NSF Standard(s) Impacted: NSF/ANSI 14, Section 5.3

Background:

NSF/ANSI 14, Section 5.3 currently specifies:

5.3 Requirements for PVC resins

Resins intended for use in PVC fitting compounds shall have an inherent viscosity of at least 0.65 when tested according to ASTM D1243. Resins intended for use in PVC pressure pipe compounds shall comply with the applicable requirements of PPI TR-3.

NOTE – PPI TR-3 currently limits the inherent viscosity of PVC pressure pipe resin to a minimum of 0.88.

This statement is incorrect and misleading:

First, PPI TR-2 has a specific section restricting all PVC resins intended for use in pressure pipe applications to have an IV with a range of 0.88 – 0.96 but specifically for the PPI PVC Range Composition. PPI TR-2, Section “B.1 PVC Resin” specifies that all resins that shall be used in the “PPI PVC Range Composition” shall have an IV between 0.88 and 0.96. This restriction is to ensure that all resins from various producers have similar fundamental characteristics when allowed to utilize the “PPI PVC Range Composition”.

Second, PPI TR-3 does not have a specific section restricting all PVC resins intended for use in pressure pipe applications to have an IV equal to or greater than 0.88. PPI TR-3, Section E.4.2.4 within Section E.4 – SUBSTITUTION OF RESIN IN POLY(VINYL CHLORIDE) PVC PLASTIC PIPE FORMULATIONS specifies that the requirements for the resins shall be between 0.88 and 0.96. This is to justify equivalency between the substituted and the original resin. However, long-term strength testing (Part A HDB or Part B MRS) does not include requirements restricting the inherent viscosity of PVC resins to a specific range.

Neither of these resin restrictions for pressure pipe compounds should apply to a unique PVC pipe formulation employing a resin with an IV outside of the 0.88 to 0.96 range. If a resin IV is found to reside either below 0.88 or above 0.96, can process adequately and can comply with the appropriate requirements for pressure pipe applications there should be nothing to prevent its use in pressure pipe.

In addition, PPI TR-4 lists compounds specifically for molding grades in Section I Part A or Part B. Currently, there are active listings for molding grades in Part B Table I.B.1 (molded specimens), Table I.B.2 (extruded pipe specimens) and in the past Table I.B.3 (molded plaque specimens) also listed molded compounds.
Recommendation:

5.3 Requirements for PVC resins

Resins intended for use in PVC fitting compounds shall have an inherent viscosity of at least 0.65 when tested according to ASTM D1243. Resins intended for use in PVC pressure pipe compounds shall comply with the applicable requirements of PPI TR-3. PVC pipe resins intended use in the PVC Range Formulation shall comply with PPI TR-2, B.1 PVC Resin. The substitution of PVC resins in an existing listed formulation shall comply with the applicable requirements of PPI TR-3, Section E.4.2.4.

NOTE – PPI TR-3 currently limits the inherent viscosity of PVC pressure pipe resin to a minimum of 0.88.

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