

UCR (Brush Grade)

Product Summary

- Nano-technology based coating with ultra high resistance to full immersion in concentrated organic/mineral acids, alkalis and solvents at room and elevated temperatures.
- Cures at ambient temperature.
- Excellent adhesion.
- Excellent abrasion resistance.
- Single coat application without primer.

DuraPol UCR is an advanced coating system designed to protect components that carry highly aggressive chemicals found in the chemical industry. Chemical resistance is especially superior at elevated temperatures where other such coatings will more often than not fail. The coating has exceptional adhesion directly to steel and concrete surfaces and so is ideal for large secondary containment areas.

Application Areas

Chemical storage tank/process vessel internal linings, internal pipe lining, road/sea chemical tankers and concrete walls/floors - secondary containment areas. External coating for insulated pipes operating at sub ambient temperatures.

Physical Properties

Abrasion Resistance: ASTM D 4060

26 mg weight loss (Tabor CS-17/1kg/1000 cycles)

Impact resistance: ASTM G14

Forward: 10 Joules

Reverse: 3 Joules

Adhesive Strength: ASTM D4541

19.3 MPa (cohesive failure)

Elongation to break: BS 6319: Part 7: 1985

1.5%

Tensile Strength: BS 6319: Part 7: 1985

40 MPa

Elastic Modulus: BS 6319: Part 2: 1983

10.0 GPa

Compressive Strength: BS 6319: Part 2: 1983

120 MPa

Temperature Resistance: NACE TM0174

130°C Immersed

150°C Non Immersed

Typical Chemical Resistance (full immersion)

- 98% Sulphuric acid
- 37% Hydrochloric acid
- 100% Glacial acetic
- 84% Phosphoric acid
- Methylenechloride
- Tetrahydrofuran
- Carbon Disulphide
- 100% Phenol
- MEK
- 50% Nitric Acid
- Hydrazine
- Monoethanolamine
- Digylcolamine (DGA)
- Methyl-diethanolamine (MDEA)
- 50% NaOH (Caustic)
- 15% Sodium Hypochlorite

More detailed chart available on request

Coating Data

Finish: Gloss

Colours Available: Black, Red and Grey

Solids Content: 100%

Mixed Viscosity: 40,000 +/- 5000 mPa.s

Recommended Dry Film Thickness (DFT):

800 microns

Number of Coats: 1

Practical Coverage at 800 microns: 0.45 m²/kg

Pot Life at 20°C:

50 minutes

Tack Free/ Drying Time: 120 minutes at 20°C

Cure Time: +1 to 4 days

Storage Life: 36 months in unopened containers

Packaging: 2.5kg kit

Specific Gravity: 1.75 gms/cm³ (base + catalyst)

Surface Preparation

Remove all loose rust and dirt using a metal scraper. Remove oil or greases from surface using cleaning solvents that leave no residue once evaporated such as methyl ethyl ketone (MEK) or acetone. Surface should be roughened using a needle gun, angle grinder or ideally grit blasted using angular grit to give a surface profile greater than 50 microns (SA 2.5). Remove residual dirt and grit using a vacuum. If surface has been immersed in salt water then surface needs to be washed with fresh water before blasting. Once the surface is prepared it should be coated immediately to avoid surface oxidation and contamination.

Mixing of DuraPol UCR (Brush Grade)

Thorough mixing will give optimum product performance. Ensure base and hardener are between 20 and 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 to the base 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. 50 minutes at 20°C, 35 minutes at 30°C and 20 minutes at 40°C. Do not mix more material than can be used within the pot life period.

Application Equipment

Stiff brush with natural or synthetic bristles, 3 inches wide and bristles no more than 2 inches long. If the brush is new, 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 UCR (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 but if time constraints force application in such conditions then enclose equipment to be coated in plastic sheeting as described above. Stripe coat corners, edges and welds. Apply by 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. After coating, the brush must be immediately cleaned with MEK or acetone based thinners.

Dry Coating QC

12 to 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 it is 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 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.

Cure Schedule

Coating is touch dry after ~ 120 minutes at 20°C. Allow a minimum period of 3 - 4 days at 20°C to reach full cure before exposing to a chemical load. If ambient temperature is above 30°C the coating can be put into service 24 hours after final holiday testing and repairs. For decontamination of the coating surface or to maximise chemical resistance after the ambient cure the coating can be exposed to 100°C steam for approximately 4 hours.

Recommended Dry Film Thickness Specifications

- Internal coating of storage tanks and process vessels:
Single coat @ 600 - 800 microns DFT.
- Coating of concrete bunds:
Single coat @ 600 microns DFT. Use concrete sealer and glass matting to reinforce concrete to stop it cracking if temperature loads are to be encountered.