



MATERIAL COMPARISON



PRECISELY ENGINEERED. REAL-WORLD TESTED.

Optimization without Overengineering: Why EPCs Should Specify Corzan® CPVC

Not all plastics are created equal. Chlorinated polyvinyl chloride (CPVC) has performance and material qualities that allow it to handle higher pressures, temperatures and chemical loads than many other plastics. Formulated by Lubrizol, the inventor of CPVC, Corzan® CPVC has been precisely engineered and real-world tested to exceed standards, meet regulations and stand the test of time in the most demanding industries. From superior formulation to extensive in-house and third-party testing, Corzan CPVC is a material to trust.

CPVC's Material Advantages

CPVC is a polyvinyl chloride (PVC) homopolymer that has been subjected to a chlorination reaction. A high-quality product like Corzan CPVC may have 63-69% chlorine content, which, along with proprietary additives, provides additional protection and strength.

Corzan CPVC's material advantages include:

- Inherent **corrosion resistance**
- Suitability for **potable water** and **plenum rated**
- A smooth interior surface inhospitable to biofilm and *Legionella* growth
- Increased temperature resistance
- Better **burn resistance**, low flame-spread and smoke generation and self-extinguishing
- Increased **chemical resistance**, standing up to most acids, bases and salts, and **tested for suitability** against over 500 chemicals and compounds
- **Multiple joining methods** without hot work

Corzan CPVC vs. Other Materials

Are assumptions about the physical characteristics and long-term performance of plastics founded in fact? Let's see how CPVC compares to other materials for industrial piping systems.

CPVC vs. Stainless Steel and Carbon Steel.

Steel is a very common choice for industrial piping. Carbon steel is often used, but when corrosion is a main concern, stainless steel will be specified. But a significant drawback, beyond a steep initial cost that contributes to a **high total cost of ownership**, is weight. An equivalent length of 4-inch, Schedule 80 stainless steel pipe weighs 3.5x more than 4-inch, Schedule 80 Corzan CPVC. Metal also requires hot work to join. This and metal's weight increase safety risks and costs during installation and maintenance. In cases that don't specifically call for the performance properties of stainless steel, Corzan CPVC can deliver reliable service at a competitive cost and requires no skilled welders for hot work during installation and has significantly greater corrosion resistance than carbon steel.

CPVC vs. PVDF

Polyvinylidene fluoride (PVDF) is trusted not simply for its high purity but also for its excellent chemical resistance, mechanical strength and thermal tolerance. Like stainless steel, PVDF is often the most appropriate choice for certain industrial applications requiring very high, sustained service temperatures (exceeding 250°F/121.1°C) and exceptional purity. However, **Corzan CPVC shares many desired performance qualities**, including low thermal conductivity, corrosion resistance and chemical resistance.

But unlike PVDF, CPVC doesn't require costly fusion joining and can instead use solvent welding and often has a shorter lead time than PVDF. CPVC helps avoid overpaying when the additional benefits of PVDF would be superfluous to the application in question.

CPVC vs. PVC Pipe

Though they share a chemical foundation, CPVC's additional chlorine and additives allow CPVC to remain reliable at significantly higher temperatures and pressures and to deliver broader chemical resistance and impact strength than **polyvinyl chloride** (PVC). When an application is near the upper limit of PVC's capabilities, fluctuating conditions can exceed PVC's physical limitations and introduce unnecessary risk of failure.

CPVC vs. PP-R/PP-RCT

Polypropylene random copolymer (PP-R) and polypropylene random copolymer with modified crystallinity and temperature resistance (PP-RCT) have gained recent popularity for industrial use. While both PP-R/RCT and

CPVC are appropriate for use with water and have good chemical compatibility, corrosion resistance and low heat conductivity, **Corzan CPVC outperforms PP-R/PP-RCT when exposed to flame** and does not rely on sacrificial antioxidants to protect it from degradation. CPVC also can be joined via multiple methods, including solvent welding. Polypropylene products, by contrast, must be fusion welded, which requires special machinery and operators.

Corzan CPVC vs. Other CPVC

Each CPVC compound maker uses a proprietary process and additive formula to create their product. Corzan CPVC has been expertly formulated over decades to deliver **the best CPVC performance**. Each batch is traceable to a single manufacturing location in Kentucky to ensure consistent performance and quality. Lubrizol also works only with leading partner manufacturers across North America that have a proven track record of quality and reliability to turn the compound into corrosion-resistant piping materials, high-temperature piping systems and Corzan CPVC fittings.



Corzan CPVC Industrial Piping Systems

Corzan CPVC has a decades-long track record of reliable use in industrial settings that include:

- **Chemical Processing**
- **Data Centers**
- **Mineral Processing**
- **Power Generation**
- **Semiconductor**
- **Water/Wastewater Treatment**

Because of its **outstanding resistance to all types of water** and NSF/ANSI 61 approval, Corzan CPVC is also a strong choice for **plumbing**, from the tie-in to the tap.



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