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PPI TR2 Listing Process Explained (PPI PVC Range Composition)

Note, the following is only an example. Actual steps depend on the ingredient being listed. Should you have questions regarding the process, please contact the Plastics Pipe Institute Hydrostatic Stress Board (PPI HSB) Chairman via the PPI HSB web page.

Listing Process (X-ingredient)

1. ***Ensure the latest versions of PPI TR2, PPI TR3 and all applicable standards are used.***

2. ***Determine what type of listing is needed***
   i. **PPI TR2 Part A (Pre-Qualified** – ingredient meets property requirements in Part A) or
   ii. **PPI TR2 Part B (Functional Equivalent** – ingredient does not meet property requirements in Part A)
   iii. Some **compound or pipe manufacturers** list their own **fixed formulation (PPI TR3 requirements**). To qualify in these formulations, discuss with them directly.
   iv. **Combination Ingredient Packages**: only Pre-Qualified Ingredients are in the package.
   v. **Functional Equivalent Packages**: only one Functional Equivalent Ingredient is allowed in the package. All others are Pre-Qualified Ingredients.

3. ***PPI TR2 Part A.2 – A.6: data requirements***
   i. **If the ingredients meets the predefined properties** per PPI TR2 Part A.2 – A.6, **hydrostatic stress data** is not required.
   ii. **Data confirming the predefined properties is required** (detailed in the applicable PPI TR2 Part A). *Report test method used, e.g. Congealing Point ASTM D938.

PPI TR2 Table 1: PPI PVC Range Composition for listing at 73°F (23°C)

Ingredient	Qualification Requirements		Allowable Content Range (in parts per hundred parts of resin)
	By Pre-qualification	Document and Part to reference *Experimental level requirements in PPI TR3	
PVC Resin	No	Compliance to PPI TR2 B.1 *Reference PPI TR3 A.1 for the hydrostatic data experimental test levels.	100
Heat Stabilizer	No	Compliance to PPI TR2 Part B.2	0.3 – 1.0
Calcium Stearate	Yes, A.2	For Functional Equivalent Ingredients: Compliance to PPI TR2 Part B.2	0.4 – 1.5
Paraffin Wax	Yes, A.3		0.6 – 1.5
Polyethylene Wax	Yes, A.4		0.0 – 0.3
Titanium Dioxide	Yes, A.5		0.5 – 3.0
Calcium Carbonate	Yes, A.6		0.0 – 5.0
Process Aid	No	Compliance to TR2 Part B.2	0.0 – 2.0
Colorant	No	Compliance to TR2 Part B.2	See listing in PPI TR2 of qualified colorants as reference
Combination Ingredient Packages	Yes	All ingredients comply with the applicable section in PPI TR2 Part A and meet the allowable content range per PPI TR2 Table 1.	
Functional Equivalent Ingredient Packages	No	Compliance to PPI TR2 B.2 *Reference PPI TR3 A.1 for the hydrostatic data experimental test levels.	

PPI TR2 Part B.2- Heat stabilizer, Process Aid, colorant and other components Not Complying to Part A: data requirements

i. **PPI TR2 Part B.2a:** For an initial listing such as an **Experimental listing**, E2 data or higher is required.
   - All Experimental listings must continue to progress to a Standard Grade.
   - One lot with the subject ingredient at the maximum proposed use level and lower level if greater than zero. See PPI TR2 Part B.2 for all details.
   - Refer to PPI TR3 Part A.2 Requirements for Grades at 73F (23C) and Part A.1.2.1.

ii. **PPI TR2 Part B.2b: For a Standard Grade:**

Required Lot	Lot1	Lot2	Lot3
Hydrostatic data level	E10	E2	E2

- One lot must be at the minimum proposed use level.
- All lots must be formulated with different qualified PVC resins (see listings in PPI TR2).
- The formulation for the lots must contain ingredients listed in Table I (PPI PVC Range Composition for listing at 73F/23C).
  - For all ingredients listings in PPI TR2, there are two tables: One for Pre-Qualified and one for Functional Equivalent.
  - Choose from the Pre-Qualified ingredient tables if your product is a Functional Equivalent Ingredient.
- Note, if a Functional Equivalent Ingredient is being qualified, no other Functional Equivalent Ingredients are allowed in the formulations.
- Note, only one liquid dispersed colorant is allowed per formulation.

iii. If a customer is requesting to qualify your product for the PPI PVC GRC, possibly discuss substituting your product for the ingredient they are currently using in their formulation. Note, use levels must comply with Table I (X-ingredient allowable content range, low – high). It may be possible to qualify at a use level outside of this range via a HSB Special Case.

iv. All information (formulation, supplier names, etc.) are kept confidential with the requester. This is important and is judiciously practiced.

4. Submit a request on company letterhead and include the following items

i. Detail the request in a cover letter. Templates available on the PPI HSB web section for download and use: http://plasticpipe.org/hsb/hsb-tr2-listing-requirements.html.

ii. Submit the following data:
   - **Part A.2 – A.6:** The properties defined in the applicable PPI TR2 Part. Include the test method number used, e.g. Congealing Point ASTM D938, or
   - **Part B.1 and B.2:** The formulations of all three lots (e.g. use levels of all ingredients, the three PVC resins used, etc.), hydrostatic stress data, cell classification data and a completed checklist (use the template available on the PPI HSB web section).

iii. Include the name of the test lab:
- There are PPI member companies on the PPI web page who conduct testing. It is not a requirement to use one of these labs but it is recommended to use a test lab familiar with pipe testing, PPI TR3 and PPI TR2 requirements and applicable standards (e.g. ASTM D2837 (regression methodology), D1784 (PVC Cell classification testing), ASTM D1598 (sustained pressure testing, etc.).

5. ***PPI HSB Chairman will place the request in the review queue, review the request/ data and then communicate the status once the review is completed. Pending on the dataset, the status could result in one of the following:***
   i. **No authorization.** *Note, it is important to ensure the correct data and paperwork is submitted to prevent this scenario. Please do not hesitate to email/call to clarify the details on the PPI HSB Listing process.
   ii. **Authorization of an Experimental Grade:** the data complies with the minimum requirements to be listed in the program.
   iii. **Authorization of a Standard Grade:** the data complies with the full requirements of PPI TR2 and PPI TR3.
   iv. **HSB Special Case:** something unique in the dataset/formulation and/or other requires review and authorization for a listing by the full HSB. These are presented by the requestor during one of the two HSB meetings per year (spring/ fall). A request for an HSB Special Case can be made in advance to the HSB Chairman. See HSB web page for explanation of this process: http://plasticpipe.org/hsb/hsb-request-special-case.html.

Key Documents
- PPI TR3 (requirements, policies, procedures), PPI TR2 (ingredient listing document)
- Applicable standards such as ASTM D1784 (to establish the cell classification), ASTM D1598 (test method for the sustained pressure testing), ASTM D2837 (regression methodology).

PPI TR2 (on the PPI HSB web page: http://www.plasticpipe.org/hsb-listing.html)
- On bottom of the Hydrostatic Stress Board page, "Current TR2". **This action generates a copy of PPI TR2 with all active listings and TR2 policies.
- PPI TR2 Part I, II and III: definitions and explanations of the listing types in TR2
- TR2 Part A: properties of ingredients that would qualify as "Pre-Qualified ingredients" to include Combination Packages.
- TR2 Part B (B.1 and B.2): PVC Resin, functional equivalent and Functional Equivalent Ingredient Packages.
- TR2 Part C. Mixing
- TR2 Listings: PVC, Heat Stabilizers, Table 'A' Ingredients (Pre-Qualified – optional to list), Table 'B' Ingredients (Functional Equivalent – required to list), Table 10 (Combination Ingredient Packages), Table 11 (Functional Equivalent Ingredient Packages).

