

DESCRIPTION:

Nukote Chemshield TS is a plural component system composed of ceramics in a polymeric binder, providing excellent performance in corrosive, chemical and abrasive environments, at ambient or elevated temperatures. This product is designed for industrial use at elevated temperatures and will maintain its physical properties under continued exposure at high constant temperature both in exposed as well as immersion conditions. It is resistant to all petroleum distillates, most solvents, diluted acids, diluted alkalis, sulfur fumes, acid fumes, distilled water, seawater, and wastewater in ambient or elevated temperatures. It is also suitable in cryogenic applications as well as suitable in applications requiring handling thermal cycling.

FEATURES:

- 100% solids, No VOC
- Self-priming on steel substrates
- High temperature resistance- up to 225 °C (437 °F)
- Inflammable without carbonization
- Excellent abrasion resistance
- Good impact resistance
- Excellent resistance to wide range of petroleum distillates
- Spray, brush, and roller applied
- Available in spray grade as well as trowel grade

TYPICAL USES:

- Internal and external coating for flow lines and transmission lines
- Petroleum and chemical tanks, process equipment, bulk carriers
- Specifically designed for gas pressure / separator vessels and down-hole tubulars
- Offshore rigs and platforms
- Sour gas pipelines and process equipment.
- Repairs of Pitted steel
- Concrete chimneys

COLORS:

Standard light grey only.

PACKAGING:

5-gallon (18-liter) kits (Net Weight = 28.35 kgs), shipped in plastic pails of 4 gallons (15 liters) of side A and 1 gallon (3 liters) side B.

COVERAGE:

Nukote Chemshield TS may be applied at any rate to achieve the desired thickness. Calculation for theoretical coverage: 100 Ft²/gal @ 16 mils (2.5 m²/liter @ 400 microns).

STORAGE:

Eighteen months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture. The use of drum heaters is encouraged to reduce material viscosity at low temperatures.

TECHNICAL DATA (All values @ 77 °F / 25 °C)	US	Metric
Solids by volume (ASTM D2697)	100%	100%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	100 ft ² /gal @ 16 mils	2.5m ² / lit @ 0.4 mm
Density (ASTM D792)	A: 14.02, B: 8.76 lbs./gal	A: 1.68, B: 1.05 kg/ liter
Shelf life @ 77 °F /25 °C	18 months	18 months
Tensile strength (ASTM D412-C)	5510 to 5800 psi	38 to 40 MPa
Adhesive Shear Strength (ASTM D1002)	2030 to 2320 psi	14 to 16 MPa
Hardness (ASTM D2240)	75 Shore D	75 Shore D
Flexural strength (ASTM D790)	8410 - 8700 psi	58 - 60 MPa
Water vapor permeability (ASTM E96)	< 0.5 perm-in	
Thermal Fatigue ASTM D 6944 (-31 °F/ -35 °C to 248 °F/ 120 °C,)- 20 cycles	No cracking, checking, blistering or loss of adhesion	
Pinhole Pressure Test @ 1000 psi (70 kgf/cm ²) 1/8”(3 mm) hole, 30 minutes (in-house test)	Pass	
Service temperature Dry, Spike, Immersion *	355 °F , 435 °F, 320 °F	180 °C, 225 °C, 160 °C
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	4 A :1 B	
Mix Ratio W/W	6 A :1 B	
Pot life	45 minutes (250 gr mix)	
Tack free time (DFT & Temperature dependent)	6 to 8 hours (20 mils @ 77 °F)	
Dry to Recoat	10 to 12 hours	
Maximum Recoat Time	18 to 20 hours	
Post cure time	24 hours	
<i>Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected. * Please consult NCSI prior to use on suitability</i>		

MIXING:

Nukote Chemshield TS might not be diluted under any circumstance. Mixing ratio for Chemshield TS is 4:1 by volume. Add 4 parts of Base (A) to 1 part of Hardener (B) to a wide mouthed mixing container. Mix gently the Side A (base) using a heavy duty slow speed drill fitted with a mixing paddle or commercially available paint mixers. Add side B (hardener) to side A and mix it thoroughly until a streak free homogeneous color is obtained. Chemshield TS is ready to be applied. Mix only the quantity that can be used during the pot life. Discard material when the mixed material start gelling and do not try to re-use by adding thinner. Mixing this product manually by hand is not recommended. When environment temperature is 50 °F (10°C) or lower, the product can be indirectly heated to 70 – 75 °F (20-25 °C). This will make mixing easier and accelerate the curing and may have effect on Pot life. The mixed material will develop high exothermic heat and it is advisable to use small quantity to prevent wastage and mix it in a wide mouth container keeping the mixing vessel in cold/ice water where possible.

SURFACE PREPARATION:

Concrete:

The surface of a concrete subfloor should be dry, smooth, structurally sound and free of depression, scale, or foreign deposits of any kind. Remove all curing compounds. Abrasive blast, sweep blast or water blast to remove all latent material and expose voids. Use a good quality epoxy filler or mortar for void and spall filling, skim coat or repairs. Prime, fill imperfections in the substrate surface to limit out-gassing. All concrete substrates, on or below grade level should be tested for moisture content. On-grade or below-grade concrete floors or slabs should have a moisture barrier installed to protect from ground moisture. The surface preparation of concrete should meet and conform to Joint NACE 6/SSPC-SP 13 standards and achieve a concrete surface profile of CSP 3 to CSP 6 as per ICRI Guideline No.03732 for optimum performance.

Metal:

All surfaces should be clean and free from contamination. The surface should be assessed and treated in accordance with ISO 8504, Abrasive blast the surface to minimum NACE-1/SSPC SP-5/Sa 3, as per ISO 8501-1, for a visual assessment of surface cleanliness with an anchor profile of 3 to 4 mils (75 -100 microns). Soluble salts must be removed to an acceptable levels. *Refer to NCSI surface preparation manual for detailed procedures for different types of substrates.*

APPLICATION:

This product can be applied by dedicated airless spray equipment, brush, roller or trowels depending on the volume and project size. An airless pump 45:1 or higher is recommended. Trowel grade material is also available for a higher DFT metal repair and rebuilds application. Surfaces must be sound, dry, clean, free of oil, grease, dirt, mildew, and other foreign substances. Abrasive blast cleans the substrates to Sa 2½ BS 7079: Part A1: 1989 (ISO 8501-1: 1988). The average surface profile to be in the range 75 µm. Manually prepared surfaces should be to a minimum standard of St 3 BS 7079: Part A1: 1989 at the time of coating. The concrete shall be thoroughly cleaned to remove all dirt, oil, and other contaminants, as per SSPC SP-13. NACE 6/SSPC- SP-1. The Minimum temperature for application is 7oC below which you may require to heat the substrate as well the material.

EQUIPMENT CLEAN UP:

Cured product may be disposed of without restriction. Uncured activator and resin portions should be mixed together and disposed of in accordance with local regulations. Containers should be disposed of according to local environmental laws and ordinances.

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening. Do not leave it on open sun. Not good for applications below 45 °F (7 °C).

WARNING:

This product contains Amine and curatives

CHEMICAL RESISTANCE:

Each Nukote product formulation has varying levels of resistance to specific chemicals. Please review the chemical immersion test data included in the Nukote Test Book for general resistance to specific chemicals at specific concentration levels. Chemical concentrations are complex and when combined with temperatures above ambient levels this complexity increases exponentially. Contact Nukote Technical Personnel for specific recommendations for chemical resistance prior to specifying these products in this application type. Consult with NCSI for more details on product and chemical resistance. The following chart is the results of Polyurea immersed in chemicals and tested as per modified ASTM D 3912.

Chemicals	Resistance	Chemicals	Resistance
Hydrochloric acid upto 15%	R	Xylene, Toluene (Ambient)	R
Sulphuric Acid 20%	R	Carbon Disulfide	R
Motor Oil, Lubricants	R	Hydrogen Peroxide 30%	R
Sea water, Deionized water	R	Refined Petroleum products	R
Acetic Acid 10%	R	Sewage, Waste water	R
Citric Acid	R	Methanol, Ethanol, Butanol	R
Crude Oil, JetFuel	R	Most Industrial effluents	R
Water @ 302 °F (150 °C)	R	Gasoline, Kerosene, Diesel	R

R = Resistant RC = Slight surface change or discolouration with no loss of hardness

WARRANTIES AND DISCLAIMERS:

Nukote Coating Systems International, a Nevada, USA Corporation warrants that the two components of this product shall conform to the technical specifications published in the product literature. The quality and fitness of the product is dependent upon the proper mixture and application of the components by the applicator. Nukote Coating Systems has no role in the application of the finished polymer other than to manufacture and supply its two components. It is vital that the person applying this product understands the product and is fully trained and certified in the use of plural component equipment and application of plural component materials. There are no warranties that extend beyond the description on the face of this instrument, except when provided in writing, directly by Nukote Coating Systems International and executed under seal by a company officer.