



The Significance of ASTM Cell Class As Compared to CPVC “Hyped Pipe” Systems

Let’s get to the truth in understanding the significance of performance regarding ASTM Cell Class and product strength in CPVC piping systems. First off, a piping *system* is typically composed of pipe, fittings and valves. These are produced by different processes that require different CPVC material compounds. Pipe is a cylindrical tube produced by an extrusion process while valves and fittings are injection molded in a variety of shapes. Of these, pipe bears the least stress load since it is simply a straight tube conveying fluid flow. **The greater majority of system stress is realized at valves and change-of-direction fittings** since they must handle the pressure and velocity forces encountered in stopping and bending the flow path. This is where the importance of strength and cell class significance should be focused in system performance – not on pipe. Competitor “High Performance (HP)” system *fittings* have the conventional CPVC Cell Class of **23447** required in product standards, regardless of claims for that of pipe materials. *Only Spears® uses valve and fitting materials with a higher CPVC Cell Class of 23567.*

Spears® CPVC Material Advantage

A simple overview of CPVC material “Cell Class” is essential to understanding this advantage. ASTM D1784, *Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds*, establishes various material property categories with increasing numerical designations assigned according to capabilities specified in the standard. This is the “Cell Class”, as typically stated below:

Conventional CPVC material Cell Class property designation for valves and fittings is:

Spears® CPVC material Cell Class property designation used for valves and fittings is:

CPVC Material
Impact Resistance
Tensile Strength
Modulus of Elasticity
Deflection Temperature
 2 3 4 4 7

CPVC Material
Impact Resistance
Tensile Strength
Modulus of Elasticity
Deflection Temperature
 2 3 **5** **6** 7

The Cell Classification for Spears® valve and fitting material has a significantly higher Tensile Strength and Modulus of Elasticity, Certified by NSF® International. The increase in tensile strength means **over 14% stronger valves and fittings**, while the increase in modulus means valves and fittings have **over 22% greater resistance to deformation** as compared to product produced from conventional CPVC materials. *Simply put, Spears® valves and fittings are stronger!*

What about a “pressure rated” fitting material?

Competitor claim to a PPI pressure rated fitting material is based on tests of conventional 23447 Cell Class **CPVC material formed into pipe – no tests of actual “fittings” was involved. As a result, this “pressure rated” fitting material has little significance in the real-world performance demands placed on valves and fittings** over any other conventional CPVC products – **a good example of Marketing as opposed to true Manufacturing benefit!**