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**DESCRIPTION:**

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Nukote Chemshield TG is a plural component system composed of a proprietary polymeric binder, providing excellent performance in highly 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. Nukote Chemshield TG is resistant to many solvents, hydrocarbons, steam, chemicals including high levels of hydrochloric acid, sulphuric acid, Alkalis, Mineral Spirits, Cutting oil, Sulphur fumes, Seawater, in ambient or elevated temperatures. Nukote Chemshield TG has good bond to rubber, metal as well as concrete surfaces and also is suitable in cryogenic applications. Chemshield TG is excellent for lining vessels in direct constant contact with hydrochloric acid at elevated temperature and acid fumes.

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**FEATURES:**

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- 100% solids with excellent resistance to equipment exposed to high-pressure process fluids and gas mixtures
- Trowel grade, self-priming, fast curing and back to service in 24 hours
- Excellent chemical resistance to wide range of chemicals
- Excellent resistance to hydrocarbons, water and gases rich in H<sub>2</sub>S and CO<sub>2</sub>
- Resists rapid decompression and steam out process
- Good bond to rubber and tenacious bond to metals
- High temperature resistance- up to 200 °C (390 °F)
- Inflammable without carbonization
- Good erosion, abrasion and impact resistance

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**TYPICAL USES:**

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- For repairs or in application where spray grade (Nukote Chemshield FC) is not suitable
- 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

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**COLORS:**

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Standard grey only.

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**PACKAGING:**

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Nukote Chemshield TG is available in 0.85-gallon (3.22-liter) kits, shipped in plastic pails of 0.73 gallons (2.76 liters) of side A and 0.12 gallons (0.46 liters) side B.

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**COVERAGE:**

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Nukote Chemshield TG may be applied at any rate to achieve the desired thickness. Calculation for theoretical coverage: 40 Ft<sup>2</sup>/gal @ 40 mils (1 m<sup>2</sup>/liter @ 1mm).

**STORAGE:**

Eighteen to twenty four 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.

<b>TECHNICAL DATA (All values @ 77 °F / 25 °C)</b>	<b>US</b>	<b>Metric</b>
Solids by volume (ASTM D2697)	100%	100%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	40 ft <sup>2</sup> /gal @ 40 mils	1m <sup>2</sup> / lit @ 1mm
Specific Gravity of materials (ASTM D792)	A: 13. 5, B: 9.01 lbs./gal	A: 1.62, B: 1.08 kg/ liter
Viscosity at 77 °F /25 °C in cps ±10% (ASTM D4878)	Paste	Paste
Shelf life @ 77 °F /25 °C	18 to 24 months	12 to 18 months
Tensile strength (ASTM D412-C)	4350 to 5100 psi	30 to 35 MPa
Elongation (ASTM D412-C)	0.1-2 %	0.1-2 %
Hardness (ASTM D2240)	90 Shore D	90 Shore D
Flexural strength (ASTM D790)	7250 - 8700 psi	50 - 60 MPa
Water absorption -24 hours (ASTM D570)	< 0.5 %	< 0.5 %
Adhesive tensile shear (ASTM D1002)	2500 -3000 psi	17 -21MPa
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 @ 1400 psi (100 kgf/cm <sup>2</sup> ) 1/8”(3 mm ) hole, 30 minutes (in-house test)	Pass	
Impact Resistance (ASTM D 256 ) Izod impact test (reverse)	10.1 in.lbs/in	45J/m
Flash point Pensky Martin	N/A	N/A
Service temperature Dry, Spike, Immersion *	345 °F , 400 °F, 300 °F	175 °C, 200 °C, 150 °C
Abrasion Resistance (ASTM D4060) weight loss	< 45 mg loss Taber CS 17 wheel 1Kg/1000 rev	
<b>PROCESSING PROPERTIES (Under standard lab conditions)</b>		
Mix Ratio V/V	6 A :1 B	
Gel time	15 to 20 minutes	
Tack free time ( DFT & Temperature dependent)	30 to 45 minutes	
Post cure time	4 to 6 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>		

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**MIXING:**

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Nukote Chemshield TG might not be diluted under any circumstance. Mixing ratio for Chemshield TG is 6:1 by volume. Add 6 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 colour is obtained. Chemshield TG 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.

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**SURFACE PREPARATION:**

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**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.*

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**APPLICATION:**

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Chemshield TG is a trowel applied product and do not attempt to dilute and use any alternate method of application. Use under controlled conditions which will completely avoid material loss due to exothermic heat, faster gelling and pot life. Stripe coat details such as brackets, edges, corners, welds and work well into the substrate with a good quality stiff brush. Apply using a spatula with lift coats of 600-700 microns each to recommended thickness of Chemshield TG. Finish the last build coat with a hard rubber roller for a smooth finish. Standard abrasive blast with angular abrasives is the preferred method of preparing surfaces prior to application of the product and mandatory in dynamic applications. Preparation can also be accompanied by use of proper hand tools to remove all oxidation or other loose particulates. Follow any surface preparation with proper solvent (MEK, Acetone) wipe to remove residues and e prior to application of the products. Manually prepared surfaces should be to a minimum standard of St 3 BS 7079: Part A1: 1989 at the time of coating. Refer NCSI manual on surface preparation for more details.

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**EQUIPMENT CLEAN UP:**

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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 33% at elevated temperature	R	Xylene, Toluene	R
Sulphuric Acid 70%	R	Acetone, MEK	R
Sulphuric Acid 50% at elevated temperature	R	Hydrogen Peroxide 30%	R
Nitric Acid 15%	R	Refined Petroleum products	R
Acetic Acid 10%	R	Sewage, Waste water	R
Crude Oil, JetFuel	R	Most Industrial effluents	R
Water @ 302 °F (150 °C)	R	Diesel Fuel, Gasoline (unleaded)	R
Motor Oil, Lubricants	R	Methanol, Ethanol	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*

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*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.*