

Technical Bulletin #240322

CPVC for Grease Waste

An Appealing Cost Effective Alternative?

Historically, engineers and plumbing designers have specified either cast iron soil pipe or Sch 40 PVC for grease waste lines in sanitary drainage applications. Both of these products are code compliant and readily available from most plumbing wholesalers. There are other materials that meet the code and will provide a good service life, but considerations such as price and additional installation requirements have rendered these alternative materials as second tier options.

While both are widely used, PVC and cast iron soil pipe with a traditional asphalt emulsion coating do have downsides in grease waste lines. PVC is limited to 140°F. It is not uncommon for grease waste lines in commercial kitchens to experience temperature spikes well over 140°F. PVC is not an effective material option when boiling water from a steam jacketed kettle is dumped down the drain. On the other hand, traditional cast iron soil pipe can suffer corrosion issues when the grease interceptor is undersized or improperly serviced. In this scenario, hydrogen sulfide gas can get trapped, and when it condenses, the top of the pipe can deteriorate. Also, cleaning chemicals that are corrosive to cast iron are often injected into the system to clean the line.

CPVC As An Alternative

In an effort to circumvent the shortcomings of PVC and traditional cast iron soil pipe, some specifiers have opted for the use of Sch 40 Chlorinated Poly Vinyl Chloride, commonly referred to as CPVC. These specifiers cite the fact that CPVC is capable of conveying effluent up to 220°F in a gravity application. They also assume that CPVC has the same chemical resistance capabilities as PVC.

Unfortunately, there are problems with this alternative spec.

Considerations When Choosing CPVC

Sch 40 CVPC is manufactured to ASTM F2618, the *Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Fittings for Chemical Waste Drainage Systems*. As the title of the standard suggests, piping systems manufactured to this standard are exclusively listed for chemical waste drainage applications. They are not listed for sanitary drainage applications. Chemical waste drainage is defined as: the routine disposal of a wide variety of hot and cold chemicals in relatively small quantities in a gravity drainage system accompanied by water sufficient for the purpose of dilution and flushing. Grease waste clearly does not qualify as chemical waste. Additionally, ASTM F2618 is not referenced in the material tables found in Chapter 7 of the International Plumbing Code and the Uniform Plumbing Code. Specifying product manufactured to ASTM F2618 is inconsistent with its listing and violates the plumbing code.



CPVC pipe that suffered ESC from contact with FOGs

CPVC Is Not The Same as PVC

Furthermore, while having similar sounding names, PVC and CPVC materials have significantly different chemical resistance capabilities. Multiple manufacturers and compound providers classify effluents like fats, oils, and greases (FOGs) as “Not Recommended”, “No Data Available”, or “Caution” for CPVC piping systems in their chemical capability charts. They also warn that exposure to certain FOGs under stressful conditions can cause CPVC to experience environmental stress cracking.

Examples of stressful conditions include high temperatures, thermal expansion/contraction, and improper alignment during installation. Grease waste lines are certain to be subjected to one or more of these conditions. Furthermore, the interference fit between the OD of a pipe and the ID of a tapered fitting hub, by design, generates stress on the pipe and fitting.

A closer examination of most CPVC manufacturers’ chemical resistance information will reveal that CPVC is not suitable for continuous drainage of FOGs, and grease



Commercial Kitchen Grease Interceptor

What To Specify?

Given these considerations, CPVC piping systems are not a durable, viable, or code compliant material for grease waste lines. Products like enhanced coated cast iron soil and stainless steel should be specified for these applications. Both of these materials are designed to meet the demanding requirements of aggressive DWV applications and are approved for such service in the model plumbing codes.



Pipe clogged with fats, oil and grease

See the Charlotte Pipe and Foundry Plastics Technical and Installation Manual available at www.charlottepipe.com for additional information.

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