
DESCRIPTION:

Nukote HCR is a fast set, high end, rapid curing pure polyurea designed for use in application on substrates exposed to solvents and chemicals. It is 100% solids, flexible, two component new generation aromatic polyurea that can be applied to suitably prepared concrete, metal, and most substrates. Nukote HCR is suitable for tank farms and fuel storage yards in primary as well a secondary containments. The product is commonly specified as a standalone liner or in conjunction with other Nukote products in monolithic composites on concrete, steel or other substrates exposed to hydrocarbon solvents and distillates.

FEATURES:

- 100% solids with zero VOC
- Eco-friendly
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Return to service within hours not days (foot traffic 1 hour, vehicle traffic 4 hours)
- Typically applied in a single 'multi-pass' application
- An elastomer with chemical resistance; comparable to many epoxies
- Performs in constant temperatures from -40 °F to 200 °F (-40 °C to 93 °C)
- Retains physical properties on weathering
- Moderate elongation properties
- Seamless, resilient, flexible and tough
- Excellent solvent resistance (consult NCSI)
- Good chemical resistance
- Good corrosion protection
- Good impact, tear and abrasion resistance
- Low permeability waterproofing membrane

TYPICAL USES:

- Primary and secondary containment
- Steel tanks, concrete tanks, and silos
- Tank liner for hydrocarbon, distillates and petroleum products
- Secondary containment of solvent and chemical storage tanks
- Oil and gas pipelines
- Wastewater treatment facilities.
- Floor coating on chemical and solvent processing facilities
- Cargo holds, chemical transportation. Barge and ship holds.
- Landfill containment
- Pulp and paper industry
- Asbestos and lead encapsulation.

COLORS:

Standard medium grey only. Custom colors, blended to match any RAL number, are available upon request subject to minimum quantity.

PACKAGING:

110-gallon (416-liter) drum sets, shipped in metal drums of 55 gallons (208 liters) each of side A and side B
 30-gallon (114-liter) kits, shipped in plastic pails of 5 gallons (56.5 liters) each of side A and side B
 10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B

COVERAGE:

Nukote HCR may be applied at any rate to achieve the desired thickness.
 Calculation for theoretical coverage: 40 Ft²/gal @ 40 mils (1 m²/liter @ 1mm).

STORAGE:

Six to nine 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.

Nukote HCR must be stored at temperatures between 60 - 90°F (15 - 32°C).

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	40 ft ² /gal @ 40 mils	1m ² / lit @ 1mm
Specific Gravity of mixed materials (ASTM D792)	9.63 lbs./gal	1.15 kg/ liter
Viscosity at 158 °F/70 °C in cps ±10% (ASTM D4878)		A-160, B-380
Viscosity at 77 °F/25 °C in cps ±10% (ASTM D4878)		A-650, B-750
Shelf life @ 77 °F /25 °C	6 – 9 months	6 – 9 months
Tensile strength (ASTM D412-C)	3000 to 3200 psi	21 to 23 MPa
Elongation (ASTM D412-C)	75-125 %	75-125 %
Hardness (ASTM D2240)	60 to 70 Shore D	60 to 70 Shore D
Flexibility (2mm mandrel ASTM D522) Mandrel Size 1” Test Temp - 40°F (-40°C)	Pass	Pass
Permeance (ASTM E96)		0.007 perms-inch
Water vapor transmission rate (ASTM E96)	0.030-0.035grains/hr-ft ²	0.15 to 0.25gms/hr-m ²
Water absorption -24 hours (ASTM D570)	~ 1 %	~1%

Crack Bridging @ -13 °F/-25 °C (ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D642)	250 to 300 pli	45 to 55 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 175 in-lbf	> 18 J (N-m)
Fire Rating (ASTM E108)	Meets Class A for Flame spread	
Flash point Pensky Martin	>200 °F	>93 °C
Service temperature (Dry)	-40 °F to 200 °F	-40 °C to 93 °C
Abrasion Resistance (ASTM D4060) weight loss	< 30 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time	4 to 6 seconds	
Tack free time (DFT & Temperature dependent)	10 to 30 seconds	
Recoat time	0 to 6 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.</i>		

MIXING:

Nukote HCR might not be diluted under any circumstance. Thoroughly agitate the “B” components of this product prior to application. Use a blade mixer or air driven power equipment until a homogeneous mixture and color is obtained.. Install mixer through the extra air specific 2” bung hole provided on all “B” drums. Care must be taken not to cross contaminate the individual components with the mixing equipment; for best mixing results, supply the mixer with 25 cfm of air at 100 psi. Thinning is not required. Using any thinner may adversely affect product performance.

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-2/SSPC SP-10/Sa 2.5, 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:

Must be applied utilizing high-pressure, heated plural component spray proportioning equipment, such as Graco Reactor 2, or equivalent, capable of delivering materials without loss of pressure or drop in temperature for the appropriate hose length on a consistent basis.

Standard 1:1 ratio, heated, plural-component equipment developing a minimum of 2500 psi (17.24 MPa) dynamic pressure will adequately spray Nukote HCR. Other application equipment may be acceptable depending on product and application. Contact NCSI technical service for specifics.

Machines capable of producing a higher dynamic psi may be required depending on the service environment the Nukote HCR will be exposed to. Consult NCSI technical service personnel for additional information.

Primary heater temperature should be at 160-170°F (71-77°C). Hose temperature should be at 160-170°F (71-77°C). A hose thermometer inserted under the insulation near the gun.

Physical properties will be enhanced when sprayed at higher pressure (3000 psi or more), utilizing an impingement mix gun such as MP Fusion or GX7-DI gun.

For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote HCR should always be applied over a suitable primer for maximum adhesion. For all submersed or immersion applications, use of a suitable primer is absolutely essential. On horizontal surface applications, a texture “stipple” coat can be applied for non-skid purposes, after reaching the initial desired film thickness. Recommended DFTs are a function of the project specific requirements. Please review your specific project with Nukote technicians.

EQUIPMENT CLEAN UP:

Cured product may be disposed of without restriction. Uncured Isocyanate 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. Adding a nitrogen blanket is strongly recommended for the ‘A’ component when storing after opening.
- Liquid temperature in containers/drums during application 70 - 100°F (21 - 38°C).
- Apply Nukote HCR when surface and air temperatures are above 40°F (5°C) and the surface temperature is at least 5°F (3°C) above dew point and rising.
- Minimum material/container temperature for spray application is 70°F (21°C).
- Avoid moisture contamination in containers. Containers should not be resealed if contamination is suspected. CO₂ created pressure can develop. Do not attempt to use contaminated material.
- Undried air exposed to liquid components will reduce physical properties of the cured coating.

WARNING:

This product contains Isocyanate 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 10%	R	Ammonium Hydroxide 20%	R
Sulphuric Acid 15%	R	Ammonium Hydroxide 50%	RC
Phosporic Acid 30%	R	Pottasium Hydroxide 10%	R
Acetic Acid 10%	R	Pottasium Hydroxide 20%	RC
Acetic Acid 50%	RC	Sodium Hydroxide 20%	R
Sea water, Wastewater, Water, De ionized Water	R	Skydrol	RC
Jet Fuel JP-1,2,3	R	Diesel Fuel, Gasoline (unleaded)	R
Methanol	RC	Motor Oil, Brake Oil	RC
Sodium Hydroxide-50%	RC	Hydraulic Oil	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.