[METRIC]
A-A-3174
October 15, 1998

COMMERCIAL ITEM DESCRIPTION

# PLASTIC SHEET, POLYOLEFIN

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

## 1. SCOPE AND CLASSIFICATION

1.1. Scope. This document covers requirements for polyolefin film. Polyolefin film covered by this document is intended for use in general purpose packaging applications where a high degree of water resistance, moderate moisture vapor resistance, and dust protection are desired. The item is not intended for use in special packaging applications where special grease or oil resistance properties may be required. The class 1 film is intended to be used in building material shrouds and similar non-food applications. The class 2 film is intended to be used in food contact and wrapping applications.

1.2. Classification. For the purpose of this document, the polyolefin film shall be classified as follows:

Type I - Normal strength polyethylene
Type II - High strength polyethylene
Type III - Polypropylene
Type IV - Heat shrinkable polyethylene
Type V - Heat shrinkable weather resistant polyethylene
Type VI - High density polyethylene

Class 1 - For non-food application
Class 2 - For use in contact with food
Class 3 - Biaxially oriented
Class 4 - Preferentially oriented

Grade A - Low slip
Grade B - Medium slip
Grade C - High slip

Finish 1 - Untreated
Finish 2 - Treated

Beneficial comments, recommendations, additions, deletions, clarifications, etc. and any data which may improve this document, should be sent to: General Services Administration, Federal Supply Service, 26 Federal Plaza, New York N.Y. 10278 ATTN: Engineering Branch (2FYEE).

2. SALIENT CHARACTERISTICS

2.1. Construction.

2.1.1. Types I & II. Type I material shall be flexible unsupported normal strength polyethylene film, meeting the physical requirements specified in Table I herein. Type II material shall be flexible unsupported high strength polyethylene film, meeting the physical requirements specified in Table I herein. Unless otherwise specified, Type I and II materials shall be made of Low Density Polyethylene (LDPE), Linear Low Density Polyethylene (LLDPE), Medium Density Polyethylene (MDPE) or Linear Medium Density Polyethylene (LMDPE).

2.1.2. Type III. Type III material shall be flexible unsupported polypropylene film, meeting the physical requirements specified in Table I herein.

2.1.3. Types IV & V. Type IV material shall be flexible, unsupported, heat shrinkable polyethylene film. Type V material shall be flexible, unsupported, heat shrinkable, weather resistant polyethylene film. Type V material shall not have more than an appreciable change in color* after exposure to accelerated weathering, when tested in accordance with Fed-Std-191, Method 5804(carbon arc) with 200 hrs exposure with filters, or any other equivalent commercial method.

> * Note 1: Appreciable change in color means a change which is immediately noticeable in comparing the test specimen with the original unexposed material. If closer inspection or change of light is required to make a slight change in color, the change is not considered appreciable.

2.1.4. Type VI. The material shall be flexible, unsupported, high density polyethylene film, meeting the physical requirements specified in Table I herein.

2.2. Form. The film shall be furnished in the form of flat cut sheets or in rolls, as specified. Material in roll form shall be either single thickness or lay flat tubing, as specified.

2.3. Dimensions.

2.3.1. Thickness. Unless otherwise specified, the thickness of the film is not a requirement and shall be at the option of the supplier. For the purpose of this document, the nominal thickness shall be cited for identification only. The material shall meet or exceed all the physical requirements specified in Table I for the appropriate nominal thickness.

2.3.2. Dimensions of Rolls and Tubing. Length and width of rolls of film and tubing shall be as specified, with a tolerance of ±3%. The overall average length of 2 or more rolls shall be not less than 99% of specified length. Each roll shall have no more than 3 splices and each piece shall be not less than 10' in length.

2.3.3. Core Size. The film shall be furnished on cores having a length equal to or up to 1" longer than the actual width or the folded width of the film as furnished. Unless otherwise specified, the inside diameter of the core shall be not less than 1-1/2" nor more than 6-1/4".

2.3.4. Dimensions of Sheets. Length and width of sheets shall be as specified with the tolerance of ± 3%.

2.4. Finish. When specified, that printing on film is required, the film shall be Finish 2 meeting the physical requirement for Wetting Tension.

2.5. Materials. When specified that the film is intended for use in contact with food, the material shall be Class 2 and shall conform to the Federal Food, Drug, and Cosmetic Act, Food Additive Amendment, 21 CFR Paragraph 177.1520.

2.6. Color. Unless otherwise specified, the film shall be of natural color (colorless) and transparent.

2.7. Workmanship. The workmanship shall be evaluated on the basis of the intended application of the material. The material shall be uniform in color, texture, finish, and other physical properties and shall be free from cuts, cracks, holes, dirt, gels, or other defects which may impair its utility or appearance.

2.8. Physical Requirements. The finished sheet or strip shall meet the physical requirements specified in Table I.

TABLE I
PHYSICAL REQUIREMENTS

| Property | Type I | Type II | Type III | Type IV & V | | Type VI | Test |
|---|---|---|---|---|---|---|---|
| | | | | Class 3 | Class 4 | | |
| Density, ($g/cm^3$) without additives | 0.910 to 0.940 | 0.910 to 0.940 | 0.885 to 0.905 | 0.910 to 0.940 | 0.910 to 0.940 | higher than 0.940 | ASTM D1505 or ASTM D792 |
| Impact Resistance, Grams, minimum | | | | | | | |
| 0.006mm (0.00025") | - | - | - | - | - | 18 | ASTM D1709 |
| 0.013mm (0.00050") | - | - | - | - | - | 35 | (method A) |
| 0.019mm (0.00075") | - | - | - | - | - | 53 | |
| 0.025mm (0.0010 ") | 40 | 75 | - | - | - | 70 | |
| 0.038mm (0.0015 ") | 65 | 105 | - | - | - | 105 | |
| 0.051mm (0.0020 ") | 85 | 135 | - | - | - | 140 | |
| 0.064mm (0.0025 ") | 105 | 165 | - | - | - | 175 | |
| 0.076mm (0.0030 ") | 125 | 195 | - | - | - | 210 | |
| 0.102mm (0.0040 ") | 165 | 255 | - | - | - | - | |
| 0.127mm (0.0050 ") | 205 | 295 | - | - | - | - | |
| 0.152mm (0.0060 ") | 245 | 305 | - | - | - | - | |
| 0.178mm (0.0070 ") | 285 | 345 | - | - | - | - | |
| 0.203mm (0.0080 ") | 325 | 385 | - | - | - | - | |
| 0.229mm (0.0090 ") | 365 | 430 | - | - | - | - | |
| 0.254mm (0.0100 ") | 405 | 475 | - | - | - | - | |
| Tensile Strength, kPa(psi), minimum @ break | 11800 (1700) | 11800 (1700) | 31100 (4500) | 11800 (1700) | 13200 (1900) | 27600 (4000) | ASTM D882 (method A) |
| Elongation, % minimum @ break | | | | | | | ASTM D882 (method A) |
| MD* | 225 | 225 | 200 | 225 | 300 | 200 | |
| TD | 350 | 350 | 200 | 350 | 350 | 300 | |
| Heat Sealability, % minimum | 60 | 60 | 60 | 60 | 60 | 60 | ASTM F88 Fin Seal Method |

TABLE I (continued)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Tear Resistance, Grams, minimum | | | | | | | | |
| 0.025mm (0.0010") | MD* | - | - | - | 150 | 150 | - | ASTM D1922 |
| | TD | - | - | - | 150 | 300 | - | |
| 0.038mm (0.0015") | MD | - | - | - | 200 | 200 | - | |
| | TD | - | - | - | 200 | 400 | - | |
| 0.051mm (0.0020") | MD | - | - | - | 250 | 250 | - | |
| | TD | - | - | - | 250 | 500 | - | |
| 0.064mm (0.0025") | MD | - | - | - | 300 | 300 | - | |
| | TD | - | - | - | 300 | 600 | - | |
| 0.076mm (0.0030") | MD | - | - | - | 350 | 350 | - | |
| | TD | - | - | - | 350 | 700 | - | |
| 0.102mm (0.0040") | MD | - | - | - | 400 | 400 | - | |
| | TD | - | - | - | 400 | 800 | - | |
| 0.127mm (0.0050") | MD | - | - | - | 450 | 450 | - | |
| | TD | - | - | - | 450 | 900 | - | |
| 0.152mm (0.0060") | MD | - | - | - | 500 | 500 | - | |
| | TD | - | - | - | 500 | 1000 | - | |
| 0.178mm (0.0070") | MD | - | - | - | 550 | 550 | - | |
| | TD | - | - | - | 550 | 1100 | - | |
| 0.203mm (0.0080") | MD | - | - | - | 600 | 600 | - | |
| | TD | - | - | - | 600 | 1200 | - | |
| Film shrinkage, % minimum | MD* | - | - | - | 30 | 40 | - | ASTM D2732 |
| | TD | - | - | - | 30 | 10 | - | |
| WVTR, maximum, $g/m^2$@24hr, Class 2 | | | | | | | | |
| 0.006mm (0.00025") | | - | - | - | - | - | 86.8 | ASTM F372 |
| 0.013mm (0.00050") | | - | - | - | - | - | 43.4 | or |
| 0.019mm (0.00075") | | - | - | - | - | - | 29.0 | ASTM E96 |
| 0.025mm (0.0010 ") | | 26.4 | 26.4 | - | - | - | 21.7 | desiccant |
| 0.038mm (0.0015 ") | | 20.2 | 20.2 | - | - | - | 14.4 | method |
| 0.051mm (0.0020 ") | | 15.5 | 15.5 | - | - | - | 10.9 | |
| 0.064mm (0.0025 ") | | 12.4 | 12.4 | - | - | - | 8.7 | |
| 0.076mm (0.0030 ") | | 10.1 | 10.1 | - | - | - | 7.3 | |
| 0.102mm (0.0040 ") | | 6.9 | 6.9 | - | - | - | - | |
| 0.127mm (0.0050 ") | | 4.7 | 4.7 | - | - | - | - | |
| 0.152mm (0.0060 ") | | 3.9 | 3.9 | - | - | - | - | |
| 0.178mm (0.0070 ") | | 3.6 | 3.6 | - | - | - | - | |
| 0.203mm (0.0080 ") | | 3.2 | 3.2 | - | - | - | - | |
| 0.229mm (0.0090 ") | | 2.5 | 2.5 | - | - | - | - | |
| 0.254mm (0.0100 ") | | 2.2 | 2.2 | - | - | - | - | |
| Slip, maximum | | | | | | | | |
| Grade A | | 0.8 | 0.8 | - | - | - | - | ASTM D1894 |
| Grade B | | 0.5 | 0.5 | - | - | - | - | |
| Grade C | | 0.2 | 0.2 | - | - | - | - | |
| Wetting Tension, minimum, dynes/cm (Finish 2) | | 35 | 35 | 35 | 35 | 35 | 35 | ASTM D2578 |

Footnotes to Table I:

- Where no value is specified, no requirement is applicable
* MD/TD - Machine Direction/Transverse Direction
WVTR Water Vapor Transmission Rate

3. PRODUCT CONFORMANCE. The product provided shall meet the salient characteristics of this commercial item description. The quality of the product sold to the government shall be equal to or better than the quality of the product sold by the manufacturer in the commercial market. The government reserves the right to require proof of such conformance.

4. PACKAGING, PACKING & MARKING. Unless otherwise specified in the contract or purchase order, packaging/packing shall be in accordance with ASTM D 3951. Marking shall be as specified in the contract or purchase order. In addition, each unit of issue for Class 2 material shall be marked with the following: " **FOR FOOD CONTACT** "

5. REFERENCED DOCUMENTS: The issues of the referenced documents in effect on the date of the solicitation for offers or request for proposals shall be used to determine conformance with the requirements of this Commercial Item Description.

Copies of Federal specifications, standards, and commercial item descriptions may be obtained through the Congressional Sales Office, U.S. Government Printing Office, Washington, DC 20402.

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.

ASTM methods may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshocken, PA 19428-2959.

6. NOTES.

6.1. Ordering data. Purchasers shall select the preferred options permitted herein and include the following information in procurement documents:

6.1.1. Title, number, and date of this document.
6.1.2. Type, class, grade, finish and nominal thickness.
6.1.3. Color required, if applicable.
6.1.4. Form, length and width required.
6.1.5. Single thickness or lay flat tubing.
6.1.8. Unit of issue.

6.1.6. Core size, if required.
6.1.7. Packaging, packing & marking.

6.2 List of NSNs:

8105-00-191-3701
8105-00-191-3776
8105-00-191-3902
8135-00-579-6487
8135-00-579-6489
8135-00-579-6491
8135-00-584-0610
8135-00-584-0619
8135-00-618-1783
8135-00-855-3387

MILITARY INTEREST

Coordinating activity:

Army - GL

Custodians:

Army - GL
Navy - SA
Air Force - 69

Review activities:

Army - MD, AR, SM
Air Force - 71, 82

User activities:

Army - EL, AV
Navy - MC, EC

PREPARING ACTIVITY

GSA-FSS