CASE STUDY

CORZAN®

LUBRIZOL ADVANCED MATERIALS
Founded 1942

TYPE OF CONSTRUCTION:
Plant Expansion

INSTALLATION TYPE:
New

CORZAN® CPVC FOR MANUFACTURING PIPE AND FITTING MATERIAL

Lubrizol relies on Corzan® CPVC performance capabilities for its Kentucky production facility

One of the best ways for a piping manufacturer to confirm its product's performance is to install it in a range of applications within its own production facility. Lubrizol Advanced Materials depends on Corzan CPVC piping at its 41-acre Louisville, Kentucky facility, which employs 134. The plant produces TempRite CPVC compounds used in FlowGuard Gold®, BlazeMaster® and Corzan systems around the world.

The site is also home to Vycar™ Latex Emulsions and produces coatings for applications globally.

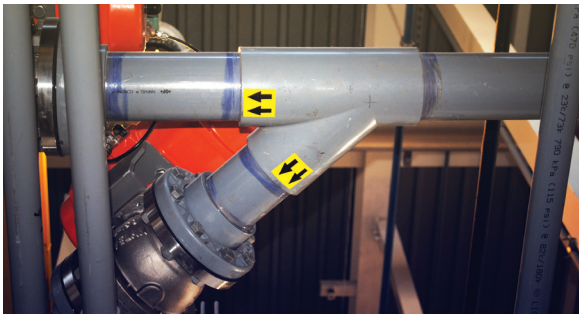
The Louisville production facility opened its doors in 1942 under BF Goodrich®, the plant's original owner. Lubrizol began commercially producing CPVC at the site 20 years later and implemented a $108 million expansion in 2013.

The need for a corrosion-resistant alternative to exotic metals

Lubrizol's TempRite CPVC resin process includes acidic and corrosive materials that generally require exotic piping materials able to withstand contact with the unstripped, acidic resin slurry. Metals such as titanium, however, are very expensive and still tend to undergo the same deterioration as other piping materials.

"TempRite is a 24-hour, seven-day-a-week operation that has often been pushed to capacity," said Chris Costin, TempRite resin area specialist. "The piping system used must be highly reliable as it transports the manufactured material a distance from reaction to drying. One failure can result in a costly process shutdown that impacts our ability to service customers."

Chemical resistance was also a consideration since hydrochloric acid is produced as a byproduct of the CPVC resin manufacturing process. When designing the piping system, Lubrizol relied on the Corzan Chemical Resistance Chart to determine Corzan CPVC's suitability for hydrochloric acid and other chemicals. The piping system also had to be able to withstand high levels of heat since the acidic resin slurry is transferred at elevated temperatures.



Corzan CPVC meets application and longevity requirements

Lubrizol selected Corzan CPVC piping for the TempRite resin production area in 1987. The previous system was comprised of titanium and various lined piping components.

Corzan CPVC offered purchase price advantages over titanium and other metal piping without sacrificing performance. Schedule 80 Corzan CPVC piping cost approximately 93 percent less than Grade 2 schedule 80 titanium piping and about 46 percent less than schedule 40 stainless steel piping. The Corzan CPVC piping also offered savings throughout the system's life in the form of increased operational efficiency, less maintenance and minimal downtime.

The plant installed Corzan CPVC piping for applications in other areas, such as the Vycar drumming line, the TempRite compounding city water system and waste pump-out system. Corzan sheet material was utilized in an inclined plate clarifier application and the B-Line dryer scrubber system.

In addition, Corzan CPVC was installed extensively during the 2013 plant expansion as the primary piping system used for the G-Line. The material was also installed for the process water system in the master batch building.

"Space is usually the greatest challenge during redesigned piping system installations," said Joe Newton, TempRite manufacturing manager. "But, once the design was complete, Corzan CPVC was simple to install and required minimal time."

Corzan CPVC piping used in the Louisville plant ranges from ¼-inch to 8 inches in diameter, with 10-inch and 12-inch piping custom fabricated for the plant's reactor relief and wastewater neutralization systems.

Installers used solvent cement to form joints and attach flanges and fittings, 45-degree elbows, 90-degree elbows, "T" fittings and sweep "L" fittings. "T" fittings are used in straight runs of piping where the stream of material flow splits. Sweep "L" fittings create smooth, sweeping 90-degree directional transitions.

"The pipes and fittings are well suited to the plant's process conditions, which are harsh in terms of corrosion, abrasiveness and temperature," said Lynn Huff, TempRite compound area leader. "Corzan CPVC piping has proven a durable and cost-effective alternative to expensive exotic metals."

Projected life and future applications

The piping system's projected life varies and depends on the specific system installed and the application conditions. As an example, Corzan CPVC piping was installed in the facility's B-Line production unit in 1992 and most of the original piping is still in use today.

Lubrizol will use Corzan CPVC piping for any future applications where the product ensures cost-saving performance and longevity. For more information about Corzan CPVC and the Louisville piping application, visit Corzan.com. Free process suitability reviews and technical assessments are also available.

CORZAN®

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Corzan® CPVC
Marketing Department
9911 Brecksville Road
Cleveland, Ohio 44141-3201 USA
888.234.2436 ext. 7393
216.447.5000
216.447.5750 FAX

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