Stainless Steel *VS.* PVC/CPVC

Topic	UL 1738 Stainless Steel	PVC/CPVC
Performance and Safety	• Large overall Factor of Safety • No thermal expansion issues • Not susceptible to environmental stress cracking • Long history of proven reliable performance • Superior strength, no loss of structural integrity • Designed for positive pressure	• Minimal overall Factor of Safety • No provision for thermal expansion (2-3 times greater expansion rate than stainless steel) • Susceptible to environmental stress cracking (aging and embrittlement process results in leakage potential) • Cracking and/or failure of solvent welds may cause leakage • Possible degradation from UV light exposure • Toxic odors if severely overheated
Temperature Limitations and Concerns	• Maximum normal use temperature of 600°F but can withstand much higher temperatures	• Flue gas temperatures may cause PVC & CPVC to reach their "Heat Deflection Temperature" (HDT) limits: approximately 149°F (PVC) and194°F (CPVC) • Plastics begin to soften/lose strength when HDT is exceeded. Some boilers/water heaters barely qualify to use PVC/CPVC, yet are known to produce higher flue temperatures as they age, resulting in HDT's being exceeded & possible product failure, including stress cracking.
Available Technical Support	• Extensive technical support available from the manufacturer	• Little or no technical support available (for use as a vent system)
Installation	• Fast, safe and easy product installation • Complete instructions provided • Laser welded seams and factory installed gaskets	• Field preparation required (cutting, cleaning, priming, solvent welds and curing) • PVC/CPVC manufacturers do not provide installation instructions for flue gas venting applications
Codes /Test/Standards	• UL 1738 tested, listed and labeled for the application • Meets all code requirements (including fire codes)	• Not listed to UL 1738 for gas appliance venting • Performance concerns with through penetrations (firestop locations) • Defined as a combustible and has no flame/smoke rating • Must be fire wrapped within a plenum space (adds material/labor costs)
Application Versatility	• Wide range of applications • Long term proven performance with Cat II, III, & IV appliances	• Limited applications due to temperature limitations • No double wall option • Not designed or endorsed by PVC/CPVC pipe manufacturers for venting flue gases
"Green" Contributions	• Recycleable and made from recycled steel	• Possibility of chloride leaching and long term leakage • PVC, when utilized in inappropriate applications, can be very damaging to the environment and human health
Warranty	• Factory Warranty	• No Warranty

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