

## Polypropylene (PP) Schedule 80 Industrial Pipe and Fittings

### Scope:

This specification establishes the manufacturing requirements for black and Chem-Pure® Schedule 80 polypropylene piping components intended for use in industrial, pressure-rated, fluid-handling systems for applications at 180° F or less, where resistance to corrosion are of prime importance.

### Materials:

Rigid PP (polypropylene) used in the manufacture of Schedule 80 piping components shall be one of the following:

Black Polypropylene:

- Pipe-material shall be Cell Class PP0110-A2-1510 as per ASTM D 4101. Fittings material shall be Cell Class PP0110-M30-A10120 (glass bead material) and Cell Class PP0110-B67154 (unfilled material) as per ASTM D 4101. These materials shall be pigmented jet black.

Chem-Pure (Natural) Polypropylene:

- Pipe material shall be Cell Class PP0110-A2-1510 as per ASTM D 4101. Fitting material shall be Cell Class PP0210-B45145 as per ASTM D 4101. These materials shall be unpigmented.

### Dimensions/Design (IPS Size):

Socket-end connections suitable for heat-fusion welding shall have socket lengths and wall thicknesses as required for Schedule 80 fittings in ASTM D 2467. Socket diameters shall be in accordance with the manufacturer's recommendations for an interference fit with the pipe as prescribed in ASTM D 2657; taper pipe threaded-ends shall have lengths, diameters, and configuration in accordance with ASTM D 2467 for Schedule 80 fittings.

Pipe shall have diameters and wall thicknesses in conformance with ASTM D 1785 for Schedule 80 pipe.

Fittings shall be industrial, heavy-duty, hub style.

Flanges shall be one-piece design utilizing the tapered-, serrated-, and full-face gasket technique for joining, with bolt pattern compatible with ASME B16.5 Class 150 metal flanges.

Unions shall have an O-ring seal and components interchangeable with true union valves for maximum system versatility.

Transition unions, unions intended for joining dissimilar materials, shall utilize components of the two dissimilar materials, joined with an elastomeric seal to absorb the thermal-expansion coefficient differential.

### Pressure Ratings:

Pipe and fittings joined by the heat-fusion technique shall be rated according to the following pressures for a given nominal size at 73° F water service.

1/2 – 410 psi	1 – 310 psi	2 – 200 psi	4 – 160 psi
3/4 – 330 psi	1-1/2 – 230 psi	3 – 190 psi	6 – 140 psi

**NOTE:** Threaded pipe and fittings shall be rated at 20 psi maximum for all sizes at 73° water service.

Heat-fusion valves, unions, and flanges shall be rated at 150 psi for non-shock water service at 73° F and have a minimum burst requirement of 3.3 times the rated pressure.

### Markings:

Fittings and pipe shall be clearly marked with the manufacturer's name or trademark, nominal size, material designation, and country of manufacture.

### Installation/Maintenance:

At the specifying engineer's option, the manufacturer shall provide, at no additional cost, on-site training for installation/maintenance personnel. Otherwise, installation shall be as specified by the manufacturer's printed instructions. Specialized joining equipment shall be as recommended by the manufacturer.

## Polyvinylidene Fluoride (PVDF) (KYNAR®) Schedule 80 Industrial Pipe and Fittings

### Scope:

This specification establishes the manufacturing requirements for red and natural PVDF Schedule 80 piping components intended for use in industrial, pressure-rated, fluid-handling systems of 280° F or less where resistance to corrosion are of prime importance.

### Materials:

Rigid PVDF (polyvinylidene fluoride) used in the manufacture of Schedule 80 piping components shall conform to requirements in ASTM D 3222 for Type I homopolymers. Pipe and fitting components shall be manufactured from one of the following:

### Red Kynar®:

PVDF compound with a minimum of 1.7% red pigment content for opaqueness to UV radiation.

### Natural Kynar®:

Unpigmented 700 series PVDF compound of the highest purity and maximum transparency to UV radiation.

### Dimensions/Design:

Socket-end connections suitable for heat-fusion welding shall have socket lengths and wall thicknesses conforming to ASTM D 2467 and socket diameters shall be in accordance with the manufacturer's printed recommendations to provide an interference-fit with the pipe; taper pipe threaded-ends shall have thread lengths, diameters, and configurations in conformance with ASTM D 2467.

Pipe shall be manufactured to the same tolerances for outside diameter and wall thicknesses as outlined in ASTM D 1785 for Schedule 80 pipe.

Fittings shall be industrial, heavy-duty, hub style.

Unions shall have an O-ring seal and components interchangeable with true union valves for maximum system versatility.

Transition unions, unions intended for joining dissimilar materials, shall utilize components of the two dissimilar materials, joined with an elastomeric seal to absorb the thermal-expansion coefficient differential.

### Pressure Ratings:

Pipe and fittings joined by the heat-fusion technique shall be rated according to the following pressures for a given nominal size at 73° F water service.

1/2 – 580 psi	1 – 430 psi	2 – 270 psi	4 – 220 psi
3/4 – 470 psi	1-1/2 – 320 psi	3 – 260 psi	6 – 190 psi

**NOTE:** Threaded pipe and fittings shall be rated at 50% of the values given for socket ends.

Valves, unions, and flanges (either socket or threaded end) shall be pressure rated at 150 psi non-shock water service at 73° F and have a minimum burst requirement of 3.3 times the rated pressure.

### Markings:

All pipe, fittings, and valves shall be clearly marked with the manufacturer's name or trademark, nominal size, and country of manufacture.

### Installation:

At the specifying engineer's option, the manufacturer shall provide, at no additional cost, on-site training for installation/maintenance personnel. Otherwise, installation shall be as specified by the manufacturer's printed instructions. Specialized joining equipment shall be as recommended by the pipe, valves, and fittings manufacturer.