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SUPERSEDING
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MILITARY SPECIFICATION

BAG, SAND: ACRYLIC

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

1. SCOPE

1.1 This specification covers sand bags manufactured entirely of acrylic fiber.

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 this specification to the extent specified herein:

SPECIFICATIONS

Federal

NN-P-71	- Pallets, Material Handling, Wood, Double Faced, Stringer Construction.
QQ-S-781	- Steel, Strapping, Flat.
RR-S-366	- Sieve, Test.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-S-760	- Strapping, Nonmetallic (and Connectors).

Military

MIL-P-3938	- Pallet, Material Handling, Hardwood, Stringer Construction, 4-Way (Partial).

STANDARDS

Federal

FED. TEST METHOD STD. No. 141	- Paint, Varnish, Lacquer, and Related Materials; Methods of Inspection, Sampling, and Testing.

FED. TEST METHOD STD. No. 191 - Textile Test Methods.
FED. STD. No. 595 - Colors.
FED. STD. No. 751 - Stitches, Seams, and Stitching.

Military

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-129 - Marking for Shipment and Storage.

(Copies of 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 date of invitation for bids or request for proposal shall apply.

AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS

ISO Recommendation R 105/I:
Part 2 - Grey Scale for Assessing Change in Colour.
Part 3 - Grey Scale for Assessing Straining.

AATCC Standard 16E - Color Fastness to Light: Water-Cooled Xenon Arc-Lamp, Continuous Light.
AATCC Standard 107 - Color Fastness to Water, Test Method For.

(Application for copies should be addressed to the American Association of Textile Chemists and Colorists, P. O. Box 886, Durham, North Carolina 27702.)

UNIFORM CLASSIFICATION COMMITTEE, AGENT

Uniform Freight Classification.

(Application for copies should be addressed to the Uniform Classification Committee, 202 Union Station, 516 West Jackson Boulevard, Chicago, Illinois 60606.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION, INC., AGENT

National Motor Freight Classification.

(Application for copies should be addressed to the American Trucking Associations, Inc., 1616 P Street NW, Washington, D. C. 20036.)

3. REQUIREMENTS

3.1 Description. The sand bag shall be an acrylic woven fabric container, closed on two sides and the bottom, with an affixed tie string for closing the top after filling. Bags shall be one piece construction (splicing of fabric shall not be permitted). Allowed sand bag constructions are bags with either sewn or woven side seam(s) and bottom, or combinations thereof; and tubular woven (sock-form) bags with no side seams, but with sewn bottom. Bags having sewn bottoms shall have the bottom closed by a sewn butt seam conforming to type SSn-1 of FED. STD. No. 751.

3.2 Material. The material used to make the yarns, thread, and twine shall be of 4.5 to 18.0 denier acrylic staple with a uniform length of not less than 2.5 inches. All material shall be of virgin (unused) semi-dull staple in which the fiber-forming substance is any long-chain synthetic polymer composed of at least 85 percent by weight of acrylonitrile units. The material shall conform to all requirements of this specification.

3.3 Fabric.

3.3.1 Basic bag fabric. Finished fabric for the sand bags shall conform to the following requirements:

Weight/square yard	- 5.0 ounces minimum
Warp yarns/inch	- 16 minimum
Filling yarns/inch	- 16 minimum
Fabric breaking strength, warp (lot average)	- 90 pounds minimum
Fabric breaking strength, filling (lot average)	- 90 pounds minimum
Weave	- plain

3.3.2 Specular gloss. The specular gloss of the fabric shall be not more than 2.0 gloss units.

3.3.3 Color. The color shall be obtained by fiber producer solution dyeing or, on the finished fiber yarn, by stock, piece, or pigment pad dyeing operations (see 6.5). The fabric color shall be a lusterless olive drab, not lighter than color number 34096 nor darker than color number 34079 of FED. STD. No. 595 (see 6.5). The fabric after exposure to 160 hours in a carbon arc weatherometer or a Xenon arc-lamp weatherometer, shall retain its color within 3.5 NBS units, or be within an equivalent standard Grey Scale fading rating of at least 2.5. Sand bag fabric after immersion in water for 100 hours shall show a color difference not less than class 4 of the International Geometric Grey Scale.

3.3.3.1 Pigment pad dyed fabric. Sand bag fabric colored by pigment pad dyeing operation shall, in addition to meeting the requirements specified in 3.3.3, show an average difference of not more than two luminance units in either warp or fill specimens after the specimens have been subjected to ten cycles of abrasion. Separate fabric specimens subjected to water leaching for 24 hours, then tested for fungus resistance, shall show no fungus growth.

3.4 Dimensions. The finished bag interior length, measured from the top edge, shall be 26 inches plus or minus 1-1/4 inch. The finished interior width shall be 14 inches plus or minus 1/2 inch.

3.5 Seams and stitches.

3.5.1 Seams. Sewn seams shall be tightly, strongly, and uniformly sewn with the thread specified herein. The stitching shall be straight, uniform, even, and continuous throughout the length of the seams. Woven seams shall be integral with the fabric and shall be not less than 1/2-inch in width.

3.5.2 Seam classes and types. Seam classes and types shall be optional, except when otherwise specified herein. Seams formed at fabric edges which are not selvaged shall have fabric extending beyond the stitching for not less than 3/8-inch.

3.5.3 Stitches. Stitches shall conform to stitch type 401 of FED. STD. No. 751. Ends of stitches shall be secured by beginning and ending in a chain link off the fabric of not less than 1 inch nor more than 3 inches in length, or otherwise shall be effectively secured.

3.5.4 Seam repair. Defects in seams shall be repaired by initiating a new seam beginning in a lockstitch chain which catches the fabric of the bag edge 3 inches before the defect; crosses the original stitching of the seam, continues parallel to the stitching inside the seam; then re-crosses the original stitching, and ends in a lockstitch chain off the bag edge not less than 3 inches beyond the defect. The lockstitch chain shall be from 1 to 3 inches in length.

3.6 Thread. The thread used in the sewing of bag seams or for other stitchings specified herein, shall be of material specified herein and of suitable weight to produce bags to conform to all other requirements of this specification. The color of the thread shall be as specified for the bag fabric or black.

3.7 Tie strings. Tie strings shall be formed of tightly twisted strands or of braided strands, material as specified herein. The length of the

finished tie string shall be a minimum of 24 inches. The breaking strength of the tie string shall be not less than 70 pounds. The color of the tie string shall be as specified for the bag fabric, or black. A minimum of five extra tie strings shall be furnished with each 100 bags.

3.7.1 Tie string fastening. The tie string shall be securely fastened at its center to one side of the sand bag between 4 and 5 inches from the top edge of the bag, either by sewing the string in the stitches of a sewn side seam, or by threading through the side edge of the bag and knotting (tying) if neither side of the bag has a sewn seam.

3.8 Edge finish. The edges of fabric not incorporated in a seam shall be finished by a selvage, by heat seal, or by stitchings conforming to type EFa-1 or EFb-1 of FED. STD. No. 751, using thread specified herein to form the stitchings. Edges finished by stitchings type EFa-1 shall have not less than 1/4-inch of the fabric extending beyond the stitchings. Heat sealed edges shall be free of crumbling, breaking, or raveling of the fabric.

3.9 Rough handling resistance.

3.9.1 Drop resistance. The filled sand bag shall withstand three consecutive free fall drops (see 6.6.3), from a height of 48 inches onto a hard, unyielding surface without sustaining visible damage other than slight slippage or yawning in the seams (see 6.6).

3.9.2 Sift resistance. The sand bag shall lose not more than 1/2 pound of the sand by sifting when tested as specified in 4.4.2.5.

3.10 Bag construction. Sand bags with sewn side seams(s) shall be constructed with the seams outside and the tie string inside so that when inverted (turned for filling and tying) the seams will be on the inside and the tie string outside. Sand bags with woven side seams or completely woven (sock form) shall be furnished ready for filling and tying.

3.11 Workmanship. Bags shall be free of holes, tears, punctures or other defects which may affect serviceability (as demonstrated by sift resistance and rough handling test). Bags shall be dry and flexible and shall be uniform in appearance and color. Seams shall be straight and even.

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 deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of inspection. Inspection shall be classified as follows:

(a) Quality conformance inspection (see 4.3).
(b) Inspection of preparation for delivery (see 4.5).

4.3 Quality conformance inspection.

4.3.1 Sampling.

4.3.1.1 Sand bags. Sampling of sand bags for examination shall be in accordance with MIL-STD-105. Sampling of sand bags for tests shall be in accordance with inspection level S-4.

4.3.1.2 Fabric. The sample shall consist of sufficient finished fabric to conduct tests specified in table I. The sample size (number of samples) shall be in accordance with the following, except that only one sample per lot is required to be tested for color fastness, one sample for acrylic fiber identification, and one sample tested for fungus resistance (required only where fabric is dyed by pigment padding):

Lot size (yards)	Sample size
800 or less	2
801 up to and including 22,000	3
22,001 and over	5

4.3.1.3 Twine tie strings. The sample shall consist of sufficient material to conduct tests specified in table II. Sampling of twine, either spooled or cut into tie string lengths, shall be in accordance with MIL-STD-105, inspection level S-1, except that only one sample per lot is required to be tested for acrylic fiber identification.

4.3.1.4 Thread. The sample shall consist of sufficient material to conduct tests specified in table III. Sampling of spooled thread for

tests shall be in accordance with MIL-STD-105, inspection level S-1, except that only one sample per lot is required to be tested for acrylic fiber identification.

4.3.2 Examination. Samples of sand bags selected in accordance with 4.3.1.1 shall be examined as specified in 4.4.1. AQL shall be 2.5 for major, and 6.5 for total defects, expressed in terms of defects per hundred units.

4.3.3 Tests.

4.3.3.1 Fabric. Samples selected in accordance with 4.3.1.2 shall be tested as specified in table I. The lot shall be unacceptable if one or more samples fail to meet any test requirement, except that criteria for fabric strength shall be lot average. If the lot average breaking strength in either the warp or fill direction is less than 90 pounds, the lot shall be rejected.

4.3.3.2 Twine. Samples selected in accordance with 4.3.1.3 shall be tested as specified in table II. AQL shall be 1.5 percent defective.

4.3.3.3 Thread. Samples selected in accordance with 4.3.1.4 shall be tested as specified in table III. AQL shall be 1.5 percent defective.

4.3.3.4 Sand bags. Samples selected in accordance with 4.3.1.1 shall be tested as specified in table IV. AQL shall be 1.5 percent defective.

4.4 Inspection procedure.

4.4.1 Examination. Sand bags shall be examined for the following defects:

Major

101. Materials not as specified.
102. Fabric not woven as specified.
103. Stitch type not as specified.
104. Stitches less than 3/8 inch from raw edge of fabric.
105. Workmanship not as specified.

Minor

201. Dimensions not within tolerances specified.
202. Tie string length less than minimum specified.
203. Tie string not attached as specified.
204. Tie strings not located as specified.
205. Fabric edges not finished as specified.
206. Ends of stitches not in chain link or otherwise effectively secured.
207. Color not as specified for the fabric, tie string, or thread.

4.4.2 Tests.

Table I. Fabric test methods

Characteristic	Requirement paragraph	Test paragraph or test method
Acrylic fiber identification	3.2	4.4.2.1
Wt./sq. yd.	3.3.1	5041.1, FED. TEST METHOD STD. No. 191
Breaking strength		
Warp	3.3.1	5100.1, FED. TEST METHOD STD. No. 191
Filling	3.3.1	5100.1, FED. TEST METHOD STD. No. 191
Specular gloss	3.3.2	4.4.2.2
Color fastness		
*Light fastness	3.3.3	4.4.2.3.2
*Light fastness	3.3.3	4.4.2.3.3
Water fastness	3.3.3	4.4.2.3.4
Abrasion fastness	3.3.3.1	4.4.2.3.5
Fungus resistance	3.3.3.1	**5760.1, FED. TEST METHOD STD. No. 191

* Either of the two light fastness methods of testing is acceptable.
** Except that the specimens shall not be subjected to accelerated weathering (cited in this method). This shall be a qualitative fungus resistance test; evidence of fungus growth shall constitute failure of this test.

Table II. Twine test methods

Characteristic	Requirement paragraph	Test paragraph or test method
Acrylic fiber identification	3.2	4.4.2.1
Breaking strength	3.2.2	4102, FED. TEST METHOD STD. No. 191

Table III. Thread test methods

Characteristic	Requirement paragraph	Test paragraph or test method
Acrylic fiber identification	3.2	4.4.2.1

Table IV. Sand bag test methods

Characteristic	Requirement paragraph	Test paragraph
Drop resistance	3.8.1	4.4.2.4
Sift resistance	3.8.2	4.4.2.5

4.4.2.1 Acrylic fiber identification procedure. Cut 0.5 grams of the sample. Immerse in 50 ml of 70 percent solution of potassium thiocyanate and raise to a temperature of 100° C. sea level, or equivalent; maintain temperature for 10 minutes plus 30 seconds, minus 0 seconds. If sample dissolves completely, the fiber shall be identified as acrylic. One determination shall be made from each sample tested and the results reported as "pass" or "fail".

4.4.2.2 Specular gloss. The specular gloss of the sand bag fabric shall be determined as specified in FED. TEST METHOD STD. No. 141, method 6101, with an instrument capable of measuring gloss to 0.1 gloss units. Readings shall be taken longitudinally and transversely on both sides of fabric. In making measurement, specimen shall be backed by one or more additional pieces of fabric. The readings obtained shall be averaged. An average gloss reading of more than 2.0 gloss units shall constitute failure of this test.

4.4.2.3 Color fastness.

4.4.2.3.1 Preparation of specimens. Four 3-inch by 24-inch control specimens shall be cut from each sample (two to be used in determining color fastness to light, by either 4.4.2.3.2 or 4.4.2.3.3, and two to be used in determining color fastness to water, 4.4.2.3.4). Fold each specimen six times resulting in 3-inch by 4-inch, six-ply specimens. Stitch each specimen across the top and bottom to hold the folds in place. Also, where pigment pad dyeing of fabric is employed, three warp and three fill specimens from each sample shall be prepared as described in FED. TEST METHOD STD. No. 191, method 5104, except that each specimen shall be 8 inches to 10 inches in length (these specimens to be used in determining color fastness to abrasion, 4.4.2.3.5).

4.4.2.3.2 Light fastness by carbon arc weatherometer. Light fastness test conducted by this method shall be as follows:

(a) Two specimens (see 4.4.2.3.1) shall be used in this test. One shall be unexposed; the other shall be exposed for 160 standard fading hours in accordance with FED. TEST METHOD STD. No. 191, method 5804.1.
(b) Both the exposed and unexposed specimens shall be mounted on 3-inch by 4-inch white backgrounds.
(c) Fastness shall be evaluated either as color difference in NBS units or as an alternate, by Grey Scale rating.
(1) NBS units. Obtain a color reading for each specimen (exposed and unexposed) on a spectrophotometer or a corresponding measuring instrument such as a model LS Color Eye. These measurements shall be in the form of tristimulus values X, Y and Z. The color difference in NBS units shall be calculated using the following equation: (Reference ISO Recommendation R105/I, Parts 2 and 3. (C.D. is color difference in NBS units.))

$$\text{C.D.} = 40 \left\{ (0.23\,\Delta \bar{V}_Y)^2 + \boxed{\Delta (\bar{V}_X - \bar{V}_Y)}^{\,2} + \boxed{0.4\,\Delta (\bar{V}_Z - \bar{V}_Y)}^{\,2} \right\}^{1/2}$$

COLOR DIFFERENCE

A color difference between the specimen exposed for 160 standard fading hours and the unexposed specimen exceeding 3.5 NBS units shall constitute failure of this test.

(2) Grey Scale (alternate method evaluation). The specimens for light fastness determination may, in lieu of (1) above, be evaluated by measuring according to the International Geometric Grey Scale (I.S.O. Recommendation R105/I, Part 3). Color fade exceeding class 2.5 of the International Grey Scale shall constitute failure of this test.

4.4.2.3.3 Light fastness by Xenon arc weatherometer. Two specimens, (see 4.4.2.3.1), shall be used in this test. One specimen shall not be exposed; the other shall be exposed in a water-cooled Xenon arc-lamp weatherometer according to AATCC Test Method 16E, with two exceptions to that procedure:

(a) The specimen shall be exposed to 102 minutes of continuous light only, followed by 18 minutes of light and spray as stipulated in accelerated weathering tests specified by AATCC.

(b) During the 102-minute light cycle, the black panel temperature shall be maintained at 145° F. plus or minus 5° F. and the relative humidity of the air in the test chamber shall be 30 percent plus or minus 5 percent. During the 18-minute light and water spray cycle that follows, the relative humidity of the air in the chamber shall be increased to 80 percent. The exposed and unexposed specimens shall each be mounted on 3-inch by 4-inch white backgrounds and fastness shall be evaluated either as color difference in NBS units or as an alternate Grey Scale rating.

(1) NBS units. The color shall be measured for each specimen and color difference determined as described in 4.4.2.3.2 (c) (1) (for twin carbon arc weatherometer). A color difference between the specimen exposed in the Xenon arc weatherometer for 160 hours and the unexposed specimen exceeding 3.5 NBS units shall constitute failure of this test.

(2) Grey Scale (alternate method evaluation). The specimens for light fastness determinations may be evaluated by measuring according to the International Geometric Grey Scale (I.S.O. Recommendation R105/I, Part 3). Color fade exceeding class 2.5 of the International Grey Scale shall constitute failure of this test.

4.4.2.3.4 Color fastness to water. Select two specimens prepared according to 4.4.2.3.1. Expose one specimen in accordance with AATCC Standard Test Method 107 with the following exception to that procedure: Immerse the specimen in water for 100 hours at 75° F. Follow with wringing and drying. Both the exposed and unexposed specimens shall be mounted on 3-inch by 4-inch white backgrounds. Color difference between the specimen immersed for 100 hours and the unexposed specimen less than class 4 of the International Geometric Grey Scale (I.S.O. Recommendation R105/I, Parts 2 and 3) shall constitute failure of this test.

4.4.2.3.5 Color fastness to abrasion. This test is required only where fabric is dyed by pigment padding. Test the ravel-strip specimens prepared according to 4.4.2.3.1 in accordance with FED. TEST METHOD STD. No. 191, method 5300, with the following exceptions: (a) use of a 2-pound flexing bar load; (b) use of a 1/2-pound load on the pressure plate; and, (c) subjecting the specimens to only 10 cycles of abrasion. The color fastness to abrasion of the specimens shall be determined as specified in FED. TEST METHOD STD. No. 141, method 4252. Determine the luminance factor, Y, two times on the unabraded and one time on the abraded portions of the specimens using eight fabric layers as a backing for the test specimens. Subtract the average of the two readings of the unabraded from the reading of the abraded portion of the specimen. This difference is the increase in luminance caused by abrasion. An average difference of greater than two luminance units in either warp or fill specimens shall constitute failure of this test.

4.4.2.4 Drop resistance. Fill the sand bag with 44 pounds (approximately 760 cubic inches) of clean, dry sand and knot the tie string firmly about the choke. Adjust the contents of the bag to form a shape about 4 by 10 by 20 inches before each drop. Drop the bag free fall from a height of 48 inches on one face, one side seam, and on the butt onto a hard, unyielding surface such as stone or concrete of sufficient mass to absorb the shock without deflection. After each drop, the sand bag shall be examined for visible evidence of damage such as tears, punctures, broken yarns or thread, or exposure of the contents by any means other than sifting. Slight slippage or yawning in the seams shall not be considered damage. Test sand shall be clean, dry, washed sand which passes a No. 10 sieve and is retained on a No. 60 sieve. Sieves shall conform to RR-S-366. Visible evidence of damage shall constitute failure of this test.

4.4.2.5 Sift resistance. The bag and contents shall be weighed before the drop tests on a scale accurate to 0.25 pounds; and similarly reweighed after the drop tests if any appreciable loss of fill occurs. Any loss of weight for the bag and contents exceeding 1/2 pound after the three drops specified in 4.4.2.4 shall constitute failure of this test.

4.5 Inspection of preparation for delivery.

4.5.1 Preproduction pack inspection. The preproduction pack shall be examined for the defects specified in 4.5.2.3. Presence of one or more defects shall be cause for rejection.

4.5.2 Quality conformance inspection of pack.

4.5.2.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product. For count, lot size shall be expressed in bundles (two packages of 100 bags each). The unit of product (sample unit) shall be one package of 100 bags each. No more than one package shall be drawn from any bundle.

4.5.2.2 Sampling. Sampling shall be in accordance with MIL-STD-105.

4.5.2.3 Examination. Samples selected in accordance with 4.5.2.2 shall be examined for the following defects. AQL shall be 2.5 defects per hundred samples.

106.	Materials not as specified.
107.	Bag packages and tie strings incorrectly positioned.
108.	Less than 100 in a package.
109.	Dimensions of packages and bundles not held within prescribed tolerances (not applicable to sand bags containerized by supplier, provided minimum quantity per box is met).
110.	Bundles not compressed to minimum size before strapping.
111.	Strapping not placed, tensioned, and sealed as specified.
112.	Strapping not zinc coated for level A.
113.	Extra tie strings missing or less than numbers specified.
114.	Palletization not in accordance with size limitations.
115.	Marking illegible, incorrect, or incomplete.

4.5.2.4 Alternate method of count. The supplier may elect to perform count by the following method: Weigh all sampled packages individually and generally select the lightest 10 percent of the sampled packages. Manually count the bags in these selected packages to determine the average number of bags per selected packages. If the determined average number of bags per package for the selected packages is less than 100, the represented lot shall be rejected.

5. PREPARATION FOR DELIVERY

5.1 Preproduction pack. The supplier shall furnish a preproduction pack for examination within the time frame specified to prove, prior to starting production packaging and packing, that the packaging, packing, and marking comply with the preparation for delivery requirements of this specification. Examination shall be as specified in 4.5 and shall be subject to surveillance and approval by the Government (see 6.3).

5.2 Packaging. Packaging shall be level A (see 6.7).

5.2.1 Packages. Sewn seam sand bags, with the seams outside and the tie strings sewn into the seam with the entire length of the tie strings positioned entirely within the bag, shall be packaged by flatwise stacking quantities of 100 with the extra tie strings placed in the top bag of each package. Woven side seam bags and tubular woven (sock form) bags with the tie strings positioned toward the center of the flatwise stacked bags shall be packaged in quantities of 100 with the extra tie strings placed in the top bag of each stack. Each package shall be compressed to the minimum height, forming a flat package, and while under compression shall be secured with one girthwise tie located in the center of the package. The tie shall be of the same material as specified for the tie strings. Length and width of the tied package shall be equal to the exact outside length and width measurements of the flat bag with a maximum tolerance of plus 2 inches in either dimension. No parts of the tie string, with exception of the loop at the sewn seam, shall be exposed at sides or ends of the package.

5.2.2 Bundles. Two packages of sand bags, packaged as specified in 5.2.1, shall be closely compressed to form a bundle. The bundle shall be strapped while under compression of a minimum total pressure of 1,000 pounds over the entire area of the bag (2.5 psi). While under pressure, each bundle shall be strapped with two girthwise and one lengthwise strap conforming to QQ-S-781, type I or IV, class B, 3/8-inch by 0.015 or PPP-S-760, type II, with metal sealed joint, 3/8-inch by 0.020. Girthwise straps shall be applied approximately 5 inches from each end of the bundle. Lengthwise strap shall be centered on the bundle. Length and width of bundle shall equal the outside measurements of the flat bag within a tolerance of plus 2 inches in length and plus 2 inches in width (not applicable to sand bags containerized by the supplier, provided minimum quantity per box is met).

5.3 Packing. Packing shall be level A, B, or C as specified.

5.3.1 Level A. A minimum of 15 bundles of sand bags, packaged as specified in 5.2, shall be tightly packed in a box conforming to PPP-B-601, overseas type, style I, load type 3 for a 1,000-pound load, with the following exceptions and additions: The container is to be constructed to an outside length of 88 inches, and outside height of 43 inches (including skids) and an outside width of a maximum of 31-3/4 inches. The container is to be solidly and completely filled with sand bags without regard to the 1,000-pound weight limitation. Box sides are to be constructed with two intermediate cleats. Four girthwise flat steel straps

conforming to QQ-S-781, 3/4 by 0.035 inches type I or IV, class B, shall be located on center of the edge and intermediate cleats. In order to completely utilize the capacity of the box, bags packaged but not bundled, may be packed up to a quantity of 10 percent of the total number of packages in each box. Each box in any one shipment shall contain the same number of bags.

5.3.2 Level B. The bundles of sand bags specified in 5.2.2 shall be palletized on pallets conforming to MIL-P-3938, type I, class B or NN-P-71, type III, 40 by 48 inches in size. Overhang shall be limited to a total of 4 inches in the 40-inch dimension and 6 inches in the 48-inch dimension. Overall height shall be a maximum of 43 inches. Bundles shall be secured to the pallet with three girthwise straps and two lengthwise straps. Straps shall conform to QQ-S-781, type I or IV, class A, 0.75 by 0.020. Strips of nominal 1-inch by 4-inch lumber equal in length to load width less 3 inches shall be used under the girthwise straps. Girthwise straps shall be applied over the lengthwise straps.

5.3.3 Level C. The sand bags shall be packed to assure carrier acceptance and safe delivery to destination at lowest rates in compliance with Uniform Freight Classification rules and National Motor Freight Classification rules.

5.4 Marking. Packages, bundles, pallets and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. Acrylic sand bags are intended for use in field fortifications, breastworks, revetments, personnel shelters, ammunition bunkers, and gun emplacements, where a high degree of biodeterioration resistance and also a high degree of ultraviolet light resistance is required. The acrylic sand bags are not recommended for temporary flood control where easy destruction and rapid deterioration of bag fabrics are desired after flood danger has passed.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Time frame required for submission of preproduction pack (see 5.1).
(c) Level of packing required (see 5.3).

6.3 Preproduction pack. Any changes or deviations of production packs from the approved preproduction pack will be subject to the approval of the contracting officer. Approval of the preproduction pack will not relieve the supplier of his obligation to package, pack, and mark the sand bags in accordance with this specification.

6.4 Synthetic material. The contracting officer should require the supplier to submit a certificate of compliance certifying that the requirements of the fiber are as specified in 3.2. The certificate of compliance should be accompanied by actual test, inspection, or other verifiable quality data. The supplier should identify the types of acrylic used and the acrylic producer's commercial fiber designation.

6.5 Dyeing information. Caution should be exercised in any drying process used in dyeing the sand bag fabric, thread, or tie string. It is recommended that maximum temperature in dyeing or drying process for this material not exceed 260° F. in order to prevent damage; however, the supplier must insure that finished bags meet the drop-test requirements of 3.9.1. The color range specification in 3.3.3 may be obtained by the use of producer-colored fiber or through regular dyeing operations using either of the following dyeing formulations; however, the Government assumes no responsibility for these formulations:

	Color Index Classification	% Used o.w.f.
Formulation A	Basic Yellow 21	0.11%
	Basic Red 18	0.20%
	Basic Blue 45	0.80%
Formulation B	Genacryl Blue RGL (or equivalent)	1.5%
	Basic Red 18	0.12%
	Basic Yellow 25	0.68%

6.6 Definitions. For the purpose of this specification, the following definitions apply.

6.6.1 Seam slippage. Seam slippage is defined as openings occurring in the bag fabric immediately adjacent to the seam, which are caused by the bunching of yarns by the sewing thread in the seam under the stress of a drop test. Slight slippage results in openings between adjacent yarns not more than 1/8 inch in width and 5/8 inch in length, and does not permit the loss of any fill.

6.6.2 Yawning. Yawning is defined as the spreading apart of the folded fabric edges of a sewn seam under the stress of a drop test. Slight yawning will expose a continuous length of seam thread which is not more than 1/2 inch, and does not permit the loss of any fill.

6.6.3 Free fall. Free fall is defined as unrestricted fall that permits the sand bag to be placed in a position prior to release that will assure an absolutely free unobstructed fall to impact of the sand bag at the orientation and in the direction required; by apparatus that provides an instantaneous release without imparting rotational or sidewise forces to the sand bag.

6.7 Level A packaging. Level A packaging is the only acceptable level of packaging and is applicable to all levels of packing.

Custodians:

Army - ME
Navy - SA
Air Force - 84

Review activity:

Navy - YD

Preparing activity:

Army - ME

Project No. 8105-0194

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 22-R255

INSTRUCTIONS: This sheet is to be filled out by personnel, either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity. Comments and suggestions submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or serve to amend contractual requirements.

SPECIFICATION

MIL-B-52598B Bag, Sand: Acrylic

ORGANIZATION

CITY AND STATE

CONTRACT NUMBER

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO *(If "yes", in what way?)*

4. REMARKS *(Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)*

SUBMITTED BY *(Printed or typed name and activity - Optional)*

DATE

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REPLACES EDITION OF 1 OCT 64 WHICH MAY BE USED.

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