

PVC SDR Series: Pressure Rated Pipe

Application:

Corrosion resistant pressure pipe, IPS sizes 3/4" through 24", for use at temperatures up to and including 140 F. Pressure rating (100 psi to 200 psi) varies with SDR Series and temperature shown on page 2 of this specification, and as stated in Georg Fischer Harvel LLC engineering bulletin (Product Bulletin 112/401). Generally resistant to most acids, bases, salts, aliphatic solutions, oxidants, and halogens. Chemical resistance data is available and should be referenced for proper material selection. Pipe exhibits excellent physical properties and flammability characteristics (independently tested flame and smoke characteristics-ULC,1993). Typical applications include: potable water systems, water and wastewater treatment, irrigation, agricultural, high purity applications, chemical processing, and other industrial applications involving corrosive fluid transfer.

Scope:

This specification outlines minimum manufacturing requirements for Polyvinyl Chloride (PVC) SDR Series iron pipe size (IPS) pressure pipe. This pipe is intended for use in piping systems where the fluid conveyed does not exceed 140F. This pipe meets and or exceeds the industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM) and the National Sanitation Foundation (NSF).

PVC Materials:

The material used in the manufacture of the pipe shall be domestically produced rigid polyvinyl chloride (PVC) compound, Type I Grade I, with a Cell Classification of 12454 as defined in ASTM D1784, trade name designation H707 PVC. This compound shall be white or gray in color as specified, and shall be approved by NSF for use with potable water.

Dimensions:

PVC SDR Series pipe shall be manufactured in strict accordance to the requirements of ASTM D2241 for physical dimensions and tolerances. Each production run of pipe manufactured in compliance to this standard, shall also meet or exceed the test requirements for materials, workmanship, burst pressure, impact resistance, flattening, and extrusion quality as defined in ASTM D2241. This pipe shall be produced in IPS diameters to either: SDR 21 (3/4"-8" sizes 200 psi @ 73 °F); SDR 26 (1"-24" sizes 160 psi @ 73 °F); or SDR 41 (18"-24" 100 psi @ 73 °F) as specified. All belled end pipe shall have tapered sockets to create an interference type fit, which shall meet or exceed dimensional requirements and the minimum socket length for pressure-type belled sockets as defined in ASTM D2672.

Marking:

Product marking shall meet the requirements of ASTM D2241 and shall include: the manufacturers name (or the manufacturers trademark when privately labeled); the nominal pipe size; the outside diameter system; the material designation code; the applicable Standard thermoplastic pipe Dimension Ratio designation code (SDR number) and the corresponding pressure rating in psi for water @ 73 °F; the ASTM designation D2241; and the independent laboratory's' seal of approval for potable water usage.

Sample Specification:

All PVC SDR Series pipe shall be manufactured from a Type I, Grade I Polyvinyl Chloride (PVC) compound with a Cell Classification of 12454 per ASTM D1784. The pipe shall be manufactured in strict compliance to ASTM D2241, consistently meeting and/or exceeding the Quality Assurance test requirements of this standard with regard to pressure rating, material, workmanship, burst pressure, flattening, impact resistance, and extrusion quality. The pipe shall be manufactured in the USA, using domestic materials, by an ISO 9001 certified manufacturer. Standard lengths of pipe sizes 10" and larger shall be beveled each end by the pipe manufacturer. All pipe shall be stored indoors after production at the manufacturing site until shipped from factory. This pipe shall carry the National Sanitation Foundation (NSF) seal of approval for potable water applications. All pipe shall be manufactured by Georg Fischer Harvel LLC.



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SDR 13.5 - Max W.P. 315 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
1/2	0.840	0.696	0.062	0.110

SDR 21 - Max W.P. 200 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
3/4	1.050	0.910	0.060	0.136
1	1.315	1.169	0.063	0.180
1-1/4	1.660	1.482	0.079	0.278
1-1/2	1.900	1.700	0.090	0.358
2	2.375	2.129	0.113	0.550
2-1/2	2.875	2.581	0.137	0.797
3	3.500	3.146	0.167	1.168
3-1/2	4.000	3.597	0.190	1.520
4	4.500	4.046	0.214	1.927
5	5.563	5.001	0.265	2.948
6	6.625	5.955	0.316	4.185
8	8.625	7.756	0.410	7.069

SDR 26 - Max W.P. 160 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
1	1.315	1.175	0.060	0.173
1-1/4	1.660	1.512	0.064	0.233
1-1/2	1.900	1.734	0.073	0.300
2	2.375	2.173	0.091	0.456
2-1/2	2.875	2.635	0.110	0.657
3	3.500	3.210	0.135	0.966
3-1/2	4.000	3.672	0.154	1.250
4	4.500	4.134	0.173	1.569
5	5.563	5.108	0.214	2.411
6	6.625	6.084	0.255	3.414
8	8.625	7.921	0.332	5.784
10	10.750	9.874	0.413	8.971
12	12.750	11.711	0.490	12.620
14	14.000	12.860	0.538	15.205
16	16.000	14.696	0.615	19.877
18	18.000	16.533	0.692	25.156
20	20.000	18.370	0.769	31.057
24	24.000	22.043	0.923	44.744

SDR 41 - Max W.P. 100 PSI*(all sizes)

Nom. Pipe Size (in.)	O.D.	Average I.D.	Min. Wall	Nom. Wt./Ft.
18	18.000	17.061	0.439	16.348
20	20.000	18.956	0.488	20.196
24	24.000	22.748	0.585	29.064

*PRESSURE RATINGS GIVEN ARE FOR WATER, NON-SHOCK, @ 73 ° F

ASTM STANDARD D1784 MATERIAL EQUIVALENTS:
Cell Classification 12454 = PVC Type I Grade I = PVC 1120

PIPE SIZES SHOWN ARE MANUFACTURED IN STRICT COMPLIANCE WITH ASTM D1785

The pressure ratings given are for water, non-shock, @ 73 ° F. The following temperature de-rating factors are to be applied to the working pressure ratings (W.P.) listed when operating at elevated temperatures. Multiply the working pressure rating of the selected pipe at 73 ° F, by the appropriate de-rating factor to determine the maximum working pressure rating of the pipe at the elevated temperature chosen.

De-Rating Factor	
Operating Temp (°F)	De-Rating Factor
73	1.00
80	0.88
90	0.75
100	0.62
110	0.51
120	0.40
130	0.31
140	0.22

EX: SDR 21 @ 120 ° F = ?
200 psi x 0.40 = 80 psi max. @ 120 ° F

THE MAXIMUM SERVICE TEMPERATURE FOR PVC IS 140 ° F.

Solvent cemented joints should be utilized when working at or near maximum temperatures. GF Harvel does not recommend the use of PVC for threaded connections at temperatures above 110 ° F; use flanged joints, unions, or roll grooved couplings where disassembly is necessary at elevated temperatures.

Threading of SDR Series pipe is not a recommended practice due to insufficient wall thickness.

Chemical resistance data should be referenced for proper material selection and possible de-rating when working with fluids other than water. Refer to GF Harvel 112/401 Product Bulletin for chemical resistance and installation data.