Tinopoxy Water Borne Coatings

Exterior & Interior

Curing agents: Hardeners 80/ 81 / 82

Low Odor / Low VOC epoxy high performance water based coatings

Non-toxic & non-flammable. Free of lead, mercury, asbestos, hexavalent chromium, solvents & hazardous air pollutants

Tinopoxy Water-Borne Coating, series 4400 – smooth finish

Tinopoxy Water-Borne Skid Resistant Coating, series 5300

Tinopoxy Water-Borne Clear Coating, Nr.15005

Tinopoxy Water-Borne Cement Concrete, Nr. 15135 + Tinocement quartz series 4100 & 4200

CHARACTERISTICS

Epoxy water-based non-ionic 2-pack cold cured high quality protective coatings with high hardness, chemical resistance and protection against atmospheric corrosion.

This liquid emulsifiable epoxy resin coating system is intended to seal and protect concrete floors against crushing to fine dust, under the effect of abrading rolling loads and the deteriorating effects of chemicals, and to protect wall & floor surfaces against alkalis, mild aids, chemicals, oils & greases, hydraulic fluids, coolants & motor oils, solvents, salts, cleaning detergent solutions and staining substances.

**Tinopoxy Water-Borne Coatings** offer great versatility for many applications as primers, epoxy-cement bound mortars and screeds, and as top coats on concrete and on metals and timber, especially in beverage & food stuff processing plants & warehouses, hospitals, car parks, commercial and industrial places.

They are moisture tolerant & can be successfully applied to dry, damp or wet concrete with good adhesion and intercoat adhesion giving a good aesthetic look and easy-to-clean surface.

UV rays on exterior exposed surfaces cause superficial loss of gloss of the coating, but do not affect its characteristics.

**Tinopoxy Water-Borne Coatings** are formulated to meet the specifications of the building industry, providing concrete with high sealing properties & protections, and minimizing thermal conductivity.

Tests according to DIN 53536 standards reveal that their high resistance against diffusion of alkalis, CO2, chlorides & other acid gaseous compounds into concrete structures protects against damage by carbonation.

**Tinopoxy Water-Borne Coatings** are available in 4 types:

**Tinopoxy Water-Borne Coating, series 4400** is a gloss colored coating in smooth finish.

**Tinopoxy Water-Borne Skid Resistant Coating, series 5300** contains hard aggregates to protrude, out of the coated layer, and render a fine skid resistant finish that helps gain a better foot-hold.

**Tinopoxy Water-Borne Clear Coating, Nr. 15005** is intended to serve as a transparent sealer & finishing clear lacquer, and as a bonding material for cement/ aggregates compound.

**Tinopoxy Water-Borne Cement Concrete** (epoxy base Nr. 15135 + Tinocement quartz aggregates (with or without coloring pigments), series 4100/4200) is a 3-pack epoxy mortar compound & grout to level the surface, fill crevices, joints & ponds. It could be applied to new or old concrete without a primer.
ENVIRONMENTAL STANDARDS & VOC REQUIREMENTS:

These coatings conform to environmental standards and MPI performance requirements, and are free of toxic materials, solvents and the restricted chemical components (as defined by ACGIH 0100 Doc).

**Tinopoxy Water-Borne Coating, series 4400** is a Low Odor / Low VOC product containing <5 g/l

**Tinopoxy Water-Borne Skid Resistant Coating, series 5300** is a Low Odor / Low VOC product containing <5 g/l

**Tinopoxy Water-Borne Clear Coating, Nr. 15005** is a Low Odor / Low VOC product containing <5 g/l

**Tinopoxy Water-Borne Cement Concrete** is a Low Odor / Zero VOC product

They all comply with the following standards:
- LEED v.3 (LEED 2009)
- SCAQMD 1113- 7/1/08
- MPI GPS-1
- US EPA VOC Standards for Architectural Coatings

TECHNICAL DATA

**Tinopoxy Water-Borne Coatings** are liquid emulsifiable bisphenol pure epoxy resin (solventless) cross-linked with aqueous solution of a modified aliphatic polyamine (Hardeners 80, 81 & 82), complying favourably with the technical requirements of International Standards and Specifications.

**COMPOSITION**

Base Component cross-linked with its Hardener:

<table>
<thead>
<tr>
<th>Coating</th>
<th>Skid Res. Coating</th>
<th>Clear Coating</th>
<th>Epoxy Cement Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Series 4400 + Hard. 80</td>
<td>Series 5300 + Hard. 80</td>
<td>Nr. 15005 + Hard. 82</td>
<td>Nr. 15135 + Hard. 81 + Tinocement quartz series 4100</td>
</tr>
<tr>
<td>Total solids, by volume (ISO 3233)</td>
<td>47%</td>
<td>48%</td>
<td>15%</td>
</tr>
<tr>
<td>Total solids, by weight (ASTM D2369)</td>
<td>55%</td>
<td>56%</td>
<td>17%</td>
</tr>
<tr>
<td>Solid vehicle (resins) by weight (ASTM D2369)</td>
<td>43%</td>
<td>42%</td>
<td>17%</td>
</tr>
<tr>
<td>Pigments, by weight (ASTM D2373)</td>
<td>12%</td>
<td>14%</td>
<td>--</td>
</tr>
<tr>
<td>Density kg/L (ASTM 1475)</td>
<td>1.175</td>
<td>1.21</td>
<td>1.025</td>
</tr>
<tr>
<td>Mixing ratio: Base Component to Hardener by volume</td>
<td>1:1.7</td>
<td>1:1.6</td>
<td>1:11.5</td>
</tr>
</tbody>
</table>

**TYPICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Coating 4400</th>
<th>Skid Res. Coating 5300</th>
<th>Clear Coating 15005</th>
<th>Epoxy Cement Concrete 15135+ Hard. 81+ Tinocement quartz 4100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive strength (DIN 51290)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/mm² 57</td>
</tr>
<tr>
<td>Flexural strength (DIN 51290)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>N/mm² 11.0</td>
</tr>
<tr>
<td>E - modulus (ISO 6272/93)</td>
<td>&gt;30Kg.cm</td>
<td>&gt;30Kg.cm</td>
<td></td>
<td>N/mm² 25.270</td>
</tr>
<tr>
<td>Impact resistance (ISO 6272/93)</td>
<td>&lt;0.20</td>
<td>&lt;0.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abrasion resistance (taber abraser mg/cycle)</td>
<td>326s</td>
<td>326s</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>Persoz hardness (ISO 1552/73)</td>
<td>326s</td>
<td>326s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>after 2 weeks at 20°C &amp; 65 r.h.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Ericksen distensibility
  (ISO 1520/73) after 2
  weeks at 20°C & 65 r.h.
  4mm 4 mm
- Bond strength kg/cm²
  Min. 30
  (thereafter
  concrete
  failure)
  Min 30
  (thereafter
  concrete
  failure)
  10 - 20
- Adhesion to steel
  very good very good
- Gloss
  Pot life at 23°C & 65% r.h.
  120 min 120 min 120 min 60 min
  120 min
- Dust dry time at 20°C &
  65% r.h.
  4.5h 4.5h

* In all types higher temperatures reduce pot life and vice versa.

CHEMICAL RESISTANCE

<table>
<thead>
<tr>
<th>Tests</th>
<th>Immersion Test Period</th>
<th>Tests</th>
<th>Immersion Test Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deionized water</td>
<td>Unaffected for 12 months</td>
<td>Sodium Hydroxide, 50%</td>
<td>Unaffected for 12 months</td>
</tr>
<tr>
<td>Sodium chloride, 10%</td>
<td>Unaffected for 12 months</td>
<td>Xylene</td>
<td>Unaffected for 12 months</td>
</tr>
<tr>
<td>Ammonia, 10%</td>
<td>Unaffected for 1 week</td>
<td>Ethanol, 95%</td>
<td>Unaffected for 1 month</td>
</tr>
<tr>
<td>Lactic Acid, 2%</td>
<td>Unaffected for 12 months</td>
<td>Ethanol, 30%</td>
<td>Unaffected for 1 month</td>
</tr>
</tbody>
</table>

RECOMMENDED USES

On interior & exterior floor & wall surfaces of concrete, fairfaced concrete, plaster, masonry, mosaic & granite tiles, primed metal & wood in food, beverage, fish & meat processing plants, hospitals, pharmaceutical areas, operation theatre, foot & vehicular trafficable areas, car parks, oil & grease warehouses, generator's rooms, water purification plants, very humid rooms & cellars etc... as well as for protection against corrosion & mild chemical attacks & for general applications over damp surfaces and on surfaces to be immersed in fresh or sea water.

As an excellent anti-graffiti coating that could be easily cleaned with solvents to remove marker or spray paint writings & staining substances.

Tinopoxy Water-Borne Cement Concrete compound is intended to be used as a filling grout and pond levelling compound on concrete substrates.

SURFACE PREPARATION

Surface must be solid, clean & free from oils, greases, salt, dirt, efflorescence & other contaminants.

Tinopoxy Water-Borne Coatings are highly resistant to alkalis & saponification; the concrete substrates could be top coated over-night.

Pretreatment of concrete and masonry substrates:
Best results on concrete are obtained by shot blasting to remove laitence, grout and dust contaminants, then vacuum cleaned.

Acid etching pre-treatment with a 5%-10% muriatic acid solution brushed out on the concrete surface, & after about 5 minutes when the solution ceases to effervesce, rinse the surface with clean water, could be adequate for specific jobs especially after scarifying.

Pre-treatment by mechanical means could also be useful.

Highly alkaline or acidic surfaces should be neutralised.

Levelling of surface, irregularities, crevices, non-active cracks or sizeable holes should be made good by being filled with Tinopoxy Water-Borne Cement Concrete or with TINOPOXY S.F. PUTTY 14500, which one is more appropriate.

Pretreatment of steel surfaces:
Best results on steel are obtained by sand or metal blasting to Sa 2½ standards. Mechanical & manual cleaning to Sts Standards could prove adequate for specific jobs.

If oxidation occurs between blasting time and priming, the surface should be reblasted and cleaned to the specified standard.
Pretreatment of previously painted surfaces:
Non-disintegrated paints should be roughened properly and tested for compatibility and adhesion. Flaking, blistered, cracking or heavily chalking paint should be removed by sand blasting, flame spraying, paint removers or mechanical tools. Paint remnants, oils or greases must be removed by flame spraying or paint removers.

PRIMING
Concrete & masonry surfaces:
No primer is necessary after surface preparation, but the first coat should be diluted with water up to 15% when to be applied to porous or absorbent surfaces.

Metal surfaces:
Steel surfaces should be primed to insure adequate rust protection, preferably with TINOPPOXY ZINC RICH PRIMER Nr. 15400 at 60 – 80µm d.f.t.

MIXING
Pour contents of BASE COMPONENT into a larger container, add gradually while mixing, its HARDENER 80 or HARDENER 81, or HARDENER 82 supplied with each pack & stir well (preferably with a low-speed mixer) until a cohesive mix of uniform consistency is achieved. It is important to add hardener onto Base Component, while mixing and not vice versa.

Tinopoxy Water-Borne Cement Concrete:
Mix Base Component Nr. 15135 with its Hardener 81, then pour onto Tinocement quartz aggregates & mix thoroughly.

Warning: Do not apply mixture of colored or clear coating after 2½ hours of mixing because it loses its efficacy. End of pot-life is not visible in liquid mix as viscosity does not change.

THINNING
Use clean water to thin. Paints, clear coating & cement concrete mixtures could be diluted by 10-15% for application of first coat on concrete and by 5% for application to non-absorbent surfaces or for recoating.

APPLICATION
As per Code of Practice.
Prepare coating mix & apply in one or consecutive coats, allowing enough time between coats to dry (>12 hours).

Tinopoxy Water-Borne Coating series 4400 & Clear Coating Nr. 15005 are applicable by brush, roller or spray (preferably airless spray). For the first coat, it is always preferable to apply it by brush.

Tinopoxy Water-Borne Coating - Skid resistant series 5300 is applicable by roller or suitable spray-gun. Constant stirring is required during application.

Tinopoxy Water-Borne Cement Concrete mixture is applicable with a trowel (preferably in one direction to avoid air entrapment) in thickness from 1mm to several centimetres. For application as a wall or floor grout, adjust viscosity by adding water to the mixture and apply with spatula or trowel or squeegee to level or fill the joints. Always wet the concrete substrate before application of mixture.

Successive coats application of coating is usually carried out at a rate of about 120-200 µm w.f.t. (65-106µm d.f.t.). Service life of floor coatings is relevant to its susceptibility to frequent traffic loads & chemicals. When a clear topping is required, apply successive coats of Tinopoxy Water-Borne Clear Coating Nr. 15005 to attain the specified thickness. Immediately after use, clean tools and equipment with soap & water.

DRYING & RECOATING TIME
At temperature of 23°C & 65% RH, a wet film of 150µm:
- Dries to touch in 12 hours
- Dries to recoat 18 hours min. 24 hours max.
- Dries to light traffic in 48 hours
- Fully cures in 1 week.

Leave TINOPOXY WATER-BORNE CEMENT CONCRETE layer to cure in about 48 hours.
Re-coating and top coating should be carried out before the complete curing of the preceding coat (within 48 hours at 23°C & 65% r.h.), otherwise the surface should be roughened with sand paper or wire brushing. Higher temperatures accelerate drying time and vice versa.

In damp or very humid places, adequate ventilation and air circulation should be used to assist drying.

**GLOSS**
Gloss finishes.

**COVERAGE**
Depends on the texture and absorption of surface. Contents of one gallon of:

- **Tinopoxy Water-Borne Coating, series 4400** base component 2.231 litres + its hardener 80 in full gallon of 3.785 litres = 6.016 litres, cover abt. 57 sq.m. at 50µm d.f.t.
- **Tinopoxy Water-Borne Skid Resistant Coating, series 5300** base component 2.300 litres + its hardener 80 in full gallon of 3.785 litres = 6.085 litres, cover abt. 39sq.m. at 75µm d.f.t. (about 175µm d.f.t. including aggregates).
- **Tinopoxy Water-Borne Cement Concrete**, base component Nr. 15135 (0.322 litres) + Hardener 81 (3.785 litres) + a pail of Tinocement quartz aggregates series 4100 (9.435 litres or 25 kg) cover about 13.5 sq.m. at 1000µm. Same mixture of Base Component and Hardener 81 plus a pail of Tinocement quartz aggregates series 4200 (8 litres or 17.65 kg) cover 12 sq.m. at 1000µm.
- **Tinopoxy Water-Borne Clear Coating Nr. 15005** Base Component (0.330 litres) + its Hardener 82 (3.785 litres) = 4.115 litres, cover about 25sq.m. at 25µm d.f.t.

**COLORS**
Array of colors as per color card.
Also available in clear transparent coating Nr. 15005. Custom colors available on request in considerable quantities.
Cement / aggregates dry compound is available in concrete grey color and off-white color. Light & medium colors could be supplied upon request in considerable quantities.

**PACKING**
Into standard tin containers of:
- 1 US gallon = 3.78 L
- 1 US quart = 0.94 L
- 5 US gallons pail = 18.9 L (on request).
Each container is supplied with its appropriate pack of hardener.
Tinocement quartz aggregates are packed into plastic pails of about 25kg for series 4100 & 17.65kg for series 4200.

**WARRANTY**
TINOL products are warranted to be free of materials and manufacturing defects, & to give the performance required of good quality coatings of International Standards, when properly applied in accordance with the written directions & the Code of Practice.
If any product proves to contain materials or manufacturing defects that substantially affect its performance, it will be either replaced free of charge or the purchase price reimbursed. Other liabilities or claims for any consequential loss or damage are disclaimed.

**LABELLING & MATERIAL SAFE HANDLING:**
This product is not toxic or irritant. However, all industrial coatings require handling with care. Avoid contact with eyes. No eating, smoking or drinking & wear suitable gloves while applying these coatings. Flash point > 100°C.

**FIRST AID MEASURES**
Eye contact: Rinse with water and wash off properly. Seek medical help.