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COMMERCIAL STANDARD CS254-63

**Acrylonitrile-Butadiene-Styrene
(ABS) Plastic Pipe
(SDR-PR and Class T)**

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*Superseded
by PS 19-69*

A recorded
voluntary standard of the
trade published by
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of Commerce



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NATIONAL BUREAU OF STANDARDS

Office of Commodity Standards

EFFECTIVE DATE

Having been passed through the regular procedures of the Office of Commodity Standards (formerly the Commodity Standards Division, Office of Technical Services; transferred to the National Bureau of Standards July 1, 1963) and approved by the acceptors hereinafter listed, this Commercial Standard is issued by the U.S. Department of Commerce, effective July 1, 1963.

LUTHER H. HODGES, *Secretary.*

COMMERCIAL STANDARDS

Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Office of Commodity Standards of 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 standards 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 Office of Commodity Standards the necessary data to be used as the basis for developing a standard of practice. The office 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 office 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 Office of Commodity Standards 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 CS254-63 was made possible through the cooperation of The Plastics Pipe Institute, A Division of The Society of the Plastics Industry, Inc.

Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR and Class T)

[Effective July 1, 1963]

1. PURPOSE

1.1 The purpose of this Commercial Standard is (a) to establish, on a national basis, standard dimensions, water pressure ratings, and other significant quality requirements for acrylonitrile-butadiene-styrene (ABS) plastic pipe, (b) to inform producers, distributors, engineers, code officials, and users about some of the qualities of this product, (c) to assist buyers and vendors in obtaining and vending quality merchandise, and (d) to promote understanding concerning commercially available ABS plastic pipe among all these groups.

2. SCOPE

2.1 The ABS pipe covered in this Commercial Standard is made in standard thermoplastic pipe dimension ratios and is pressure rated for water. Included are criteria for classifying ABS plastic pipe materials and ABS plastic pipe, a system of nomenclature for ABS plastic pipe, and requirements and methods of test for materials, workmanship, dimensions, pressure rating, sustained pressure, burst pressure, and extrusion quality. Methods of marking and practices for indicating compliance with this standard are also given.

3. DEFINITIONS

3.1 **General.**—Definitions are in accordance with Definitions of Terms Relating to Plastics (ASTM Designation: D883-62T) and abbreviations are in accordance with Abbreviations of Terms Relating to Plastics (ASTM Designation: D1600-60T), unless otherwise indicated. The abbreviation for acrylonitrile-butadiene-styrene plastic is ABS.

3.2 **Standard thermoplastic pipe dimension ratio (SDR).**—SDR is the ratio of pipe diameter to wall thickness. For ABS pipe it is calculated by dividing the average outside diameter of the pipe in inches by the minimum wall thickness in inches. If the wall thickness calculated by this formula is less than 0.060 inch, it shall be arbitrarily increased to 0.060 inch.

3.3 **Hydrostatic design stress.**—The estimated maximum tensile stress in the wall of the pipe in the circumferential orientation due to internal hydrostatic water pressure that can be applied continuously with a high degree of certainty that failure of the pipe will not occur.

3.4 **Pressure rating (PR).**—The estimated maximum pressure that water in the pipe can exert continuously with a high degree of certainty that failure of the pipe will not occur.

(2) Type I, Grade 2, with a hydrostatic design stress of 1000 psi for water at 23° C (73.4° F), designated as ABS1210.

(3) Type II, Grade 1, with a hydrostatic design stress of 1250 psi for water at 23° C (73.4° F), designated as ABS1210.

4.5 Compound.—The ABS plastic extrusion compound shall meet the requirements of Type I Grade 1, Type I Grade II, or Type II Grade 1 as described in ASTM D1788-62T.¹

4.6 Rework material.—Clean, rework material, generated from the manufacturer's own pipe production, may be used by the same manufacturer so long as the pipe produced is equal in quality to pipe extruded from virgin material.

5. PIPE CLASSIFICATION

5.1 General.—This Commercial Standard covers ABS pipe made from three ABS plastic pipe materials in four standard dimension ratios and five water pressure ratings for nonthreaded pipe and in one class (Class T) for pipe intended for threading.

5.2 Standard dimension ratio pipe.—This Commercial Standard covers ABS pipe in four standard dimension ratios, namely, 13.5, 17, 21, and 26. These are referred to as SDR13.5, SDR17, SDR21, and SDR26, respectively. The pressure rating is uniform for all nominal pipe sizes for a given ABS pipe material and SDR. (See Table 1).

5.3 Class T pipe.—This Commercial Standard covers ABS pipe intended for threading, designated as Class T. The pressure ratings vary with the pipe size and the material as shown in Table 2. These ratings are one-half those for nonthreaded pipe in the same material and dimensions. These pressure ratings are used with a T after the value, e.g., 100T psi.

5.4 Pressure rating (PR).—The pipe shall be rated for use with water at 23° C (73.4° F) at the maximum internal pressures shown in Table 1 and Table 2. Lower pressure ratings than those calculated in accordance with paragraph 3.5 may be recommended, at the option of the pipe manufacturer, in which case the SDR shall be included in the marking. Experience of the industry indicates that ABS pipe meeting the requirements of this standard gives satisfactory service under normal conditions for a long period at these pressure ratings.² The sustained pressure requirements (6.3) are related to these ratings through the slopes of the strength-time plots for these materials in pipe form.

6. REQUIREMENTS

6.1 Workmanship.—The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign inclusions or other defects. The pipe shall be as uniform as commercially practicable in color, opacity, density and other physical properties.

6.2 Pipe dimensions and tolerances.

6.2.1 Outside diameters.—The outside diameters and tolerances shall be as shown in Table 3 when measured in accordance with paragraphs 7.4 and 7.4.1.

6.2.2 Wall thickness.—The wall thicknesses and tolerances shall be as shown in Table 4 when measured in accordance with paragraphs 7.4 and 7.4.2.

¹ See footnote 1 on p. 4.

² See footnote 2 on p. 4.

6.2.3 Eccentricity.—The eccentricity of the inside and outside circumferences of the pipe walls shall be within 12 percent when measured in accordance with paragraphs 7.4 and 7.4.3.

6.3 Sustained pressure.—The pipe shall not fail, balloon, burst, or weep as defined in Test for Time-to-Failure of Plastic Pipe Under Long-Term Hydrostatic Pressure (ASTM Designation: D1598-63T, Section 4) at the test pressures given in Table 5 when tested in accordance with paragraph 7.5.

6.4 Burst pressure.—The minimum burst pressures for ABS plastic pipe shall be as given in Table 6, when determined in accordance with paragraph 7.6.

6.5 Extrusion quality.—The pipe immediately after extrusion shall exhibit no cracking when tested in accordance with paragraph 7.7.³

6.6 Approval for potable water.—All pipe intended for use with potable water shall meet the specifications of the National Sanitation Foundation Testing Laboratories, Inc., or other accredited testing laboratories recognized by Public Health officials. These specifications require that the pipe shall be manufactured of virgin ABS plastic, that no scrap material shall be used, and that it is satisfactory for transporting potable water.⁴

7. TEST METHODS

7.1 Conditioning test specimens.—The test specimens shall be conditioned at $23^{\circ}\pm 1^{\circ}$ C ($73.4^{\circ}\pm 1.8^{\circ}$ F) and 50 ± 2 percent relative humidity for not less than 48 hours prior to test in accordance with Procedure A in Standard Method of Conditioning Plastics and Electrical Insulating Materials for Testing (ASTM Designation: D618-58) for those tests where conditioning is required and in all cases of disagreement.

7.2 Test conditions.—Tests shall be conducted in the standard laboratory atmosphere of $23^{\circ}\pm 1^{\circ}$ C ($73.4^{\circ}\pm 1.8^{\circ}$ F) and 50 ± 2 percent relative humidity, unless otherwise specified in the test methods or in this Commercial Standard.

7.3 Sampling.—A sample of the pipe sufficient to determine conformance with this standard shall be taken at random.

7.4 Dimensions.—Any length of pipe may be used to determine the dimensions. Measurements shall be made in accordance with Method of Determining Dimensions of Thermoplastic Pipe (ASTM Designation: D2122-62T).

7.4.1 Outside diameter.—The outside diameter of the pipe shall be measured in accordance with Section 7 of D2122-62T. The average outside diameter at any cross section on the length of the pipe is the arithmetic average of the maximum and minimum diameters at that section. The average outside diameter of the pipe is the arithmetic mean of the average outside diameters at all measured cross sections. The tolerances for out-of-roundness shall apply only on pipe prior to shipment.

³ This requirement is intended for control of extrusion quality. It may not apply to pipe several hours after extrusion because pipe of unsatisfactory extrusion quality may not then fail in this test.

⁴ Manufacturers should obtain information on conditions for approval from the National Sanitation Foundation Testing Laboratories, Inc., School of Public Health, University of Michigan, Ann Arbor, Michigan, or other accredited laboratory.

7.4.2 Wall thickness.—Micrometer measurements of the wall thickness shall be made in accordance with Section 4 of D2122-62T, to determine the maximum and minimum values. The wall thickness shall be measured at both ends of the pipe to the nearest 0.001 inch.

7.4.3 Eccentricity.—The measurements shall be made in a manner such that the maximum, A, and the minimum, B, wall thicknesses of each cross-section measured are obtained. The eccentricity, E, shall be calculated for each cross-section as follows:

$$E, \% = \frac{A-B}{A} \times 100$$

The eccentricity shall not exceed 12 percent for any cross section measured.

7.5 Sustained pressure test.—The test specimens shall be selected at random. Six specimens of pipe, each specimen at least 10 times the nominal diameter in length, but not less than 10 inches or more than three feet between end closures and bearing the permanent marking on the pipe, shall be tested individually with water at the internal pressures given in Table 5. The specimens shall be maintained at the pressure indicated for a period of 1000 hours. Pressure shall be held as closely as possible, but within ± 10 psi. Specimens shall be conditioned at the test temperature of 23°C (73.4°F) to within $\pm 2^{\circ}\text{C}$ ($\pm 3.6^{\circ}\text{F}$). The test shall be in accordance with Method of Test for Time-to-Failure of Plastic Pipe Under Long-Term Hydrostatic Pressure (ASTM Designation: D1598-63T), except that the pressure shall be maintained at the values given in Table 5 for 1000 hours. Failure of two of the six specimens tested shall constitute failure in the test. Failure of one of the six specimens tested is cause for re-test of six additional specimens. Failure of one of the six specimens tested in re-test shall constitute failure in the test. Evidence of failure of the pipe shall be as defined in ASTM D1598-63T, Section 4, namely:

7.5.1 Failure.—Any continuous loss of pressure resulting from the transmission of the test liquid through the body of the specimen under test.

7.5.2 Ballooning.—Any abnormal localized expansion of a pipe specimen while under internal hydraulic pressure.

7.5.3 Bursting.—Failure by a break in the pipe with immediate loss of test liquid and continued loss at essentially no pressure.

7.5.4 Seepage or weeping.—Failure that occurs through essentially microscopic breaks in the pipe wall, frequently only at or near the test pressure. At lower pressures the pipe may carry liquids without evidence of loss of the liquids.

7.6 Burst pressure.—The minimum burst pressure shall be determined with at least 5 specimens in accordance with Tentative Method for Short-Time Rupture of Thermoplastic Pipe, Tubing, and Fittings (ASTM Designation D1599-62T). The time of testing each specimen shall be between 60 and 90 seconds.

7.7 Extrusion quality.—The pipe specimens shall show no evidence of cracking when tested in accordance with Method of Test for Extrusion Quality of Acrylonitrile-Butadiene-Styrene (ABS) Pipe by Acetic Acid Immersion (ASTM Designation: D1939-62T). Three randomly selected specimens shall be tested for each lot of pipe or set of extrusion conditions.

8. MARKING AND DECLARATION OF COMPLIANCE

8.1 **Marking.**—Marking on the pipe shall include the following, spaced at intervals of not more than five feet:

- (1) The nominal pipe size, (e.g., 2").
- (2) The type of plastic pipe material in accordance with the designation code in paragraph 4.4, (e.g., ABS1210.)
- (3) The standard thermoplastic pipe dimension ratio (or Class T, whichever is applicable) in accordance with the designation code in paragraph 5.2 (e.g., SDR17; Class T), or the pressure rating in psi for water at 23° C (73.4° F) shown as the number followed by psi (e.g., 125 psi; 100T psi), except that when intended for pressure application the pressure rating shall be shown (e.g., 125 psi; 100T psi). When the indicated pressure rating is lower than that calculated in accordance with paragraph 3.5 (see par. 5.4), the SDR shall also be included in the marking code.
- (4) The Commercial Standard designation CS254-63 with which the pipe complies.
- (5) The manufacturers name (or trade mark) and code. It shall also include the seal of approval (or "nSf" mark) of the National Sanitation Foundation, or of some other accredited laboratory, spaced at intervals specified by the accredited laboratory for pipe intended for transporting potable water.⁵

8.2 **Declaration of compliance.**—To assure the purchasers that the ABS plastic pipe actually complies with all requirements of this Commercial Standard, it is recommended that manufacturers include the following statement in conjunction with their names and addresses on labels, invoices, sales literature, etc.

This ABS plastic pipe conforms to all requirements⁶ of Commercial Standard CS254-63, as developed by the trade under the Commodity Standards procedures, U.S. Department of Commerce.

TABLE 1.—Standard thermoplastic pipe dimension ratios (SDR) and water pressure ratings (PR) at 23° C (73.4° F) for nonthreaded¹ ABS plastic pipe

Standard dimension ratio	ABS pipe materials ²		
	ABS2112	ABS1210	ABS1106
	Pressure rating, p.s.i.		
13.5	200	160	100
17	160	125	80
21	125	100	-----
26	100	80	-----
Pressure rating	Standard dimension ratio		
p.s.i.			
200	13.5	-----	-----
160	17	13.5	-----
125	21	17	-----
100	26	21	13.5
80	-----	26	17

¹ These pressure ratings do not apply for threaded pipe. See Table 2 for pressure ratings for threaded pipe.
² See paragraphs 3.6 and 4.4 for code designation.

⁵ Manufacturers using the seal of approval (or "nSf" mark) of the National Sanitation Foundation Testing Laboratories, Inc. or other accredited laboratory must obtain authorization from the laboratory concerned.

⁶ Insert minimum marking code as described in paragraph 8.1 plus any additional information the manufacturer wishes to add here.

TABLE 2.—Water pressure ratings at 23° C (73.4° F) for class T ABS plastic pipe (threaded)

Nominal pipe size	Dimension ratio	Pipe pressure ratings ¹ for threaded ABS pipe		
		ABS1106	ABS1210	ABS2112
<i>Inch</i>		<i>p.s.i.</i>	<i>p.s.i.</i>	<i>p.s.i.</i>
1/8	4.15	200	315	400
1/4	4.15	200	315	400
3/8	4.15	200	315	400
1/2	5.0	160	250	315
3/4	6.0	125	200	250
1	6.0	125	200	250
1 1/4	7.3	100	160	200
1 1/2	9.0	80	125	160
2	11.0	63	100	125
2 1/2	11.0	63	100	125
3	13.5	50	80	100
3 1/2	13.5	50	80	100
4	17.0	NPR ²	63	80
5	17.0	NPR	63	80
6	21.0	NPR	50	63
8	26.0	NPR	NPR	50
10	32.5	NPR	NPR	NPR
12	41.0	NPR	NPR	NPR

¹ Pressure ratings for threaded pipe are one-half those calculated in accordance with 3.5. Thus, pressure ratings for nonthreaded pipe in Class T dimensions are twice those given in this table.
² NPR=not pressure rated.

TABLE 3.—Outside diameters and tolerances for ABS plastic pipe

Nominal pipe size	Average outside diameter	Tolerances		
		For maximum and minimum (out-of-roundness)		
		For average	SDR26 SDR21	SDR17 SDR13.5 Class T
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
1/8	0.405	±0.004	±0.015	±0.008
1/4	0.540	±0.004	±0.015	±0.008
3/8	0.675	±0.004	±0.015	±0.008
1/2	0.840	±0.004	±0.015	±0.008
3/4	1.050	±0.004	±0.015	±0.010
1	1.315	±0.005	±0.015	±0.010
1 1/4	1.660	±0.005	±0.015	±0.012
1 1/2	1.900	±0.006	±0.030	±0.012
2	2.375	±0.006	±0.030	±0.012
2 1/2	2.875	±0.007	±0.030	±0.015
3	3.500	±0.008	±0.030	±0.015
3 1/2	4.000	±0.008	±0.050	±0.015
4	4.500	±0.009	±0.050	±0.015
5	5.563	±0.010	±0.050	±0.030
6	6.625	±0.011	±0.050	±0.035
8	8.625	±0.015	±0.075	±0.045
10	10.750	±0.015	±0.075	±0.050
12	12.750	±0.015	±0.075	±0.060

TABLE 4.—Wall thicknesses and tolerances for ABS plastic pipe

Nominal pipe size	Wall thickness ¹					
	SDR26		SDR21		SDR17	
	Minimum	Tolerance	Minimum	Tolerance	Minimum	Tolerance
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
1/8	-----	-----	-----	-----	-----	-----
1/4	-----	-----	-----	-----	-----	-----
3/8	-----	-----	-----	-----	-----	-----
1/2	-----	-----	-----	-----	-----	-----
3/4	-----	-----	-----	-----	0.060	+0.020
1	0.060	+0.020	0.060	+0.020	0.062	+0.020
1 1/4	0.064	+0.020	0.063	+0.020	0.077	+0.020
1 1/2	0.073	+0.020	0.079	+0.020	0.098	+0.020
2	0.091	+0.020	0.090	+0.020	0.112	+0.020
2 1/2	0.110	+0.020	0.113	+0.020	0.140	+0.020
3	0.135	+0.020	0.137	+0.020	0.169	+0.020
3 1/2	0.154	+0.020	0.167	+0.020	0.206	+0.025
4	0.173	+0.021	0.190	+0.023	0.235	+0.028
5	0.214	+0.027	0.214	+0.026	0.265	+0.032
6	0.255	+0.031	0.265	+0.032	0.327	+0.039
8	0.332	+0.040	0.316	+0.038	0.390	+0.047
10	0.413	+0.050	0.410	+0.049	-----	-----
12	0.490	+0.059	0.511	+0.061	-----	-----
			0.606	+0.073	-----	-----

TABLE 4.—Wall thicknesses and tolerances for ABS plastic pipe—Continued

Nominal pipe size	Wall thickness ¹			
	SDR13.5		Class T	
	Minimum	Tolerance	Minimum	Tolerance
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
1/8	0.060	+0.020	0.100	+0.020
1/4	0.060	+0.020	0.130	+0.020
3/8	0.060	+0.020	0.163	+0.020
1/2	0.062	+0.020	0.168	+0.020
3/4	0.078	+0.020	0.175	+0.021
1	0.097	+0.020	0.219	+0.026
1 1/4	0.123	+0.020	0.227	+0.027
1 1/2	0.141	+0.020	0.211	+0.025
2	0.176	+0.021	0.216	+0.026
2 1/2	0.213	+0.026	0.261	+0.031
3	0.259	+0.031	0.259	+0.031
3 1/2	0.296	+0.036	0.296	+0.036
4	0.333	+0.040	0.265	+0.032
5	0.412	+0.049	0.327	+0.039
6	0.491	+0.059	0.315	+0.038
8	-----	-----	0.332	+0.040
10	-----	-----	0.331	+0.040
12	-----	-----	0.311	+0.037

¹ The minimum is the least wall thickness of the pipe at any cross-section. All tolerances are on the plus side of the minimum requirement.

TABLE 5.—Sustained pressure test conditions for water at 23° C (73.4° F) for ABS plastic pipe

Dimension ratio	Pressure ¹ required for test		
	ABS2112	ABS1210	ABS1106
4.15	<i>p.s.i.</i> 1,710	<i>p.s.i.</i> 1,350	<i>p.s.i.</i> 860
5	1,350	1,070	680
6	1,070	860	540
7.3	860	680	430
9	680	540	340
11	540	430	270
13.5	430	340	220
17	340	270	170
21	270	220	140
26	220	170	110
32.5	170	140	90
41	140	110	70

¹ The fiber stresses used to derive these test pressures are as follows:
 ABS2112—2700 psi
 ABS1210—2140 psi
 ABS1106—1350 psi

Some minor adjustments have been made to keep the test pressures uniform to simplify testing.

TABLE 6.—Burst pressure requirements for water at 23° C (73.4° F) for ABS plastic pipe

Dimension ratio	Minimum burst pressure ¹		
	ABS2112	ABS1210	ABS1106
4.15	<i>p.s.i.</i> 4,190	<i>p.s.i.</i> 3,300	<i>p.s.i.</i> 2,100
5	3,300	2,620	1,650
6	2,620	2,100	1,320
7.3	2,100	1,660	1,050
9	1,660	1,320	830
11	1,320	1,050	660
13.5	1,050	830	530
17	830	660	420
21	660	530	330
26	530	420	260
32.5	420	330	210
41	330	260	160

¹ The fiber stresses used to derive these test pressures are as follows:
 ABS2112—6600 psi
 ABS1210—5240 psi
 ABS1106—3300 psi

Some minor adjustments have been made to keep the test pressures uniform to simplify testing.

HISTORY OF PROJECT

On November 14, 1962 the Society of the Plastics Industry, Inc. requested the cooperation of the Division in establishing a Commercial Standard for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR and Class T).

The projects were initiated by the Thermoplastics Pipe Division, now the Plastics Pipe Institute ⁷ of the SPI in cooperation with their joint American Society for Testing and Materials subcommittee on plastic pipe.

The drafts presented to the Division represented a consensus of the views of approximately 400 producers, raw materials suppliers, users

⁷ During the development of this project the name was changed from the Thermoplastic Pipe Division to the Plastics Pipe Institute, A Division of the SPI.

and members of National, Municipal and other code bodies as well as the views of the interested ASTM organization. All comments were considered in open meetings of the SPI and ASTM, and adjustments were made wherever practicable.

Following review of the proposals by the National Bureau of Standards, the Recommended Commercial Standards were widely circulated to industry on January 14, 1963, for consideration and acceptance. Sufficient acceptances were received to assure success of the standard. Accordingly, on May 10, 1963, the new edition, Commercial Standard CS254-63 was announced to become effective for new production on July 1, 1963.

Project Manager: C. G. Hemmer, Commodity Standards Division, Office of Technical Services, U.S. Department of Commerce.

Technical Advisor: Dr. G. M. Kline, Chief, Organic and Fibrous Materials Division, National Bureau of Standards.

STANDING COMMITTEE

In accordance with the established procedure for keeping recommendations abreast of current conditions and best industry practice, this program will be reviewed from time to time, and revised whenever necessary. For this purpose, a standing committee composed of representatives of the industry has been appointed. All comments and suggestions concerning the recommendation will be referred to the standing committee for consideration. This committee also serves as the medium through which the industry may be consulted, and through which the industry may in turn make known its views concerning the recommendation. The members of this committee are:

Ted M. Yeiser, Crescent Plastics, Inc., 955 Diamond Avenue, Evansville, Ind. (Chairman.)

Dick Bigler, Lasco Industries, 1561 Chapin Road, Montebello, Calif.

Robert C. Jones, Federal Corp., 120 East Main Street, Oklahoma City, Okla.

W. K. Klein, Joseph T. Ryerson & Son, Inc., P.O. Box 8000A, Chicago, Ill.

Eugene J. Linsky (Alternate, G. Bruce LeVine), Tampa Wholesale Plumbing Supply Corp., 205 Brush Street, Tampa, Fla.

Charles B. Maguire, Landmark Engineering Co., P.O. Box 5355, Tucson, Ariz.

L. P. Sharpe, Republic Steel Corp., Bond and Adams Streets, Elyria, Ohio.

R. S. Tope, Yardley Plastics Co., 142 Parsons Avenue, Columbus, Ohio.

Richard E. White, National Association of Plumbing-Heating-Cooling Contractors, 1016 20th Street NW., Washington, D.C.

Dr. Frank W. Reinhart, Director, Technical Division, Plastics Pipe Institute, 9918 Sutherland Road, Silver Spring, Md.

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 listed as an acceptor.

ASSOCIATIONS

(General Support)

American Institute of Architects, Washington, D.C.
Central Supply Association, Chicago, Ill.
National Association of Plumbing-Heating-Cooling Contractors, Washington, D.C.
Plastic Pipe Institute, A Division of the Society of the Plastics Industry, Inc., New York, N.Y.

FIRMS AND OTHER INTERESTS

ACF Industries, Inc., ACF Technical Center, St. Charles, Mo.
Alpha Plastics, Inc., Livingston, N.J.
Amco Plastic Pipe Co., San Leandro, Calif.
American Agricultural Chemical Co., New York, N.Y.
American Brass & Iron Foundry, Plastics Div., Newark, Calif.
American Cyanamid Co., Plastics & Resins Div., Wallingford, Conn.
American Hard Rubber Co., Div. of Amerace Corp., Butler, N.J.
Anaconda American Brass Co., Waterbury, Conn.
Anderson, Ted D., Construction Co., Kokomo, Ind.
Arizona Plastic Extrusion Co., Phoenix, Ariz.
Armite Laboratories, Los Angeles, Calif.
Avisun Corp., Philadelphia, Pa.
Baldwin Extruded Products, Inc., Downey, Calif.

Barringham Plastics, Ltd., Clarkson, Ontario, Canada
Beible's Pump & Supply, Emmaus, Pa.
Bellingham Supply, Inc., Bellingham, Wash.
Berg Construction Co., Inc., Juneau, Alaska
Better Lawns, Inc., Mineral Wells, Tex.
Bolta Products Div., General Tire & Rubber Co., Lawrence, Mass.
Busada Manufacturing Corp., Flushing, N.Y.
Camlet, J. Thomas, Architect & Engineer, Garfield, N.J.
Canadian General Electric Co., Ltd., Plastics Section, Cobourg, Ontario, Canada
Cannelton Sewer Pipe Co., Inc., Cannelton, Ind.
Cannon & Mullen, Architects, Salt Lake City, Utah
Carlton Products Corp., Aurora, Ohio
Colonial Plastics Manufacturing Co., Cleveland, Ohio
Commercial Solvents Corp., New York, N.Y.
Consolidated Pipe Co. of America, Stow, Ohio
Consolidated Plastics, Inc., McPherson, Kans.
Consolidated Supply Co., Portland, Oreg.
Cooperative G.L.F. Exchange, Inc.—Farm Supplies Div., Ithaca, N.Y.
Cracker Asphalt Corp., Douglasville, Ga.
Crane Supply Co., Chicago, Ill.
Crescent Plastics, Inc., Evansville, Ind.
DeBell & Richardson, Inc., Hazardville, Conn.
Diversified Plastics, Inc., Memphis, Tenn.

Dixie Plastics Manufacturing Co., New Orleans, La.
 Dolplex, Inc., Lake Park, Fla.
 DowSmith, Inc., Milwaukee, Wis.
 Electric Hose & Rubber Co., Wilmington, Del.
 El Paso Natural Gas Products Co., El Paso, Tex.
 Engineered Plastic Products Co., Spokane, Wash.
 Esco Corp., Los Angeles, Calif.
 Federal Corp., Oklahoma City, Okla.
 Fullerton Manufacturing Co., Fullerton, Calif.
 Gaspro, Ltd., Honolulu, Hawaii
 Goldthwaite's of Texas, Inc., Fort Worth, Tex.
 Goodall Rubber Co., Trenton, N.J.
 Goodrich Chemical, B. F., Co., Cleveland, Ohio
 Halby Chemical Co., Inc., Wilmington, Del.
 Hogner, P. R. L., Architect, Fort Lauderdale, Fla.
 International Pipe and Ceramics Corp., East Orange, N.J.
 Japan Cotton Co., Dallas, Tex.
 Johnson Plastic Corp., Chagrin Falls, Ohio
 King, John & Associates, Cupertino, Calif.
 Kraloy/Chemtrol Co., Santa Ana, Calif.
 Landmark Engineering Co., Tucson, Ariz.
 Lasco Industries, Montebello, Calif.
 Lindsay Bros., Inc., Milwaukee, Wis.
 Loeb, Laurence M., Architect, White Plains, N.Y.
 Marken Plastic Corp., Los Angeles, Calif.
 McDonald, A. Y., Manufacturing Co., Dubuque, Iowa
 McPherson Co., Architects-Engineers, Greenville, S.C. (General Support)
 Meyer, F. & J., New York, N.Y.
 Miller, Miller & Associates, Architects, Terre Haute, Ind.
 New Mexico State University, Physical Plant Dept., University Park, N. Mex.
 Northwest Natural Gas Co., Portland, Oreg.
 Orangeburg Manufacturing Co., Div. of The Flintkote Co., New York, N.Y.
 Palmer Supply Co., Seattle, Wash.
 Palomar Refining and Oil Co., Bakersfield, Calif.
 Parish, Archie G., Architect, St. Petersburg, Fla.
 Patzig Testing Laboratories, Inc., Des Moines, Iowa
 Perma-Pipe Corp., Middlesboro, Ky.
 Plastex Co., Columbus, Ohio
 Plastiline, Inc., Pompano Beach, Fla.
 Plymouth Cordage Co., Plymouth, Mass.
 Portco Corp., Paper & Plastic Div., Vancouver, Wash.
 Portland General Electric Co., Portland, Oreg.
 R & K Plastic Industries Co., IPF Div., Cleveland, Ohio

Raub Supply Co., Lancaster, Pa.
 Republic Steel Corp., Cleveland, Ohio
 Riverside Chemical Co., Inc., North Tonawanda, N.Y.
 Rock Island Refining Corp., Indianapolis, Ind.
 Ryerson, Joseph T. & Son, Inc., Chicago, Ill., and Service Centers at Boston, Mass.; Buffalo, N.Y.; Charlotte, N.C.; Cincinnati, Cleveland, Ohio; Dallas, Tex.; Detroit, Mich.; Ameryville, Calif.; Houston, Tex.; Indianapolis, Ind.; Jersey City, N.J.; Los Angeles, Calif.; Milwaukee, Wis.; Philadelphia, Pittsburgh, Pa.; St. Louis, Mo.; Seattle, Spokane, Wash.; Wallingford, Conn.
 Scoville Manufacturing Co., Waterbury, Conn.
 Sears, Roebuck & Co., Chicago, Ill.
 Sedco Manufacturing Co., Inc., Miami, Fla.
 Skagit County, Public Utility District No. 1, Mount Vernon, Wash.
 Skelly Oil Co., Tulsa, Okla.
 Skyline Industries Sales, Inc., Titusville, Pa.
 Skyline Plastic Pipe Co., Inc., Titusville, Pa.
 Sloane Manufacturing Co., Div. Atlantic Research Corp., Sun Valley, Calif.
 Soule Construction Co., Inc., Pensacola, Fla.
 Southeast Distributing Co., Miami, Fla.
 Southwestern Plastic Pipe Co., Phoenix, Ariz.
 Southwestern Plastic Pipe Co., Mineral Wells, Tex.
 Stauffer Chemical Co., Molded Products Div., Los Angeles, Calif.
 Tampa Wholesale Plumbing Supply Corp., Tampa, Fla.
 Texacon Industries, Inc., Kearny, N.J.
 Triangle Conduit & Cable Co., Inc., New Brunswick, N.J.
 Trubek Chemical Co., East Rutherford, N.J.
 Tube Turns Plastics, Inc., Louisville, Ky.
 Union Carbide Plastics Co., Bound Brook, N.J.
 Union Malleable Manufacturing Co., Plastic Div., Ashland, Ohio
 University of Texas, School of Agriculture, Austin, Tex.
 Uyesaka Bros., Inc., Clovis, Calif.
 Vogel, Willis A., Architect & Consultant, Toledo, Ohio
 Wade, R. M., & Co., Portland, Oreg.
 Welch, Carroll E., Architect, Huntington, N.Y.
 Western Plastics Corp., Hastings, Nebr.
 Western Plastics Corp., Tacoma, Wash.
 Worthington Associates, Inc., Corvallis, Oreg.
 Yardley Plastics Co., Columbus, Ohio
 U.S. GOVERNMENT
 General Services Administration, Standardization Div., Washington, D.C.
 Health, Education, and Welfare, Department of, Washington, D.C.
 Interior, Department of the, Washington, D.C.
 Post Office Department, Procurement Div., Washington, D.C.
 Veterans Administration, Washington, D.C.

ACCEPTANCE OF COMMERCIAL STANDARD

CS254-63 Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR and ClassT)

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 _____

Office of Commodity Standards
National Bureau of Standards
U.S. Department of Commerce
Washington, D.C. 20234

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 other¹
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.