

# SuperPressure

## Product Summary

- 100% solids modified phenolic epoxy offering excellent resistance to equipment exposed to high-pressure process fluids and gas mixtures
- Specifically designed for gas pressure / separator vessels and down-hole tubulars
- Excellent resistance to hydrocarbons, water and gases rich in H<sub>2</sub>S and CO<sub>2</sub>
- Excellent resistance to acids and solvents
- High abrasion and impact resistance
- Self-priming, single coat system bonding tenaciously to metallic surfaces
- Resists explosive decompression

DuraPol HPG cures rapidly to provide a smooth highly abrasion resistance finish that improves fluid flow and prevents build up of paraffin, asphaltene and scale. An extremely high coating adhesive strength in excess of 4200 psi coupled with resistance to gas permeation allows it to withstand explosive decompression cycles. It is resistant to elevated temperatures up to 180°C dry heat and 150°C under gaseous immersed conditions.

## Application Areas

Internals of pressure / separator vessels handling sour gas, water, CO<sub>2</sub> and hydrocarbon mixtures at elevated temperatures and pressures. Production tubing, seawater and gas injection lines, flow lines and down hole equipment.

## Physical Properties

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

**Adhesive Strength:** ASTM D4541  
310 kg cm<sup>-2</sup> (cohesive failure)

**Autoclave Test:** NACE TM 0185  
Temperature: 266oF  
Pressure: 7500 psi  
Fluids: Sour Crude / acidified seawater (50% / 50%)  
Gas: Methane / CO<sub>2</sub> (85% / 15%)  
Decompression Rate: 625 psi per minute  
Results: Pass with no delamination / blisters

**Impact resistance:** ASTM G14  
Forward: 10 Joules  
Reverse: 3 Joules

**Temperature Resistance:** NACE TM0174  
150°C Immersed  
180°C Non Immersed

## Typical Chemical Resistance (full immersion)

90% Sulphuric acid  
37% Hydrochloric acid  
50% Glacial acetic  
84% Phosphoric acid  
30% Nitric Acid  
15% Sodium Hypochlorite  
MEK, Toluene, Xylene, Acetone, Ammonia  
Sweet and sour crude  
Gas rich in H<sub>2</sub>S, CO<sub>2</sub> and water vapour  
Any chemical solution rich in chlorides or sulphates

## Coating Data

**Finish:** Matt  
**Colours Available:** Grey, White and Black  
**Solids Content:** 100%  
**Mixed Viscosity@20°C:** 18,000 +/- 5000 mPa.s  
**Typical Dry Film Thickness:** 200 microns  
**Number of Coats:** 1  
**Practical Coverage at 200 microns DFT:**  
1.8 m<sup>2</sup>/kg  
**Pot Life at 20°C:** 60 minutes  
**Tack Free/ Drying Time:** 120 minutes at 20°C  
**Storage Life:** 36 months minimum in sealed tins  
**Packaging:** 2 and 5 kg kits  
**Specific Gravity:** 2.0 gms/cm<sup>3</sup> (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 SuperPressure

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 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. 60 minutes at 20°C, 40 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

Brush:

Stiff brush with bristles 3 inches wide and no more than 2 inches long.

Spray:

Single component 63:1 airless spray unit. 19 thou reversible fluid tip with a fan angle of 60° or near. Can also be applied using conventional pipe spraying equipment.

## Application of DuraPol SuperPressure

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 DuraPol SuperPressure and build to specified film thickness in a single coat. It is important not to exceed the recommended film thickness. Check regularly the wet film thickness using a wet film thickness gauge. The spray equipment after coating should be immediately cleaned with MEK or acetone based thinners. However if the equipment is used in hot climates for a lengthy period then it must be cleaned after every 60 minutes before spraying can re-commence. Once cleaned it can be used for a further 60 minutes without stopping and so on.

## 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 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. Any thick areas must be sanded to within specification.

## Cure Schedule

Coating is touch dry after ~ 120 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. To maximise performance the coating can be exposed to 100°C steam after the 3-4 day ambient cure.

## Typical DFT Specifications

- Internal coating of gas pressure/separator vessels and down-hole tubulars:  
Single coat @ 175-225 microns DFT.
- Internal coating of oil/water pressure/separator vessels:  
Single coat @ 800 microns DFT.
- Internal coating of cyclones  
Single coat @ 1000 microns DFT.