4.3.1).

3.3 Lubricant. Unless otherwise specified (see 6.2), the finished sheets of packing shall not be lubricated. When a lubricant is required, either a graphite or silicone type may be used.

3.4 Asbestos fiber and rubber content. The packing shall contain not less than 70 percent by weight of asbestos fiber and not less than 10 percent by weight of natural or synthetic rubber when tested as specified in 4.5.1.1.2.

3.4.1 Chemically combined water. The asbestos fiber shall be chrysotile and the dry asbestos fiber shall contain not less than 12 percent by weight of chemically combined water (water of crystallization), when tested as specified in 4.5.1.1.3.

3.5 Construction. The packing shall be thoroughly and evenly mixed to the desired consistency (see 3.4), and compressed into a sheet of compact and uniform texture either cross-laminated or single-ply.

3.6 Weight and thickness. The Weight and thickness of the finished compressed asbestos sheet shall be as specified (see 6.2), and in accordance with table I.

TABLE I - Weight and thickness.

Weight (pounds per square yard)	Thickness	
	Required (inch)	Tolerance (inch)
Minimum		
0.8	0.0156	+0.005 -0.002
2.0	.0313	+/-0.005
4.0	.0625	+/-0.063
6.0	.0938	+/_0.0094
8.0	.1250	+/-0.0125
12.0	.1875	+/-0.0188
16.0	.250	+/-0.0250

3.6.1 Form. Compressed asbestos packing in thicknesses up to and including 1/16 inch shall be furnished in rolls (see 5.1.1.1); and compressed asbestos packing exceeding 1/16 inch in thickness shall be furnished in flat sheets.

3.7 Length and width. Unless otherwise specified (see 6.2), asbestos packing sheets shall be furnished in widths not less than 36 inches, and in lengths not greater than 153 inches when examined as specified in 4.4.3. The tolerance limits for both length and width shall be -0 percent to plus 1 percent.

3.8 Loss of weight on heating. The loss of weight of the packing on heating at 900 deg. to 925 deg. Celsius (C) (1652 deg. to 1697 deg. Fahrenheit (F)) shall be not more than 35 percent when tested as specified in 4.5.2.

3.9 Compressibility and recovery. The compressibility of the sheet shall be not less than 5 percent not more than 20 percent for 1/64 inch thickness, and not less than 7 percent nor more than 17 percent for 1/32 inch thickness. The recovery shall be not less than 40 percent. Tests shall be as specified in 4.5.4.

3.10 Tensile strength. Tests for tensile strength shall be made as specified in 4.5.5.

- (a) Sheets 1/32 inch and thicker shall have an average tensile strength of not less than 3,500 pounds per square inch (psi).
- (b) Single-ply sheets 1/64 inch thick shall have a minimum average

tensile strength for each sheet of 1,200 psi in the weakest direction and an average tensile strength in both the longitudinal and transverse directions of not less than 2,000 psi.

3.11 Identification of product. Unless otherwise specified (see 6.2), sheets and rolls shall be legibly marked with a fuel-oil resistant lacquer, ink, or dye to show information as follows:

- | Class 1 | Class 2 |
|----------------------------|----------------------------|
| (a) HH-P-46, class 1 | (a) HH-P-46, class 2 |
| (b) Manufacturer's name | (b) Manufacturer's name |
| (c) Product identification | (c) Product identification |

The markings shall be not less than 3/8 inch in height, on one side only, and shall be on every square foot, or less, of the packing.

3.11.1 When lubricant is required (see 6.2), sheets and rolls shall have attached a sturdy paper tag containing the information required by 3.11, marked thereon in a fuel-oil resistant lacquer, ink, or dye.

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3.12 Limitation on age. The packing shall be not older than 4 quarters from date of manufacture, when offered for delivery to the Government (see 5.3).

3.13 Simulated performance - class 2 only. The flanged joint containing the compressed asbestos sheet shall not leak after being subjected to the simulated performance test specified in 4.5.6. There shall be no corrosion of the test flanges in the gasket contact area.

3.13.1 Class 2 gaskets shall permit no leakage of refrigerant during the 14 days under pressure in the test described in 4.5.6.

3.14 Oil immersion. Samples of class 2 gaskets immersed in oil conforming to VV-L-825, class II, shall not swell more than 20 percent, no decompose after a 48-hour immersion period (see 4.5.7).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 seemed necessary to assure supplies and services conform to prescribed requirements.

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

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

4.3 Qualification tests. Qualification tests shall be conducted at a laboratory satisfactory to the Naval Ship Engineering Center. Qualification tests shall consist of the examinations of 4.4.3 and the tests specified in 4.5. Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.4) and 6.5).

4.4 Quality conformance inspection.

4.4.1 Lot. For purposes of sampling a lot shall consist of all asbestos sheet of the same class and thickness produced under essentially the same conditions and offered for delivery at one time.

4.4.2 Sampling.

4.4.2.1 Sampling for examination of asbestos packing. A random sample of rolls or sheets shall be selected from each lot offered for examination in accordance with MIL-STD-105 at Inspection Level II. The Acceptable Quality Level (AQL) shall be 2.5 percent defective. The sample rolls or sheets shall be obtained in equal number from each shipping container, as nearly as possible.

4.4.2.2 Sampling for tests. Two samples, each 12 inches by 12 inches, shall be selected from each lot.

4.4.2.3 Sampling for examination of packaging, packing, and marking for

shipment. A random sample of exterior containers shall be selected from each lot in accordance with MIL-STD-105 at Inspection S-1.

4.4.3 Visual and dimensional examination. Each of the sample rolls or sheets selected in accordance with 4.4.2.1 shall be surface examined, and measured to determine conformance with the requirements of this specification which do not require test. Any sample containing one or more visual or dimensional defects shall not be offered, and if the number of defective rolls or sheets in any sample exceeds the acceptance number for that sample, this shall be cause for rejection of the lot represented by the sample.

4.4.3.1 Gasket material which is delivered in rolls shall be unrolled sufficiently to expose the required sample area (square yards). Both side (faces) shall be inspected whether flat sheet or roll materials. Visual and dimensional examination shall be directed to the characteristics of table II.

TABLE II - Classification of defects.

Category	Item	Defect
Critical		None defined
Major		
101	Asbestos sheets and rolls	Thickness is not as specified
102		Width is less than 36 inches
103		Length is greater than 153 inches
104		Marking is not as specified; class and manufacturer's name and brand missing
105		Surface is not smooth
106		Evidence of lubricant on the sheets
107		Sheet is damaged; not suitable for making gaskets
108		Material is not in rolls, as specified
109		Material is not in flat sheets, as specified
110		Asbestos sheets (see 3.2.2, 3.7, and 5.2.1.2)
111	Finished sheet not free of gasoline or other solvents	
112	Sheet less than minimum length required	
113	Box open (see 5.2.1.1., 5.2.2., and 5.2.3)	
114		Box not properly packed
115	Box closed (see 5.2.1.2.1, 5.2.2.1, or 5.2.3, 5.3, and 5.4)	Lack of or improper strapping
116		Box weight excessive
117		Box improperly closed, improperly marked
118		Not palletized, if required
Minor		None defined

4.4.4 Examination of packaging, packing and marking for shipment. Sample units of exterior containers, selected in accordance with 4.4.2.3 shall be examined for the defects shown in table II, with an AQL of 1.5.

4.4.5 Lot tests. The samples selected in accordance with 4.4.2.2 shall be subjected to the test specified in 4.5.2 through 4.5.5. Failure in any test shall be cause for rejection of the lot.

4.5 Tests

4.5.1 Chemical analysis (see 6.3).

4.5.1.1 Asbestos fiber and rubber content. A specimen of approximately 2 grams (g) and prepared as specified in 4.5.1.1 shall be placed in a 125 milliliters (ml) lipped assay flask or a 250 ml Erlenmeyer flask or equal fitted with a standard taper and an air condenser. Ten g of paranitrotoluene

and 25 ml of orthodichlorobenzene shall be added, and the mixture heated to 180 deg. to 190 deg. C (356 deg. to 374 deg. F) on a hotplate under a hood with occasional stirring until the rubber dissolves. From 4 to 10 hours are usually sufficient to effect mixture decanted through a 100 mesh screen. The residue shall be washed with chloroform until the insoluble fillers are removed as indicated by a clear filtrate. If undissolved paranitrotoluene and orthodichlorobenzene repeated. The filtrates and wash solutions shall collect any fibers that may have passed through previously. The fibers shall then be transferred to a siphon cup and extracted for 1 hour with chloroform, dried at 105 deg. C (221 deg. F), for 1 hour, cooled, and weighed.

4.5.1.1.2 Chemically combined water. Two specimens of approximately 1 g each shall be taken from the fibrous material which has been treated as required in 4.5.1.1.2. They shall be dried for 1 hour in platinum crucibles at a temperature of 105 deg. to 110 deg. C (221 deg. to 230 deg. F), cooled in a desiccator, and again weighed. The specimens and crucibles shall be ignited in an electric furnace at a temperature of 800 deg. to 825 deg. C (1472 deg. to 1517 deg. F), or over a blast lamp, to a constant weight.

Calculation.

$$\text{Chemically combined water, percent} = \frac{S-R}{S} \times 100$$

Where:

R = Weight of specimen after ignition.

S = weight of specimen before ignition.

The average of the results obtained from the two specimens shall be chemically combined water of the sample.

4.5.1.1.3 Cotton, asbestos, and chemically combined water. If the fibrous material contains cotton or other organic materials as indicated by nonconformance with 3.4.1, it may be determined as follows: The asbestos content of the fibrous material which has been treated as specified in 4.5.1.1.2 shall be determined by the combustion procedure for cotton and asbestos. If lubricant, carbon black, or other material insoluble in the paranitrotoluene - orthodichlorobenzene mixture remains on the fibers, the combustion method will not give reliable results, and in such cases the results obtained shall be considered to be approximations. A specimen weighing approximately 1 g shall be taken from the fibrous material of 4.5.1.1.2. It shall be placed in a porcelain or platinum combustion boat, dried for 1 hour at a temperature of 105 deg. to 110 deg. C (221 deg. to 230 deg. F), cooled in a desiccator, and weighed. The dried specimen in the boat shall be inserted in the combustion tube of an electric organic combustion furnace. The specimen shall be maintained at a temperature of 900 deg. +/- 50 deg. C (1652 deg. +/- 90 deg. F) for approximately 30 minutes or until combustion of the cotton is complete. During the combustion period, a current of oxygen (carbon dioxide free) shall be passed through the combustion tube at a rate of approximately 200 ml per minute. The combustion gases shall be passed through either two U-tubes containing calcium chloride or through a drying tube containing anhydrous magnesium perchlorate or calcium sulphate to remove the moisture; and finally the gases shall be passed into either a weighed Vanier or similar absorption bulb containing a strong solution of caustic potash, or in a weighed carbon dioxide absorption bulb containing a sodium hydroxide impregnated base (the absorbent having the trade name "ascarite" is of this type), to absorb the carbon dioxide. Three-elevenths of the increase in weight of the Vanier or other carbon dioxide absorption bulb shall represent the weight of the carbon in the fibrous material. This shall be 44.40 percent of the cotton. These factors may be combined to give a constant of 0.614. When the combustion has been completed, the absorption tube shall be weighed, and the combustion boat containing the ignited residue shall be removed from a furnace, cooled in a desiccator, and weighed.

Calculation. The percentage of cotton shall be calculated as follows:

$$A = \frac{61.4}{E} \times C$$

Where:

A = Percentage of cotton.

B = Weight of carbon dioxide, grams.

E = Weight of fiber specimen, grams.

4.5.2 Loss in weight on heating.

4.5.2.1 Preparation of sample. Small strips or cross-sections shall be cut from various parts of the sample so as to be representative of the sample. The specimen shall be split with the aid of a knife to produce relatively thin layers of material.

4.5.2.2 Procedure. Specimens of approximately 5 g each, prepared as in 4.5.2.1 shall be dried for 1 hour in porcelain crucible at a temperature at 105 deg. to 110 deg. C (221 deg. to 230 deg. F), cooled in a desiccator, and again weighed. The specimen and crucible shall be ignited in an electric furnace at a temperature of 900 deg. to 925 deg. C (1652 deg. to 1697 deg. F) or over a blast lamp, to a constant weight. The loss of weight shall be calculated as follows:

$$\text{Loss in weight (percent ash)} = \frac{R}{S} \times 100$$

Where:

R = weight of specimen after ignition.

S = weight of specimen before ignition.

4.5.3 Thickness. The thickness of the asbestos packing shall be determined as specified in ASTM F39.

4.5.4 Compressibility and recovery. Compressibility and recovery shall be determined as specified in ASTM P36, procedure A.

4.5.5 Tensile strength. Tensile strength shall be determined as specified in ASTM F39.

4.5.6 Performance - class 2 only. The test shall be conducted in a pipe flange gasket test apparatus consisting of two commercial flat-faced flanges in accordance with MIL-F-20670, type C (slip-on welding flanges), 1 inch size, connected to a refrigerant tank as shown on the figure 1. The refrigerant line shall be fitted with a pressure gage and valve so that when the valve is closed, any change in pressure will be indicated by the gage. The refrigerant shall be supplied from a pressure storage vessel provided with a means to control pressure. Winding the tank with a variable temperature electrical heating tape has been found satisfactory. The temperature of the tank shall be measured by some means, such as a thermocouple attached to the tank between heating elements. The vessel shall never exceed a temperature at least 10 deg. below the safe temperature limit for that particular vessel. The four flange bolts shall be fitted with washer type force gages (electrical strain gages) wire through a strain gage switching unit to a strain indicator. The gasket specimen, cut to fit the full face of the flange from 1/32 inch sheet material, shall be installed in the flange joint and the flange bolts tightened to compress the gasket to 2000 pounds per square inch gage (lb/in²g. The refrigerant tank valve and connecting line valve shall be opened to admit refrigerant to the joint. The tank shall be heated until the desired pressure (100 +/- 5 lb/in²g, for R-11, and R-114, 200 +/- 5 lb/in²g for R-12 and R-22) is contained in the flange joint. This pressure shall be maintained by adjusting the electrical input to the tank heater. A pressure sensing electrical switch shall be connected to the refrigerant line. It shall be set to maintain the correct refrigerant pressure. The electrical contacts of the switch shall be connected to the heater circuit to control the heater thereby controlling the pressure. The apparatus should be valved off and the heating unit secured

during extended periods when it is left unattended (for example, at night). No leakage shall occur during 14 days. Test for leakage may be made at shorter intervals and the test discontinued if leakage is evident. Duplicate determinations shall be made (see figure 1).

4.5.6.1 Prior to subjecting the class 2 gasket material to the test above, the sample shall be immersed in VV-L-825, class II oil for a period of 24 hours.

4.5.6.2 The refrigerant leak testing shall be conducted using an electronic leak detector. During the test the sensitivity of the leak detector shall be set to detect a leak of one ounce per year or larger. Any refrigerant leak detected shall be cause for rejection.

4.5.7 Oil immersion - class 2 only. Oil immersion test shall be conducted as specified in ASTM D471. Test specimens, 1 inch by 2 inches, shall be cut at random from one sheet of class 2 material. Specimens shall be completely immersed in VV-L-825, class II oil, and heated to 149 deg. C (300 deg. F) for a period of 48 hours. Samples shall be dried and the percent sell determined. Five specimens shall be tested. Failure of any specimen to comply with 3.14 shall be cause for rejection of the lot.

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5. PREPARATION FOR DELIVERY

(The preparation for delivery requirements specified herein apply only for direct Government procurements. For the extent of applicability of the preparation for delivery requirements of reference documents listed in section 2, see 6.6.)

5.1 Packaging. Packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Rolls. Asbestos packing shall be rolled and restrained from unwinding. The rolls shall be wrapped with class E2 barrier material conforming to PPP-B-1055 with ends enclosed. All seams, joints, and closures shall be sealed with adhesives or other suitable materials to afford waterproofness equal to that of the wrap material itself. A minimum of 2-inch overlap shall be provided at all overlapping edges.

5.1.1.2 Sheets. No overpackaging required.

5.1.2 Level C. Asbestos packing in the form specified (see 6.2), shall be packaged to afford protection against deterioration and damage from the supply source to the first receiving activity for immediate use. The supplier's normal packaging method may be used when such meets the requirements of this level.

5.2 Packing. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 Level A.

5.2.1.1 Rolls and sheets. Rolls and sheets shall be packed in containers conforming to any of the following specifications at the option of the contractor:

Specification	Classification
PPP-B-576	Class 2
PPP-B-585	Class 3 use
PPP-B-591	Overseas type
PPP-B-601	Overseas type
PPP-B-621	Class 2
PPP-B-636	Weather-resistant
PPP-B-640	Class 2

5.2.1.2 Case liners for first sheets. Shipping containers for flat sheets shall have case liners conforming to MIL-L-10547. Case liners shall be closed and sealed in accordance with the appendix to MIL-L-10547. Case liners for fiberboard boxes, PPP-B-636 and PPP-B-640, may be omitted provided all center and edge seams and manufacturer's joints are sealed and waterproofed with pressure sensitive tape in accordance with the applicable fiberboard box specification.

5.2.1.2.1 Shipping containers shall be closed and strapped or banded in accordance with the applicable box specification or appendix thereto. The gross weight of wood or wood-cleated boxes shall not exceed 200 pounds; fiberboard boxes shall not exceed the weight limitations of the applicable fiberboard box specification.

5.2.2 Level B. Asbestos packing shall be furnished in rolls or sheets as specified in 5.1.1.

- (a) Rolls packaged as specified in 5.1.1.1 will need no overpacking.
- (b) Sheets shall be packed in containers conforming to any of the following specifications at the option of the contractor.

Specification	Classification
PPP-B-576	Class 1
PPP-B-585	Class 1 or 2 use
PPP-B-591	Domestic type
PPP-B-601	Domestic type
PPP-B-621	Class 1
PPP-B-636	Class domestic
PPP-B-640	Class 1

5.2.2.1 Shipping containers shall be closed in accordance with the applicable box specification or appendix thereto. The gross weight of wood or wood-created boxes shall not exceed 200-pounds; fiberboard boxes shall not exceed the weight limitations of the applicable fiberboard box specification.

5.2.3 Level C. Asbestos packaged as specified shall be packed in a manner to insure carrier acceptance and safe delivery at destination at the lowest rate. Containers, packing, or method of shipment shall comply with Uniform Freight Classification Rules or National Motor Freight Classification Rules.

5.3 Marking. Containers shall be marked in accordance with 5.3.1 or 5.3.2, as applicable, and shall include any special marking specified in the contract or order (see 6.2). In addition, the date of manufacture (see 3.12), expressed by quarter and year (for example sheets manufactured in January, February, or March 1966 would be marked 1-66), shall be marked on the outside of each shipping container. The size of letters and material for the marking for date-of-manufacture shall conform to FED-STD-123 or MIL-STD-129, as applicable.

5.3.1 Civil agencies. In addition to the marking specified in 5.3, all containers for civil agencies shall be marked in accordance with FED-STD-123.

5.3.2 Military agencies. In addition to the marking specified in 5.3, all containers for military agencies shall be marked in accordance with MIL-STD-129.

5.4 Palletization. When specified (see 6.2), shipping containers shall be palletized in accordance with MIL-STD-147.

6. NOTES

6.1 Intended use. The packing is intended for use in pipe joints under the following conditions:

6.1.1 Class 1

- (a) Saturated steam to 300 lb/in²g or alternatively to 300 pounds pressure and 350 deg. C (600 deg. F) temperature.
- (b) Hot or cold water or brine to 400 pounds pressure, except potable water.
- (c) Air to 3,000 pounds pressure.
- (d) Gases of combustion to 300 pounds pressure and 350 deg. C (600 deg.) temperature.
- (e) Fuel oil to 1500 pounds pressure and 121 deg. C (250 deg. F) temperature.

6.1.2 Class 2

- (a) Refrigerant service to 225 pounds pressure and 149 deg. C (300 deg. F) temperature.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) Class required (see 1.2).
- (c) Whether the finished sheet shall be furnished with lubricant (see 3.3 and 3.11.1).
- (d) Weight, thickness and form required (see 3.6 and 3.6.1).
- (e) Minimum and maximum length and width of sheet required (see 3.7).
- (f) Whether identification of product shall be other than that

- specified (see 3.11).
- (g) Selection of applicable levels of packaging and packing required (see 5.1, 5.1.2, and 5.2).
 - (h) Whether special marking is required (see 5.3).
 - (i) Whether shipping containers shall be palletized (see 5.4).

6.3 Chemical analysis. Present known methods of chemical analysis of this type of material do not have a high degree of accuracy. It is necessary to make assumptions and unless one has run this type of test many times, it is difficult to arrive at the correct answer on what is in the sheet and have other laboratories be able to duplicate the findings. At the same time the importance of accurately determining what is in the sheet is considered satisfactory, a comparison of the results of the loss of weight test with previous results, where the material passed the chemical analysis test, is sufficient to assure that the material is the same as that previously supplied.

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6.4 With respect to products requiring qualification, awards will be made only for products which are at the time set for opening of bids, qualified for inclusion in applicable Qualified Products List OPL HH-P-46 whether or not such products have actually been so listed by that date. The attention of the suppliers is called to this requirement, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to awarded contracts or orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Ship Engineering Center, Prince George's Center, Center Building, Hyattsville, Maryland 20782, and information pertaining to qualification of products may be obtained from that activity. Application for Qualification tests shall be made in accordance with "Provisions Governing Qualification SD-6" (see 6.5).

6.5 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

6.6 Sub-Contracted material and parts. The preparation for delivery requirements of referenced documents listed in section 2 do not apply when material and parts are procured by the supplier for incorporation into the equipment and lose their separate identity when the equipment is shipped.

6.7 Supersession data. The asbestos sheet covered by Military Specification MIL-A-17472B, Asbestos Sheet, Compressed (Gasket Material), dated 22 May 1964 is now class 1 of this specification.

6.8 THE MARGINS OF THIS SPECIFICATION ARE MARKED "#" TO INDICATE WHERE CHANGES (ADDITIONS, MODIFICATIONS, CORRECTIONS, DELETIONS) FROM THE PREVIOUS ISSUE HAVE BEEN MADE. THIS WAS DONE AS A CONVENIENCE ONLY AND THE GOVERNMENT ASSUMES NO LIABILITY WHATSOEVER FOR REQUIREMENTS OF THIS DOCUMENT BASED ON THE ENTIRE CONTENT IRRESPECTIVE OF THE MARGINAL NOTATIONS AND RELATIONSHIP TO THE LAST PREVIOUS ISSUE.

Custodians:

Army - MR
Navy - SH
Air Force - 68

Preparing activity:

Navy - SH
(Project 5330-0237)

Review activities:

Army - MR, AT
Navy - SH, YD
Air Force - 68

User activates:

Army - AV
Navy - MC, OS

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See Section 2 of this specification to obtain extra copies and other documents referenced herein. Price 40 cents each.

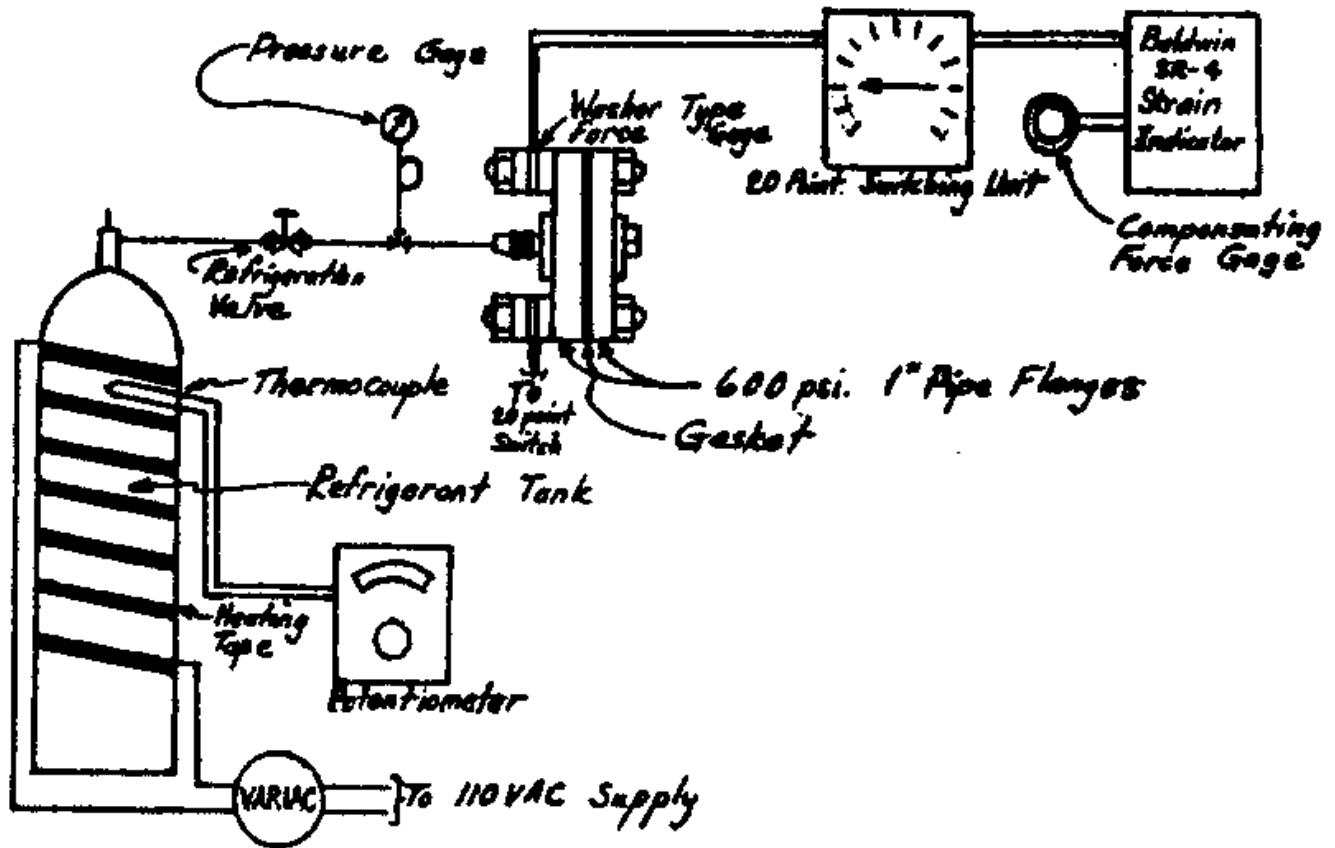


Figure 1 - Schematic Diagram of Pipe Flange Gasket Apparatus
for Testing Refrigerant Gasket Materials.

SH 10653

Testing Refrigerant Gasket Materials.

HH-P-46E
AMENDMENT 2
July 26, 1985
SUPERSEDING
INT. AMENDMENT-1 (SH)
April 13, 1984

FEDERAL SPECIFICATION

PACKING; ASBESTOS, SHEET, COMPRESSED

This amendment, which forms a part of HH-P-46E, dated March 3, 1975, is approved by the Assistant Administrator, Office of Federal Supply and Services, General Services Administration, for the use of all Federal Agencies.

PAGE 2

3.1: Delete and substitute:

"3.1 Qualification for class 1 compressed asbestos sheet only. Compressed asbestos sheet furnished for class 1 under this specification shall be products which are qualified for listing on the applicable qualified products list at the time set for opening of bids (see 4.3 and 6.4).

3.1.1 First article inspection for class 2 compressed asbestos sheet only. When specified (see 6.2) a sample shall be subjected to first article inspection (see 4.3.1 and 6.6)."

PAGE 4

4.2: Delete and substitute:

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

- (a) Qualification inspection (see 4.3).
- (b) First article inspection (see 4.3.1).
- (c) Quality conformance inspection (see 4.4).

4.3 Qualification inspection for class 1 only. Qualification inspection for class 1 compressed asbestos sheet shall be conducted at a laboratory satisfactory to the Naval Sea Systems Command. Qualification inspection shall consist of the examinations of 4.4.3 and the tests specified in 4.5.

4.3.1 First article inspection for class 2 only. First article inspection for class 2 compressed asbestos sheet shall consist of the examination of 4.4.3 and tests specified in 4.5."

FSC 5330

DISTRIBUTION STATEMENT A Approved for public release; distribution unlimited

HH-P-46E
AMENDMENT 2

PAGE 9

6.2: Delete and substitute:

"6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in acquisition documents:

- (a) Title, number, and date of this specification.
- (b) Class required (see 1.2).
- (c) First article inspection, if required (see 3.1.1).
- (d) Whether the finished sheet shall be furnished with lubricant (see 3.3 and 3.11.1).
- (e) Weight, thickness and form required (see 3.6 and 3.6.1).
- (f) Minimum and maximum length and width of sheet required (see 3.7).
- (g) Whether identification of product shall be other than that specified (see 3.11)
- (h) Selection of applicable levels of packaging and packing required (see 5.1, 5.1.2, and 5.2).
- (i) Whether special marking is required (see 5.3).
- (j) Whether shipping containers shall be pelletized (see 5.4)."

6.6 and 6.7: Delete and substitute:

"6.6 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.

6.7 Sub-contracted material and parts. The preparation for delivery requirements of referenced documents listed in section 2 do not apply when material and parts are acquired by the contractor for incorporation into the equipment and lose their separate identity when the equipment is shipped.

MILITARY INTERESTS:

CIVIL AGENCY COORDINATING ACTIVITY:
GSA-FSS

Custodians

Army - MR
Navy - SH

Preparing activity:

Navy - SH
(Project 5330-0634)

Review activities

Army - AT
DIA - IS

User activities

Navy - MC, OS, YD

NOTICE OF
VALIDATION

INCH-POUND

HH-P-46E
NOTICE 1
4 April 1991

FEDERAL SPECIFICATION

PACKING; ASBESTOS, SHEET, COMPRESSED

HH-P-46E, dated March 3, 1975 has been reviewed and is determined to be valid for use in acquisition.

Preparing activity:
Navy - SH

AMSC N/A

FSC 5330

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.