
Description:

Nukote Chemshield CW compounds are paste of metals and ceramic in a polymeric binder to be used as a repair, rebuild and resurfacing product, providing excellent performance in corrosive, chemical and abrasive environments, at ambient or elevated temperatures for both ferrous as well as nonferrous metals. These products are designed for industrial use at elevated temperatures and will maintain its physical properties under continued exposure to high constant temperature both in exposed as well as immersion conditions. Nukote Chemshield Cold weld compounds are resistant to many solvent, chemicals including hydrochloric, sulphuric acid, alkalis, mineral spirits, cutting oil, sulphur fumes, seawater, in ambient as well as elevated temperatures. The products are available in different grades and specific purposes. Chemshield CW is used as a high strength structural adhesive and also suitable in cryogenic applications. This product can be used in most applications in combinations with other nukote ceramic coating assortments.

Features:

- Easy to apply for patch repair on metals
- High temperature resistance- up to 390 °F(200 °C)
- No shrinkage, expansion or distortion
- Excellent abrasion resistance
- Superior impact resistance
- Strong chemical resistance
- 100% solids, no VOC content
- Maintains strong adhesive strength.
- Can be used for repairing pitted steel.
- S and E versions of cold weld compounds are fully machinable using carbide tipped tools or grinding
- Can be heat cured for faster down time

Typical uses:

In repair, rebuild, and resurfacing metal damages resulting from erosion, corrosion, cavitation, wear and chemical attack in:

- In flow lines and transmission lines in petroleum and chemical industries
- Petroleum and chemical process equipment ,petroleum and chemical bulk carriers and tanks
- Sour gas pipelines and process equipment, offshore rigs and platforms,
- Corroded pumps, pump casing, impellers ,valves, condenser plates, diffusers, tanks,
- Heat exchangers, tube sheets, water boxes, chillers absorbers
- FGD systems , scrubbers, cooling towers, and centrifuges
- Propellers, kort nozzles, bow thrusters, rudders, struts, hull fairing.
- Weld overlay repairs ,crack repairs resulting from fatigue, stress and vibrations

Colors:

Standard grey only.

Coverage:

Nukote Chemshield Cold weld compounds should be applied at 200 mils (5 mm) and upwards or depending on the actual requirement. Theoretical coverage: 8.1 ft²/gal @ 200 mils (0.2 m²/liter @ 5mm).

Storage:

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

Technical data (all values @ 77 °F / 25 °C)			
	E	S	C
Solids by volume (ASTM D2697)	100%	100%	100%
Volatile organic compounds(ASTM D2369)	0 lb./gal	0 lb./gal	0 lb./gal
	0 gm/ lit	0 gm/ lit	0 gm/ lit
Theoretical coverage @200 mils(5mm)	8.1 ft ² /gal(0.2m ² / lit)	8.1 ft ² /gal(0.2m ² / lit)	8.1 ft ² /gal(0.2m ² / lit)
	1m ² /lit @ 1 mm	1m ² /lit @ 1 mm	1m ² /lit @ 1 mm
Specific gravity (ASTM D 792)	A:2.25, B:1.125 gm/liter	A:2.25, B:1.0 gm/liter	A:1.9, B:1.3 gm/liter
	A:15.82,B: 9.37 lbs/gal	A:18.73,B: 8.32 lbs./gal	A:15.82,B: 10.83lbs/gal
Shelf life @ 80 °F /27 °C	24 months	24 months	24 months
Tensile strength (ASTM D412-C)	3450-3750 psi	4050-4500 psi	4350-4650 psi
	24-26 MPa	28-31 MPa	30-32 MPa
Hardness (ASTM D2240)	80 shore D	88 shore D	90 shore D
Tensile shear (ASTM D1002) -SS	2520 (18 Mpa)	2940 Psi (21Mpa)	2800 psi (20Mpa)
Flexibility (10 mm bar bend)	Pass	Pass	Pass
Thermal fatigue -30 °F to 2 50 °F (-35 °C to 120 °C) - 20 cycles	Pass	Pass	Pass
Maximum Pressure (pin hole test)	1450 psi	1600 psi	1600 psi
	10 MPa	11 MPa	11 MPa
PROCESSING PROPERTIES (Under standard lab conditions)			
Mix ratio W/W (V/V) A:B	4A:1B (2 A :1 B)	9A:1B (4 A :1 B)	4A:1B (2.75 A :1 B)
Gel time	30 minutes	20 minutes	15 minutes
Tack free time (DFT & Temperature dependent)	10-15 minutes	45-60 minutes	30-45minutes
Post cure time	2-3 hours	5-6 hours	4-5 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 contact for curing schedules for machining, mechanical loading and immersion. Depends on thickness, ambient conditions and post curing methods.</i>			

Packaging:

Nukote Metalshield Cold weld compounds are available in 1 Kg (2.2 lbs.) Packs only.

Chemshield CW (E): A-800 grams, B -200 grams

Chemshield CW (S): A-900 grams, B -100 grams

Chemshield CW (C): A-800 grams, B -200 grams

Surface preparation:

Oil , grease, etc., shall be removed by means of solvent cleaning or by high-pressure water jetting or steam with a water soluble degreasing cleaning agent and rinsed and cleaned with fresh water. Metal surfaces for which blast cleaning is specified but which because of their location cannot be open blasted shall be prepared wherever practicable by bristle blasting. Where this is not possible such areas shall be fully cleaned and prepared using powered equipment without creating a polished surface. All welds should be prepared as per NACE SP 0178 grade C or better. Standard abrasive blast techniques are the preferred and recommended method of preparing surfaces prior to application of Nukote Chemshield CW product. Abrasive blast the substrate with angular grit to NACE-1 SSPC-SP-5, Sa3 to 2½ as per ISO 8501-1. The average surface profile to be in the range of 75-125 microns. Follow any surface preparation with proper solvent/chemical wipe to remove residues prior to application of any .Manually prepared surfaces should meet to a minimum standard of with ISO-8501-1 St 3. Refer NCSI Surface preparation manual for more details. Soluble salt contamination of prepared surface should be less than 20mg/m2

Mixing:

The ratios are pre measured and strongly recommended that full units be mixed. Always add hardener (B Side) to resin (A side).Mix thoroughly and continuously scrape material away from sides and bottom of container until a uniform streak-free consistency is obtained. Add part quantity of hardener (Side B) to resin (Side A) and mix thoroughly to a homogeneous mix. Add rest of the side B to Side A to achieve a uniform streak free mix. For larger volumes up to 2 kg's or part mixing, place resin and hardener on a flat, disposable surface such as cardboard, plywood, or plastic sheet. Use a trowel or wide-blade tool to mix the material. For volumes more than 10 kg's use a dedicated mixing paddle or a Jiffy Mixer Model ES on a slow speed electric drill. Heat both resin and hardener to 75 °F (24 °C) to ease mixing in cold weather

Application:

The application should take place when the temperature is at least 50 °F (10 °C) and above and less than 85% humidity. The material should not be applied when temperature is 7°C and falling or if the relative humidity is approaching 90%. The mixed material should be used within the pot life. On cold weather indirectly heat the material to 70- 80 °F /22-28 °C to aid proper mixing and application. Spread the mixed material with a plastic applicator or a spatula. Ensure not trap air and press it even pressure when spreading and work well into crevices, pits, cracks to achieve maximum surface contact and finish the application to mend with the substrate profile and contour. Allow Chemshield CW to cure for the recommended time before subjecting to mechanical loading, thermal loading or subjecting to immersion services. Where a two coat applications are required, apply it when it is still tack free and soft. Sweep blast with angular grit, if the surface is hard before applying the second layer. Use diamond tipped tool to machine Chemshield CW (C) and carbide tipped tools for other.

Equipment clean up:

All equipment and tools should be cleaned with MEK, acetone or any other suitable cellulose thinners

Limitations:

Do not open from the blister pack until ready to use, and store in a sealed container after opening. Do not leave it on open sun. Do not put to service until the desired and specific curing time has elapsed. Do not apply on adverse weather conditions or on contaminated surface.

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 resistance with NCSI 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.

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.