
LAARS Double Glass Lining for Custom Steel Tanks

Submittal Data

Laars double glass lining is a premium lining for hot water applications with temperatures up to 180°F. Because of the special formulation, the lining exceeds all ASHRAE testing target points.

When heated to the proper temperature, the material is bonded to the steel substrate which produces a superior, durable, resistant long lasting coating. When magnified, it can be seen that this lining has a unique bubble structure which is critical to allow the lining to expand and contract with the steel. It is applied using an automatic articulating spray head capable of maintaining consistent thickness throughout the vessel, resulting in 100% coverage. Each vessel has 20 mils +/- 2 mils of finished glass lining, allowing for a 10-year tank warranty.

Process:

Each vessel is prepared by being cleaned and sandblasted. An automatic sprayer then applies 20 mils of wet glass enamel to the inside of the tank. The partial vessel is then dried in a curing oven at 400° until all moisture is removed. At this point the dried enamel is called bisque and is semi bonded to the vessel wall. Vessels are then fired at 1500°, the melting point of the enamel, and “soaked” at that temperature for a period of time, which bonds the lining to the steel. After cooling, the process is completed a second time to achieve a thickness that is double that of the standard glass lining. Once complete, the lining is cooled, and the vessel moves to final assembly.

Testing:

Laars glass lining is tested under the following ASTM testing guidelines:

- **W-H-196 Test = 7.0 – 8.0 mg/in²:** This test consists of exposing the lining to a boiling (212°F) 4/10% solution of sodium bicarbonate for eight 18-hour cycles. Maximum weight loss after eight cycles is not to exceed 15 mg/in².
- **PEI T-21 Spot Acid Test = Class A:** This test is used to determine resistance to acids. The test area is examined for visible effects on the lining and is graded from Class AA (no sign of etching) to Class D (etched surface).
- **Impact resistance = Class 4 to 5:** The impact resistance test is used to determine the adhesive qualities of the lining to the substrate. It is graded from Class 1 (worst) to Class 5 (best). Class 3 is acceptable.
- **Hi-Pot Test = Less than 20:** The HYPO test is a measurement of the continuity of the lining (spark test). Fifty sparks or fewer are the acceptable count for the water storage industry.
- Thickness: 20 mils +/- 2 mils
- Adhesion: Class 4 to 5
- Resistance: Class A
- Tank Sizes: 24” diameter to 84” diameter, up to 262” long
- Maximum Temperature: 180°F
- Color: Cobalt Blue
- Anodes: One or more magnesium anode rods based on gallon size, or optional powered anodes