

COMMERCIAL STANDARD CS238-61

Polyethylene Sheeting
(Construction, Industrial and
Agricultural Applications)

A recorded
voluntary standard of the
trade published by
the U.S. Department
of Commerce



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U.S. DEPARTMENT OF COMMERCE
BUSINESS AND DEFENSE SERVICES ADMINISTRATION
OFFICE OF TECHNICAL SERVICES
Commodity Standards Division

With the cooperation of the
National Bureau of Standards

EFFECTIVE DATE

Having been passed through the regular procedures of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective October 6, 1961.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Technical Services, Business and Defense Services Administration, and with the National Bureau of Standards. Their purpose is to establish quality criteria, standard methods of test, rating, certification, and labeling of manufactured commodities, and to provide uniform bases for fair competition.

The adoption and use of a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

Commercial Standards originate with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The division by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the division assures continuous servicing of each Commercial Standard through review and revision whenever, in the opinion of the industry, changing conditions warrant such action.

SIMPLIFIED PRACTICE RECOMMENDATIONS

Under a similar procedure the Commodity Standards Division cooperates with industries in the establishment of Simplified Practice Recommendations. Their purpose is to eliminate avoidable waste through the establishment of standards of practice for sizes, dimensions, varieties, or other characteristics of specific products; to simplify packaging practices; and to establish simplified methods of performing specific tasks.

Polyethylene Sheeting

(Construction, Industrial and Agricultural Applications)

[Effective October 6, 1961]

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish a national standard for the information/and guidance of producers, distributors, and consumers; to promote understanding between buyers and sellers; to provide a basis for fair competition among producers; to give the consumer confidence in the quality of these products; and to provide a means of identifying products conforming to this standard.

2. SCOPE

2.1 This standard covers dimensional tolerances, intrinsic quality requirements, and test methods for polyethylene sheeting for construction, industrial, and agricultural applications. The dimensional tolerances include thickness, yield, width, and length. The intrinsic quality requirements include composition, appearance, impact strength, tensile properties, reflectance, opaqueness (low luminous transmittance), and water vapor transmission.

3. TERMINOLOGY AND GENERAL DESCRIPTION

3.1 The plastics terminology used in this Commercial Standard is in accordance with the definitions given in ASTM D883-60T, Tentative Definitions of Terms Relating to Plastics, unless otherwise indicated.

3.2 *General description.*—This standard covers flexible (non-rigid) unsupported flat or tubular polyethylene sheeting intended for use in construction, industrial, and general agricultural applications.¹ It may be natural, colored, translucent, or opaque and also may be plain, printed, embossed, or otherwise surface-treated.

4. DIMENSIONAL REQUIREMENTS

4.1 *Thickness tolerances.*—The thickness at any point when measured in accordance with 6.3 shall be within ± 25 percent of the nominal thickness.

4.2 *Yield tolerances.*—The actual yield for each sales unit, when determined in accordance with 6.4, shall be within ± 10 percent of the nominal value.

4.3 *Width tolerances.*—The tolerance for widths of 1 foot or more shall be $\pm 1/8$ inch per foot of nominal width. For all widths less than 1 foot, the tolerance shall be $\pm 1/8$ inch.

¹ For applications where requirements for slip, clarity, ink adhesion, heat sealability, and odor are needed, the use of CS227-59 is recommended.

4.4 Length.—The length of sheeting per roll shall be within plus 3 percent to minus 1 percent of the specified length as marked or agreed upon between the manufacturer (or vendor) and the purchaser.

5. INTRINSIC QUALITY REQUIREMENTS

5.1 Composition.—The sheeting shall be made from polyethylene or modified polyethylene, such as an ethylene copolymer consisting of a major proportion of ethylene in combination with a minor proportion of some other monomer, or a mixture of polyethylene with a lesser amount of other polymers. It may contain additives or modifiers such as pigments and stabilizers.

5.2 Appearance.—The material shall have appearance qualities conforming with those produced by good commercial practice. It shall be free as is commercially possible of gels, streaks, pinholes, particles of foreign matter, and undispersed raw material. There shall be no other visible defects, such as holes, tears, or blisters. The edges shall be free of nicks and cuts visible to the unaided eye.

5.3 Impact resistance.—The average impact resistance when determined in accordance with 6.5 shall be not less than the following:

Sheeting thickness	Dart drop impact resistance
<i>mil</i>	<i>grams</i>
1.0	40
1.5	65
2.0	85
3.0	125
4.0	165
5.0	205
6.0	260
7.0	315
8.0	370
9.0	420
10.0	475

Values for thicknesses other than those listed shall be determined by arithmetical interpolation.

5.4 Tensile properties.—The average tensile strength and elongation at break for all thicknesses when tested in accordance with 6.6 shall be as follows:

	Direction	
	Lengthwise	Crosswise
Tensile strength, min., psi.....	1700	1200
Elongation, min., percent.....	225	350

5.5 Reflectance.—The average 45-deg, 0-deg directional reflectance of white opaque sheeting intended for use in curing concrete shall be not less than 70 percent when determined in accordance with 6.7.

5.6 Luminous transmittance.—Black sheeting intended for exclusion of light and for maximum resistance to weathering shall have an average luminous transmittance not greater than 1 percent when determined in accordance with 6.8. This low level of luminous transmittance indicates a high degree of opaqueness.

5.7 Water vapor transmission.—The average water vapor transmission rate when determined in accordance with 6.9 shall be not greater than 1.40 grams per 100 square inches in area per 24 hours for sheeting one mil in thickness. The water vapor transmission requirement for other thicknesses shall be inversely proportional to the thickness. Thus, the requirement for other thicknesses shall be 1.40 grams per 100 square inches per 24 hours divided by the thickness in mils. This requirement is expressed in perms (grains per square foot per hour per inch of Hg water vapor pressure differential) for sheeting of various thicknesses in figure 1.

6. TEST METHODS

6.1 Conditioning.—The test specimens shall be conditioned in accordance with Procedure A in ASTM D618-58, Standard Methods of Conditioning Plastics and Electrical Insulating Materials for Testing, and shall be tested under these conditions, unless otherwise specified.

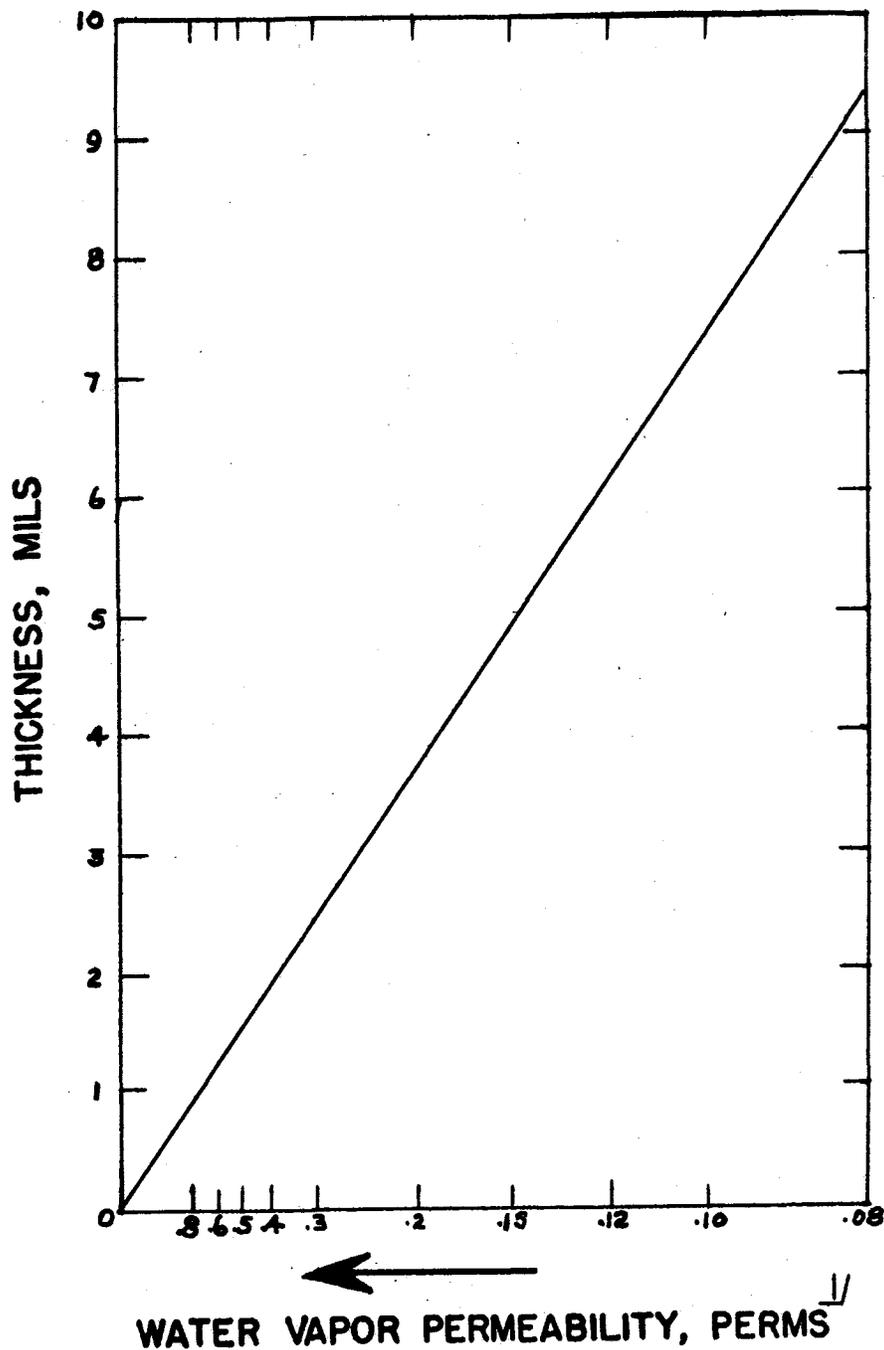
6.2 Sampling.—Samples for test shall be taken from rolls selected at random from the total number of rolls in each shipment or lot as follows:

Rolls in shipment or lot	Rolls sampled
2- 15	2
16- 40	3
41- 65	5
66- 110	7
111- 180	10
181- 300	15
301- 500	25
501- 800	35
801-1300	50

The sample for test shall be full width and shall be cut at least three full turns but not less than 5 linear feet from either end of the sheeting on the roll. Normally about 20 square feet of sheeting is needed to make all the tests. All the tests shall be made on each sample roll. Rolls damaged in shipment shall not be selected for testing.

The specimens to be used for a particular test shall be cut from different parts of the sheeting sample (that is, they shall not be cut adjacent to one another), unless otherwise specified in the method of test.

6.3 Thickness.—The thickness shall ordinarily be determined by the method described in 6.3.1. Where high accuracy is required, or for arbitration purposes, the method described in 6.3.2 shall be used. The apparatus used in both tests shall be installed and operated according to the procedure recommended by the manufacturer of the



1/ The numbers are perms, the scale is reciprocal.

FIGURE 1. Water vapor permeability requirements for polyethylene sheeting.

apparatus.² When gages are used that apply a load to the sheeting, the readings shall be taken between 2 seconds and 2 minutes after the load is applied, and the load shall not create a stress in the sheeting greater than 10 lb/in.². The apparatus shall be checked

² Types of thickness measuring gages are described in National Bureau of Standards Circular 585, issued January 20, 1958. Names of manufacturers are also given. This publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., for 50 cents.

periodically with gage standards. The thicknesses of gage standards shall be known to ± 0.00001 inch and be calibrated by the National Bureau of Standards, Washington 25, D.C., Pratt and Whitney Company, West Hartford, Conn., or other organizations offering comparable service.

6.3.1 General method.—This method is capable of producing measurements with a maximum error of ± 0.0001 inch.

6.3.1.1 Apparatus.—A deadweight dial micrometer with a flat anvil of $\frac{1}{4}$ inch diameter or larger in area and a $\frac{3}{16}$ inch diameter flat surface on the head of the spindle. Unless otherwise specified herein, the micrometer shall meet the requirements of the apparatus in Method C of ASTM D374-57T, Tentative Methods of Test for Thickness of Solid Electrical Insulation.

6.3.1.2 Specimens.—Five specimens, at least 2 by 2 inches in area, taken uniformly across the width of the roll shall be tested. At least one set of specimens shall be measured from each roll being tested.

6.3.1.3 Procedure.—Unless otherwise specified, the procedure shall be in accordance with that in Method C of ASTM D374-57T. The surfaces of the anvil and spindlehead, and of the specimen, shall be clean and dry. Place the specimen on the anvil and lower the spindlehead onto it slowly. The total load applied by the spindle shall be 4 ounces. One measurement shall be made on each specimen. The measurements of all the specimens of a sample roll shall be averaged to obtain the thickness of the film on the roll for use in paragraphs 4.2 and 6.4.

6.3.2 Arbitration method.—This method is capable of producing measurements with a maximum error of ± 0.00005 inch.

6.3.2.1 Apparatus.—Any type of apparatus capable of measuring thickness in the range covered by this standard to an accuracy of better than ± 0.00005 inch and which has been calibrated for use with polyethylene sheeting.

6.3.2.2 Specimens.—Five specimens, at least 2 inches by 2 inches, taken uniformly across the width of the roll shall be tested. At least one set of specimens shall be measured from each roll being tested.

6.3.2.3 Procedure.—The procedure recommended by the manufacturer of the gage shall be followed. The gage parts contacting the sheeting and the sheeting specimen shall be clean and dry. One measurement shall be made on each specimen.

6.4 Yield.—Yield is the amount of area provided by a given weight of sheeting of specified thickness. The *actual yield* shall be calculated as follows:

$$Y_a = \frac{A}{W}$$

Where Y_a = actual yield, in square inches per pound

W = weight, in pounds

A = area, in square inches

The area shall be calculated from the length and width of the sheeting on the roll. The weight shall be the weight of the sheeting on the roll. The *nominal yield* shall be calculated as follows:

$$Y_n = \frac{27.68}{dt}$$

Where Y_n = nominal yield, in square inches per pound ³
 d = density, in g/cm³
 t = thickness, in inches

The thickness shall be determined in accordance with 6.3. The density shall be determined in accordance with ASTM D1505-57T, Tentative Method of Test for Measurement of Density of Plastics by the Density-Gradient Technique, using three specimens.

The deviation of the actual yield from the nominal yield shall be calculated as follows:

$$D = \frac{100 (Y_a - Y_n)}{Y_n}$$

Where D is the deviation from the nominal yield in percent.

6.5 Impact resistance.—The impact resistance shall be determined in accordance with ASTM D1709-59T, Impact Resistance of Polyethylene Film by the Free Falling Dart Method, for sheeting less than 7 mils in thickness. Six test specimens shall be used to obtain the average value. For sheeting 7 mils and greater in thickness D1709-59T shall be used with the following modifications in the apparatus to obtain a greater impact by means of heavier darts and a 60-inch drop.

6.5.1 Electromagnet, capable of supporting a 2-kg weight, for use in supporting and releasing the dart assembly. It shall be equipped with a centering device to insure reproducible drop and a suitable interrupted source of electric power to energize and deenergize the electromagnet.

6.5.2 Dart, consisting of a 2-inch diameter hemispherical head fitted with 1/4-inch-diameter shaft 4 1/2 inches long to accommodate removable weights. The dart, exclusive of any weights, shall weigh 320 ± 10g. The dart weight shall be known to ± 0.5g. The head shall be constructed of smooth, polished stainless steel, or other material of similar density and hardness. The shaft shall be attached to the center of the flat upper surface of the head with its longitudinal axis at 90° to the surface. The shaft shall be made of aluminum with a 1/2 inch long steel tip at the end that attaches to the electromagnet.

6.5.3 Weights.—Stainless steel detachable weights are required as follows:

(a) Twenty-four weights of 40.0 ± 0.1g each, having appropriate dimensions of 1.750 inches in diameter, and 0.137 inch in thickness, and a center hole, 0.250 inch in diameter. The thickness shall be altered to obtain the specified weight.

(b) Two or more weights of 15.0 ± 0.1g each, having approximate dimensions of 1.250 inches in diameter, and 0.100 inch in thickness, and a center hole, 0.250 inch in diameter. The thickness shall be altered to obtain the specified weight.

6.5.4 Positioning device.—Means shall be provided for positioning the dart at a drop height of 60 inches from the impinging surface of the dart head to the surface of the test specimen.

³ This may be expressed in square feet per pound by using the formula: $Y_n = \frac{0.1922}{dt}$

6.6 Tensile properties.—The tensile properties of polyethylene sheeting shall be determined in accordance with Method A in ASTM D882-56T, Tentative Methods of Test for Tensile Properties of Thin Plastic Sheets and Films, using ten specimens for each direction. The thickness of the specimens shall be measured in accordance with 6.3.

6.7 Reflectance.—The 45-deg, 0-deg directional reflectance shall be measured in accordance with ASTM E97-55, Standard Method of Test for 45-deg, 0-deg Directional Reflectance of Opaque Specimens by Filter Photometry, using five specimens and the procedure described in E97-55 for paper.

6.8 Luminous transmittance.—The luminous transmittance shall be measured with any apparatus that will measure luminous transmittance with an accuracy of 0.1 in the range 0.5 to 2 percent. The apparatus described in ASTM D1003, Method of Test for Haze and Luminous Transmittance of Transparent Plastics, may be used although it was not designed for accurate measurement of low values of transmittance; the accuracy may be increased by making measurements relative to a neutral filter of known transmittance. A detailed procedure for use with the pivotable-sphere hazemeter widely used in the plastics industry is appended in 8.5.

6.9 Water vapor transmission.—The water vapor transmission rate shall be determined in accordance with Method E in ASTM E96-53T, Methods of Measuring Water Vapor Transmission of Materials in Sheet Form, using four specimens. When this procedure is used, grams per 24 hours per square meter are divided by 15.5 and by the thickness of the sheeting in mils to convert to grams per 24 hours per 100 square inches per mil in thickness. Perms per mil thickness are obtained by multiplying grams per 24 hours per square meter by 0.0343 and dividing by the thickness in mils, or by multiplying grams per 24 hours per 100 square inches by 0.532 and dividing by the thickness in mils.

7. IDENTIFICATION

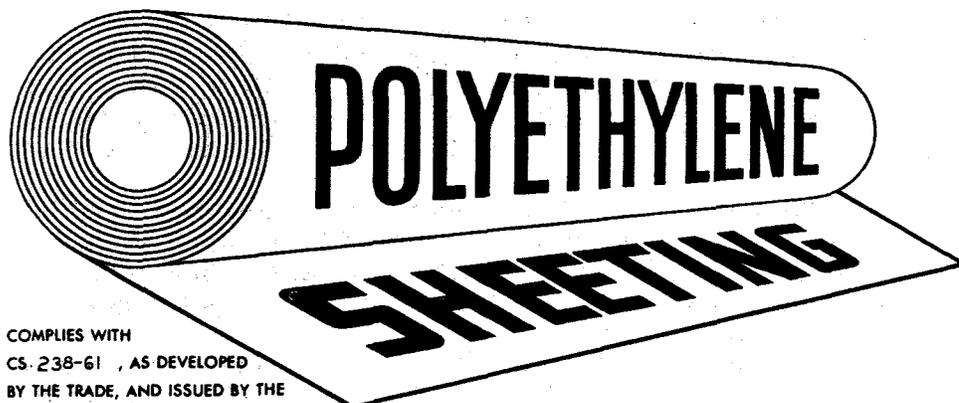
7.1 Labels and literature.—In order that purchasers may be assured that the polyethylene sheeting actually complies with all the requirements of this Commercial Standard, it is recommended that manufacturers include the following statement in conjunction with their name and address on labels, invoices, and sales literature:

“This polyethylene sheeting complies with Commercial Standard CS238-61, as developed by the trade, under the procedure of the Commodity Standards Division, and issued by the U.S. Department of Commerce.”

7.1.1 The following abbreviated statement is suggested when available space on labels is insufficient for the full statement:

“Complies with CS238-61, as developed by the trade and issued by the U.S. Department of Commerce.”

7.2 Hallmark.—Polyethylene sheeting may carry the hallmark shown in Figure 2 to indicate compliance with this Commercial Standard.



COMPLIES WITH
CS. 238-61, AS DEVELOPED
BY THE TRADE, AND ISSUED BY THE
U.S. DEPARTMENT OF COMMERCE

FIGURE 2. *Hallmark.*

8. APPENDIX

8.1 It is planned to add a shrinkage requirement to this Commercial Standard when a satisfactory test method is developed.

8.2 Polyethylene is generally resistant to fungi and decay caused by wetting and drying. If any unusual decay resistance is required, it is recommended that the buyer consult with manufacturers regarding this problem.

8.3 It is recommended that users who need better weather resistance than that afforded by natural polyethylene, use the black pigmented variety or compositions developed to provide increased weather resistance.

8.4 Polyethylene sheeting is made in a variety of colors, opaqueness, translucency, and dimensions. It is recommended that manufacturers be consulted for information on the varieties available.

8.5 The following apparatus and procedure is one that has been found satisfactory for measuring luminous transmittance of polyethylene sheeting.

8.5.1 Apparatus.—

(a) Gardner Hazemeter with the Automatic Photometric Unit, or equivalent.

(b) Filter, silvered, 2 inches x 2 inches, Bausch and Lomb No. 0.6, neutral 25 percent transmittance; or equivalent to obtain required sensitivity. (The factor of the Bausch and Lomb filter is 4.00.) The factor for an equivalent filter shall be known.

(c) Template, 2.5 inches x 3 inches, razor blades, and plate glass for cutting specimens.

8.5.2 Specimen preparation.—Five specimens, 2.5 by 3 inches, shall be cut from each sample. The specimens shall be wrinkle free and protected from fingerprints and dust. They shall be tested the same day they are cut.

8.5.3 Procedure (Note 1).—The Hazemeter and photometric unit shall be turned on at least 30 minutes before beginning the test.

1. Place the Hazemeter sphere in the cocked position and put the filter in the specimen holder. Turn on the motor switch and, using the rough adjustment knob on the Hazemeter, bring the dial almost to the 1,000 reading. Use the balance knob to set the dial at exactly 1,000. Turn the switch off.

2. Take the filter out and place the sphere in the straight position. Cover sphere opening by placing a completely opaque sheet, such as a heavy piece of paper or folded black sheeting, in the specimen holder.

Turn the switch on and bring the dial to zero with the zero knob. Turn the switch off and remove opaque sheet.

3. Repeat step No. 1.

4. Take the filter out, leaving the sphere cocked, and insert specimen. Turn switch on and record the dial reading. Repeat for each of the remaining specimens, being sure to turn switch off each time before opening Hazemeter to change specimens. Record the readings for each specimen.

8.5.4 Calculations.—Since the instrument is adjusted with the filter to increase the sensitivity by a factor, divide each dial reading by the factor to obtain the actual luminous transmittance in percent. Average the results obtained with the five specimens to obtain the value for the sample.

NOTE 1. The procedure described is for the Gardner instrument. A suitable procedure to obtain the required accuracy shall be used for other instruments.

HISTORY OF PROJECT

In a letter dated June 17, 1960, The Society of the Plastics Industry, Inc. requested the cooperation of the Commodity Standards Division in the establishment of a Commercial Standard for polyethylene sheeting. At that time the Polyethylene Film Division of The Society of the Plastics Industry, Inc. submitted a draft of a proposed standard, which had been prepared by its Technical Committee, to be used as a basis for the Commercial Standard.

Under date of August 1, 1960, the Commodity Standards Division distributed copies of the proposed Commercial Standard (TS-5501) to representative producers, distributors, testing laboratories, users and Government agencies for constructive comment. All comments received were considered at an industry meeting on November 30, 1960 and at a Committee meeting on March 24, 1961.

Accordingly, the Recommended Commercial Standard (TS-5534), adjusted wherever practicable in accordance with comment, was circulated to the trade on June 1, 1961 for written acceptance. Upon receipt of sufficient acceptances, considered to be representative of the industry and to insure the successful application of the standard, the Division issued an announcement on September 6, 1961 that the Commercial Standard, designated CS238-61, would become effective October 6, 1961.

Project Manager: H. A. Bonnet, Commodity Standards Division, Office of Technical Services

Technical Advisor: Dr. Frank W. Reinhart, Chief, Plastics Section, National Bureau of Standards.

STANDING COMMITTEE

The function of the standing committee is to review, prior to circulation for acceptance, changes proposed to keep the standard abreast of progress. Comments concerning the standard and suggestions for revision may be addressed to the Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce, which acts as secretary for the committee, or to any of its members listed below:

C. J. B. THOR, Manager, Technical Services Dept., Visking Co., Division of Union Carbide Corp., P.O. Box 1548, Terre Haute, Ind. (Chairman)

ROBERT J. BARBOUR, Director of Marketing, Gering Plastics, Division of Studebaker-Packard Corp., North Seventh St. & Monroe Ave. Kenilworth, N.J.

A. L. JACKSON, A. L. Jackson Co., 300 W. Washington St., Chicago, Ill. (Representing The Associated General Contractors of America, Inc.)
LOUIS R. STAKE, Quality Control Manager, Kordite Co., Macedon, N.Y.

Invited to name a representative:

American Society of Agricultural Engineers, 420 Main St., St. Joseph, Mich.
Department of the Navy, Bureau of Yards & Docks, Washington, D.C.
Durethene Division, Koppers Co., 7001 W. 60th St., Chicago, Ill.
Patzig Testing Laboratories, 2215 Ingersoll Ave., Des Moines, Iowa.
Protective Lining Corp., 601 39th St., Brooklyn, N.Y.
Sears, Roebuck and Co., 925 S. Homan Ave., Chicago, Ill.

ACCEPTORS

The manufacturers, distributors, users and others listed below have individually indicated in writing their acceptance of this Commercial Standard prior to its publication. The acceptances indicate an intention to utilize the standard as far as practicable, but reserve the right to depart from it as may be deemed desirable. The list is published to show the extent of recorded public support for the standard, and should not be construed as indicating that all products made by the acceptors actually comply with its requirements.

Products that meet all requirements of the standard may be identified as such by a certificate, grade mark, or label. Purchasers are encouraged to require such specific evidence of compliance, which may be given by the manufacturer whether or not he is an acceptor.

ACCEPTANCE OF COMMERCIAL STANDARD
CS238-61 Polyethylene Sheeting (Construction, Industrial and
Agricultural Applications)

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this Commercial Standard.

Date _____

Commodity Standards Division
Office of Technical Services
Business and Defense Services Administration
U. S. Department of Commerce
Washington 25, D. C.

Gentlemen:

We believe that this Commercial Standard constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production¹ distribution¹ purchase¹ testing¹

of this commodity.

We reserve the right to depart from the standard as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer _____
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer _____

Organization _____
(Fill in exactly as it should be listed)

Street address _____

City, zone, and State _____

¹ Underscore the applicable words. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interest, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

(Cut on this line)

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial Standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of Commercial Standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the standard, where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function, performed by the Department of Commerce in the voluntary establishment of Commercial Standards on a nationwide basis is fourfold: First, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

FIRMS AND OTHER INTERESTS

Bemis Bro. Bag. Co., St. Louis, Mo.
Bolta Products Division, Lawrence, Mass.

Campeco Division, Chicago Molded Products
Corp., Chicago, Ill.
Celanese Plastics Co., Newark, N.J.
Continental Extrusion Corp., Brooklyn, N.Y.

Del Val Ink & Color, Inc., Pennsauken, N.J.
Dow Chemical Co., The, Midland, Mich.

Equitable Paper Bag Co., Inc., Long Island
City, N.Y.

Favorite Plastic Corp., Brooklyn, N.Y.
Firestone Plastics Co., Division of Firestone
Tire & Rubber Co., Pottstown, Pa.

Gering Plastics, Division of Studebaker-
Packard Corp., Kenilworth, N.J.
Goodrich-Gulf Chemicals, Inc., Cleveland,
Ohio
Goodrich-Gulf Chemicals, Inc., Port Neches,
Tex. (General Support)
Grace, W. R., & Co., Polymer Chemicals
Division, Clifton, N.J.

Industrial Nucleonics Corp., Rubber & Plas-
tics Industries Division, Columbus, Ohio
(General Support)

Jet Plastics, Los Angeles, Calif.
Joanna Western Mills Co., Chicago, Ill.

Koppers Co., Inc., Plastics Division, Pitts-
burgh, Pa.
Kordite Co., Macedon, N.Y.

L & P Tool Co., Cincinnati, Ohio

Macy's Bureau of Standards, New York, N.Y.
Michigan State University, School of Pack-
aging, E. Lansing, Mich.
Midwest Plastic Products Co., Steger, Ill.

Milprint, Inc., Milwaukee, Wis.
Monsanto Chemical Co., Springfield, Mass.
(General Support)

Olin Mathieson Chemical Corp., Film Opera-
tions Division, Pisgah Forest, N.C.

Patzig Testing Laboratories, Des Moines,
Iowa
Phillips Chemical Co., Bartlesville, Okla.
Plasti-Form, Inc., Phillipsburg, N.J.
Poly Plastic Products, Inc., Paterson, N.J.
Protective Lining Corp., Brooklyn, N.Y.

Reliance Plastic & Chemical Corp., Pater-
son, N.J.

Sears, Roebuck and Co., Chicago, Ill.

Tennessee Eastman Co., Kingsport, Tenn.
Trimount Plastic Co., Inc., New Bedford,
Mass.

Union Carbide Plastics, Division of Union
Carbide Corp., New York, N.Y.

Visking Co., Division of Union Carbide
Corp., Chicago, Ill.

Warp Bros., Chicago, Ill.

U.S. GOVERNMENT

Army, Department of, Office of the Chief of
Engineers, Washington, D.C.
Atomic Energy Commission, Property and
Supply Management Branch, Washington,
D.C.
Navy, Department of, Bureau of Yards &
Docks, Washington, D.C.

OTHER COMMERCIAL STANDARDS

A list of Commercial Standards may be obtained from the Com-
modity Standards Division, Office of Technical Services, United States
Department of Commerce, Washington 25, D.C. This list includes the
purchase price of the publication and directions for ordering copies.