



BEWARE OF CPVC PIPE USED IN COMBINATION WITH STEEL PIPE IN FIRE SPRINKLER SYSTEMS

We have become aware of numerous failures of CPVC pipe in fire sprinkler systems where CPVC is used in combination with steel pipe. Through our involvement in the aftermath of these pipe failures and our work with chemists and other consultants conducting failure analysis, we have learned that the failures were caused by contamination of the CPVC pipe with petroleum based products introduced into the fire sprinkler systems through poor installation practices.

CPVC is plastic and, like most other plastic, is very susceptible to degradation and weakening when exposed to petroleum products. Manufacturers often coat steel pipe with petroleum based oil for corrosion protection during storage and handling and steel pipe is often cut in the field and threaded utilizing petroleum based pipe thread oil. If these protective oil coatings or pipe thread oils are not removed from steel pipe used in combination with CPVC pipe in a fire sprinkler system before the steel and CPVC pipes are connected, oil will flow with water from the steel pipe into the CPVC pipe when the system is pressurized. The oil will then rise to the top of the inside of the CPVC pipe and will be absorbed into the pipe wall. This will weaken the pipe and cause pinholes or cracks, allowing pressurized water to escape. As water escapes, pressure in the fire sprinkler system will fall, the fire pump will be activated and flooding is likely to occur.

There are other potential causes of CPVC pipe failure which are unrelated to the combined use of steel and CPVC, but still warrant attention. These include pinholes and cracking due to the excessive use of pipe dope; cracking due to improper clamping, excessive bending or abusive handling; and defectively manufactured pipe and fittings.

This Client Alert is intended to share our experience in dealing with CPVC pipe failures in the hope that it may help contractors avoid similar problems. We thank those clients who graciously granted us permission to disclose information obtained as a result of their difficulties for the benefit of their colleagues and the construction industry in general.

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