

INCH-POUND

A-A-59311

17 November 1998

SUPERSEDING

MIL-P-29596(NAVY)

15 January 1993

## COMMERCIAL ITEM DESCRIPTION

### PACKAGING MATERIAL, KRAFT PAPER, 3-PLY, FLEXIBLE

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. **SCOPE.** This commercial item description (CID) covers the requirements for flexible 3-ply kraft paper for use in dunnage packaging operations.

#### 2. SALIENT CHARACTERISTICS.

2.1 **Raw material.** Packaging materials covered under this specification shall be made from kraft material conforming to A-A-203.

2.1.1 **Construction.** The materials shall be constructed in any manner that forms a 3-ply configuration. The plies shall be plainly layered and shall be non-bonded.

2.2 **Form.** The material specified in 2.1.1 shall be furnished in rolls. The roll material shall be uniformly wound on nonreturnable cores. The cores inside diameter shall be not less than 3 inches, with a tolerance of + 0.125 inch. The length of the core shall be equal to the width of the roll material, with a tolerance of + 0.125 inch. The core shall be rigid to prevent distortion of the roll during use and shipment conditions. Each roll shall be restrained to prevent unwinding.

2.2.1 **Roll dimensions.** Unless otherwise specified (see 5.2), the average length shall be not less than 150 yards. The length of any individual roll shall be not less than 145 yards. If rolls are specified with an average length that exceeds 150 yards the individual roll length tolerance shall be -5 percent. Unless otherwise specified, the width of roll material shall be 30 inches with a tolerance of  $\pm 0.25$  inch. If rolls are specified in widths exceeding 30 inches the tolerance shall be  $\pm 2$  percent. If rolls are specified in widths less than 30 inches the tolerance shall be  $\pm 0.5$  percent.

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any other data which may improve this document should be sent to: Commander, Naval Air Warfare Center Aircraft Division, Code 414100B120-3, Highway 547, Lakehurst, NJ 08733-5100.

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2.3 Packaging material (conversion). Roll materials specified in 2.2 and 2.2.1 shall be capable of being converted into packaging materials with portable equipment and processes developed by the manufacturer.

2.4 Identification sheet. Each lot or order shall contain the specification number, manufacturer's designation, manufacturer's name, lot number, and date of manufacture.

2.5 Contact corrosivity. The kraft paper shall have no corrosion, etching, or pitting in the contact area when tested in accordance with FED-STD-101, Method 3005.

2.6 Abrasiveness. The kraft paper shall not rupture, tear, or produce a macroscopic scratch on the material or metal surface when tested in accordance with 3.3.2.

2.7 Low temperature flexibility. The kraft paper surface shall have no cracks, tears, or separation when bent over a mandrel and tested in accordance with 3.3.3.

2.8 Vibrational settling. The kraft paper samples average thickness decrease shall be not greater than 15 percent, and the thickness decrease of any one sample tested shall be not greater than 20 percent when tested in accordance with 3.3.4.

### 3. QUALITY ASSURANCE PROVISIONS.

3.1 Product Conformance. The products provided shall meet the salient characteristics of this commercial item description, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale in the commercial market. The government reserves the right to require proof of such conformance.

3.2 Market acceptability. The following market acceptability criteria is necessary to document the quality of the product to be provided under this commercial item description: The company furnishing the kraft paper must have been producing a product meeting the requirements of this commercial item description for at least 6 months.

3.3 Testing. All tests shall be conducted as specified herein.

3.3.1 Test conditions. Unless otherwise specified, tests shall be conducted at a temperature of  $72 \pm 2$  °F and a relative humidity of  $50 \pm 5$  percent.

3.3.2 Abrasiveness.

3.3.2.1 Procedure. A specimen of packaging material shall be placed on the surface of a polished 2024-T2 aluminum panel conforming to QQ-A-250/4. The aluminum panel shall be wider than the packaging material and long enough to permit the packaging material to be pulled along the

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panel is specified herein. A weight exerting a force of  $1.0 \pm 0.1$  psi shall be placed on top of the packaging material. The weighted packaging material shall be pulled horizontally  $6.0 \pm 0.5$  inches back and forth along the panel for 30 cycles at a speed of 1 foot (1 cycle) per second. The weight shall then be removed and this procedure shall be repeated using the other side of the specimen in direct contact with the same plate.

### 3.3.3 Low temperature flexibility test.

3.3.3.1 Conditioning. Cut four specimens, 4 by 12 inches, and condition for 3 hours at  $-20 \pm 2$  °F. The specimens shall be arranged in a low temperature chamber so that the air can circulate against all surfaces of the specimens. A 0.25 inch steel diameter mandrel and the test specimens shall be placed in the low temperature chamber simultaneously.

3.3.3.2 Procedure. After low temperature conditioning, immediately bend each specimen over the mandrel so that the 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 over the mandrel 3 times with one face against the mandrel and then turned over so that the opposite face of the specimen is toward the mandrel; the bending procedure is then repeated as described above.

### 3.3.4 Vibrational settling test.

3.3.4.1 Cleated plywood box. A cleated plywood box conforming to PPP-B-601, Style A (except as specified herein) shall be fabricated. The box shall have interior dimensions of 10 by 10 by 10 inches with a tolerance of + 0.0625 inch. The plywood panels shall be 0.5 inches thick. The lumber for cleats shall be nominal 1 by 2 inch material. No cover is necessary.

3.3.4.2 Prototype load. A rigid prototype test load shall be fabricated of wood, steel, aluminum, or other rigid materials. In order to provide a 100 square inch bearing area on the packaging material, the prototype test load shall have length and width dimensions of 10 by 10 inches with a  $-0.0625$  tolerance for each. The prototype shall be constructed in such a manner that the load-bearing surface is flat. The prototype load shall be designed so that its weight provides a bearing stress of  $0.10 \pm 0.01$  psi. In addition, an accelerometer shall be mounted to the prototype load.

3.3.4.3 Pack assembly. The inside bottom surface of the cleated plywood box shall be covered with  $100 \pm 5$  grams of the packaging material to be tested.

3.3.4.4 Test procedure. Place the completed pack upon a vibration table in the configuration shown on figure 1. Place the prototype test load on the test specimen and immediately vibrate the entire test fixture at 0.5 Gs through a frequency sweep of 5 Hz to 100 Hz (vertical linear) at a rate of 2 octaves/minute. Note the frequency at which resonance occurs (natural frequency). Record

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the material initial thickness immediately following frequency sweep (allow the load to remain on the material). Run at the natural frequency for  $30 \pm 0.5$  minutes and record the final material thickness. Three samples shall be tested. The average thickness decrease of the three samples and the thickness decrease of any one sample shall be not greater than the requirement specified in 2.8. The thickness decrease shall be calculated in accordance with 3.5.1.4.

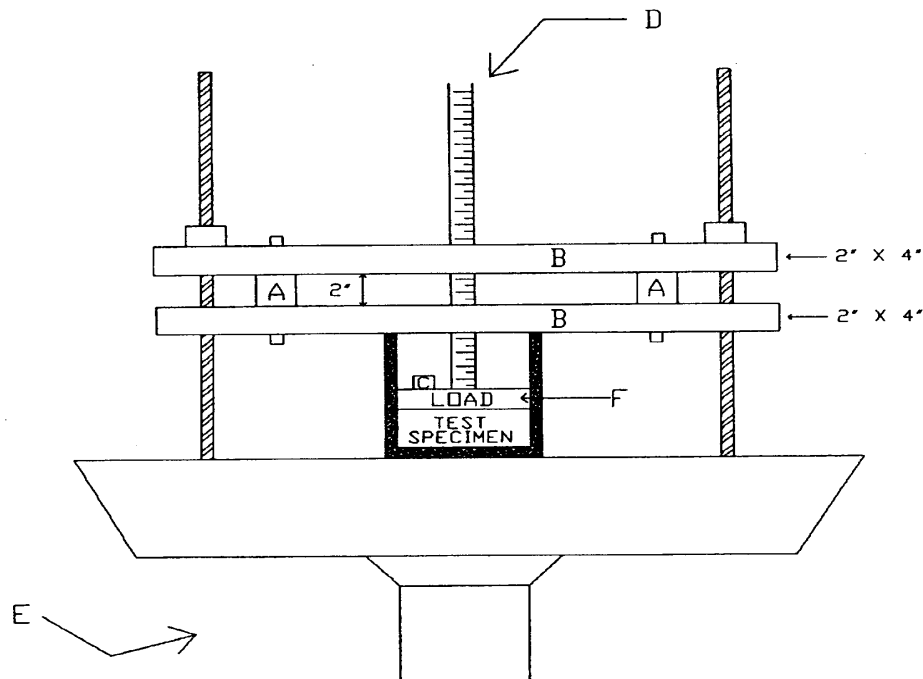
3.5.1.4 Calculations. Calculate the percent thickness decrease utilizing the following formula:

$$TD = \frac{(TF - TI)}{TF} \times 100 \text{ percent}$$

TF = final material thickness

TI = initial material thickness

TD = percent material thickness decrease



- A - Spacer
- B - 22 inch guide
- C - Accelerometer
- D - Graduated cylindrical guide bar
- E - Hydraulic actuator and table components
- F - 10 by 10 inch prototype load

FIGURE 1. Test fixture configuration.

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4. PACKAGING.

4.1 Preservation, packing, and marking. Preservation, packing, and marking shall be as specified in the contract or order.

5. NOTES.

5.1 Usage.

5.1.1 Intended use. The packaging materials covered by this specification are intended for use primarily as dunnage in packing or shipping applications where a flexible, non-plastic material is required.

5.1.2 Other use. In certain applications, at the discretion of the acquiring activity, these packaging materials may be used in cushioning applications. It is recommended that in those instances, testing be conducted to determine the adequacy of the material to perform as a cushioning material. These materials may be oriented in such a manner to enhance their ability to provide primary cushioning protection. The manufacturer may be able to furnish information as to particular material orientations that may yield the desired results.

5.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification.
- b. Issue of the DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced.
- c. Number of rolls (see 2.2.1).
- d. Length of rolls (if other than 150 yards) (see 2.2.1).
- e. Width of rolls (if other than 30 inches) (see 2.2.1).

5.3 Federal Standards and Specifications may be obtained from the General Services Administration Specifications Section, Suite 8100, 470 E. L'Enfant Plaza, SW, Washington, DC 20407.

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MILITARY INTERESTS:

Custodians:  
Navy - AS

Review activities:  
Navy - SA

CIVIL AGENCY COORDINATING  
ACTIVITY:

GSA/FSS-2FYE

Preparing activity:  
Navy - AS  
(Project 8135-N003)