Product Data Sheet: Curran 1400

Product Summary

Solvent-free, two component, hybridized epoxy
Offering temperature resistance from -94°F
(-70'C) to + 374°F (190°C) immersed and
(482'F)+250°C non-immersed. Resists thermal cycling.
Excellent broad range chemical resistance.

- Resists dissolved H,S at high temperatures
- Superior alternative to thermal spray aluminisation.
- Combats CUI "Corrosion under Insulation".
- Single coat application
- Cures at ambient temperature.

Can be cleaned using high temperature steam.
Can be used to repair damaged equipment.

Curran 1400 Series 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 cross – linked structure. It offers superior broad range chemical resistance from sub ambient to elevated temperatures in excess of 374°F (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.
Curran 1400 Series can be steam cleaned at temperatures exceeding 374'F (190'C).

Application Areas
Chemical tanks, process vessels, evaporators, scrubber units, heat exchangers, condensers, distillation units autoclaves, sulphur recovery units, sour gas treating units,. Internal and external 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 O 4060
20mg weight loss (tabor CS - 17/1kg/1000 cycles)

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

Adhesive Strength: ASTM 04541
29.3 MPa (cohesive failure)
Elongation to break: BS 6319 Part 7 1985 1.8 o/

Temperatures Resistance: NACE TM0174
374°F (+190°C) Immersed
482°F (+250°C) Non Immersed

Typical Chemical Resistance full Immersion

- 9% Sulphuric acid
- 38 o/o Hydrochloric acid
  100% Glacial acetic
  50% Nitric acid
  Methylenechloride, Vinyl chloride, benzyl chloride,…
- Amines (DEA, MDEA,MEA, DGA, ADIP)
- Spent amines rich in SJC02
- Carbon Disulphide
- Molten Sulpur + acidic vapour
  Cone. 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
Colors Available: Dark Brown, Black, Grey, Red
Solids Content: 100%
Mixed Viscosity@ 20'C:
20,000 +/- 5000 mPa.s
Recommended Dry Film Thickness (OFT):
Vessel/Pipe internals: 24-32 MILS
600-800 microns
Equipment externals: 16-20 MILS
400-500 microns
Concrete surfaces: 24-32 MILS
600-800 microns
Number of coats: 1
Practical Coverage:
..0.40 m'kg @800 microns
4.3 Sq. Ft. @ 32 MILS
Pot life at 70°F (20°C)
65 minutes
Tack Free/ Drying Time 70°F (20°C)
150 minutes
Storage Life +36 months in unopened containers
Packaging: 2.5kg composite kits
Specific Gravity:
1.75 gms/cm^3 (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.

Surface Preparation for Operational Equipment

External surface of equipment operating at high temperature that cannot be shut down or grit blasted must be prepared manually. Use a rotating wire brush or needle gun to remove all loose rust and dirt. Remove oil or grease using cleaning solvents that leave no residue once evaporated such as methyl ethyl ketone (MEK) or acetone.

Wash the surface with potable water ensuring all residual dirt is removed. Large areas should be washed using high pressure water jetting especially when the surface has been exposed to chemical contamination. Use a wire brush or needle gun surface to induce some surface roughness and profile.

Mixing of Curran 1400 Spray Grade

Thorough mixing will give optimum product performance. Ensure base and hardener are below 86°F (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 unstable for a time approximately equal to the pot life i.e. 75 minutes at 70°F (20°C), 50 minutes at 86°F (30°C) and 30 minutes at 104°F (40°C). Do not mix more material than can be used within the pot life period.

Application Equipment

Single component 63:1 airless spray unit. 19 thou reversible fluid tip with a fan angle of 60° or near.

Application of Curran 1400 Spray Grade

Before coating ensure that the surface temperature is at least 60°F (15°C) and that the air temperature is 5°F (3°C) above the dew point with a relative humidity below 80%. If the temperature of the substrate is below 60°F (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 applications in such conditions then enclose equipment to be enclosed in plastic sheeting as described above. Strip coat corners, edges and welds. Apply Curran 1400 series (spray grade) and build 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 OFT Measurements are not possible. The spray equipment alter coating should be immediately cleaned with MEK or acetone based thinners. However, if the equipment is used in hot climates for a lengthy period of time it must be cleaned after every 60 minutes before spraying can re-commence. Once cleaned it can be used for another 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 repaired if applied 25% below specification. Pinholes, misses and thin areas of coating should be identified for repair using 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 are is cleaned with xylene before application of the repair.

Cure Schedule

Coating is touch dry after – 160 minutes at 70°F (20°C). Unless stated otherwise allow minimum period of 3-4 days to reach full cure before exposing to a chemical load. For decontamination of the coating surface or to maximize chemical resistance. “The coating can be exposed to 266°F (130°C) steam after the 3-4 day ambient cure.

Recommended Diy Film Thickness

Specification

Internal coating of process vessels, pipes and equipment: single coat @ 24 – 32 MILS (600-800 microns OFT)

Exterior coating of high temperature pipes and equipment: Single coat @ 16-20 MILS (400-500 microns OFT)

Exterior coating of pipes and equipment operating at sub ambient temperatures: Single coat @ 16 -20 MILS (400-500 microns)

Equipment externals operating at +70°C during coating application: Single coat @ 12-16 MILS (300-400 microns OFT)