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CLOTH, CLEANING, NONWOVEN FABRIC

This specification is approved by the Administrator,
Office of Federal Supply and Services, General Services
Administration. For the use of all Federal Agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers nonwoven cloth of a planar assembly of textile fibers and yarns held together by a binder or a mechanical process, and primarily intended for use as a washing, polishing, and wiping cloth (see 6.1).

1.2 Classification.

1.2.1 Types and classes. The nonwoven cloth covered by this specification shall be of the following types and classes, as specified (see 6.2):

Type I - Untreated

- Class 1 - Light duty
- Class 4 - Extra heavy duty
- Class 5 - Medium extra heavy duty
- Class 6 - Light duty, perforated or nonperforated
- Class 7 - Aircraft solvent wiper

Type II - Oil treated

2. APPLICABLE DOCUMENTS

2.1 Government publications. The issues of the following documents, in the effect on date of invitation for bids or solicitation for offers, form a part of this specification to the extent specified herein.

Federal Specifications

- P-D-800 - Dust Mop Treating Compound
- QQ-S-781 - Strapping, Steel, and Seals
- PPP-B-636 - Boxes, Shipping, Fiberboard
- PPP-B-1055 - Barrier Material, Waterproofed, Flexible
- PPP-S-760 - Strapping, Nonmetallic (and Connectors)
- PPP-T-45 - Tape, Gummed, Paper, Reinforced and Plain, for Sealing and Securing

AMSC N/A

FSC 7920

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

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Federal Standards

- FED-STD-123 - Marking for Shipment
- FED-STD-191 - Textile Test Methods

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions, as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly 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 and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications

- MIL-L-10547 - Liners, Case and Sheet, Overwrap, Water-vaporproof or Waterproof, Flexible
- MIL-W-43334 - Webbing and Tape, Textile, Packaging and Packing of

Military Standards

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
- MIL-STD-129 - Marking for Shipment and Storage
- MS-24694 - Screw, Machine, Flat Countersunk Head, 100 Degree, Structural, Cross Recessed, Unc-3a And Unf-3a

Air Force - Navy Aeronautical

- AN315 - Nut, Plain, Hexagon Airframe

(Copies of Military Specifications and Standards 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 documents form a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

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Technical Association of the Pulp and Paper Industry (TAPPI) Method

T 432 - Water Absorption of Bibulous Paper

(Application for copies should be addressed to the Technical Association of the Pulp and Paper Industry, One Dunwoody Park, Atlanta, GA 30341.)

American Society for Testing and Materials (ASTM) Standards

E 70 - pH of Aqueous Solutions with the Glass Electrodes

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

National Motor Freight Traffic Association, Inc., Agent

National Motor Freight Classification

(Application for copies should be addressed to the National Motor Freight Traffic Association Tarrif 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, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

3. REQUIREMENTS

3.1 Material.

3.1.1 Fibers and yarns. Fibers and yarns shall be of vegetable, animal, or synthetic origin, and the fibers or combination of fibers and yarns shall be in a planar assembly held together by a binder, except for class 7, forming either a solid or perforated cloth (see 1.2.1). Type I, class 7 cloths shall contain no binder and no color pigment and the fibers shall be held together through mechanical entanglement. When yarns are used, they shall be no more than 2 inches in length. Metallic fibers are prohibited (see table II).

3.1.2 Binder. The binding material used for combining the fibers or yarns shall be odorless and of stable character, and shall be suitable for meeting the requirements of the finished cloth. The use of water-soluble binder materials is prohibited. The use of any other water-soluble materials in either type I or type II cloth shall not exceed 5 percent by weight (see 4.4).

3.1.3 Impregnating oil (type II cloth). The oil used for treating type II cloth shall be a standard grade mineral oil emulsion with an unobjectionable odor, having a tendency not to sour or mildew after impregnation of the cloth. Oil shall be of a viscosity suitable for impregnating nonwoven cloth for polishing and cleaning purposes without harmful effects to the surfaces to which it is applied. The oil shall be nontoxic (see table II).

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3.2 Form. Cloth shall be in the form of either cut size sheets or full width rolls or bolts, as specified in the invitation for bid (see 3.9, 3.11, and 6.2).

3.3 Color. Any color or design is acceptable.

3.3.1 When a color is submitted, the cloth shall show fair colorfastness to water and crocking (see 4.3).

3.4 Finish. The bonded finish of type I cloth shall be free from blocking (see 4.3), and shall not become brittle. Type II cloth shall have an oil-impregnated finish with a soft hand, void of harshness and stiffness.

3.5 Absorption.

3.5.1 Type I.

3.5.1.1 Water (total). Cloth shall have a total water absorption of not less than 350 percent by weight (see 4.3.1.1).

3.5.1.2 Oil (total). Cloth shall have a total oil absorption of not less than 350 percent by weight (see 4.3.1.2).

3.5.1.3 Water (rate). Cloth shall have an absorption rate of not more than 2 seconds when tested with 0.1 milliliter (ml) of water (see 4.3.1.3).

3.5.1.4 Oil (rate). Classes 1 and 6 cloths shall have an absorption rate of not more than 30 seconds when tested in accordance with 4.3.1.4. For classes 4, 5, and 7 cloths, the absorption rate shall be not more than 8 seconds when tested with 0.1 ml of oil (see 4.3.1.4).

3.6 Linting. The finished cloth shall be essentially lintless when used in a dry or wet condition. For class 7 cloth, in dry or solvent wetted condition, there shall be essentially no linting after vigorously wiping over a test panel containing aerospace fasteners (see 4.3.2).

3.7 Solvent resistance (type I).

3.7.1 Class 1. When tested in accordance with applicable requirements of method 5508 referenced in 4.3, the nonwoven cloth shall not be seriously affected by the following organic solvents: Carbon tetrachloride, turpentine, and stoddard solvent.

3.7.2 Classes 4, 5, and 6 - resistance to aromatic and nonaromatic solvents. Classes 4, 5, and 6 cloths shall lose not more than 2.0 percent in weight by extraction when immersed, as described in 4.3.3, for 1 hour in the test fluid, and the cloths shall show no tackiness, appreciable stiffness, surface gelling, or other tactfully observable effect of immersion in the test fluid.

3.7.3 Class 7. When tested in accordance with 4.3.6, the average percentage of extractable matter, excluding volatiles, shall be no more than 0.20 percent using methyl ethyl ketone (MEK) and 0.20 percent using 1,1,1 trichloroethane. Infrared analysis of extract residue shall show no evidence

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of silicone, chemical sizing, lanolin, oil, or wax. In addition, the pH of a water extract shall be not less than 6.0 nor more than 7.5, when tested as specified in 4.3.7.

3.8 Physical requirements. The finished cloth shall conform to the requirements shown in table I for the applicable type and class when tested in accordance with 4.3.

3.9 Width. Cloth in rolls or bolts shall be in widths of 36, 38, 42, or 48 inches, as specified (see 6.2). A tolerance of minus 1/4 inch and plus 1/2 inch in width will be permitted.

3.10 Length (roll or bolt). Each roll or bolt of cloth shall be of one continuous length and of the minimum length specified (see 6.2).

3.11 Size (cut). Cloth shall be of the following cut-to-size sheets, as specified (see 6.2). Any plus tolerance and a tolerance of minus 1/4 inch in either dimension will be permitted.

Size - inches

9 by 9
12 by 15
16-1/2 by 18
17 by 21
18 by 24
13-1/4 by 19-3/4
20 by 20-1/2

3.12 Odor. Cloth shall be free from objectionable odors.

3.13 Impregnation oil (type II). Mineral oil shall be uniformly dispersed in the nonwoven cloth, and shall be present to the extent of not showing a deposit of oil on a flat, nonabsorbent surface when tested in accordance with 4.3.5.

3.14 Dirt pick-up (type II). The dirt pick-up efficiency of the cloth shall average not less than 21 percent based on the weight of the cloth before soiling when tested in accordance with 4.3.4.

3.15 Workmanship. The cloth shall conform to the quality of the product established by this specification. All cleaning cloths shall be free from dirt spots, holes, breaks, wrinkles, creases, or tears that might affect its serviceability. Cloths shall also be free from uneven or ragged edges, foreign material--sand, grit, lint, or dust--and raised yarns. The cloth for type I, class 7 shall be of a first quality 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

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TABLE I. Physical requirements

Type	Class	Bursting strength, minimum pounds	Ounces per square yard		Breaking strength, minimum (dry) pounds		Breaking strength, minimum (wet) pounds		Tear strength, minimum pounds	Stiffness, maximum inch-pounds		Elongation at break, minimum (dry) percent
			Mini- mum	Maxi- mum	Weaker direction	Combined total average both 1/ directions	Weaker direction	Combined total average both 1/ directions		Stiffer direction	Weaker direction	
I	1	15	1.26	2.40	--	--	--	--	--	--	--	--
I	4	--	3.5	4.0	14	28	7	15	0.4	0.012	0.0085	--
I	5	--	1.75	2.25	7	15	3	6	0.4	0.006	0.002	--
I	6	22	1.13	1.38	--	--	--	--	--	--	--	--
I	7	--	1.75	2.25	18	46	15	39	--	--	--	25
II	--	--	2.00	2.76	1.5	5	--	--	0.2	0.003	0.001	50.0

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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 that supplies and services conform to described requirements.

4.2 Inspection. Sampling for inspection shall be performed in accordance with MIL-STD-105, except where otherwise indicated hereinafter.

4.2.1 Component and material inspection. In accordance with 4.1 above, components and materials shall be tested in accordance with all the requirements of referenced specifications, drawings, and standards unless otherwise excluded, amended, or qualified in this specification or applicable procurement documents.

4.2.1.1 Evidence of compliance. In lieu of his own facilities, the contractor may submit a report of analysis of component materials from a laboratory acceptable to the Government whether an independent test facility or the laboratory of the raw material supplier, as evidence of compliance with the specification requirements. The report of analysis shall include, in addition to the actual data, the manufacturer's name, name and address of the testing laboratory, date of test, and quantity of material requested by the test report. Where certificates of compliance are submitted, the Government reserves the right to check test such items to determine the validity of the certificate.

4.2.2 Examination of the end item. Examination of the end item shall be in accordance with the classification of defects and AQL's set forth below. The lot size, for the purpose of determining the sample size for examinations, shall be expressed in unit packages of cut-to-size sheets or in units of rolls or bolts, as applicable.

4.2.2.1 Examination of the end item for defects in appearance and composition. The sample unit for this examination shall be one cut-to-size sheet or one yard. Not more than three sample units shall be selected from any one unit package, or not more than three sample units shall be selected from any one roll or bolt.

Examine	Defects
Appearance	Dirt spots affecting serviceability. Holes, breaks, wrinkles, creases, or tears affecting serviceability. Uneven or ragged edges. Any objectionable odor. Any foreign material--sand, grit, lint, or dust--critically affecting serviceability. Raised yarns on face or back.
Composition	Type I, oiled. Type II, unoiled.

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4.2.2.2 Examination of the end item for dimensional defects. The sample unit for this examination shall be one cut-to-size sheet or one roll or bolt, as applicable.

Examine	Defects
Cut-to-size	Varies from specified width and length by more than minus 1/4 inch.
Bolt or roll	Width not within tolerance.

NOTE: The average of four determinations randomly made throughout the roll or bolt shall represent the width of the roll or bolt.

4.2.2.3 Examination of the end item for average count of sheets per package or length per roll or bolt. The sample unit for this examination shall be one unit package of cut-to-size sheets or one roll or bolt, as applicable. The average count per package shall be not less than the specified quantity. Each roll or bolt in the sample shall be examined for length. Any length found to be less than the minimum specified shall be considered a defect with respect to length. The lot shall be unacceptable if two or more rolls or bolts in the sample are defective in respect to length.

4.2.2.4 Inspection levels and AQL's for examinations. The inspection levels and AQL's, expressed in defects per 100 units, shall be as follows:

Examination paragraph	Inspection level	AQL
4.2.2.1	S-2	2.5
4.2.2.2	S-2	2.5
4.2.2.3	S-2	see 4.2.2.3
4.2.2.5	S-2	2.5

4.2.2.5 Examination of preparation for delivery requirements. An examination shall be made to determine whether the packaging, packing, and marking comply with the requirements of section 5. Defects shall be scored in accordance with the following list. The sample unit shall be one shipping container fully prepared for delivery. Defects of closure listed shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in the end item inspection lot.

Examine	Defects
Marking (exterior and interior)	Omitted; incorrect; illegible; of improper size, location, sequence, or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components such as incomplete closure of caseliners, container flaps; improper taping, loose strapping; inadequate stapling; improperly heat-sealed seams, and closure of polyethylene bags. Bulging or distortion of containers.

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Weight	Gross weight exceeds requirements.
Content	Number of bundles per shipping container is more or less than specified. Bundles not securely tied. Cloths of different type, class, color, or size in same bundle.

4.3 Testing of the end item. The methods of testing specified in FED-STD-191, wherever applicable, and as listed in table II, shall be followed. The physical and chemical values specified in section 3 apply to the results of the determinations made on a sample unit for test purposes, as specified in the applicable test method. The sample unit shall be 2 continuous yards, full width of the finished cloth or 10 cut-size cloths, as applicable. The sample size shall be as shown below. The lot size shall be expressed in units of one yard or one bundle. The lot shall be unacceptable if one or more sample units fails to meet any test requirements specified. All test reports shall contain the individual values utilized in expressing the final results.

Lot size (yards or bundles)	Sample size
800 or less	2
801 up to and including 22,000	2
22,001 and over	5

TABLE II. Instructions for testing

Characteristic	Specification Requirement	Reference test method	No. determinations per sample unit	Results reported as
Identification of metallic fibers	3.1.1	2/	1	Pass or fail
Dry cleaning solvent resistance of cloth, tumble jar method	3.2	5508	1	Pass or fail
Strength of cloth;	Table I	5122	5	1.0 diaphragm bursting Pound method
Colorfastness of cloth to water	3.3.1	5630	1	Pass or fail
Crocking of cloth	3.3.1	5651	1	Good, fair, or poor
Temperature, high, effect on cloth blocking	3.4	5872	3	Scale rating

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TABLE II. Instructions for testing (continued)

Characteristic	Specification Requirement	Reference test method	No. determinations per sample unit	Results reported as
Weight of cloth; small	Table I	5041	5	0.1 specimen method ounce
Breaking strength and	Table I	5100 <u>1/</u>	5	1.0 elongation pound
Tearing strength	Table I	5132.1	5	0.1 pound
Stiffness, directional	Table I	5202	5	0.001 pound
Nonfibrous materials	3.1.2	2611 <u>3/</u>	2	0.1 percent
Impregnating oil (nontoxic)	3.1.3	<u>2/</u>	-	Pass or fail

1/ To test the cloth for wet breaking strength, immerse the required specimens for test in a tray of clean water. Allow specimens to soak for a period of not less than 30 seconds or more than 60 seconds. Remove specimens and hang them by a corner for a period of not less than 5 or more than 7 minutes for drainage.

2/ The supplier shall submit a certificate of compliance for the nontoxic characteristics and absence of metallic fibers. When required, the certificate shall be accompanied by actual test results, inspection, or other verifiable data.

3/ When type II cloth is required, samples of the basic cloth, prior to the oil treatment, shall be tested for the presence of water-soluble materials (see 3.1.2) which shall not exceed 5 percent by weight. A certificate of compliance from the supplier for this characteristic shall be accompanied by test results.

4.3.1 Absorption (type I).

4.3.1.1 Water (total). Conditioned test specimens measuring 4 by 4 inches shall be weighed on an analytical balance. Immerse the specimens in water at 73° F for 2 minutes, then hang the specimens by a corner over water in a vessel having a tightly-fitting cover; allow the specimens to drain for 1/2 hour; remove them, and weigh the specimens in weighing bottles. Not less than five specimens shall be tested and the average percentage of water absorbed shall be recorded. The percentage of water absorbed shall be calculated as follows:

$$\text{Basis, percent} = \frac{M-O}{O} \times 100$$

where O = weight of original conditioned specimen.
M = weight of saturated specimen.

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4.3.1.2 Oil (total). A conditioned 4 by 4 inch specimen of cloth shall be weighed, the weight recorded to .01 gram, and then immersed 15 minutes in a petroleum-base technical white oil with Saybolt viscosity of 40-65 seconds when tested at 100° F. The specimen shall then be suspended by a corner for 1 minute to drain and then reweighed, and the percentage of oil determined by the basic formula in 4.3.1.1.

4.3.1.3 Water (rate). The water absorption rate of cloth shall be determined by TAPPI method T 432.

4.3.1.4 Oil rate. The oil absorption rate for classes 1 and 6 shall be determined by laying the specimen on a nonabsorbent surface and 0.1 ml of light machine oil, Saybolt viscosity of 80-90 seconds at 100° F, applied. After 30 seconds, the sample shall be examined and absorption or nonabsorption of the oil reported. For classes 4 and 5 cloth, the absorption rate shall be determined by TAPPI method T 432, using oil as described in 4.3.1.2.

4.3.2 Linting. Cut a 1/8 inch aluminum panel to 5 by 5 inches. Drill 16 holes spaced 1 inch apart and countersink (See Figure 1). Install MS 24694 screws and secure with AN 315-3R nuts. Rub the surface of this panel vigorously with the cloth for one minute and examine for evidence of linting. Repeat this procedure three times with the cloth soaked in methyl ethyl ketone, water, and 1,1,1-trichloroethane.

4.3.3 Resistance to aromatic and nonaromatic solvents (type I, classes 4, 5, and 6). Sufficient 2 by 1/2 inch specimens shall be cut from various parts of the sample size to make a specimen of approximately 2 grams. The conditioned, accurately weighed specimen shall be placed, strips standing upright, in a glass cylinder and covered with 100 ml of hydrocarbon test fluid (see 4.3.2.1). After 1/2 hour with occasional agitation, the test fluid shall be poured off the specimen into a tared beaker and the specimen shall be covered with a fresh 100 ml of test fluid for another 1/2 hour. At the end of this period, the second portion of fluid shall be added to the first 100 ml in the tared beaker. The combined portions of fluid shall be evaporated to dryness over a steam bath, dried to constant weight in an air oven of 100° C, and calculated to percent of the weight of the specimen. The cloth specimen, while still wet with test fluid, shall be checked with the fingers for tackiness, stiffness, surface gel, or similar effect of immersion.

4.3.3.1 The test fluid shall have the following composition by volume. Reagent grade ingredients are required for this test.

Ingredient	Volume (percent)
Iso-octane (2, 2, 4 tri-methyl pentane)	60
Benzene	5
Toluene	20
Xylene	15

4.3.4 Dirt pick-up efficiency (type II). Five samples of cloth cut in strips 2 by 3 inches, conditioned as described in FED-STD-191, shall be tested in accordance with applicable procedures under section 4 of P-D-800, except that 4.4.7.5 shall not apply.

4.3.5 Oil content (type II). A specimen consisting of a strip of cloth 2-1/2 inches wide and of adequate length shall have a solid weight of 1 kilogram, with weight bearing area of $19.35 \pm .654 \text{ cm}^2$ ($3.0 \pm .1 \text{ inch}^2$) placed on its center approximately 2 inches from the end of the specimen that is placed on a black-colored, nonabsorbent plastic surface. The specimen shall then be pulled, by hand, 12 inches across the plastic surface at the rate of 24 inches per minute. Three specimens shall be tested and if any one specimen shows a deposition of oil on the plastic surface, the lot shall be rejected.

4.3.6 Extractable matter (class 7 only).

4.3.6.1 Procedure. The cloth shall be cut into 3/4 inch by 2 1/2 inch pieces. After conditioning at ambient for at least 24 hours, a one gram sample shall be weighed to the nearest 0.1 mg and placed in a weighing bottle, and immediately, an identically conditioned 5 gram sample shall be weighed to the nearest 0.1 mg and placed in a suitable sized Soxhlet extractor without thimble. The weighing bottle with top removed shall be heated in a 105°C (220° F) forced draft oven for at least one hour before replacing the top, cooling the bottle and reweighing; this process shall be repeated to constant weight. The Soxhlet extractor shall be run simultaneously using the appropriate solvent at 9 to 11 cycles per hour for 2 hours; the extracted sample shall be removed and dried as above. Extractables shall be calculated as follows:

$$\text{Percent extractable matter} = \frac{\frac{S_o - S_f}{S_o} - \frac{V_o - V_f}{V_o}}{\quad} \times 100$$

where: S_o = initial weight of the 5g Soxhlet sample

S_f = final dried weight of the 5g Soxhlet sample

V_o = initial weight of the 1g sample

V_f = final dried weight of the 1g sample.

This test shall be run in duplicate and the results averaged.

4.3.7 Procedure for the pH of a water extract (class 7 only). Eighty one square inches of material shall be soaked in 200 ml of distilled water for 15 minutes, and the pH determined in accordance with ASTM E 70.

5. PREPARATION FOR DELIVERY

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

5.1 Level A.

5.1.1.1 Cut-to-size sheets.

5.1.1.1.1 Type I. Type I cloth of one cut-to-size sheet only, packaged in bundles of 100, 500, or 1,000 sheets, shall be wrapped in light-weight kraft paper and securely tied, and then overwrapped in barrier material conforming to PPP-B-1055, class B-1, B-2, or B-3. Wrapping shall then be sealed with tape conforming to PPP-T-45.

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5.1.1.1.2 Type II. Type II cloth of one cut-to-size sheet only, packaged in bundles of 100 sheets, shall be placed in a close-fitting polyethylene bag a minimum of 3 mils thick. The excess air shall be expelled from the bag prior to sealing.

5.1.1.2 Rolls or bolts. Rolls or bolts of type I or II cloth shall be unit packaged as specified for level A in MIL-W-43334.

5.1.1.3 Precrumped cloths. Precrumped cloths of one class only shall be furnished in 50-pound bales. The bales shall be compressed to a density of not more than 3.5 cubic feet per 50 pounds. The compressed bales shall be covered with either clean, serviceable burlap material; waterproof, reinforced laminated flexible barrier material; or nonwoven cloth. The burlap material shall be new or reclaimed closely woven material, free from holes and markings. The reinforced laminated flexible barrier material shall have a minimum Mullen test of 200 pounds. The nonwoven cloth shall be mildew-proof with a minimum thickness of .030 inch, and have a minimum tensile strength of 90 pounds, a tear strength of 45 pounds, and a wet strength of 45 pounds. The covering material shall be of a size that will fully cover the bales with a minimum of 3 inches of overlap on the sides and ends of the bales, or burlap tubing that fully covers the bale may be used. Each bale shall be secured with either round or flat steel strapping or nonmetallic strapping. The round wire strapping shall conform to QQ-S-781, type VI, class 2, finish B or C, 16 gage. Flat steel strappings shall conform to QQ-S-781, type I, class B, grade Z, size 375 by 0.020 inch. Nonmetallic strappings shall conform to PPP-S-760, type II or III, minimum size .375 by 0.020 inch. Three round wire ties of three flat steel or nonmetallic straps shall be equally spaced between the heads (ends) of the bales. At the option of the supplier, the round wire ties or strapping may be applied either on the outside or underneath the baling material; the baling material shall be securely sealed. When burlap tubing is used over the wire ties for strapping bales, the ends of the tubing shall be closed with 15-gage soft wire or steel ties. The wire ties shall be not less than 6 inches long with a .5 inch diameter forward eye at each end.

5.1.2 Level B.

5.1.2.1 Cut-to-size sheets.

5.1.2.1.1 Type I. Type I cloth of one cut-to-size sheet only shall be packaged as specified in 5.1.1.1.1 except that the barrier material shall not be used.

5.1.2.1.2 Type II. Type II cloth of one cut-to-size sheet shall be packaged as specified in 5.1.1.1.2.

5.1.2.2 Rolls or bolts. Rolls or bolts of Type I or II cloth shall be packaged as specified for level B in MIL-W-43334.

5.1.2.3 Precrumped. Unless otherwise specified (see 6.2), precrumped - cloths of one class only shall be packaged as specified in 5.1.1.3. When specified, precrumped cloths of one class only shall be compressed and inserted, or inserted and compressed, in a box conforming to PPP-B-636, class domestic, grade 350 minimum. The box shall be closed in accordance with method II of the appendix to PPP-B-636.

5.1.3 Level C. Cloth in cut-to-size sheets, rolls or bolts or in precrumped style shall be packaged to insure protection during shipment and safe delivery at destination.

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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 Cut-to-size sheets.

5.2.1.1.1 Type I. Type I cloth in cut-to-size sheets, packaged as specified in 5.1, shall be packed ten bundles of 100, two bundles of 500, or one of 1,000 sheets in a close-fitting box conforming to PPP-B-636, class weather-resistant. Shipping containers shall be provided with waterproof caseliners conforming to MIL-L-10547, type I or II, grade B or C. Each shipping container shall be closed, waterproof sealed, and reinforced in accordance with the appendix to PPP-B-636. Class 7 cloths shall be packaged as a C-folded product in corrugated dispenser packaging. The 9" by 9" size shall be packed with 150 pieces/dispenser, 18/box (2,700 total pieces) and the 17" by 21" size shall be packed with 100 pieces/dispenser, 8/box (800 total pieces).

5.2.1.1.2 Type II. Type II cloth in cut-to-size sheets, packaged as specified in 5.1, shall be packed in ten bundles of 100 sheets in a close-fitting box conforming to PPP-B-636, class weather-resistant. Shipping containers shall be provided with waterproof caseliners conforming to MIL-L-10547, type I or II, grade B or C. Each shipping container shall be closed, waterproof sealed, and reinforced in accordance with the appendix to PPP-B-636.

5.2.1.2 Rolls or bolts. Rolls or bolts, packaged as specified in 5.1, shall be packed as specified for level A in MIL-W-43334.

5.2.1.3 Precrumped. Precrumped cloth, packaged as specified in 5.1.1.3, shall require no further packing.

5.2.2 Level B.

5.2.2.1 Cut-to-size sheets.

5.2.2.1.1 Type I. Type I cloth in cut-to-size sheets, packaged as specified in 5.1, shall be packed as specified in 5.2.1.1.1 except that the boxes shall be class domestic and the closure shall be in accordance with method II of the appendix to PPP-B-636.

5.2.2.1.2 Type II. Type II cloth in cut-to-size sheets, packaged as specified in 5.1, shall be packed as specified in 5.2.1.1.2 except that the boxes shall be class domestic and the closure shall be in accordance with method II of the appendix to PPP-B-636.

5.2.2.2 Rolls or bolts. Rolls or bolts, packaged as specified in 5.1, shall be packed as specified for level B in MIL-W-43334.

5.2.2.3 Precrumped. Precrumped cloth, packaged as specified in 5.1.2.3, shall require no further packing.

5.2.3 Level C. The cloth, packaged as specified in 5.1, shall be packed to comply with the National Motor Freight Classification or the Uniform Freight Classification.

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5.3 Marking. Marking shall be in accordance with 5.3.1 or 5.3.2, as specified (see 6.2).

5.3.1 Civil agencies. Marking shall be in accordance with FED-STD-123.

5.3.2 Military agencies. Marking shall be in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Type I, classes 1 and 6 cloths are used for dusting, wiping, washing, and polishing. Type I, classes 4, 5 and 7 cloths are intended for use in industrial-type wiping operations; class 4 may be used as a substitute for chamois skins for cleaning and wiping purposes. Type II cloth is intended for dusting and floor wiping operations. Nonwoven cloths covered by this specification are not intended for use where high abrasive qualities of cloth are required.

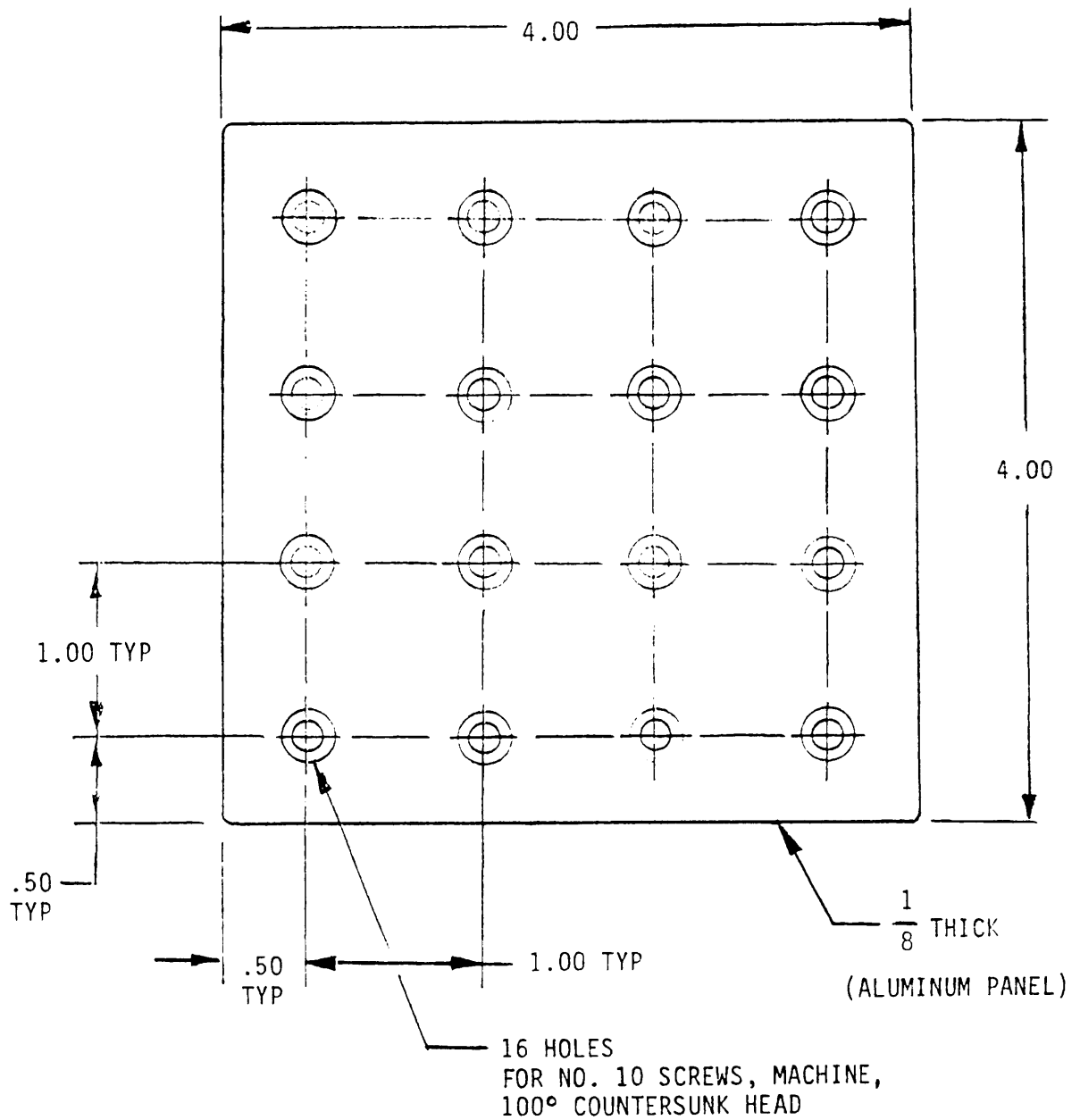
6.2 Ordering data. Purchasers should select the preferred options permitted herein, and include the following information in procurement documents:

- (a) Title, number, and date of this specification.
- (b) Type and class required (see 1.2.1).
- (c) Form (see 3.2).
- (d) Width (see 3.9).
- (e) Length (see 3.10).
- (f) Size (cut) (see 3.11).
- (g) Sheets per package (see 3.11.1).
- (h) Selection of applicable levels of packaging and packing (see 5.1 and 5.2).
- (i) Whether civil or military marking is required (see 5.3).

PREPARING ACTIVITY
NAVY-AS
(DOD Project 7920-N260)

Orders for this publication are to be placed with the 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.

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DIMENSIONS ARE IN INCHES

Figure 1. Linting Test Panel