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# Effects of Disinfectant Practices

## Plumbing Fittings Made Using Sulfone Polymers

Solvay Specialty Polymers supplies high-performance sulfone polymers that are used in water-handling devices. These include Udel® polysulfone (PSU), Radel® polyphenylsulfone (PPSU) and Acudel® modified PPSU. These tough, rigid, high-strength polymers can be precision molded to tight tolerances and maintain their properties over a wide temperature range. They are highly resistant to mineral build-up, corrosion and prolonged exposure to hot chlorinated water.

Plumbing fittings made from these materials may be periodically exposed to elevated levels of chlorine in order to disinfect plumbing systems after an installation or after the potable water supply becomes contaminated.

Although disinfection practices may vary, one of the more common procedures is to dilute household bleach to a chlorine concentration of 50 mg/L to 100 mg/L. This solution then resides in the system for up to 24 hours at ambient temperature. Afterwards, the system is flushed with potable water.

Recent laboratory tests studied the impact of subjecting Udel® PSU, Radel® PPSU and Acudel® modified PPSU to common disinfection practices. Table 1 summarizes the test conditions used to evaluate the potential effects of various procedures. Test results showed that there were no indications of degradation in mechanical properties for any of the materials studied.

**Table 1:** Test conditions at elevated chlorine concentrations*

| Chlorine Concentration [mg/L] | Exposure Time [Hours] | Temperature [˚C (˚F)] | Applied Stress [MPa (psi)] |
|---|---|---|---|
| 5,250 | 24 | 82 (180) | |
| 525 | 96 | 82 (180) | |
| 50 | 168 | 82 (180) | 27 (4,000) |
| 2,400 | 168 | 23 (73) | 27 (4,000) |

** Test conditions available upon request.*


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