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COMMERCIAL STANDARD CS230-60

8/20/73

Vinyl Plastic Weatherstrip

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



**For sale by the Superintendent of Documents
U.S. Government Printing Office, Washington 25, D.C. Price 10 cents**

U.S. DEPARTMENT OF COMMERCE

Frederick H. Mueller, Secretary

BUSINESS AND DEFENSE SERVICES ADMINISTRATION

OFFICE OF TECHNICAL SERVICES

Commodity Standards Division

With the cooperation of the
National Bureau of Standards

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.

The initial printing of CS230-60 was made possible through the cooperation of the Profile Extruders Division of the Society of the Plastics Industry, Inc.

Vinyl Plastic Weatherstrip

[Effective October 1, 1960]

1. PURPOSE

1.1 The purpose of this Commercial Standard is to establish a national standard of quality for the information and guidance of producers, distributors, and users; to promote understanding between buyers and sellers; to provide a basis for fair competition among producers of high-quality products; to give the consumer confidence in the quality of the product; and to provide means for identifying vinyl plastic weatherstrip produced in conformance with this standard.

2. SCOPE AND CLASSIFICATION

2.1 *Scope.*—This standard establishes requirements and test methods for hardness, tensile strength, elongation, low temperature flexibility, dimensional stability, compatibility of plasticizers, and accelerated weathering of vinyl plastic weatherstrip as used in the metal window, door, and metal curtain industry. The material involved is vinyl plastic based on polyvinyl chloride or its copolymers formulated in the colors normally used in the industry. A statement of compliance and identifying hallmark are included. An appendix covering industry nomenclature is also included.

2.2 *Grades.*—Industry practice and end use application require that weatherstripping be made to a specific hardness. Three grades of weatherstrip, based on hardness as measured with the Shore A instrument, have been established. The following three grades are based upon the three most common hardness values used in the industry:

Grade 70

Grade 80

Grade 90

3. REQUIREMENTS

3.1 *Physical requirements.*—Weatherstrip covered by this standard, or where specified, specimens prepared from sheeting molded from the weatherstrip in accordance with the method outlined in 4.2 shall meet the physical requirements specified in table 1 and 3.1.1 to 3.1.3, inclusive, when tested by the methods given in Section 4.

3.1.1 *Low temperature flexibility.*—The weatherstrip shall be such that specimens (see 4.1) show no evidence of cracking when tested in accordance with 4.3.3.

3.1.2 *Compatibility of plasticizers.*—The weatherstrip shall be such that specimens (see 4.1) show no plasticizer exudation when tested in accordance with 4.3.4.

3.1.3 *Dimensional stability.*—The shrinkage of the weatherstrip shall not exceed 10 percent when tested in accordance with 4.3.6.

TABLE 1.—Physical requirements

Grade	Durometer ¹ hardness	Tensile ² strength (Min.)	Elongation ² (Min.)	Accelerated weathering ³				
				1000 Hours		2000 Hours		Plasticizer exudation
				Decrease in tensile strength (Max.)	Decrease in elongation (Max.)	Decrease in tensile strength (Max.)	Decrease in elongation (Max.)	
70	70 ± 5	P.S.I. 1400	Percent 300	Percent 20	Percent 20	Percent 35	Percent 35	None
80	80 ± 5	1700	250	15	25	20	35	None
90	90 ± 5	1900	200	15	25	20	35	None

¹ See 4.3.1.² See 4.3.2.³ See 4.3.5.

4. METHODS OF TEST

4.1 *Sampling*.—Sufficient samples shall be taken at random of the extruded weatherstrip to determine its conformance with this standard. Samples for the obtaining of specimens for the tests of 4.3.1 to 4.3.5 inclusive shall be prepared by the method described in 4.2. Tests for dimensional stability (4.3.6) shall be performed on samples of the extruded weatherstrip.

4.2 *Sample preparation*.—Molded sheets for the obtaining of specimens for test purposes shall be prepared from extruded weatherstrip. The weatherstrip shall be sheeted out on a 2-roll 6'' x 12'' laboratory mill with the roll temperatures about 280°F.; the mill rolls shall be cored for water and steam and shall be capable of maintaining this temperature. If necessary the weatherstrip may be granulated prior to introducing it to the mill. The batch shall be cut and rolled until smooth. The mill shall be opened to give a sheet approximately 0.085'' thick and 6'' x 6'' samples shall be cut from this sheet. Each sample shall be further processed by placing it in a mold properly designed for forming a 6'' x 6'' x 0.075'' sheet. Molding shall be done on a heated press capable of controlled temperature up to 350°F. and controlled mold pressure of at least 1000 p.s.i. The mold shall be preheated for 5 minutes to the press temperature. The vinyl sheet shall be placed between cellophane sheets and molded for 5 minutes at 345°F. under a minimum mold pressure of 1000 p.s.i. The cellophane shall be removed with water prior to testing the finished sheet samples.

4.2.2 *Test conditions*.—The specimens shall be conditioned in accordance with Procedure A of ASTM Designation D618-58, Methods of Conditioning Plastics and Electrical Insulating Materials for Testing. 66

4.3 Tests.

4.3.1 *Hardness*.—Instantaneous readings at 23°C. shall be taken on the Shore A durometer in accordance with ASTM Designation D676-58T, Tentative Method of Test for Indentation of Rubber by Means of a Durometer. The average of 5 readings on molded sheets shall be used. D2240

4.3.2 *Tensile strength and elongation*.—The ultimate tensile strength and elongation shall be determined in accordance with ASTM Designation D412-51T, Tentative Method of Tension Testing of Vulcanized Rubber, using Die C. The average for 5 specimens (see 4.2) shall be used.

4.3.3 *Low temperature flexibility*.—Three specimens, 6'' x 3/8'' x 0.075'' (see 4.2), shall be exposed in a cold chamber for one hour at the temperature specified below. Thereafter, while still in the cold chamber, each sample shall be subjected to a 360° bend around a 3/4'' mandrel. The bend shall be completed in not less than 5 nor more than 10 seconds. There shall be no evidence of cracking after this test.

Grade	Temperature °F.
70	-20
80	-10
90	0

¹ Copies of ASTM publications are obtainable from the American Society of Testing Materials, 1916 Race St., Philadelphia 3, Pa.

4.3.4 *Compatibility of plasticizers.*—Three specimens, 1" x 3", shall be die cut from a 6" x 6" x .075" molded sheet. The ends shall be bent in the form of a loop and clamped to give the size loop specified below. There shall be no evidence of plasticizer exudation after subjecting the specimens to this stress for 48 hours at room temperature.

Grade	Inside diameter of loop inch
70	¼
80	½
90	¾

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4.3.5 *Accelerated weathering test.*—Accelerated weathering shall be conducted in accordance with ASTM Designation E42-57, Recommended Practice for Operation of Light and Water-Exposure Apparatus (Carbon-Arc Type) for Artificial Weathering Test, using Type E equipment and dumbbell type specimens. The arc shall be adjusted to give a black panel temperature of 145°F. The maximum specimen temperature shall be 140°F. If necessary, the black panel temperature shall be adjusted so that this maximum is not exceeded. A two-hour cycle shall be used with the arc on continuously and the water spray on 18 minutes. Changes in tensile strength and elongation shall be determined in accordance with 4.3.2. The average for 5 specimens (see 4.2) shall be used.

4.3.6 *Dimensional stability.*—Shrinkage shall be measured using 10-inch long specimens of the weatherstrip. The exposure in the oven at 250° F. for 1 hour shall be conducted in accordance with the procedure described in ASTM Designation D1204-54, Test for Measurement of Changes in Linear Dimensions of Non-Rigid Thermoplastic Sheeting or Film. The average change in length for 5 specimens shall be used.

5. PACKING

5.1 The weatherstrip shall be packed in such a manner as to provide reasonable protection against damage in ordinary handling and transportation.

6. IDENTIFICATION AND MARKING

6.1 *Identification.*—In order that purchasers may be assured that the vinyl plastic weatherstrip purchased actually complies with all requirements of this Commercial Standard it is recommended that manufacturers include the following statement in conjunction with their name and address on labels, invoices, sales literature, etc.:

This vinyl plastic weatherstrip complies with all requirements for Grade _____ as specified in Commercial Standard CS230-60, and developed by the industry under the procedure of the Commodity Standards Division and issued by the U.S. Department of Commerce.

or, more briefly

Conforms to CS230-60, Grade _____, as developed by the industry and issued by the U.S. Department of Commerce.

6.2 *Hallmark.*—Vinyl plastic weatherstrip may carry the hallmarks shown in figures 1 to 3 inclusive to indicate compliance with this Commercial Standard.



FIGURE 1.—Hallmark for declaring compliance with Grade 70 weatherstrip.



FIGURE 2.—Hallmark for declaring compliance with Grade 80 weatherstrip.



FIGURE 3.—Hallmark for declaring compliance with Grade 90 Weatherstrip.

7. APPENDIX

7.1 *Definitions.*—The following glossary covers certain terms as applied to extruded vinyl plastic weatherstrip by the trade.

Weatherstrip.—All miscellaneous shapes used as weatherseals referred to in the trade as gaskets, balloon sections, and compressibles.

Glazing channel.—A U-shaped section used to mount glass in slotted frame.

Glazing retainer.—Any glazing shape other than channel.

Spline.—An extruded section described as plain or serrated, hollow or solid.

8. EFFECTIVE DATE

9.1 Having met all procedural requirements of the Commodity Standards Division, including approval by the acceptors hereinafter listed, this Commercial Standard was issued by the U.S. Department of Commerce, effective October 1, 1960.

HISTORY OF PROJECT

In a letter dated August 15, 1958, The Society of the Plastics Industry, Inc., requested the cooperation of the Commodity Standards Division in the establishment of a Commercial Standard for Vinyl Plastic Weatherstrip, and submitted as a basis a tentative standard developed by the Profile Extruders Division of that organization.

The Commodity Standards Division circulated copies of the proposed Commercial Standard to representative producers, distributors, users, and Government agencies for constructive comment. All comments and suggestions received were carefully considered and adjustments were made to the proposal to satisfy the comment wherever practicable. The recommended Commercial Standard, TS-5470, was circulated to the trade on January 5, 1960, for acceptance.

On September 1, 1960, the Commodity Standards Division announced that acceptances had been received representing a satisfactory majority of the industry and the Commercial Standard, to be designated CS230-60 would be considered effective beginning October 1, 1960.

Project Manager: D. R. Stevenson, Commodity Standards Division, Office of Technical Services
Technical Adviser: Dr. G. M. Kline, Chief, Organic and Fibrous Materials Division, National Bureau of Standards

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce which acts as secretary for the committee.

G. F. COHAN, B. F. Goodrich Chemical Co., 3135 Euclid Ave., Cleveland, Ohio. (Chairman) *44131 216-871-2200*

H. E. MACHAMER, Ceco Steel Products Corp., 5601 West 26th St., Chicago 50, Ill. (Representing the Aluminum Window Manufacturers Association.)

W. B. ANDERSON, Fenestra Inc., 2250 East Grand Blvd., Detroit 11, Mich.

LYON D. EVANS, Hope's Windows, Inc., 84 Hopkins St., Jamestown, N.Y.

MILTON J. LAX, Kreidel Plastics, Inc., C/O Lax Industrial Products, Inc., 4228 Lee Rd., Cleveland 28, Ohio.

RAY PERRY, Irvington Division, Minnesota Mining & Manufacturing Co., 2545 N.W. 39th Ave., Miami, Fla.

H. M. WILKOFF, New England Tape Co., Hudson, Mass.

JOSEPH JERAM, Pittsburgh Testing Laboratory, 1330 Locust St., Pittsburgh 19, Pa.

JOHN LINK, United States Testing Co., Inc., 1415 Park Ave., Hoboken, N.J.

G. M. Prall, Western Textile Products Co., 2131 Hickory St., St. Louis 4, Mo.

WALTER H. BAMFORD, Wm. Brand-Rex Division, American Enka Corp., Hayward Rd., West Acton, Mass.

ACCEPTANCE OF COMMERCIAL STANDARD

CS230—60 Vinyl Plastic Weather-strip

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.

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.

ASSOCIATIONS

Aluminum Window Manufacturers Association,
New York, N.Y.

FIRMS AND OTHER INTERESTS

Adams Engineering Co., Inc., Ojus, Fla.
Air-Tite Products, Inc., South Bend, Ind.
Alpha Plastics, Inc., Livingston, N.J. (General Support)
American Steel Products Corp., Brooklyn, N.Y.

Bickford, Robert Turner, Architect, Elmira, N.Y.
Borden Chemical Co., New York, N.Y.
Brasco Manufacturing Co., Harvey, Ill.

Carolina Industrial Plastics Division of Essex Wire Corp., Mount Airy, N.C.
Cary Chemicals Inc., New Brunswick, N.J. (General Support)
Ceco Steel Products Corp., Chicago, Ill.
Collins & Aikman Corp., New York, N.Y.
Crane Plastics, Inc., Columbus, Ohio (General Support)
Crescent Plastics, Inc., Evansville, Ind.
Crippen Laboratories, Inc., Baltimore, Md.
Cuyahoga Weatherstrip Supply Co., North Olmsted, Ohio

Dadobult Co., Glen Cove, N.Y.
Diamond Alkali Co., Cleveland, Ohio (General Support)

District of Columbia Department of Highways & Traffic, Materials Development & Research Division, Washington, D.C.

Ellerbe & Co., St. Paul, Minn. (General Support)
Engineering Metal Products Corp., Indianapolis, Ind.

Escambia Chemical Corp., New York, N.Y. (General Support)

Farley & Loettcher Manufacturing Co., Dubuque, Iowa

Fenestra, Inc., Detroit, Mich.
Flour City Ornamental Iron Co., The, Minneapolis, Minn.
Froehling & Robertson, Inc., Richmond, Va.

Goodrich, B. F., Co., Cleveland, Ohio
Great American Plastics Co., Fitchburg, Mass. (General Support)

Hirzel, Charles K., A.I.A., Architect, New York, N.Y. (General Support)
Hope's Windows, Inc., Jamestown, N.Y.
Hunt, Robert W., Co., Chicago, Ill.

Industrial Plastics Corp., Elkhart, Ind.
Industrial Vinyls, Inc., Miami, Fla.
Irvington Division, Minnesota Mining & Manufacturing Co., St. Paul, Minn.

J & B Plastics Co., Inc., Fairfield, Iowa

Kreidel Plastics, Inc., c/o Lax Industrial Products, Inc., Cleveland, Ohio

Marbon Chemical Division, Borg-Warner Corp., Washington, W. Va.

Marken Plastics Corp., Los Angeles, Calif.
Maynard Plastics, Inc., Salem, Mass.

McPherson Co., The, Greenville, S.C.
Michaels Art Bronze Co., Inc., The, Erlanger, Ky.

Minnesota Mining & Manufacturing Co., Irvington Division, Miami, Fla.

Monsanto Chemical Co., Plastics Division, Springfield, Mass. (General Support)
Moynahan Bronze Co., Flatrock, Mich.

Naugatuck Chemical Division, U.S. Rubber Co., Naugatuck, Conn.

New England Plastics Corp., Waltham, Mass.
New England Tape Co., Division of United-Carr Fastener Corp., Hudson, Mass.

Oklahoma Testing Laboratories, Oklahoma City, Okla.

Ornamental Iron Work Co., The, Akron, Ohio

Panelfab Products, Inc., North Miami, Fla.
Pawling Rubber Corp., Pawling, N.Y.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Plastics Technology, The Magazine of Applied Engineering, New York, N.Y. (General Support)

Reliance Plastic & Chemical Corp., Paterson, N.J.
Reliable Weatherstrip Co., Inc., New Britain, Conn.
Resinacraft Plastics, Inc., Chicago, Ill.
Rosenberg Bros. & Co., Smithtown, N.Y.
Ryko Products, Inc., Los Angeles, Calif.

Screens & Fabricated Metals Corp., North Bergen, N.J.

Shuford Mills, Inc., Hickory, N.C.
Southern Testing Laboratories, Inc., Birmingham, Ala.

Southwestern Laboratories, Fort Worth, Tex.

Sunlite Plastics, Inc., Milwaukee, Wis.
Syracuse Fire Door Corp., Syracuse, N.Y.

Taylor Garage Doors, Inc., Detroit, Mich.
Tex-Trude, Inc., Houston, Tex.
Twining Laboratories, Inc., The, Fresno, Calif.

United States Testing Co., Inc., Hoboken, N.J.

Vogt Manufacturing Corp., Plastics Division, Rochester, N.Y.

Waljohn Plastics, Inc., Brooklyn, N.Y.
Ware Laboratories, Inc., Miami, Fla.
Water Seals, Inc., Chicago, Ill.
Weather-Proof Co., The, Litchfield, Ill.
Western Textile Products Co., Extruded Plastics Division, St. Louis, Mo.

William Brand-Rex Division, American Enka Corp.,
Concord, Mass.

U.S. GOVERNMENT

Atomic Energy Commission, Division of Construc-
tion & Supply, Washington, D.C.
Coast Guard, Cataloging & Standards Section,
Washington, D.C.

Health, Education, and Welfare, Department of,
Procurement & Supply Management Branch,
Washington, D.C.
Interior, Department of, Office of the Secretary,
Washington, D.C.
Veterans Administration, Technical Representative
on Standards, Washington, D.C.

federal register



DEPARTMENT OF COMMERCE
National Bureau of Standards
VOLUNTARY PRODUCT STANDARDS
Notice of Intent To Withdraw Certain
Standards

In accordance with § 10.12 of the Department of Commerce Procedures for the Development of Voluntary Product Standards (15 CFR Part 10, as revised, 35 FR 8349 dated May 28, 1970), notice is hereby given of the Department's intent to withdraw the following listed standards:

Simplified Practice Recommendation SPE 237-49, Packaging, Marking, and Loading Methods for Steel Products for Overseas Shipments.
Commercial Standard CS 280-60, Vinyl Plastic Weatherstrip.

It has been tentatively determined with the concurrence of the proponent organizations that these voluntary standards are obsolete, no longer technically adequate, and revision would serve no useful purpose.

Any comments or objections concerning the intended withdrawal of these standards should be made in writing to the Office of Engineering Standards Services, National Bureau of Standards, Washington, D.C. 20234, by May 15, 1973. The effective date of withdrawal will be not less than 60 days after the final notice of withdrawal. Withdrawal action will terminate the authority to refer to the standards as voluntary standards developed under the Department of Commerce procedures, from the effective date of the withdrawal.

Dated: March 28, 1973.

RICHARD W. ROBERTS,
Director.

[FR Doc.73-6344 Filed 4-2-73;8:45 am]