DESCRIPTION:

Nukote PLC Plus is a high performance 100% solids structural polyurethane which is designed specifically for steel, ductile iron, and concrete pipe. Persistent adhesion and high impact resistance allow it to be utilized in the severest environments. Nukote PLC Plus is a direct-to-metal, quick-set, two-component, polyurethane designed to protect pipelines from corrosion and abrasion.

FEATURES:

- Meets the requirements of AWWA C222
- NSF 61 approved
- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Good resistance to cathodic disbondment
- Good corrosion protection
- Good impact and abrasion resistance
- Good thermal stability
- High tensile strength
- Excellent adhesion directly to steel and ductile iron
- Simple inexpensive field jointing and repair material

TYPICAL USES:

- Below and above grade pipeline applications
- Steel pipes lining and repair
- Fresh or saltwater submersed pipeline applications
- Potable water pipe lining
- Steel poles (above and below ground)
- Waste water and Effluent transmission lines
- Field jointing and pipeline repairs
- Steel and concrete piles, penstocks, offshore jackets and platform
- Steel or concrete protection in Power, Paper & pulp mills, mining and refineries
- Storage tanks and primary containments lining
- Buried tanks external coating

COLORS:

Black, Grey, Blue, White. Custom colors, blended to match any RAL number, are available upon request subject to minimum quantity.

PACKAGING:

100-gallon (380-liter) drum sets, shipped in metal drums of 50 gallons (190 liters) each of side A and side B
500-gallon (1900-liter) tote sets, shipped in plastic totes of 250 gallons (950 liters) each of side A and side B

COVERAGE:

Nukote PLC Plus may be applied at any rate to achieve the desired thickness.
Calculation for theoretical coverage: 40 Ft^2 /gal @ 40 mils (1 m^2/liter @ 1mm).

STORAGE:

Twelve months in factory delivered, unopened drums. Store on pallets indoors at temperatures between 60°-95°F (15°-35°C) and keep away from extreme heat, freezing, and moisture. The use of drum heaters is encouraged to reduce material viscosity at low temperatures. This material will react with humidity and moisture. Keep containers tightly sealed.

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/mm
Density (ASTM D792)	A: 10.01, B: 9.17 lbs./gal	A-1.2, B-1.1 kg/ liter
Viscosity at 158 °F/70 °C in cps ±10% (ASTM D4878)	A-200 ± 50, B-175 ± 50	
Shelf life @ 77 °F /25 °C	12 Months	12 Months
Tensile strength (ASTM D412-C)	4200 ± 500 psi	29 ± 3 MPa
Elongation (ASTM D412-C)	12 ± 5 %	
Hardness (ASTM D2240)	80 ± 3 Shore D	80 ± 3 Shore D
Flexibility – 180° (ASTM D522)	No cracking or delamination	
Accelerated weathering (ASTM G154)	No cracking. Some chalking and darkening	
Water absorption -24 hours (ASTM D570)	~ 1.33 %	
Adhesion to steel (ASTM D4541)	>3500 psi	>24 MPa
Cathodic disbondment (ASTM G95)	< 8mm	< 8mm
Dielectric strength (ASTM D149)	769 Volt/mil	302756 Volt/cm
Impact Resistance (ASTM G14), No Holidays	> 128 in-lbf	> 14.5 J (N-m)
Flammability (FMVSS-571.302) Title 49 ,Transportation	Pass	Pass

Flash point Pensky Martin	>260 °F	>130 °C
Application temperature	-40 °F to 150 °F	- 40 °C to 65 °C
Service temperature (Dry)	-20 °F to 250 °F	- 30 °C to 120 °C
Abrasion Resistance (ASTM D4060) weight loss	< 74 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Initial setting time	<5 minutes (set time may be adjusted depending on production needs.)	
Recoat time (DFT & Temperature dependent)	1 to 3 hours	
Curing time before handling	>20 minutes	
Full cure time	>7 days	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected. Values included above are per NCSI standard lab practices & methodology of draw down film at various dry film thicknesses.		

MIXING:

Nukote PLC Plus might not be diluted under any circumstance. Agitate individual components thoroughly before use to disperse pigments and assure homogeneity. DO NOT thin or mix A and B together.

SURFACE PREPARATION:

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 with angular media (sand, aluminum oxide, garnet or steel grit G40 or coarser) 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). DO NOT USE steel shot or non-angular products or slag-based media. Soluble salts must be removed to an acceptable level depending on applications.

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 laitance and expose voids. Use a good quality epoxy filler or mortar for blow hole filling, skim coat or repairs. Prime, fill imperfections in the substrate surface to limit out-gassing. All concrete subfloors on or below grade level should be tested for moisture. On-grade or below-grade concrete floors 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 for optimum performance (6, 7).

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.
See below for suggested application settings and conditions:

Condition	Material	Surface	Ambient	Humidity
Optimum	130 °F to 140 °F	70 °F to 90 °F	70 °F to 90 °F	0-50 %
Minimum	125 °F	0 °F	35 °F	0 %
Maximum	150 °F	120 °F	120 °F	85 %

Recommended DFTs are a function of the project specific requirements. Please review your specific project with Nukote technicians.
High film thickness can be obtained in one continuous coating operation, using one of several techniques.
For coating on a conveyor line, a uniform pipe temperature of between 70°F (20°C) and 120°F (55°C) is required to enable the coating to cure quickly.
A second coat may be applied over the first, so long as it is applied within the recoat window. Otherwise, it will be necessary to roughen the surface or using Premera AE T7LF inter-coat primer to ensure good inter-coat adhesion.

EQUIPMENT CLEAN UP:

For clean-up, use MEK or 50/50 MEK/Xylene.
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. Poor gloss retention and tendency to chalk on UV exposure. Use an aliphatic top coat for color and gloss resistance.

WARNING:

This product contains Isocyanate and curatives.
Provide ample ventilation in confined areas. Protect skin by wearing rubber gloves, safety goggles and other appropriate PPE. Wear NIOSH approved cartridge type face mask and fresh air respirator in the spray area.

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
Sodium Chloride 30%	R	Sodium Hydroxide 30%	R

Sulphuric Acid 10%	R	Diesel Fuel	RC
Sea water	R	Sodium Hydroxide 30%	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.