THERMOPLASTIC MATERIALS

UPVC (Unplasticised PVC) - Unplasticised Polyvinyl Chloride is the most widely used of all plastics and commonly used for pressure pipes. It is rigid, suitable for above and below ground applications. UPVC has good chemical resistance and is odorless and tasteless. It is for use with liquids and gasses with temperatures +32ºF to +140ºF (for higher temperatures see CPVC) at a wide range of operating pressures. PVC has strong resistance to chemical attack by alkalis, acids, oxidizers, salt solutions, and many chemicals. PVC should not be used in some vegetable oils (such as peanut oil), non-ionic surfactants, and organic chemicals such as ketones (polor solvents), aromatics, and chlorinated hydrocarbons. Some poorer quality PVC can leach chemicals into that water which can build up in recirculation systems, however most modern pipe is built to specific standards (e.g. BS3505/6, ASTM D 1785, ASTM D 2241, DIN 8061/2, KIWA 49, BS4346 PART 1, DIN 8063) and as long as the pipe is rated as such, there should be no problems. UPVC is usually joined using a push fit solvent cement joint, requiring no special tools. ASTM D1784 controls the compounds for rigid PVC and CPVC.

CPVC (Chlorinated PVC) - Chlorinated polyvinyl chloride, or CPVC, has been offering the process industry superior corrosion resistance, mechanical strength, and excellent life-cycle economics in a single package. Conceptually, CPVC is a PVC homopolymer that has been subjected to a chlorination reaction. It is generally inert to most mineral acids, bases, salts, and paraffinic hydrocarbon solutions. CPVC is not recommended for use with chlorinated or aromatic hydrocarbons, esters, or ketones. The upper temperature limit on CPVC is 200°F. There is no lower temperature limit on CPVC and the material will withstand pressure. At very cold temperatures, the material will become brittle and the impact strength will decline.

Q&A About Thermoplastic Valve Class Ratings

Q. How do the terms “Schedule 40” and “Schedule 80” relate to PVC valves?

A. Where they’re installed. These terms refer to pipe wall thickness, not valve wall thickness; the higher the Schedule number, the thicker the pipe wall. Equally important, is that the inside diameter gets smaller as wall thickness increases, while the outside diameter remains the same. That’s why a Schedule 80 valve can be installed onto a Schedule 40 piece of pipe, and vice-versa.

Q. Since Schedule 40 and 80 are terms that describe pipe, why use them to describe thermoplastic valves?

A. It has become standard industry practice to describe PVC valves using these pipe-descriptive terms. Remember, all valves are rated by pressure, not wall thickness. Polyvinyl Chloride (PVC) resin is typically tinted white and is used to make Schedule 40 PVC pipe, valves and fittings. Unplasticized Polyvinyl Chloride (UPVC) resin is typically tinted dark gray and is used to make Schedule 80 UPVC pipe, valves and fittings. Since in both instances, the same color resin is used to make both the pipe and valves, the terminology describing the pipe has inaccurately “carried over” to describe the valves.

Q. Since all of the PVC ball valves fit onto both Schedule 40 and Schedule 80 PVC pipe, then why have separate Schedule 40 and Schedule 80 ball valves?

A. For general piping applications, such as potable water, the Schedule 40 valves have EPDM seats and stem o-ring. For the commercial or industrial applications, such as chlorinated pool water or acids, the Schedule 80 valves have superior Teflon® seats and EPDM stem o-ring (or Viton®). In Schedule 40 valves, the use of EPDM seats with traditional PVC resin offers a reliable, competitively priced valve.

Note: Since PVC valve ratings are technically independent of PVC pipe schedule ratings, FNW does not use schedule ratings to describe valve products. Pressure and temperature limits should always be referenced prior to installing any PVC valve into an application.