Tank Connection is an employee owned company and a premier global supplier of the top performance storage tank products available in the marketplace today. All of our products are produced in the U.S.A. We offer the most extensive product line in the industry including bolted RTP tank construction, shop-welded tanks, field-welded tank construction, aluminum geodesic domes, poster EWT’s, composite EWT’s, design, project management and field construction services.

Tank Connection is a global leader in engineering and manufacturing of bolted steel tanks that utilize fusion-bond epoxy powder coating systems. Our glass-fused-to-steel product line represents the next evolution in coating technology. Aqua AGT (Advanced Glass Technology) 2020™ is formulated to address problems witnessed in glass coatings provided by other suppliers in water storage applications.

Historically, glass coatings utilized for water storage applications have been found to develop major deficiencies. From spalling to pinholes and fishscale defects, suppliers of glass coated tanks have been slow to address their product defects. In the 1990’s, a significant number of glass tanks experienced fishscale defects in the northern U.S. As late as 2003, one glass manufacturer allowed up to 150 spalls on a single bolted steel tank panel as an acceptable quality standard.

Glass-fused-to-steel coatings can provide excellent performance in bolted, steel tank, water storage applications if all factors of formulation and application processes are maintained with precision. In water and wastewater storage applications, high-quality porcelain enamel formulations are required. This includes exact recipe formulation and the latest in high-tech furnace firing processes that provide consistent duplication with contingencies removed from the equation. Tank Connection’s focus is on providing a higher technology when porcelain enamels are selected for municipal and industrial water storage applications.
THE TANK CONNECTION ADVANTAGE

- Tank Connection has worked in conjunction with Porcelain Industries, the recognized experts in porcelain enamel formulations and application processes to develop the next generation of advanced glass coating technology.
- Our proprietary formulation process prevents fishscaling and spalling.
- The coating is flexible enough to accommodate the expansion and contraction of bolted steel water tanks.
- Our coating application process is precise and consistent. We utilize cutting-edge technology processes for the application of vitreous enamel/glass slip.
- The latest in technological advancements are used for our controlled firing process.
- The two major layers of glass coatings receive a two-fire process, not one-fire process. Tank Connection's two-fire glass process ensures the highest quality, glass-fused-to-steel porcelain enamel finish available.
- Tank Connection coating requirements meet or exceed AWWA D103 and EN28765:2016 requirements.
- Tank Connection is the leading expert in bolted RTP (rolled, tapered panel) steel tank design, which is recognized as the top performance bolted tank design available in the world today.

A SUPERIOR PROCESS

How important is the two-fire process for a water storage application?

In the application of high quality porcelain enamels, our two-fire coating process is one of the major factors for consistent, reliable success. The two furnace fire technology used by Tank Connection is highly superior to any single furnace fire process offered by other suppliers. The two-fire process essentially eliminates the probability for exposed pin holes with geometric performance over one-fire.

The Aqua AGT formulation utilizes a catalyst promoter (i.e., nickel oxide) in the ground coat formulation to prevent fish scale defects. Additionally,

Tank Connection utilizes a strong, high temperature base coat for improved bond strength, which is fired and becomes the substrate for the cover coat.

For the cover coat, we apply a proprietary TiO$_2$ infused glass, which is formulated with a controlled bubble structure to address spalling.

The two furnace firing process used by Tank Connection is highly superior to a one furnace firing process offered by competitor brands. The two-fire process essentially eliminates pin holes with geometric performance over one-fire. This results in the best glass/porcelain enamel coating in the industry.

**Exterior Coating**
- 10-14 mils
- 254-355 microns

**Interior Coating**
- 11-16 mils
- 279-355 microns

**Base Coat**
- Includes catalyst promoter (i.e., nickel oxide) at 5-7 mils

**Cover Coat**
- Includes formulation for exposed environment and color requirements at 5-7 mils

**Furnace fires the panel surface in excess of 1,500 °F**

**1st Fire**

**2nd Fire**
DEFINITIONS

**FISHSCALE:** Fishscale is a term that relates to a type of surface defect that occurs during the enamel firing process. When steel is heated, the solubility of hydrogen increases significantly. As a result, the breakdown of moisture into hydrogen and oxygen can lead to an increased amount of hydrogen in the steel during the firing process. During the cool down cycle, the solubility of hydrogen in the steel decreases, but it becomes trapped under the hard enamel coated surface. The pressure of this trapped hydrogen gas can create a fissure, or defect, in the glass surface where the glass will literally “pop” or “scale” off the steel substrate surface. The appearance and name of this defect is called fishscale.

**SPALLING:** Spalling (flaking) glass deficiencies have been a major liability in water storage applications for decades. All types of formulation changes have been made since the 1990’s, some with varying degrees of success and failure.
As shown above, Tank Connection has outlined a sampling of critical processes required in the application of high quality porcelain enamels formulated for bolted steel panels to be used in liquid and water immersion service. Get Connected to the future of advanced glass technologies, Tank Connection!

**In vitreous enamel/glass/porcelain enamel tank coatings, specify Tank Connection and AQUA AGT 2020™ for superior quality glass that will fulfill your expectations for long-term performance!**

<table>
<thead>
<tr>
<th>Process</th>
<th>Tank Connection AQUA AGT 2020™ Two-Fire System</th>
<th>Tank Connection AQUA AGT 2020 PLUS™ Two-Fire System</th>
<th>Competitor Coatings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caustic Wash &amp; High Temperature Wash (after panel roll)</td>
<td>Yes</td>
<td>Yes</td>
<td>Varies - must be specified</td>
</tr>
<tr>
<td>SSPC 10 Near White Blast</td>
<td>Yes</td>
<td>Yes</td>
<td>Varies - must be specified</td>
</tr>
<tr>
<td>Pretreatment</td>
<td>Not required. Catalyst promoter included in base coat.</td>
<td>Not required. Catalyst promoter included in base coat.</td>
<td>Catalyst promoter applied as aqueous solution and air dried, or included in base ground coat.</td>
</tr>
<tr>
<td>Glass Ground Coat</td>
<td>5-7 mils (contains catalyst promoter)</td>
<td>5-7 mils (contains catalyst promoter)</td>
<td>Yes - varying mils</td>
</tr>
<tr>
<td>Furnace Fire</td>
<td>1st fire in excess of 1,500 °F</td>
<td>1st fire in excess of 1,500 °F</td>
<td>None - unless specified two-fire</td>
</tr>
<tr>
<td>2nd Glass Cover Coat (Interior)</td>
<td>6-7 mils 152-178 microns</td>
<td>7-9 mils 178-229 microns</td>
<td>Yes - varying mils</td>
</tr>
<tr>
<td>2nd Glass Cover Coat (Exterior)</td>
<td>5-7 mils 127-178 microns</td>
<td>5-7 mils 127-178 microns</td>
<td>Yes - varying mils</td>
</tr>
<tr>
<td>Furnace Fire</td>
<td>2nd fire in excess of 1,500 °F</td>
<td>2nd fire in excess of 1,500 °F</td>
<td>1st fire unless specified two-fire</td>
</tr>
<tr>
<td>Total Coating Thickness (Interior)</td>
<td>11-14 mils 279-355 microns</td>
<td>12-16 mils 305-406 microns</td>
<td>Varying mils</td>
</tr>
<tr>
<td>Total Coating Thickness (Exterior)</td>
<td>10-14 mils 254-355 microns</td>
<td>10-14 mils 254-355 microns</td>
<td>Varying mils</td>
</tr>
<tr>
<td>Meets or Exceeds AWWA Glass Coating Requirements</td>
<td>Yes</td>
<td>Yes</td>
<td>Varies</td>
</tr>
<tr>
<td>Meets or Exceeds EN ISO 28765:2016 Requirements</td>
<td>Yes</td>
<td>Yes</td>
<td>Varies</td>
</tr>
<tr>
<td>Application Range</td>
<td>pH 3-11</td>
<td>pH 2-14</td>
<td>Varies</td>
</tr>
<tr>
<td>Testing</td>
<td>Zero discontinuities at 1,100 V</td>
<td>Zero discontinuities at 1,500 V</td>
<td>Varies</td>
</tr>
</tbody>
</table>