

UHT (Brush Grade)

Product Summary

- Solvent-free, two component, hybridized epoxy offering temperature resistance from -70°C to +190°C (374°F) immersed and +250°C (482°F) non-immersed. Resists thermal cycling.
- Excellent broad range chemical resistance.
- Resists dissolved H₂S at high temperatures.
- Insitu application to exterior of hot surfaces.
- Combats "Corrosion under Insulation".
- Single coat curing at ambient temperature.
- Has very high fouling resistance.
- Can be cleaned using high temperature steam.
- Can be used to repair damaged equipment, glass / rubber lined vessels and defects in old coatings coming out of service.

DuraPol UHT is an advanced coating system derived from a novel technology that combines, on a molecular level, both organic and inorganic molecules to provide a thermally stable highly crosslinked structure. It offers superior broad range chemical resistance from sub ambient to elevated temperatures in excess of 190°C, after only an ambient cure. The cured coating has excellent sliding abrasion resistance coupled with a very smooth finish that enhances fluid flow and prevents sludge build up. DuraPol UHT can be steam cleaned at temperatures exceeding 190°C (374°F).

Application Areas

Chemical tanks, process vessels, evaporators, scrubber units, heat exchangers, condensers, distillation units, autoclaves, sulphur recovery units, sour gas treating units. Internal coating of pipe-work, pumps and valves. External coating of equipment operating from sub ambient to high temperatures suffering from CUI such as insulated pipes/spools and process vessels. Possibility of application to hot surfaces while equipment is operational.

Physical Properties

Abrasion Resistance: ASTM D 4060
20 mg weight loss (Tabor CS-17/1kg/1000 cycles)

Impact resistance: ASTM G14
Forward: 13 Joules
Reverse: 3 Joules

Adhesive Strength: ASTM D4541
29.3 MPa (cohesive failure)

Temperature Resistance: NACE TM0174
+190°C Immersed,
+250°C Non Immersed

Typical Chemical Resistance (full immersion)

- 98% Sulphuric acid
- 37% Hydrochloric acid
- 100% Glacial acetic
- 50% Nitric acid
- Methylenechloride, vinyl chloride, benzyl chloride,...
- Amines (DEA, MDEA, MEA, DGA, ADIP)
- Spent amines rich in H₂S/CO₂
- Carbon Disulphide
- Molten Sulphur + acidic vapour
- Conc. Methanol, ethanol and derivatives
- Sodium hypochlorite, sodium perchlorate,....
- MEK, Toluene, Xylene, Acetone, Ammonia
- 50 - 75% Sodium Hydroxide
- Any chemical solution rich in chlorides or sulphates

Coating Data

Finish: Glossy

Colours Available: Dark Brown, Black, Grey, Red

Solids Content: 100%

Mixed Viscosity@20°C:: 40,000 +/- 5000 mPa.s

Recommended Dry Film Thickness (DFT):

Vessel / Pipe internals: 600 - 800 microns

Equipment externals: 200 - 400 microns

Concrete surfaces: 600 - 800 microns

Number of Coats: 1

Practical Coverage: 0.45 m²/kg @ 800 microns DFT

Pot Life at 20°C: 65 minutes

Tack Free/ Drying Time (20°C): 150 minutes at 20°C

Storage Life: +36 months in unopened containers

Packaging: 1 and 2.5 kg composite kits

Specific Gravity: 1.80 gms/cm³ (Base + Hardener)

Surface Preparation

For optimum results grit blast surface to remove the old coating system and then wash using high-pressure water jetting to remove any surface chemical contamination and soluble salts. Allow the substrate to dry and then re-blast the surface using angular grit to obtain a blast profile of at least 75 microns (Swedish Standard SA 2.5). Remove residual dust and grit. If surface has been immersed in salt water it needs to be grit blasted, left for 24 hours and then washed with fresh water before blasting again. New surfaces must be thoroughly degreased before final grit blasting. Once the surface is prepared it should be coated immediately..

Mixing of DuraPol UHT (Brush Grade)

Thorough mixing will give optimum product performance. Ensure base and hardener are below 30°C before mixing and always keep material in the shade before, during and after mixing. When the base tin is opened any material on the lid must be added to the tin. Hold the tin firmly between the feet to avoid the can spinning when mixed using a power mixer (electric or air operated). Add hardener gradually to the base while stirring slowly with the power mixer. When all the hardener has been added increase the speed of power mixer to maximum and mix for further 2 minutes simultaneously scraping the inside wall of the can with a firm spatula or pallet knife so that all material is properly mixed. Mixed material remains usable for a time approximately equal to the pot life i.e. 65 minutes at 20°C, 45 minutes at 30°C and 25 minutes at 40°C. Do not mix more material than can be used within the pot life period.

Application Equipment

Stiff natural bristle brush, 3 inches wide and bristles no more than 2 inches long. If the brush is new then condition by vigorously bending and pulling bristles to remove all loose ones. This is an important step to avoid bristles contaminating the coating during application.

Application of DuraPol UHT (Brush Grade)

Before coating ensure that the surface temperature is at least 15°C and that the air temperature is 3°C above the dew point with a relative humidity below 80%. If the temperature of the substrate is below 15°C then external heating may be required to increase the ambient temperature and so warm the substrate. If outdoors, plastic sheeting should be used to construct an enclosure around the equipment to be coated before applying warm air into the space within the construction. Avoid re-contamination of prepared surface from nearby sources. Do not apply coating in windy conditions unless absolutely necessary, in which case enclose the equipment in plastic sheeting as described above. Stripe coat corners, edges and welds. Apply DuraPol UHT by initially brushing firmly into the substrate to achieve surface wet out before building to specified film thickness in a single coat. Check regularly the wet film thickness using a wet film thickness gauge especially on concrete substrates where DFT measurements are not possible. The brush should be cleaned with MEK or acetone based thinners after application of every two kits.

Dry Coating QC

24 hours after application check the continuity of the applied coating using a Wet Sponge holiday detector set at an operating voltage of 90V DC. Ensure that the coated surface is thoroughly wetted out by repeated passage of the sponge over it. A quantitative measure of the dry coating thickness can be obtained using an inductance type electronic dry film thickness tester. Coating should be repaired if applied 25% below specification. Pinholes, misses and thin areas of coating should be identified for repair using a distinctive marker pen. Repair by spot blasting the defect to bare metal with a profile of at least 75 microns and additionally sweep blasting / feather a 2 inch radius of sound coating surrounding the defect for overlap of the repair. The prepared area is cleaned with xylene before application of the repair.

Repair of Existing Coatings

All loose material around the defect must be removed to leave sound firmly bonded coating. Spot grit blast the defect to bare metal having at least Sa2.5 cleanliness with a minimum 75 microns profile. Also sweep blast 2 inches of surrounding sound coating to roughen it in order to accept overlap of the repair. Wash blasted area with xylene before applying DuraPol UHT(Brush Grade) repair. Brush firmly into the surface profile to ensure complete wet out and then build to required thickness in a single coat.

Cure Schedule

Coating is touch dry after ~ 150 minutes at 20°C. Unless stated otherwise allow a minimum period of 3 - 4 days to reach full cure before exposing to a chemical load. For decontamination of the coating surface or to maximise chemical resistance the coating can be exposed to 130°C steam after the 3-4 day ambient cure.

Recommended Dry Film Thickness Specifications

Internal coating of process vessels, pipes and equipment: Single coat @ 600 - 800 microns DFT.

Exterior coating of high temperature pipes and equipment: Single coat @ 200 - 300 microns DFT.

Exterior coating of pipes and equipment operating at sub ambient temperatures: Single coat @ 300 - 400 microns DFT

Final DFT dependent on service temperature.