

A-A-549B
October 20, 1986
SUPERSEDING
A-A-549A
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COMMERCIAL ITEM DESCRIPTION

CUSHIONING MATERIAL, PACKAGING (FLEXIBLE, CELLULAR AND ANTI-STATIC PLASTIC FILM)

The General Services Administration has authorized the use of this commercial item description in preference to PPP-C-795B, Classes 1 and 2.

This description covers flexible barrier closed cell, regular and anti-static, heat sealable, noncorrosive cellular film for use in cushioning material used in packages to protect items from damage due to shock, vibration, contamination and abrasion and also eliminate the development of tribo-electric charges on electro-static discharge sensitive electronic devices.

Salient characteristics:

The cushioning material furnished under this description shall be manufactured of transparent and anti-static plastic film. It shall be pink-tinted to indicate its anti-static protective qualities. The anti-static material shall be tinted to distinguish anti-static from regular transparency material and the appropriate marking shall reflect the distinction between the two materials.

Contact corrosivity.

When tested as specified below, the manufacturer initially shall conduct this test to establish that the product is noncorrosive. The test shall be repeated annually or whenever there is any change in the manufacturing process or materials.

Materials.

(a) Copper test bars: Three 3/16-inch to 1/4-inch diameter by 1-1/2 inch test bars of electrolytic tough pitch (ETP) copper conforming to QQ-C-502. The temper is unimportant. Copper Development Association (CDA) alloy 110, ETP copper is the commercial equivalent. Bars shall be silver plated, 0.003-inch minimum thickness in accordance with QQ-S-365, type II, grade B. (Plated bars shall be immediately protected in such a manner that surfaces will remain tarnish-free until the time of use.)

(b) Specimens: Two 4-inch by 12-inch samples of cushioning material.

(c) Glycerine (glycerol)—distilled water solution having a specific gravity of 1.1724 at 24 ± 1.67 degrees C (75 ± 3 degrees F). SG 1.1724 is 67 percent glycerine or 785.5 grams of glycerine in a liter (1000 cc).

(d) Barrier material, MIL-B-131, class 1, 10-1/2 inch by 15-inch samples.

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Equipment.

- (a) Heat sealing equipment. Equipment shall be suitable for heat sealing MIL-B-131, class-1 bags.
- (b) Desiccator, minimum effective inside diameter, 10 inches. Desiccator plate shall be fitted with a single support to facilitate handling (see figure 1).
- (c) Oven. Oven shall be suitable for maintaining temperature of desiccator at 49 ± 1.11 degrees C (120 ± 2 degrees F).

Preparation of test assemblies. Prepare two test assemblies in the following manner: Fold the 15-inch length of the barrier material and heat seal adjacent to the fold. Complete the open bag by applying double heat seals to the sides. Wipe plated copper test bars with surgical gauze that has been moistened with methanol. Wipe dry with surgical gauze. Place the bar along the 4-inch edge of the 4-inch by 12-inch cushioning sample. The surfaces with the bubbles shall be in contact with the plated test bar. Loosely wrap the 12-inch long section around the test bar. Place wrapped test bar in bag. The test bar shall be approximately parallel to the bottom of the bag. Apply two heat seals across the top of the bag. Prepare a control test assembly that contains only a plated bar, without the cushioning wrap material, in the barrier bag.

Procedure. The test assemblies shall be placed on a clean desiccator plate. Place the plate in the desiccator which contains the 500 milliliters (ml) of synthetic glycerine-water solution as specified in Materials paragraph (c). The distilled water solution shall have a specific gravity of 1.1724 at 24 ± 1.67 degrees C (75 ± 3 degrees F). SG 1.1724 is 67 percent glycerine or 785.5 grams of glycerine in a liter (1000 cc). The desiccator shall be sealed and immediately placed in a circulating air oven maintained at 49 ± 1.11 degrees C (120 ± 2 degrees F). After an exposure period of 504 hours (21 days), the assemblies shall be removed. The wrapped samples shall be compared with the control sample. Indications of corrosion, etching, pitting and/or surface contamination are causes for rejection.

Low temperature flexibility. The barrier cushioning material shall remain flexible at -20° F and shall show no cracks, tears, nor separation when bent over mandrel.

Preparation of specimens. Cut five specimens, 4 by 12 inches, and condition for 3 hours at -71 ± 1.11 degrees C (-20 ± 2 degrees F). The specimens shall be arranged in the low temperature chamber in a manner which allows circulation of air against all surfaces of the specimens. A round, steel, 1/4-inch diameter mandrel and the test specimens shall be placed in the low temperature chamber simultaneously.

Procedure. After low temperature conditioning, immediately bend each specimen over the mandrel so that specimen is subjected to a 180-degree bend. Bending shall be accomplished at the conditioning temperature. The flexing operation over the mandrel shall take 2 to 3 seconds. Each specimen shall be bent so that the opposite face of the specimen is toward the mandrel; the bending procedure is then repeated as above.

Abrasion.

The cushioning material shall show no rupture or tear on material or microscopic scratches on metal panel.

A specimen of cushioning material of any convenient size shall be placed with the protuberances contacting the surface of a polished 2024-T2, QQ-A-250/4 aluminum plate. The width of the plate shall be greater than the width of the specimen and the length shall be sufficient so that the specimen remains on the plate during the complete rubbing cycles. A weight exerting 1 psi shall be placed on the specimen and the specimen shall be pulled back and forth with a horizontal stroke of 6 inches for 30 seconds at an approximate speed of 1 foot per second. This shall then be repeated using the other side of the specimen in direct contact with the plate.

Creep.

The cushioning material shall exhibit not more than 10 percent creep when tested in accordance with ASTM D2221. A 1.0 psi load shall be used. Thickness readings should be taken at the time of initial loading, 1-hour after loading and 120-hours after loading. Thickness loss shall be determined from the 1-hour and 120-hour readings, in accordance with paragraph 9.5 of the test. (Preworking prior to testing is not required).

Altitude.

Preparation of test specimen. One eight inch wide strip shall be cut in the transverse direction of the roll across its full width. This strip shall be examined for defective air cells. Any such cells found shall be marked with a suitable marking pen.

Test. The test specimen shall be folded loosely on itself so that it will fit inside a vacuum desiccator of sufficient size equipped with a hose connection to a suitable vacuum source. The gage pressure inside the desiccator shall be adjusted to 18.80 inches of mercury vacuum, which is equivalent to an altitude 25,000 feet above sea level, and held there for five minutes. The pressure shall then be returned to sea level and the specimen removed. The specimen shall then be examined for any ruptured cells not previously marked. Random cells shall be squeezed between the thumb and forefinger in an attempt to transfer the air from one bubble to an adjacent one. Material shall be able to withstand a pressure drop with not more than 4 percent cell failure.

Anti-static material.

When tested in accordance with Method 4046 of Federal Test Method Standard No. 101, anti-static material shall have static decay time not greater than 2.0 seconds. Twelve-day preconditioning and 24-hour water wash not required. Samples shall be conditioned at 23 ± 2.8 degrees C (73 ± 5 degrees F) and 15 percent RH for 24 hours before testing.

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The thickness and weight of the cushioning material shall be as specified, within the following range:

| <u>Nominal cushioning thickness</u> | <u>Cell height in inches</u> | <u>Pounds per 1000 square feet</u> |
|-------------------------------------|------------------------------|--|
| Very thin | Up to 1/8 | 9-12 pounds |
| Thin | 1/8 to 1/4 | 11-15 pounds |
| Medium | 1/4 to 3/8 | 14-19 pounds |
| Thick | Greater than 3/8 | 19-25 pounds (reg.grade) 22-30 pounds (hvy.grade) |

Workmanship. The material shall be free from dirt, contamination, mold release compounds and other foreign matters. The cells shall be evenly spaced with no tears, cuts, holes, or other defects adversely affecting serviceability.

Regulatory requirements. In accordance with the section 23.403 of the Federal Acquisition Regulations, the Government's policy is to acquire items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials.

Inspection of the end item. Random samples shall be drawn from each lot for the end item inspection. Sampling shall be in accordance with Mil-Std-105.

- A. Examination for construction, dimensions and workmanship. The inspection level shall be S-2 with an acceptable quality level (AQL) of 4.0 percent defective.
- B. Testing. Use level S-1 with an AQL of 2.5 percent defective. A sample unit should be one roll or 10 sheets.

Preservation, packaging, packing, labeling, and marking. The preservation, packaging, packing, labeling, and marking shall be as specified in the contract or order. (For use by GSA; optional for other agencies) DoD may use Commercial Packaging, Standard ASTM D3951.

Notes. Purchaser should specify roll form dimensions (length and width) and sheet form dimensions (length and width).

THE COMMERCIAL ITEM CERTIFICATION CLAUSE IS NOT REQUIRED WHEN THIS COMMERCIAL ITEM DESCRIPTION IS USED FOR PROCUREMENT.

ASTM standards are available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

MILITARY INTERESTS:

Military Coordinating Activity

Army - GL

PREPARING ACTIVITY

GSA-FSS

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Custodians:

Army - GL
Navy - AS
Air Force - 99

Review Activities:

Army - AR, MD, MI
NAVY - OS, SH
Air Force - 99

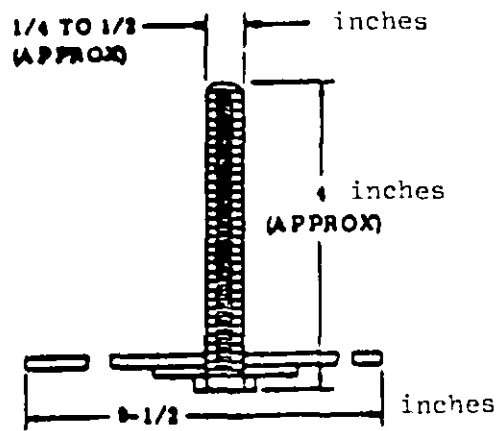


FIGURE 1 - Desiccator Plate