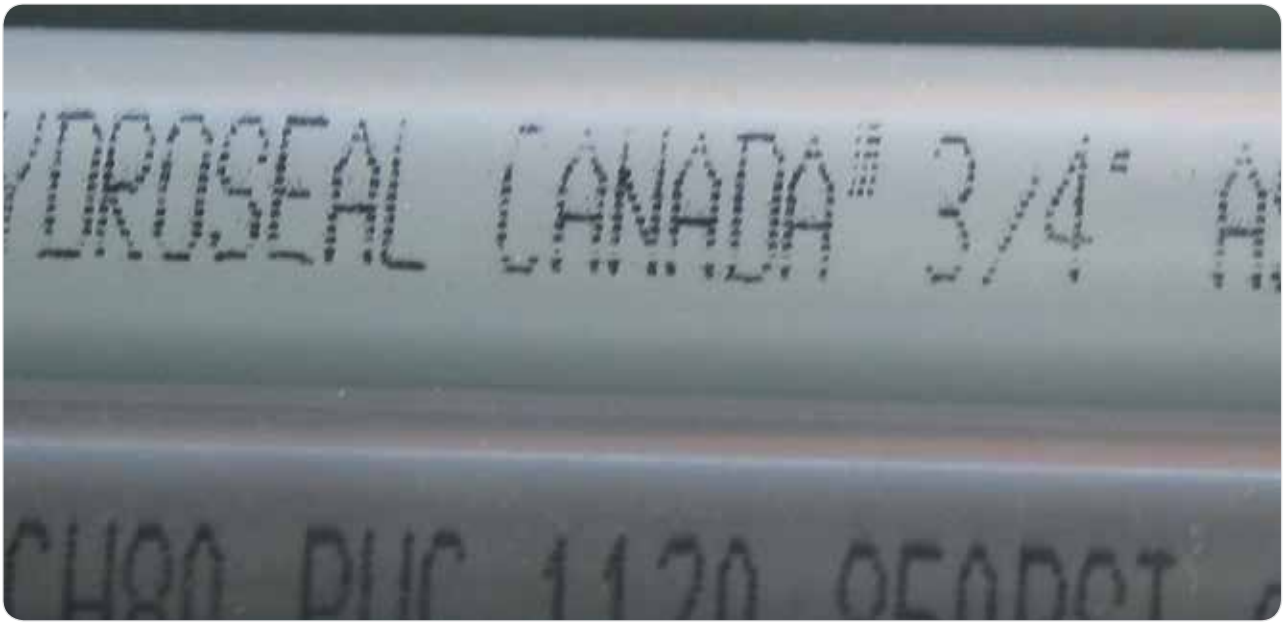


Manufacturer's Product Specification

Scope

This specification sheet covers the manufacturer's requirements for PVC and CPVC tubes in accordance with respective international standards. These tubes meet or exceed the standards set by the American Society for Testing and Materials, the National Sanitation Foundation, British Standards Institute, German Industrial Norms and Japanese Industrial Standards.

PVC and CPVC Materials

Rigid PVC (polyvinyl chloride) and CPVC (chlorinated polyvinyl chloride) used in the manufacture of tubes is Type I, Grade 1 PVC compound, and Type IV, Grade 1 CPVC compound as stated in ASTM D-1784. Raw material used in extrusion shall contain the specified amounts of color pigment, stabilizers, and other additives approved by the National Sanitation Foundation.

Dimensions and Wall Thicknesses

Physical dimensions, wall thickness and tolerances of PVC and CPVC tubes meet the requirements of ASTM, DIN and BS specifications for tubes.

Marking

PVC and CPVC tubes are marked as prescribed in ASTM D-1784 to indicate the manufacturer's name or trademark, size of Tube, material designation, batch number and month of production. There must be clear distinguishing on those products that are PVC and those products that are CPVC. Where there is no restriction of space, wall thicknesses shall also be indicated.

CPVC TUBE PHYSICAL PROPERTIES

GENERAL	VALUE	TEST METHOD
Cell Classification	23447	ASTM D1784
Maximum Service Temp.	200°F	
Color	Medium Gray	
Specific Gravity, (g/cu.cm @ 73°F)	1.52 ± 0.02	ASTM D792
Water Absorption % increase 24 hrs @ 25°C	0.03	ASTM D570
Hardness, Rockwell	117	ASTM D785
Poisson's Ratio @ 73°F	0.386	
Hazen-Williams Factor	C =150	
MECHANICAL		
Tensile Strength, psi @ 73°F	7,750	ASTM D638
Tensile Modulus of Elasticity, psi @ 73°F	360,000	ASTM D638
Flexural Strength, psi @ 73°F	13,000	ASTM D790
Flexural Modulus, psi @ 73°F	360,000	ASTM D790
Compressive Strength, psi @ 73°F	10,000	ASTM D695
Compressive Modulus, psi @ 73°F	196,000	ASTM D695
Izod Impact, notched, ft-lb/in @ 73°F	2.0	ASTM D256
THERMAL		
Coefficient of Linear Expansion (in/in/°F)	3.7×10^{-5}	ASTM D696
Coefficient of Thermal Conductivity (Cal.)(cm)/(cm²)(Sec.)(°C) BTU/in/hr/ft.2/°F Watt/m/°K	3.27×10^{-4} 0.95 0.137	ASTM C177
Coefficient of Linear Expansion (in/in/°F)	226°F	ASTM D648
ELECTRICAL		
Dielectric Strength, volts/mil	1,250	ASTM D149
Dielectric Constant, 60Hz, 30°F	3.70	ASTM D150
Volume Resistivity, ohm/cm @ 73°F	3.4×10^{15}	ASTM D257
Power Factor, 1000Hz	0.007%	ASTM D150
Harvel CPVC Tube is non-electrolytic		
FIRE PERFORMANCE		
Flammability Rating	V-0, 5VB, 5VA	UL-94
Flame Spread Index	<10	
Flame Spread	<25	ASTM E-84/UL 723
	<25	ULC
Smoke Generation	≤50	ASTM E-84/UL 723
	<50	ULC
Flash Ignition Temp.	900°F	
Average Time of Burning (sec.)	<5	ASTM D635
Average Extent of Burning (mm)	<10	
Burning Rate (in/min)	Self Extinguishing	
Softening Starts (approx.)	295°F	
Material Becomes Viscous	395°F	
Material Carbonizes	450°F	
Limiting Oxygen Index (LOI)	60	ASTM D2863
Clean Room Materials Flammability Test	FPI= 1.20 SDI= 0.09	FM 4910

Note: The physical properties shown are considered general CPVC physical properties. HYDROSEAL utilizes several CPVC compounds for the production of different CPVC product lines. CPVC compounds may exhibit slight variations in actual physical properties as compared to those stated. Contact your HYDROSEAL representative for additional information if necessary.

Notes: PVC/CPVC material meets ASTM Standard D-1784
Dimensions are subject to change without notice. Contact your HYDROSEAL representative for certification.

PVC ASTM D1785 SCHEDULE 80

PART	NOMINAL SIZE	OUTSIDE DIAMETER		PVC SCHEDULE 80			
				WALL THICKNESS		WORKING PRESSURE	WEIGHT
		IN	MM	IN	MM	PSI @73F	LB/ FT
0207.80G.0015	1/8"	0.41	10.41	0.095	2.41	1230	0.06
0207.80G.0025	1/4"	0.54	13.72	0.119	3.02	1130	0.10
0207.80G.0035	3/8"	0.68	17.15	0.126	3.20	920	0.14
0207.80G.0050	1/2"	0.84	21.34	0.147	3.73	850	0.21
0207.80G.0075	3/4"	1.05	26.67	0.154	3.91	690	0.28
0207.80G.0100	1"	1.32	33.40	0.179	4.55	630	0.41
0207.80G.0125	1 1/4"	1.66	42.16	0.191	4.85	520	0.57
0207.80G.0150	1 1/2"	1.90	48.26	0.200	5.08	470	0.69
0207.80G.0200	2"	2.38	60.33	0.218	5.54	400	0.96
0207.80G.0250	2 1/2"	2.88	73.03	0.276	7.01	420	1.46
0207.80G.0300	3"	3.50	88.90	0.300	7.62	370	1.95
0207.80G.0400	4"	4.50	114.30	0.337	8.56	320	2.84
0207.80G.0500	5"	5.56	141.30	0.375	9.53	290	3.95
0207.80G.0600	6"	6.63	168.28	0.432	10.97	280	5.43
0207.80G.0800	8"	8.63	219.08	0.500	12.70	250	8.25
0207.80G.1000	10"	10.75	273.05	0.593	15.06	230	12.24
0207.80G.1200	12"	12.75	323.85	0.687	17.45	230	16.83
0207.80G.1400	14"	14.00	355.60	0.750	19.05	220	19.96
0207.80G.1600	16"	16.00	406.40	0.843	21.41	220	26.55
0207.80G.1800	18"	18.00	457.20	0.937	23.80	220	33.54
0207.80G.2000	20"	20.00	508.00	1.031	26.19	220	41.05
0207.80G.2400	24"	24.00	609.60	1.218	30.94	210	58.23

DERATING FACTOR

PVC	
TEMP(C)	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

CPVC ASTM F441 SCHEDULE 80

PART	NOMINAL SIZE	OUTSIDE DIAMETER		CPVC SCHEDULE 80			
				WALL THICKNESS		WORKING PRESSURE	WEIGHT
		IN	MM	IN	MM	PSI @180F	LB/ FT
0208.80G.0025	1/4"	0.54	13.72	0.119	3.02	283	0.12
0208.80G.0035	3/8"	0.68	17.15	0.126	3.20	230	0.16
0208.80G.0050	1/2"	0.84	21.34	0.147	3.73	213	0.24
0208.80G.0075	3/4"	1.05	26.67	0.154	3.91	173	0.32
0208.80G.0100	1"	1.32	33.40	0.179	4.55	158	0.47
0208.80G.0125	1 1/4"	1.66	42.16	0.191	4.85	130	0.65
0208.80G.0150	1 1/2"	1.90	48.26	0.200	5.08	118	0.79
0208.80G.0200	2"	2.38	60.33	0.218	5.54	100	1.10
0208.80G.0250	2 1/2"	2.88	73.03	0.276	7.01	105	1.67
0208.80G.0300	3"	3.50	88.90	0.300	7.62	93	2.24
0208.80G.0400	4"	4.50	114.30	0.337	8.56	80	3.28
0208.80G.0600	6"	6.63	168.28	0.432	10.97	70	6.26
0208.80G.0800	8"	8.63	219.08	0.500	12.70	63	9.51
0208.80G.1000	10"	10.75	273.05	0.593	15.06	58	14.10
0208.80G.1200	12"	12.75	323.85	0.687	17.45	58	19.39
0208.80G.1400	14"	14.00	355.60	0.750	19.05	55	23.26
0208.80G.1600	16"	16.00	406.40	0.843	21.41	55	29.89
0208.80G.1800	18"	18.00	457.20	0.937	23.80	55	37.42
0208.80G.2000	20"	20.00	508.00	1.031	26.19	55	45.88
0208.80G.2400	24"	24.00	609.60	1.218	30.94	53	64.96

DERATING FACTOR

CPVC	
TEMP(C)	FACTOR
73	1.00
80	1.00
90	0.91
100	0.82
110	0.72
120	0.65
130	0.57
140	0.50
150	0.42
160	0.40
170	0.29
180	0.25
200	0.20

Notes: PVC/CPVC material meets ASTM Standard D-1784
Dimensions are subject to change without notice. Contact your HYDROSEAL representative for certification.