MIILITARY SPECIFICATION

EDGESEAL MATERIAL, SELF-ADHERING

This specification is approved for use by US Army Armament Research and Development Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers one type of self-adhering, (no primer), heat-fusing material for edgesealing laminated filter media to metal surfaces.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

MILITARY

MIL-F-51451 - Filter, Cas-Particulate, 18 CFM: M41.

STANDARDS

FEDERAL

FED-STD-123 - Marking for Shipment (Civil Agencies).
FED-STD-406 - Plastics; Methods of Testing.
FED-STD-595 - Colors.
FED-STD-601 - Rubber; Sampling and Testing,

FSC 4[illegible]

: Beneficial comments (recommendations, additions, deletions) and *any* pertinent date which may be of use in improving this document should be addressed: to: Commander, US Army Armament Research and Development Command, ATTN: DRDAR-TSC-S, Aberdeen Proving Ground, MD 21010 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

(copies of specifications, standards , drawings and publications required by contractors 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 publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request fur proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM Standard

D624 - Tear Resistance of Vulcanized Rubber.

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

3. REQUIREMENTS

3.1 Material. The edgeseal material shall consist of polyvinyl chloride dispersed in suitable liquid plasticizers, with sufficient stabilizers, and with pigments and fillers yielding a gray color similar to No. 36081 of FED-STD-595 (see 6.5). The material shall not be hazardous or detrimental to molding equipment. The material shall be packaged in containers whose nominal capacity is not greater than 5 gallons (US). Any change in ingredients or in quantities beyond the tolerable range of variation [see (b) below] shall constitute cause for submission of a new preproduction sample (see 3.8). The contractor shall submit the following information which he may designate as l "company confidential," in which case it will be so treated by the Government:

(a) Chemical and trade names of all ingredients in the edgeseal material. If the chemical name can not be obtained the trade name shall be sufficient.

(b) The purity and quantity, with allowable tolerance for each ingredients as required to fully define the edgeseal material. Quantity of each ingredient shall be expressed in percent by weight or in parts by weight.

3.2 Edgeseal migration. Filters molded with this edgeseal material shall meet the cyanogen chloride (CK) and dimethylmethylphosphonate (DMMP) gas life requirement of 3.5. 1 , 3.5.2.1 and 3.5.2.2 of MIL-F-51451 when inspected as specified in 4.3.2.2.

3.3 Physical properties. Standard specimens (4.4.4.1) fabricated from the edgeseal material shall conform to the requirements of table I before and after aging.

TABLE I. Physical properties

Property	Requirement		Test paragraph
	Unaged	Aged*	
Hardness (Shore A)	65 ± 5	65 ± 5	4.4.4.2
Average tensile strength (lb/in^2)	1250 min	1250 min	4.4.4.3
Degree of blocking, max	slight	----	4.4.4.4
Average tear strength (lb/in)	100 min	100 min	4.4.4.5

*Aging. The test specimens shall be subjected to an exposure cycle of 24 hours at 175° ± 2°F and 24 hours at -40° ± 2°F. The specimens shall be held at 73.5° ± 2°F and 50 ± 2 percent humidity for a minimum of 48 hours before testing.

3.4 Brittleness. Specimens fabricated from the edgeseal material shall slow no cracks, fissures, crazing, or ruptures when tested as specified in 4.4.4.6 at a temperature of -10° ± 2°F.

3.5 Volatile loss. The edgeseal material shall not show a loss in weight greater than 1.0 percent when tested as specified in 4.4.4.7.

3.6 Viscosity. The viscosity of the edgeseal material shall be 2500 ± 1000 centipoises (cp) when tested as specified in 4.4.4.8.

3.7 Instruction sheet. The preproduction lot -shall be accompanied by an instruction sheet containing the following information:

(a) Title, number, and date of this specification
(b) Materials designation
(c) Recommended storage conditions
(d) Estimated shelf life (under recommended storage conditions) to maintain required viscosity (see 3.6)
(e) Other information considered useful by the manufacturer or specified by the procuring activity

3.8 Preproduction. Prior to the start of regular production, a preproduction lot of edgeseal material shall be produced for testing in accordance with 4.3.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.

4.1.1 Contractor's responsibility. 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 specified requirements.

4.1.2 Objective evidence. The contractor shall provide objective evidence including actual test results acceptable to the contracting officer that the requirements of 3.1) and section 5 for which specific inspection has not been provided in this specification have been satisfied.

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

(a) Preproduction inspection (see 4.3).
(b) Quality conformance inspection (see 4.4).

4.3 Preproduction inspection.

4.3.1 Sample.

4.3.1.1 Edgeseal material. A preproduction sample of 55 gallons of edgeseal material shall be produced using the same methods, materials, and equipment as will be used in regular production.

4.3.1.2 Edgeseal migration. Fifteen sample filters for the edgeseal migration test shall be produced in accordance with the provisions of MIL-F-51451.

4.3.2 Inspection procedure.

4.3.2.1 Edgeseal material. A 1-quart specimen shall be taken from the preproduction sample and test slabs shall be prepared as specified in 4.4.4.1 for testint in accordance with 4.4.4.2 through 4.4.4.7. In addition, a portion of tile l-quart specimen shall be tested for viscosity in accordance with 4.4.4.8.

4.3.2.2 Edgeseal migration. The sample filters shall be tested in accordance with the preproduction provisions for cyanogen chloride (CK), dimethylmethylphosphonate (DMMP), and DMMP after aging specified in table I of MIL-F-51451 for compliance with the edgeseal migration requirement specified in 3.2 (see 6.6).

4.3.3 Acceptance/rejection criteria. If the edgeseal material fails any of the tests specified in 4.3.2 it shall be rejected.

4.4 Quality conformance inspection.

4.4.1 Lotting. A lot shall consist of the edgeseal material produced by one manufacturer, in not inure than 24 consecutive hours under essentially the same

manufacturing conditions and with no change in materials, provided the operation is continuous. In the event that the process is a batch operation, each batch shall constitute a lot (see 6.3).

4.4.3 Sampling. In the case of a continuous process, the unit of product shall be 5 gallons. A sample of five units of product shall be taken at random from each lot. From each container in the sample, a l-quart specimen shall be removed and placed in a clean, dry container labeled to identify the specimen with lot and sample container represented. In the case of batch processing, a S-gallon sample shall be taken from each batch while the material is stored in the final mixing tank. From the 5-gallon sample a l-quart specimen shall be removed and placed in a clean, dry container labeled to identify the specimen with batch represented.

4.4.3 Inspection procedure. Test slabs shall be prepared from each 1-quart specimen as specified in 4.4.4.1, and the slabs shall be tested in accordance with 4.4.4.2 through 4.4.4.7. Also, a portion of each 1-quart specimen shall be tested as specified in 4.4.4.8.

4.4.4 Tests.

4.4.4.1 Preparation of test specimens. Specimens for testing the fused edgeseal material shall be made in open aluminum molds 6-1/2 inches by 6-1/2 inches by not more than 1/2 inch thick, with a cavity size 6 inches by 6 inches and of sufficient depth to produce a sheet 0.075 ± 0.005 inch in thickness. The mold cavity shall be filled with fully dispersed edgeseal material and placed in a mechanical, convection, recirculating type oven at a temperature of 425° ± 2°F so that the mold is essentially level. The edgeseal material shall be fused at 400°F as indicated by a thermocouple placed in the center of the thickness of the sample. (A suitably calibrated thermocouple shall be used to determine the internal temperature of the material; care should be exercised to insure that the thermocouple does not bottom on the mold cavity). Once 400°F is indicated by the thermocouple, hold specimen in oven for 3 (plus 1 or minus f)) minutes, remove the mold from the oven, and cool it at room temperature for 8.0 ± 1.0 minutes followed by force-cooling to room temperature with 10.0 ± 1.0 minute of removal from oven. Conditioning of specimens shall commence within 48 hours of molding the fused sheets. The conditioning shall be in accordance with the applicable test method.

4.4.4.2 Hardness. Three specimens prepared as specified in 4.4.4.1 shall be tested in accordance with method 1082 of FED-STD-406.

4.4.4.3 Tensile strength. Six specimens prepared as specified in 4.4.4.1 shall be tested in accordance with method 4111 of FED-STD-601. The specimens shall be cut with die number III of figure 4111.

4.4.4.4 Blocking. Six specimens prepared as specified in 4.4.4.1 shall be cut and formed into three sandwiches (two specimens per sandwich) and tested in accordance with method 1131 of FED-STD-406. A pressure of 1 pound per square inch and a temperature of 158° ± 2°F shall be used.

4.4.4.5 Tear strength. Three specimens prepared as specified in 4.4.4.1 shall be tested in accordance with ASTM D624, using die C.

4.4.4.6 Brittleness. Five specimens prepared as specified in 4.4.4.1 shall be tested at -10° ± 2°F in an air heat transfer medium in accordance with method 5311 of FED-STD-601. The specimen shall extend 1 ± 1/4 inch beyond the edge of the clamp.

4.4.4.7 Volatile loss. Three specimens prepared as specified in 4.4.4.1 shall be tested in accordance with method 6081 of FED-STD-406 except that the charcoal shall be new and unused Fisher Scientific Company Activated Coconut Shell Charcoal, Catalog No. 5-685, 6 X 14 mesh, as manufactured by Barnebey-Cheney.

4.4.4.8 Viscosity. The edgeseal material shall be thoroughly mixed by stirring for at least 1 minute Immediately prior to drawing the specimen and performing the viscosity test. The edgeseal material shall be tested at a temperature of 77° + 2°F. Material shall be at least 7 days old as measured from date of manufacture.

4.4.5 Acceptance/rejection criteria. If the edgeseal material fails to meet any of the tests specified in 4.4.3, the lot represented shall be rejected.

5. PACKAGING

5.1 Packaging and packing, interplant shipment (see 6.4). The edgeseal material shall be packaged and packed to prevent damage in shipment from the supply source to the first receiving activity. Shipping containers shall be in compliance with the rules and regulations applicable to the mode of transportation.

5.2 Marking. In conjunction with Information provided in the contract, q arking shall be in accordance with FED-STD-123 and shall include contract number, lot number and date produced.

6. NOTES

6.1 Intended use. The material covered by this specification is intended for use as a sealing material in the manufacture of filters for explosive ordnance disposal suits.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number and date of this specification
(b) Special marking if required (see 5.2).
(c) Preproduction.

(1) Time allowed for contractor submission of sample for Government test and evaluation after award of contract.
(2) Name and address of test facility and shipping instructions when testing is performed by the Government.
(3) Time required for the Government to notify the contractor whether or not to proceed with production.

6.3 Batch. A batch is defined as the quantity of material which has been manufactured by some unit chemical process or subjected to some physical mixing operation intended to make the final product substantially uniform.

6.4 Interplant shipment. Packaging and packing for interplant shipment is for supplies and materials that do not directly enter the military supply system. Typical interplant shipments are shipments from a vendor to a contractor or from a contractor to a military arsenal.

6.5 Edgeseal material. "Providence D 3554 Self Adhering Plastisol" manufactured by Providence Coatings and Chemicals Division, Whittaker Corporation, King Phillip Road, East Providence, RI 02914 and "Wooster A-269-1 Self-Adhering Plastisol" manufactured by Whittaker Corporation, Wooster-Universal Division P.O. Box 382, Wooster, OH 44691 have been found to meet the requirements of this specification.

6.6 Edgeseal migration. When specified in the contract, the preproduction inspection of MIL-E-51451 may be used for acceptance of the Edgeseal migration preproduction provisions of this specification.

6.7 Caution. Any surface in contact with this plastisol, to which adhesion is not desired should be coated with a mold release agent before applying and baking the plastisol.

6.8 Supersession data. This specification supersedes Edgewood Arsenal Purchase Description, EA-E-1117, dated 25 June 1973.

Custodian:

Amy - EA

Preparing activity:

Army - EA

Project No. 4240-A757

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