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# LiquaTile 1172

100% Solids Epoxy Coating (Replaces NSP-120)
Technical Data Sheet (TDS)

CLASSIFIED C UL US WATER QUALITY

**LiquaTile 1172**
**NSF/ANSI 61**
**<MH60088>**
**NSF/ANSI 372**
**<MH60088>**

## UL Water Quality
Certified to US & Canadian NSF/ANSI Standard 61 & NSF/ANSI Stndard 372

## 100% Solids Epoxy
Zero VOC, Very Low Odor

## Return to Service in 5 Days
No forced curing or specialized equipment required

## Innovative New Formulation
Minimizes Use of Benzyl Alcohol

## Easy Application
May be applied with Brush, Roller, or Airless Spray

## Certified
- Tanks 50 gallons and above
- Pipes 16 inches and above
- No Lead

### PRODUCT DESCRIPTION

LiquaTile 1172 is a 100% solids epoxy coating that is UL Water Quality Certified to US and Canadian NSF/ANSI Standard 61: Drinking Water System Components – Health Effects as well as NSF/ANSI Standard 372: Drinking Water Systems Components – Lead Content for use as a protective barrier on properly prepared steel and concrete storage tanks with volume greater than 50 gallons and pipes 16" or larger.

### STORAGE

Keep well sealed containers in a cool, dry place. Avoid contact with sources of extreme hot or cold temperatures as well as direct sunlight. Containers should be stored at 40°F to 95°F. Shelf life is one (1) year if exposed to the above conditions.

### SAFETY

Refer to the Safety Data Sheets carefully before use. All applicable federal, state, local, and facility safety guidelines must be followed during the transport, storage, and application of this material. Improper use and handling can be hazardous to people and property.

### DISCLAIMER

This Document does not purport to address all applicability and safety concerns, if any, associated with its use. It is the responsibility of the user to determine applicability of the information and to establish appropriate safety practices.

### PURCHASING

This product is sold exclusively through:

Progressive Epoxy Polymers, Inc
www.epoxyproducts.com

## SPECIFYING CONSIDERATIONS

| | |
|---|---|
| **Specifying LiquaTile 1172 is recommended when...** | • very low odor is required.<br>• a zero VOC coating is required.<br>• very high wear resistance and abrasion resistance is required.<br>• fast return to service period is required. |
| **Specifying LiquaTile 1172 is NOT recommended when...** | • area is subject to high moisture vapor transmission. Consult WCC in this situation.<br>• when color stability in sunlight is required. LiquaTile 1172 will yellow and chalk under direct sunlight. Although this will not affect the physical properties of the coating, it will affect it's appearance. |
| **Comparison with Standard Products of the Industry** | • LiquaTile 1172 has innovative 100% solids technology. No solvents or the accompanying coating porosity to worry about.<br>• Unlike most coatings in the direct water contact category, LiquaTile 1172 has passed the very stringent 50 gallon minimum test. This means you can be assured of a very sanitary lining where chemical leaching is not an issue.<br>• LiquaTile 1172 is formulated with extremely low levels of benzyl alcohol and does not contain any BGE (Butyl Glycidyl Ether).<br>• LiquaTile 1172 does not require forced curing or other specialized equipment to attain its high performance.<br>• LiquaTile 1172 does not require expensive plural component spray equipment for application.<br>• LiquaTile 1172 is self priming on properly prepared steel substrates |

## Coverage:

Three quart kit covers approx. 75 - 85 sf.

Best application is by short nap roller.

Cure for 5 days before Approved for Potable Water

## SOLID (CURED) PHASE PHYSICAL DATA

| PROPERTY | | TEST METHOD |
|---|---|---|
| **Certified Colors** | Bright White (WH1A)<br><br>High | ASTM 2244 |
| **Gloss** | 84mg loss | ASTM D523 |
| **Abrasion Resistance** | 9% | ASTM D4060 |
| **Elongation** | Concrete Fails | ASTM D638 |
| **Pull Off Adhesion to Concrete** | 1,078 psi | ASTM D4541 |
| **Pull Off Adhesion to Steel** | 79 | ASTM D4541 |
| **Hardness (Shore D @ 7 days)** | 0.08 perm-in | ASTM D2240 |
| **Water Vapor Permeability** | 2,110 psi | ASTM E96-13 |
| **Tensile Strength** | 12,000 psi | ASTM D638 |
| **Flexural Strength** | 920,000 psi | ASTM D790 |
| **Modulus of Elasticity** | 23°C | ASTM D695 |
| **UL Certified Max. $H_20$ Use Temperature** | 108.4 cm2/L | |
| **UL Certified Surface Area/Water Volume** | 50 gallons (No Maximum) | |
| **UL Certified Minimum Tank Size** | 16" (No Maximum) | |
| **UL Certified Minimum Pipe Diameter** | 18 mils | |
| **UL Certified Applied System (DFT)** | | |

## EXPLAINING THE TESTS AND THEIR RELEVANCE

**ASTM D523** Gloss is a measurement of the 'perceptible shininess' of a substrate. It is measured using a special tool called a Gloss Meter that calculates the value of specular reflectance measured in GU (Gloss Units). A Gloss Meter shines light on the substrate at a specific angle (typically 20˚, 60˚, or 85˚) and then measures that light on the opposite side at the same angle (specular reflectance). When the emitted light is diffracted the reflected path changes angle and is not returned to the other side which will yield a lower GU number. The more light is reflected to the observer at the same angle the higher the gloss reading in GU (gloss units) and the more 'perceptible shininess' the human will see. The perception of gloss is dependent on the smoothness of the substrate to be coated, the thickness of the applied coating, and the final smoothness of the coated surface. While there is not a specific standard for naming gloss levels the following is a good general guideline: Flat (1–9 GU), Low Sheen (10–25 GU), Eggshell (26–40 GU), Semi Gloss (41–69 GU), Gloss (70–89 GU), High Gloss (>89 GU).

**ASTM D2244** Color is measured using a Spectrophotometer that mathematically defines a color as a point in a three dimensional space. This is defined using a CIELAB set of values. CIELAB uses three plots representing "L" (lightness/darkness), "a" (redness/greenness), and "b" (yellowness/blueness) values. The difference between two measured colors can be quantified or described using the ΔE value (pronounced delta E).

**ASTM D790** Flexural Modulus measures the stiffness (ratio of stress to strain) of a cured coating. Higher modulus yields a stiffer coating that will transmit stresses and strains more directly through the coating surface to the bond line. Low modulus materials will insulate the bond line much like flexible building foundations utilized in earthquake prone areas protect the rigid building from damage caused by movement. See also Flexural Strength.

**ASTM D790** Flexural Strength is measured using a 3 point (or sometimes even a 4 point) bend test. The test defines the amount of stress applied to a material at the point that it moves from a bend to a break (ruptures). The stress (3 point test) is defined as , where is the force applied at the fracture point, is the distance (length) between the support spans, is the width of the specimen, and is the thickness of the specimen.

**ASTM D695** Compressive properties include modulus of elasticity, yield stress, deformation beyond yield point, and compressive strength (unless the material merely flattens but does not fracture). A sample is placed between two plates that are compressed together at a uniform rate. The maximum load at the break point is recorded as well as stress/strain data. When a material does not break the numbers are highly subjective.

**ASTM D638** Elongation is the measure of the ability of a material to stretch. Higher elongation combined with high flexural strength allows a coating to take more punishment from movement without failure.

**ASTM D2240** Hardness describes the ability of a material to resist indentation. Hardness is measured using a Durometer which employs a needle that is impressed into the coating. The farther the needle impregnates the coating the lower the measured hardness. Many people mistakenly associate hardness with abrasion (or wear) resistance. While hardness can increase wear resistance of some materials it can also decrease it when a coating is so hard that it becomes brittle (like glass, a very hard but brittle material).

## EXPLAINING THE TESTS AND THEIR RELEVANCE (CONT.)

**ASTM D4060** Taber Abrasion is a test to determine a coating's resistance to abrasion. Resistance to abrasion is defined as the ability of a material to withstand mechanical action such as rubbing, scraping, or erosion. A coating is applied to a test panel, allowed to dry, and then weighed. The panel is placed on the Taber Abraser. A 1000 gram load is placed on each grinding wheel on the machine and then the wheels are allowed to sit on the coating surface. The machine turns the test panel for 1000 cycles as the grinding wheels abrade the coating. The grinding wheels are resurfaced at the beginning of each test and after 500 cycles. After 1000 cycles the test panel is weighed and the difference between the starting weight and the final weight is recorded. Many companies deceive potential customers by varying the test parameters. Sometimes you will see only 500 cycles instead of 1000. Many times the weight on the wheels is diminished. Or, a less abrasive wheel is used. For this test to be valid there must be 1000g weights, 1000 cycles, and CS-17 grade wheels must be used.

**ASTM D4541** Bond Strength is a measure of the force required to pull a coating off of a substrate.

## LIQUID PHASE PHYSICAL DATA

| PROPERTY | | | | TEST METHOD (if applicable) | |
|---|---|---|---|---|---|
| Mix Ratio (Volume) | 2 Parts A:1 Part B | | | | |
| Mix Ratio (Weight) | 2.13 Parts A:1 Part B | | | | |
| Weight (Mixed) | 12.8 lbs/gal | | | | |
| VOC Content (Mixed) | 0 g/l | | | | |
| Viscosity (Mixed) | 12,880 cps @ 50 rpm | | | ASTM D2196 | |
| Cure Schedule (ASTM D5895) LiquiTile 1172 (Standard Cure) | **Temp** | **Pot Life** | **Cure Time** | **Min. Recoat** | **Max. Recoat** |
| | 50°F | 120 minutes | 48 hours | 12 hours | 4 days |
| | 77°F | 60 minutes | 12 hours | 8-24 hours | 4 days |
| | 90°F | 30 minutes | 9 hours | 5-18 hours | 3 days |
| Gel Time @ 77F | 60 minutes | | | ASTM D2471 | |
| Recoat @ 77F & 50% RH | 6 Hours | | | | |
| Maximum Recoat @ 77F & 50% RH | 4 Days | | | | |
| Return To Service | 5 Days | | | | |
| UL Certified Applied System (DFT) | 18 mils | | | | |
| Theoretical Coverage to Achieve 9 mils DFT | 175 sf/gal | | | | |
| Shelf Life (Unmixed and Unopened Containers) | 1 Year | | | | |
| Packaging (Shipping Weight lbs.) | 3Q – ¾ gal unit – ½ gal Pt. A (4) / qt. Pt. B (2)<br>3G – 3 gal unit – 2 gal Pt. A (16) / 1 gal Pt. B (8) | | | | |
| Shipping | Part A: DOT Non Regulated Resin Compound, Class 55<br>Part B: UN3066, Paint Related Material, 8, III, Corrosive | | | | |

## EXPLAINING THE TESTS AND THEIR RELEVANCE

**ASTM D2196** Viscosity is the measurement of the resistance of a liquid to flow. The viscosity profile of the liquid is a factor in the proper installation of the liquid applied coating. The higher the viscosity the thicker the material will be. Viscosity can be affected by temperature, shear stress, or shear rate. The viscosity profile of a material can be classified as Newtonian, Thixotropic, Rheopectic, Pseudoplastic, or Dilatant.

- A Newtonian liquid (like water) would have the same viscosity no matter how much shear force or shear time (from mixing) was exerted on it.
- A Thixotropic material would decrease in viscosity as shear stress is applied to it over time. Once the material is allowed to rest the viscosity increases to its original resting state. Thixotropic fluids require time and shear to thin.
- Rheopectic fluids are the opposite of Thixotropic fluids. The longer shear is maintained on the liquid the higher the viscosity will rise. Rheopectic fluids require time and shear to thicken.
- Pseudoplastics are kind of like thixotropic liquids in that they get thinner when shear is applied. However, Pseudoplastic liquids thin and recover much faster and in more relation to the stress that is applied. Pseudoplastic liquids are more dependant on the force applied instead of the amount of time that the force is applied.
- Dilatant Fluids are the opposite of Pseudoplastic fluids in that they get thicker as more stress is applied. However, like Pseudoplastics the amount of force applied is the driving factor on thickening instead of the amount of time.

## EXPLAINING THE TESTS AND THEIR RELEVANCE (CONT.)

**ASTM D5895** The drying (cure) time of a coating can be measured by a Drying Time Recorder where a weighted Teflon stylus is dragged through the coating over time. The 4 stages of dry time (A=Set to Touch, B=Tack-Free Time, C= Dry-Hard Time, and D=Dry-Through Time) are then measured using a template that shows those times in hours.

**ASTM D2471** This ASTM test method has expired and a new one has not yet been approved by ASTM. This test utilized a machine to measure Gel Time by rotating a disposable spindle in 150grams (~110ml) of material until the gelation won't allow the spindle to turn

## INSTALLATION

### SURFACE PREPARATION

Bond strength is directly dependent upon the preparation, strength, and conditions of the substrate. All surfaces must be free of soluble salts. Concrete surfaces should be clean, porous, and textured. Steel surfaces should be blasted to SSPC-SP10 for immersion service and SSPC-SP6 for non-immersion service. Protect prepared steel from rusting prior to application. Substrate must be between 50°F and 90°F and at least 5°F above the dew point during installation and cure. Moisture vapor transmission from behind the coating will likely cause coating failure.

### APPLICATION

Material may be applied with a brush or roller

The material may be sprayed with the following equipment or equivalent:

| | |
|---|---|
| Manufacturer: | WIWA |
| Equipment Model: | 64:1 Professional, DuoMix 230 & 333 |
| Gun Model: | 500D |
| Spray Tip: | 523 |
| Hose: | 3/8", 50' length |
| Ambient Temperature: | 72°F |
| Spraying Pressure: | 3000 psi |
| Air Inlet Pressure: | 45 psi |