CPVC Duct: Extruded Round

Application:

Seamless, corrosion resistant exhaust duct, IPS sizes 6" through 24", for use in corrosive fume handling systems at temperatures up to 200˚F. Duct exhibits excellent fire resistance and is classified for Surface Burning Characteristics (independently tested flame and smoke characteristics ULC and FMRC 4910). Positive and negative pressure ratings vary with duct diameter and temperature as stated on page 2 of this specification. Offers exceptional physical properties, and is 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. Typical applications include: chemical processing, plating, clean rooms, water and wastewater treatment, laboratory, and other industrial and institutional applications involving corrosive fume collection, transfer, and reclamation.

Scope:

This specification outlines minimum manufacturing requirements for Chlorinated Polyvinyl Chloride (CPVC) iron pipe size (IPS) seamless, extruded round duct. This duct is intended for use in industrial fume handling systems where temperatures encountered do not exceed 200˚F.

CPVC Materials:

The material used in the manufacture of the duct shall be a virgin, rigid chlorinated polyvinyl chloride (CPVC) compound, with a Cell Classification of 23437 as defined in ASTM D1784. This compound shall be light gray in color. This material meets FMRC 4910 Clean Room Materials Flammability Test protocol as outlined in the fire performance section of this specification.

Dimensions:

All CPVC extruded duct shall be manufactured in strict accordance to the requirements established by Harvel Plastics, Inc. for the production of extruded duct piping; including the physical dimensions and tolerances as stated on Page 2 of this specification.

Marking:

Product marking shall include: the manufacturers name (or the manufacturers trademark when privately labeled); the nominal duct size; the Corzan® material designation, date of manufacture, and the independent laboratory's label stating flammability characteristics where applicable.

Sample Specification:

All exhaust duct piping, sizes 6" through 24", shall be CPVC seamless extruded type, as manufactured by Harvel Plastics Inc.; trade name Harvel® Corzan® Duct. Exhaust duct shall be extruded from a Type IV, Grade I Chlorinated Polyvinyl Chloride (CPVC) compound with a Cell Classification of 23437 per ASTM D1784; trade name Corzan® CPVC. All extruded duct shall have a maximum flame spread rating of 5 or less and a maximum smoke generation of 25 or less per ULC S102.2. All extruded duct shall meet Harvel Plastics Inc. published standards with regard to material and dimensions, and shall carry a maximum temperature rating of 200˚F. All extruded duct pipe shall be manufactured in the USA, using domestic materials, by an ISO 9001 certified manufacturer, and shall be stored indoors at the manufacturing site until shipped from the factory. All extruded CPVC duct pipe shall be marked with the manufacturer name or identifying symbol, and the Corzan® CPVC material trademark.

CPVC Duct Dimensions

Size (in.)	AVG. O.D.	AVG. O.D.TOL.	O of R TOL.	MIN. Wall	AVG. Wall	MAX. Wall	WT(lbs.) Per Ft.
6	6.625	+/- .020	+/- .050	0.172	0.187	0.202	2.555
8	8.625	+/- .020	+/- .075	0.172	0.187	0.202	3.349
10	10.750	+/- .025	+/- .075	0.172	0.187	0.202	4.192
12	12.750	+/- .025	+/- .075	0.172	0.187	0.202	4.986
14	14.000	+/- .030	+/- .075	0.172	0.187	0.202	5.485
16	16.000	+/- .030	+/- .075	0.172	0.187	0.202	6.273
18	18.000	+/- .040	+/- .080	0.172	0.187	0.202	7.580
20	20.000	+/- .070	+/- .140	0.199	0.219	0.239	9.146
24	24.000	+/- .090	+/- .180	0.230	0.250	0.270	12.536

O of R = Out of Roundness Factor at time of extrusion

CPVC MAX. Internal Negative Pressure Rating

Inches of Water @ Various Temperatures °F

SIZE (in.)	TEMPERATURE °F						
	73	100	120	140	160	180	200
6	426	371	316	263	208	153	98
8	193	168	143	118	93	70	45
10	100	86	73	60	48	35	23
12	60	51	43	36	28	20	13
14	45	38	33	26	21	15	10
16	30	26	21	18	13	10	6
18	26	23	20	16	13	10	6
20	28	25	21	16	13	10	6
24	20	18	15	13	10	6	3

PSI = Inches of Water x .0361; Inches of Mercury = Inches of Water x .07355

CPVC MAX. Internal Positive Pressure Rating

PSI @ Various Temperatures °F

SIZE (in.)	TEMPERATURE °F						
	73	100	120	140	160	180	200
6	70	56	45	35	26	16	13
8	53	43	33	26	20	13	10
10	43	35	28	21	16	10	8
12	36	30	23	18	15	8	6
14	33	26	21	16	13	8	6
16	28	23	18	13	11	6	5
18	25	20	15	11	10	5	5
20	26	21	16	13	10	6	5
24	25	20	15	11	10	5	5

Fire Performance

Test Protocol	Testing Agency/Standard	Test Results
Surface Burning Characteristics	Underwriters Laboratories of Canada (ULC)	Flame Spread Rating = 5 Smoke Development = 15-25
Clean Room Materials	Factory Mutual	FPI = 1.9
Flammability Test	Research Corp (FMRC)	SDI = 0.03 CDI = 0.8
Flammability Rating	Underwriters Laboratories (UL) Standard 94	UL 94 V-O
Limiting Oxygen Index	ASTM D2863	LOI = 55
Burning Rate		Self Extinguishing

General Recommendations

Joining

Thermal welding shall be performed by personnel adequately trained in the art of CPVC welding utilizing the hot gas fusion welding method using Corzan® CPVC filler welding rod as manufactured for this purpose.

When solvent cemented connections are utilized, the use of an extra heavy bodied CPVC solvent cement (such as IPS 729) and appropriate primer is recommended due to tolerance extremes that can be encountered when working with duct and fabricated duct fittings. Proper solvent cement joining procedures shall be followed.

Hangers and Supports

Hangers selected shall have an adequate load-bearing surface free of rough or sharp edges and shall not cause damage to the duct during use. Hangers and hanger hardware shall be of a corrosive resistant material suitable for use in the system environment.

Ductwork is to be supported independently of hoods, scrubbers, fans, tanks or other equipment wherever possible. Where flexible connections are provided as expansion joints a suitable hanger or support shall be provided at each end of the flexible connection. Consideration shall be given to the possibility of solids accumulation; adequate system support shall be provided where required.

Drains shall be installed where accumulation of moisture is expected at low points in the system as indicated on the drawings.

Handling and Storage

Care shall be used when transporting and storing duct to prevent physical distortion. Duct shall not be stored close to heat producing sources, subjected to external loads, or over stacked when stored. Damaged sections must be cut out and discarded.

System Components

All duct fittings, fume hoods, fans, blast gates and other system components shall be fabricated from Corzan® sheet or duct material of the same wall thickness to maintain system compatibility and integrity.

Reference Harvel Plastics, Inc. CPVC Duct product bulletin (Bulletin HPB-106) for additional information pertaining to joining methods, hangers and supports, system components, and other installation related data.