From Concept to Completion

GRP PANEL TYPE
WATER TANK

Developed in Partnership With
Solico GRP Panel Type Water Tank

Since 1966 SOLICO has been known as a reputed supplier of GRP water storage solutions in the UAE and GCC countries.

In 1984, SOLICO pioneered the introduction of groundbreaking technology, Hot Pressed GRP Panel Type Water Tanks, gaining market share by offering the top of the range Japanese Bridgestone Brand with high levels of service and reliability.

This innovation, coupled with SOLICO’s awareness and continuous marketing efforts for clean water storage systems resulted in a paradigm shift, from the conventional storage means to a cleaner and healthier solution.

In 2012, SOLICO inaugurated its own Hot Pressed SMC state of the art GRP Panel Type Water Tanks; the Solico Panel Tank Brand developed in partnership with BASF.

With this new Brand, the company continues to offer the same high quality product complying with numerous international standards, combined with our enhanced service level and competitiveness.

This decision was taken to capitalize on the company’s extensive composite manufacturing experience as well as SOLICO’s excellent reputation for their service and quality in the Hot Pressed GRP tank business after nearly 50 years.
Design Standards

Solico Panel Tanks are WRAS approved and designed to the most relevant international GRP panel type water tank’s standards such as BS 7491 (UK), SS245 (Singapore) and the latest AWWA D121-12 (USA).

The panel shapes are designed using Finite Element Analysis to allow optimization and ensure the required panel and tank safety factor.

Solico Panels are manufactured using State of the Art SMC Hot Press Molding Process, combining Japanese technology and German machinery under pressure reaching up to 2,000 Tons and at a temperature of 150°C.

Panel Strength : Hydrostatic Pressure x6 (Safety Factor)
Wind Velocity : 60 m/sec
Roof Load : 120 Kgf/m²
Ambient Temperature : 55 °C (Max)
Water Temperature : 65 °C (Max)
Seismic Load : Peak Ground Acceleration PGA = 0.25 (Group A)
Seismic Zone : B2
Upgraded Design Available for Higher Seismic Zones:
   (Group B) 0.25 < PGA < 0.40
   (Group C) PGA ≥ 0.40

Technical Characteristics

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>GRP</th>
<th>DESCRIPTION</th>
<th>GRP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>1.75</td>
<td>Thermal Conductivity</td>
<td>(Single Panel)</td>
</tr>
<tr>
<td>Glass Content</td>
<td>30%</td>
<td>(Insulated Panel 25mm)</td>
<td>0.036 w/mK</td>
</tr>
<tr>
<td>Tensile Strength</td>
<td>110 MPa</td>
<td>Coeff. of Overall Heat Transmission</td>
<td>(Single Panel)</td>
</tr>
<tr>
<td>Young’s Modulus</td>
<td>13 GPa</td>
<td>(Insulated Panel 50mm)</td>
<td>0.029 w/mK</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>230 MPa</td>
<td>(Thermal Conductance)</td>
<td>(Thermal Conductance)</td>
</tr>
<tr>
<td>Impact Strength</td>
<td>80 Kgf/cm²</td>
<td>(Single Panel)</td>
<td>14 w/m²K</td>
</tr>
<tr>
<td>Compressive Strength</td>
<td>160 MPa</td>
<td>(Insulated Panel 25mm)</td>
<td>1 w/m²K</td>
</tr>
<tr>
<td>Shear Strength</td>
<td>100 MPa</td>
<td>(Insulated Panel 50mm)</td>
<td>0.5 w/m²K</td>
</tr>
<tr>
<td>Barcol Hardness</td>
<td>66</td>
<td>Thermal Expansion</td>
<td>1.66 x 10⁻⁵°C</td>
</tr>
<tr>
<td>Flame Spread (FSI)</td>
<td>60</td>
<td>Water Absorption</td>
<td>Less than 0.1%</td>
</tr>
<tr>
<td>Smoke Development (SD)</td>
<td>40</td>
<td>Light Transmission</td>
<td>Ivory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fire Rating Class</td>
<td>B / 2</td>
</tr>
</tbody>
</table>
Internal Tie Rod Reinforcement

All Internal Metals are of Stainless Steel Grade A4/316

External Bracing Reinforcement

No Metals are in Touch with Water
Materials of Construction

**Insulation**
Rigid Polyurethane: From Density 40 Kg/m³ Thickness: 25mm (Optional 50mm)
Insulation Cover: 2mm U.V. Resistant ASA Sheet

**Sealant**
SEBS material
Strong, Durable and U.V. Resistant
“O” Ring Shaped for added security

**Panel**
SMC Hot Pressed Glass Reinforced Polyester (GRP or FRP) with Reinforced Roving Mesh

**Steel Skid**
Hot Dipped Galvanized Steel Beams and Skids

**Reinforcements**
External: HDG Structural Steel Beams, Angles & Brackets
Internal: S/S Grade A4/316 Tie Rods or Diagonal Struts

**Roof Supports**
PVC/GRP roof support pipes
Hard Polyurethane Brackets

**Bolts & Nuts**
External: HDG Grade 8.8 (Optional S/S Grade A4/316)
Internal: S/S Grade A2/304 (Optional S/S Grade A4/316)

**Ladders**
External: HDG Steel (Optional S/S or GRP)
Internal: GRP (Optional S/S)

**Airvents**
PVC4”DIA with Nylon mesh#22
Properties: Light, Dust, Insect Proof
Steel Support Beams
Solico provides Structural Steel Beams & Skids in Hot Dipped Galvanized Finishing.

Concrete Foundation
Solico provides shop drawings of the concrete foundations required for each tank to all clients, as detailed (Length of tank +200mm) x 200mm width x 600mm Height of single concrete plinth.

Clearance and Capacities

- Minimum space requirement along all sides = 500mm
- Minimum space requirement above roof panel for manhole opening = 1000mm
Flange Connections

The specially designed panels provide easy and safe flange connections for the plumber to connect his pipe works to the tanks. Typical Tank Connections are shown below.

Type of Flanges

<table>
<thead>
<tr>
<th>PVC BOLTED FLANGE</th>
<th>BRASS SOCKET FLANGE</th>
<th>HDG BOLTED FLANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAINLESS STEEL BOLTED FLANGE</td>
<td>GRP BOLTED FLANGE</td>
<td>RUBBER CAPPED BOLTS FOR FIXING FLANGES</td>
</tr>
</tbody>
</table>

Recommended Flange Sizes

<table>
<thead>
<tr>
<th>SIZE OF TANKS</th>
<th>INLET</th>
<th>OUTLET</th>
<th>OVERFLOW</th>
<th>DRAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1m - 5m³</td>
<td>25A</td>
<td>1&quot;</td>
<td>50A</td>
<td>1½&quot;</td>
</tr>
<tr>
<td>5m - 10m³</td>
<td>40A</td>
<td>1½&quot;</td>
<td>65A</td>
<td>2½&quot;</td>
</tr>
<tr>
<td>10m³ - 20m³</td>
<td>40A</td>
<td>1½&quot;</td>
<td>65A</td>
<td>2½&quot;</td>
</tr>
<tr>
<td>20m³ - 50m³</td>
<td>50A</td>
<td>2&quot;</td>
<td>80A</td>
<td>3&quot;</td>
</tr>
<tr>
<td>50m³ - 100m³</td>
<td>80A</td>
<td>3&quot;</td>
<td>100A</td>
<td>4&quot;</td>
</tr>
<tr>
<td>100m³ - 200m³</td>
<td>80A</td>
<td>3&quot;</td>
<td>150A</td>
<td>6&quot;</td>
</tr>
<tr>
<td>200m³ - 500m³</td>
<td>100A</td>
<td>4&quot;</td>
<td>200A</td>
<td>8&quot;</td>
</tr>
<tr>
<td>Over 500m³</td>
<td>100A</td>
<td>4&quot;</td>
<td>200A</td>
<td>8&quot;</td>
</tr>
</tbody>
</table>

Solico GRP Panel Tanks Cautions

1. Solico GRP Panel Tanks should be safely transported, stored and installed under Solico supervision or as per Solico’s assembly instructions.

2. Tank cleaning should be done twice a year by using soft sponge and normal hose water. No hard material, chemical or brush should be used.

3. Solico GRP Panel Tanks are designed to store water up to a maximum of 65 °C temperature.

4. No flame or heavy load should be directly imposed on Solico Panel Tanks and all piping connections should be self supported to avoid any direct stress.

5. Do not use any sub-standard parts and accessories other than original provided and approved by Solico.

6. Do not use any other liquid than water with a pH value of 5-9 without Solico recommendation.

7. Monthly inspection should be done to ensure tightening of bolts, no overload, no harmful material around, no leakage, manhole tightness, no clogging in air vent and overflow for safety assurance.

8. Do not bury Solico GRP Panel Tanks and keep standard space clear all around the tank for easy access during maintenance.

9. Maintain minimum and maximum water level inside Solico GRP Panel Tank for safety and long life.

*Overflow should be at least twice the size of inlet and shall flow freely without obstruction.
Projects

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