SPECIFICATION FOR NUKOTE AEGIS ®

LINING SYSTEMS

Suitable for use in new construction or rehabilitation of storage, distribution and processing for; raw water potable water, sanitary sewer, storm water systems.

Liners for use in New Concrete Pipe, Basins, Tanks and Vaults or Manholes

Liners for use in Rehabilitation of Concrete Pipe, Basins, Tanks and Vaults or Manholes

Liners for use in New Steel Basins, Pipe and Tanks

Liners for use in the Rehabilitation of Steel Basins, Pipe and Tanks

Liners for use in New Construction of Dam; Structures, Spillways, Canals and Penstocks

Liners for use in Rehabilitation of Dam; Structures, Spillways, Canals and Penstocks

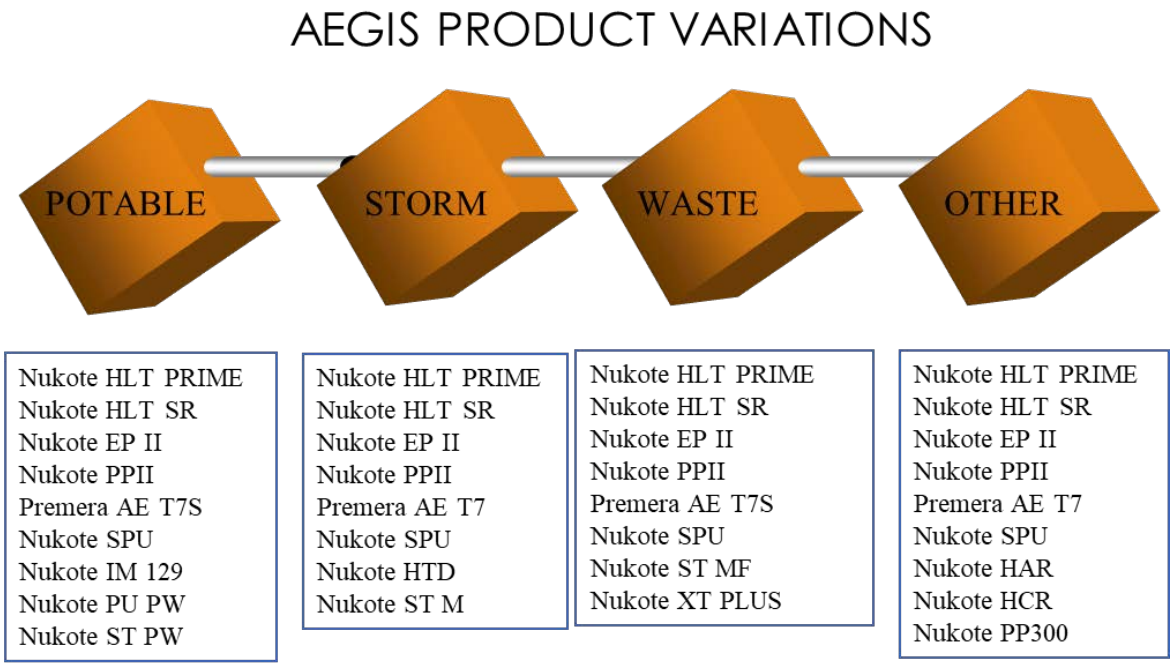
NUKOTE AEGIS ® Liners are installed using high pressure, heated, plural component proportioning equipment. The applications are performed either manually or utilizing NUKOTE 360 RINGTECH ® Robotics

NUKOTE AEGIS® Liners are widely used in North America and Globally. Major project references are available on request.

NUKOTE AEGIS® Liners are installed to specifications which meet both the client's requirements and relevant government standards including all AWWA variations and ANSI NSF. The following document is a generic specification covering new construction and rehabilitation for all substrate types.

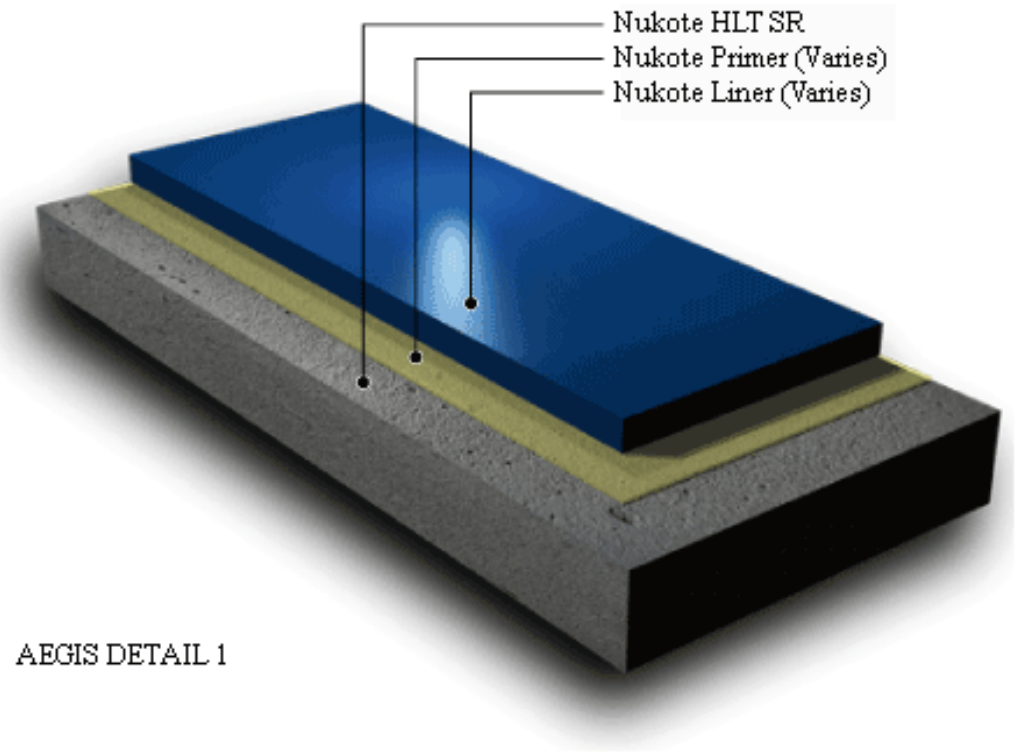
NUKOTE AEGIS® Specifications are consistent from surface preparation to priming (when required). Specifications of the liner formulation utilized will vary for use in specific effluent types, which may include; domestic and industrial waste, storm water, potable water, extreme abrasion or erosion common to penstocks and spillways and where the structural integrity of the pipe, basin or vault is compromised.

NUKOTE AEGIS® Products included in the following specification include; concrete surface treatments, primers and liners. The product technical data sheets are included as addenda to this specification. The following graphic summarizes the range of product options utilized.



PROTECTIVE LINER FOR NEW CONCRETE SUBSTRATES

Innovation in waterproofing and protection of New concrete substrates, using proprietary Nukote Coating Systems technology, through waterproofing and maintaining the structural integrity of the concrete substrate itself, not just the surface.



AEGIS DETAIL 1

Note that primer selection is variable dependent on application method (manual or robotic), desired overcoat times, substrate condition and ambient temperatures.

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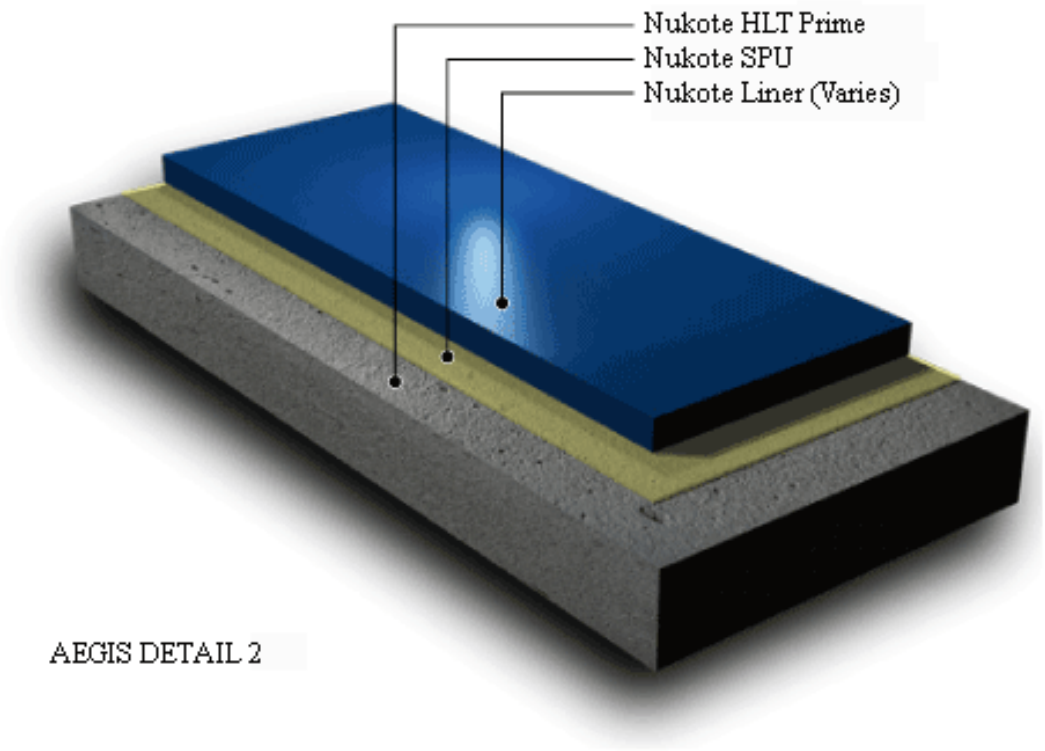
REHABILITATION LINER FOR OLD CONCRETE SUBSTRATES

Innovation in waterproofing and restoration of Existing concrete substrates, using proprietary Nukote Coating Systems technology, through waterproofing and strengthening of the concrete substrate itself, not just the surface.



Note that primer selection is variable dependent on application method (manual or robotic), desired overcoat times, substrate condition and ambient temperatures.

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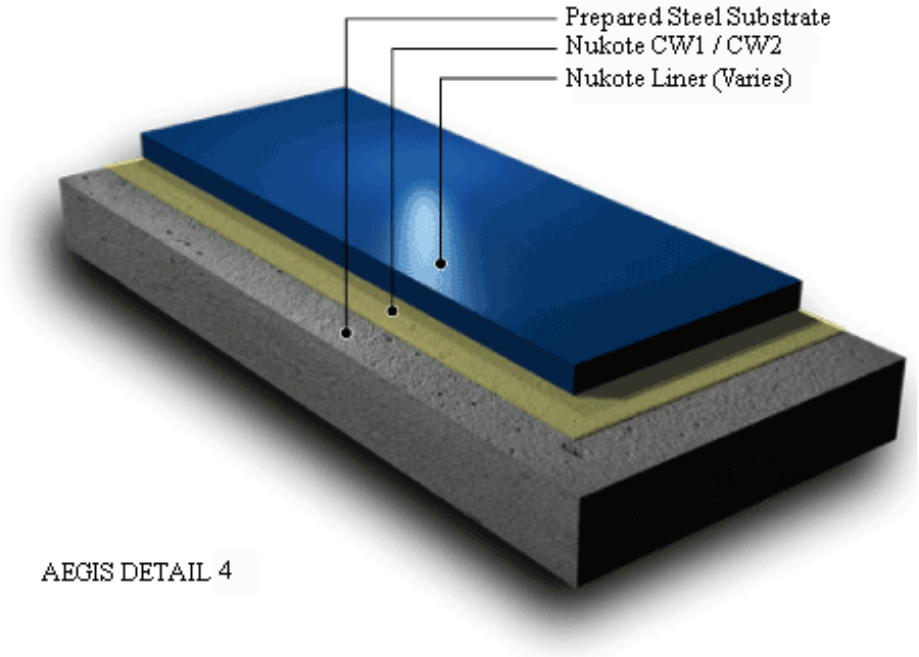
PROTECTIVE LINER FOR NEW STEEL SUBSTRATES

Innovation in protection of New steel substrates, using proprietary Nukote Coating Systems technology, through corrosion and abrasion protection, extending the design life of the steel substrate.



Note that primer selection is variable dependent on application method (manual or robotic), desired overcoat times, substrate condition and ambient temperatures.

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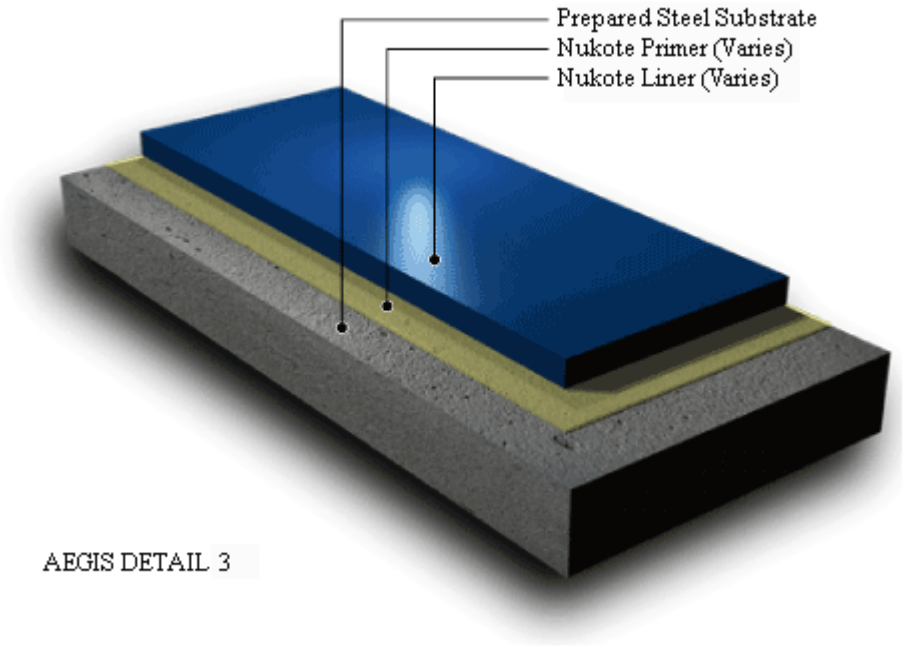
REHABILITATION LINER FOR EXISTING STEEL SUBSTRATES

Innovation in rehabilitation of Existing steel substrates, using proprietary Nukote Coating Systems technology, through corrosion and abrasion protection, extending the design life of the steel substrate.



Note that primer selection is variable dependent on application method (manual or robotic), desired overcoat times, substrate condition and ambient temperatures.

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PART 1 GENERAL

1 USER GUIDELINE PREFACE

A. *Nukote Aegis® Protective and Rehabilitation Systems were developed from experience acquired during our involvement with the construction, protection and maintenance of structures and distribution systems in storm water, potable water, and waste water, collection & treatment plants and dams, manholes, wet wells, basins and other structures, including ancillary equipment. Where appropriate they are based on, or reference is made to, international, regional, national and industry standards.*

B. *Our objective is to set the recommended standard for good design and practice as applied by Nukote Coating Systems and our affiliated Contractors active in water and infrastructure projects, to achieve maximum technical and economic benefit from standardization.*

C. *Liner formulations and typical dry film thickness of Nukote Aegis® liners are dependent on each project's unique design for; exposure, abrasion and abuse levels. The recommended DFT will provide an adequate uniform liner for use with the required resistance to; chemicals, abrasion resistance, impact resistance and resistance to mechanical damage.*

D. *For spray applied Polyurea systems, the correct equipment is critical to achieve proper mixing. For fast set spray systems, equipment shall be a plural component impingement spray machine capable of producing the Polyurea system to the manufacturers published recommended processing characteristics. Polyurea and Polyurethane Elastomers must be applied only by trained Professionals.*

2 SCOPE

A. *The work described herein details the process for use of Nukote Aegis® liners in new construction and rehabilitation of new manholes, basins, piping and structures. The processes defined herein are suitable for all application types including sanitary sewers, storm water, potable water and dam/penstock water storage systems This section details the methods, procedures, materials and equipment required during application. The completed system will provide a corrosion resistant liner that eliminates water infiltration and exfiltration, when applied in compliance with this document. This document is generic. Specific Method Statements are provided for each project during the document submittal process.*

3 REFERENCES AND STANDARDS

All references and standards listed shall be the latest revisions.

A. References

1. American Society for Testing and Materials (ASTM)
2. American Water Works Association (AWWA)
3. International Standard Organization (ISO)
4. National Association of Corrosion Engineers (NACE)
5. The Society for Protective Coatings (SSPC)
6. International Concrete Repair Institute (ICRI)
7. American Concrete Institute (ACI)

B. ASTM Standards

1. ASTM E-1907: Calcium Chloride Test for Moisture Vapor Transmission
2. ASTM D-4263: Test Method for Indicating Moisture in Concrete
3. ASTM E-337: Test Method for Measuring Humidity with a Psychomotor
4. ASTM G-8: Test Method for Measuring Cathodic Disbondment on Steel
5. ASTM D-6132: Test Method for Nondestructive Measurement of DFT
6. ASTM D-4138: Test Method for Destructive Measurement of DFT
7. ASTM D- 4541: Method for Pull-Off Strength of Coating Portable Testers
8. ASTM D-4787: Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates

C. SSPC Standards

1. SSPC Publication No 91-08: Surface Preparation Specifications
2. SSPC TU-13: Surface Preparation of Concrete
3. SSPC TU-2: Design, Installation and Maintenance of Coating Systems for Concrete

D. NACE Standards

1. NACE Standard SP 0188: Discontinuity (Holiday) Testing for Protective Coatings
2. NACE Standard SP 0892: Linings over Concrete for Immersion Service
3. NACE No.6: Surface Preparation of Concrete
4. NACE 6/SSPC 13: A joint standard for Surface preparation of concrete

E. Other standards

1. ICRI Technical Guidelines 03730: Surface Preparation Guidelines for the Repair of Deteriorated Concrete Resulting from Reinforced Steel Corrosion.
2. ICRI Technical Guidelines 03731: Guide for Selecting Application Methods for the Repair of Concrete Surfaces.
3. ICRI Technical Guidelines 03732: Guide for Selecting and Specifying Surface Preparation for Sealers, Coatings and Membranes.

4 QUALITY ASSURANCE

Single Source Responsibility:

A. *Provide conditioners, primers and undercoat materials specified and produced by the same manufacturer, or materials recommended by designer and manufacturer, for each type of Nukote Aegis® lining specified to ensure compatibility, and proper chemical and mechanical bond. Provide conditioners, primers and other required materials produced by the same manufacturer, or recommended by manufacturer, for Joining System specified to ensure compatibility, and proper mechanical bond. This would include physical properties, adhesion and no adverse reaction between various systems.*

B. *It is required that the contractor applying the Nukote Aegis® Liner System be trained and certified by Nukote Coating Systems International, as the designer and manufacturer of the specified products. Nukote Coating Systems International have in a program of training, certifying and technically supporting an organized Approved Contractor Program with annual re-certification of its participants through Nukote International Coatings training courses.*

C. EQUIPMENT REQUIREMENTS

1. *Manual application requires the use of a plural component impingement spray machine capable of producing the Nukote Aegis® Liner system specified in accordance with the manufacturers published recommended processing characteristics.*

2. *Robotic application requires the use of the equipment defined in Part C Section 1 above combined with Nukote 360 Ringtech® equipment. This equipment is primarily utilized for application of Nukote Aegis® Liner System products, is fully automated ensuring compliance with specification parameters.*

5 DELIVERY, STORAGE, AND HANDLING

A. *Deliver product in the manufacturer's original, unopened packages and containers clearly marked with manufacturer's identification, printed instructions, lot numbers and shelf life expiration date for each component.*

B. *Store and ship materials on pallets, in tightly covered containers in a dry, well-ventilated area, at ambient temperature of 45-104ºF, away from hazards. If lower temperatures are experienced, material must be effectively reconditioned under the direction of the manufacturer.*

C. *Before use, material must be conditioned to a standard minimum temperature of 68º F prior to processing with equipment.*

D. *Pigmented resin blend components must be properly agitated prior to use as per manufacturer's recommendations.*

6 PROJECT CONDITIONS

A. *Not all conditions are uniform, it is advisable to notify the Nukote Regional Technical Manager of the environmental corrosivity rating, chemical exposure, abuse level, and other operating parameters so that he may modify and specify the correct products to suit the requirement.*

1. *For temperatures below 40º F consult Nukote Coating Systems.*
2. *All surface preparation dependent upon the substrate and its condition*
3. *Applications on concrete assume normal high strength reinforced or precast concrete*
4. *Provide proper safety equipment and observe all safety & health guidelines. Surfaces shall be kept free of re contamination.*
5. *Protect adjacent surfaces, equipment, etc. from damage resulting from work of the application of Polyurea system. If necessary, mask and / or cover adjacent surfaces, fixtures, equipment, etc. by suitable means.*
6. *Do not apply material over free water or wet surfaces.*

B. HEALTH AND SAFETY

1. *General: Ventilation, electrical grounding and care in handling paint, solvents, and equipment are important safety precautions that shall be observed, and the Contractor has sole responsibility.*
2. *Ventilation: It is essential that the hazardous vapors released during and after application of coatings be removed from all areas considered as confined space. During blasting and coating operations all personnel shall wear proper respiratory and safety equipment.*
3. *Grounding: Blasting and coating hoses shall be grounded to prevent accumulation of a charge of static electricity.*
4. *Lighting: Explosion proof artificial lighting shall be provided for all work where and when required. Light bulbs shall be guarded to prevent breakage. Lighting fixtures and flexible cords shall comply with the requirements of NFPA 70 "National Electrical Code" for the atmosphere in which they will be used.*

5. *Toxicity: The solvents used with some primers or cleaning solvents are explosive at low concentrations and are toxic. Because of toxicity, the maximum allowable concentration of vapor for several common solvents shall be no greater than the Immediately Dangerous to life or Health (IDLH) limits as shown in the National Registry of Toxic Chemical Substances.*
6. *Protective Clothing: When handling or applying coatings, workmen shall wear gloves, eye shields and all other necessary protective clothing to assure workmen's safety.*
7. *Fire: During mixing and application of coating, all spark producing material and smoking shall be prohibited in the vicinity. An appropriate type of fire extinguisher shall be kept nearby.*
8. *Safety Data Sheets (SDS): Contractor shall maintain SDS Reports on all specified coating materials on project site, accessible to employees.*

7 SYSTEM PERFORMANCE REQUIREMENTS

A. *Materials utilized in the installation of these systems shall be designed and manufactured to withstand the severe effects of hydrogen sulfide in a wastewater environment*

B. *Equipment for installation of lining materials shall be high quality grade and be as recommended by the manufacturer.*

C. *The coating systems shall be a spray-applied multi-layered system consisting of products designed for use in coating new or existing manholes, pipe, wet wells, lift stations, treatment plants, and other structures as described below:*

D. *Material Compatibility: Provide conditioners, coating and repair materials, primers, finish coat and related materials that are compatible with one another and the substrates indicated under conditions of service required as recommended by the manufacturer, including; physical properties, adhesion and adverse reaction between systems.*

E. *Lining system products must meet or exceed all physical properties, test results, and certifications as published by the manufacturer.*

8 DESCRIPTION OF COATING SYSTEM

A. NUKOTE AEGIS® LINER SYSTEM FOR NEW CONSTRUCTION

1. *Surface Treatment for Concrete: Nukote HLT SR or Nukote HLT Prime applied at 170 SF per Gallon.*
2. *Recommended primers: Type and DFT vary see TDS for application coverage rates*
3. *Aromatic Lining Systems: Type and DFT vary see TDS for application coverage rates*
4. *Polyurea Joint filler: See TDS for application rates per lineal foot relevant to joint size and depth*
5. *Intercoat Primer. Nukote IC prime see TDS for application coverage rates*

B. NUKOTE AEGIS® LINER SYSTEM FOR REHABILITATION

1. *Surface Treatment for Concrete: Nukote HLT SR or Nukote HLT Prime applied at 170 SF per Gallon.*
2. *Surfacer for Concrete: Nukote SPU at ¼" thickness applied to vaults or manholes only*
3. *Recommended primers: Type and DFT vary see TDS for application coverage rates*
4. *Aromatic Lining Systems: Type and DFT vary see TDS for application coverage rates*
5. *Polyurea Joint filler: See TDS for application rates per lineal foot relevant to joint size and depth*
6. *Intercoat Primer. Nukote IC prime see TDS for application coverage rates*

9 INSPECTION AND QUALITY ASSURANCE

A. *The Application Contractor shall provide a daily record of all application process information, including; ambient and surface temperatures, ambient relative humidity, dew point, equipment temperature, equipment process ratios, equipment pressures, implemented application procedures and inspection data.*

B. *The dry film thickness shall be determined from:*

1. *Destructive Testing (where applicable)*
2. *Magnetic or ultrasonic measuring devices*
3. *Consumption of coating material, over a specific area, derived via Nukote 360 Ringtech® Equipment*

C. *Adhesion Values:*

1. *Destructive testing for measuring the adhesion level achieved accomplished through use or adhesion testing equipment.*
2. *Alternately sample substrate samples can be sprayed on a daily basis and tested to avoid destructive testing.*

D. *WARRANTY*

1. *The Nukote Aegis® Liner System is provided with a joint product and installation warranty as per standard warranty terms and conditions, or a supply and apply warranty for extended periods direct from Nukote Coating Systems to the Client. Conditions apply contact Nukote for details*

PART 2 PRODUCTS

In many instances, the Nukote Aegis® Liner System specified may include a combination or composite of products to meet the unique requirements of a specific project. These composites may be used to:

1. *Enhance adhesion*
2. *Expedite the performance of the installation*
3. *Provide high chemical resistance to a specific design parameter*
4. *Provide high abrasion resistance to a specific design parameter*
5. *Provide for high flow rates and pressures to a specific design parameter*

Note: These composites are monolithic in nature and often provide a more cost-effective solution when compared to a single product system specification.

See attached Technical Data Sheets for all Nukote Aegis® Liner System products that could be combined to provide for a total solution.

Nukote Aegis® Liner Systems are manufactured in North America and Internationally by Nukote Coating Systems International. 4730 Consulate Plaza Drive, Suite 100, Houston, Texas 77032 www.nukoteglobal.com

Nukote 360 Ringtech® equipment systems are manufactured in North America and Internationally by Nukote Coating Systems International. 4730 Consulate Plaza Drive, Suite 100, Houston, Texas 77032 www.nukoteglobal.com

NUKOTE AEGIS® LINER SYSTEM PRODUCTS

Nukote Aegis® Liner System products which can be included in a specification many include the following:

1. *Nukote ST M*
2. *Nukote ST PW*
3. *Nukote PLC*
4. *Nukote PU PW*
5. *Nukote XT +*
6. *Nukote PP 300*
7. *Nukote HTD*

NUKOTE AEGIS® LINER SYSTEM SURFACE TREATMENTS

1. *Nukote Hydro Lock Treatments, HLT® SR and HLT® Prime are colloidal silanes used on cementitious substrates to eliminate moisture content, reduce negative pressure water penetration below the liner system and/or provide an ionic bond to urethane and urea formulations without the use of an applied primer*

2. *Nukote CW1 and CW 2 are proprietary steel surface treatments that allow for comprehensive surface preparation prior to Nukote Aegis® Liner Systems installations, regardless of the interval between surface preparation and liner installation*

NUKOTE AEGIS® LINER SYSTEM PRIMERS

Primers, when required in the specification which can vary depending on substrate and other factors will include the following products:

1. *Nukote Polyprime II*
2. *Nukote EP Prime II*
3. *Nukote IC Prime*
4. *Nukote Metal Prime I*
5. *Nukote HLT Prime*
6. *Nukote Premera AE T7S*

NUKOTE AEGIS® LINER SYSTEM SPU FOAMS

Nukote SPU Polyurethane foam is utilized in Nukote Aegis® Liner System specifications, solely on cementitious substrates and primarily in rehabilitation projects where rough surface conditions, spalls and other defects exist. Use of 6 mm of high density (6 lb pcf) foam provides an even surface allowing for complete liner system coverage at lower dry film thickness. It also provides a soft interface at pipe to vault or manhole connections which is critical to system integrity. It is typically applied over surface treatments and in cases primers, the liner system is applied over the foam installation

PART 3 EXECUTION

1 EXAMINATION

A. Sequence Of work

1. Site inspection of the site.
2. Application scheduling.
3. Confined space access and support.
4. Weather conditions / delays5. Surface cleaning and preparation.
6. Substrate repairs.
7. Hydro lock application
8. Heating the substrate if required (site and weather specific)
9. Substrate priming (if required)
10. Application of Low density foam (if required)
11. Application of Polyurea spray elastomer system,
12. Review or inspection of applied area
13. Rectification and necessary repairs
14. Sign off and Release of the area to facility owner

2 SURFACE PREPARATION

Remove all oil, grease, dirt, water or other contaminants in accordance with ASTM D 4258 and SSPC -SP- 1. Abrasive grit blast, wet abrasive blast or high pressure water blast all surfaces to be coated, to remove all laitance, efflorescence, surface hardeners, curing compounds, old coatings and loose concrete, in accordance with SSPC-SP 13 /NACE No. 6 or ASTM D 4259. A surface texture similar to that of medium-coarse sandpaper should be attained. Inspect and repair the concrete for cracks and other defects with pre-approved epoxy concrete repair compounds.

Inspection of the concrete construction joints (casting stops), edges, corners, joints etc. Abrasives used shall be clean, a uniform grade and of an appropriate size to obtain the specified surface finish and profile. Water used with high-pressure water blasting or wet abrasive blasting shall be clean potable water. Thoroughly clean all blasted surfaces to remove all dust and debris after dry blasting, or to remove all water, sludge and debris after wet blasting.

Refurbish all cracks, joints and other defective areas in concrete using appropriate repair materials, where applicable.

Repair all moving cracks which have opened to a width of ½" or greater must with an Elastomeric caulking material as per the manufacturer's instructions.

3 APPLICATION EQUIPMENT

Nukote SPU and Nukote Polyurea must be applied utilizing high-pressure, heated plural component spray proportioning equipment, such as those manufactured by GlasCraft®, Gusmer® and Graco®. The proportioning equipment utilized must can supply correct pressure and heat for the appropriate hose length on a consistent basis.

4 APPLICATION

Hydro Lock Treatment (HLT® SR / HLT® P)

The prepared surface shall then be treated and sealed with Nukote HLT®, a 100% solids VOC free product suitable for application on damp surface on positive as well as negative side and capable of penetrating more than or up to 8" and forming a permanent flexible hydrostatic barrier. If curing compounds, release agents, wax etc., are present on the substrate Nukote HLT will not penetrate. These agents or bond breakers need to be removed by water blasting or abrasive mechanical means. Nukote HLT® must be applied by low pressure spray to the substrate.

Primer Application

Ensure the area to be primed is clean and dry, apply the recommended primer over the entire concrete surface prepared capable be completed within the primers recoat window. Foam is to be applied when Primer is tack free.

Use the specified primer and install to the dry film thickness and within the application window specified for the primer being utilized.

Application of Nukote SPU Foam (When Required)

Apply Nukote SPU Foam using high pressure plural component proportioning equipment primary and hose heaters set at 150º F minimum with pressure settings at 1800 psi minimum. Apply SPU Foam in a moderate speed repeat the process until the foam thickness is 6mm or ¼"

Note: Foam rises and requires 1-2 minutes to reach full expansion dependent on ambient temperatures and density of the product.

Note: Winter and Summer Foam grades are available

Note: Apply evenly ensuring a uniform (slight modulating) surface to minimum thickness levels.

Note: There is no recoat window for foam products but ensure that you complete each lift in a given area to the final thickness in the same period to ensure uniformity of the installation.

Application of NUKOTE AEGIS® LINER PRODUCTS

All liner product variations will be applied in a single monolithic layer to the specifications dry film thickness which varies to project specifics.

All products are applied using high pressure plural component proportioning equipment which also vary depending on application specifics (manual or robotic) and other factors.

All product are applied at pressures from 2000 to 2500 psi.

All products are applied at equipment primary and hose heat setting from 150F to 165F

Each day's work should be terminated on a Joint or pre-determined termination line.

All products utilized will have gel times ranging from 5-15 seconds and tack free times ranging from 40 seconds to 60 seconds.

All products will be applied in lift coats of 60 mils to the specified total dry film thickness. Completion to final dry film thickness should be accomplished within 24 hours to avoid surface preparation ensuring monolithic installation

When total dry film thickness cannot be achieved within 24 hours or if the liner needs to be repaired, recondition the existing liner surface prior to further application using the following steps:

1. Remove all damaged liner and thoroughly clean the surface and surrounding liner
2. Apply a thin coat of Nukote IC Prime (30-40 microns) and ensure the entire surface is full covered. Do not allow to pool. Allow Nukote IC Prime to be tack free, dry at 70º F and 50% relative humidity for 30-45 minutes.
3. Apply liner to match thickness of specification or surrounding areas.

END OF DOCUMENT

PRODUCT DATA SHEETS FOLLOW

NUKOTE PRODUCT DATA SHEETS

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DESCRIPTION:

Nukote ST-M is NCSI's multipurpose specially formulated polyurea coatings with characteristics and physical properties best suited for applications on substrates where faster gelling time is desired to minimize outgassing and the resultant pinholes, excess sagging and for overhead applications. Nukote ST-M (f) has uses in general as well as various industrial application including mining and mineral processing industries. It is a two-component, 100% solids, pure Polyurea that significantly reduces downtime in new as well as old construction and suitable for Metal , non-metal, SPU, and concrete structures and assets. This aromatic Polyurea Elastomer displays good resistance to a broad range of chemicals including hydrogen Sulphide, methane, excellent thermal stability, abrasion resistance and UV resistance. Nukote ST-M (f) exhibits excellent adhesion to most substrates with or without use of a suitable Nukote primer.

FEATURES:

- 100% Solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Can be applied in temperatures from -22° F (-30º C) and upwards
- Perform in constant temperatures from -22° to 250° F (-30° to 120° C)
- Retains physical properties on weathering
- Excellent elongation properties
- Seamless, resilient, flexible and tough
- Excellent corrosion protection
- Impact, tear and abrasion resistant
-
- Resistant to many solvents, acids and alkalis (consult NCSI)
- Resistant to Gases and chemicals common to Sewage and Land fills

TYPICAL USES:

- Transportation and Bulk Haulage
- Erosion-corrosion in the milling process
- Pump, Pipe and Piping systems
- Process equipment
- Heap Leach Pads
- Storage Tanks
- Atmospheric corrosion
- Primary and Secondary containment in Acid drainage
- Landfill containment
- Water, waste water and industrial effluent transmission and treatment plants

COLORS:

Standard medium grey, brick red only, 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B
275-gallon (1045 liter) totes.

COVERAGE:

Nukote ST-M 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 to 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 ºF / 25 ºC)	**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 materials (ASTM D792)	A: 9.35, B: 8.43 lbs./gal	A: 1.12, B: 1.01 kg/ liter
Viscosity at 158 ºF/70 ºC in cps ±10% (ASTM D4878)	A-260, B-380	A-260, B-380
Shelf life @ 77 ºF /25 ºC	12 - 18 Months	12 - 18 Months
Tensile strength (ASTM D412-C)	3200 - 3700 psi	23 - 27 MPa
Elongation (ASTM D412-C)	375 - 400 %	375 - 400 %
Hardness (ASTM D2240)	45-50 Shore D	45 -50 Shore D
Flexibility (2mm mandrel ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.037-0.038grains/hr-ft^2	0.2 to 0.3 gms/hr-m^2
Water absorption -24 hours (ASTM D570)	~ 1 %	~1 %
Crack Bridging @ -13 ºF/-25 ºC (ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D642)	450 - 500 pli	80- 90 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 200 in-lbf	> 20 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 250 °F	-40 °C to 120 °C
Abrasion Resistance (ASTM D4060) weight loss	< 8 mg loss Taber CS 17 wheel 1Kg/1000 rev	

Abrasion Resistance Slurry (ASTM G75) SAR Index	Less than 250
Hydrostatic Pressure Test (ASTM D5385-93/05)	Pass at 100 psig
PROCESSING PROPERTIES (Under standard lab conditions)	
Mix Ratio V/V	1:1
Gel time	5 to 8 seconds
Tack free time (DFT & Temperature dependent)	25 to 45 Seconds
Post cure time	24 hours
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 at various dry film thicknesses	

MIXING:

Nukote ST-M (f) might not be diluted under any circumstance. Use appropriate solvent for purge line and flushing of equipment and if spraying stops for a period of time in excess of the pot life of the material. Thoroughly mix Nukote ST-M (f) part B resin material with air driven power equipment until a homogeneous mixture and color is obtained.

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. Meet and conform to either 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.***

SPU:
Ensure to apply only after the surface is free of trapped moisture in the system.
Refer to NCSI surface preparation manual for more details.

APPLICATION:

This material must be applied utilizing high-pressure, heated plural component spray proportioning equipment, such as those manufactured by Graco® or similar. The proportioning equipment utilized must be capable of supplying correct pressure and heat for the appropriate hose length on a consistent basis.
For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote ST-M (f) should always be applied over a suitable primer for maximum adhesion. Please review your specific project with Nukote technicians. For all submersed applications, a primer is

absolutely essential, after proper preparation. Recommended DFTs are a function of the project, please contact a Nukote technician. On horizontal surface applications, a texture "stipple" coat can be applied for non-skid purposes, after reaching the initial desired film thickness.

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.

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 10%	R	Pottasium Hydroxide 10%	R
Acetic Acid 10%	R	Pottasium Hydroxide 20%	RC
Sea water	R	Sodium Hydroxide 10%	R
Waste Water	R	De ionized Water	R
Water @ 176 ºF (80 ºC)	R	Diesel Fuel, Gasoline (unleaded)	R
Hydrogen Sulphide (gas)	R	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.

DESCRIPTION:

NUKOTE ST®-pw is a pure aromatic polyurea modified specifically to meet requirements for use in coating substrates utilised for storage and transmission of potable and drinking water. It is an ANSI/NSF 61 compliant and approved pure polyurea barrier material and also conforms to global migration Standard US – FDA: 21 CFR 175 – 300. Nukote ST-pw is tested and approved by many countries for applications on substrates in contact with potable water and food products. It is a plural component, fast set, 100% solids product suitable for concrete, steel, and other substrates as a waterproofing membrane, anti-corrosion and abrasion resistant liner. This aromatic Polyurea Elastomer also displays good chemical resistance, thermal stability and UV resistance. It can be applied by spray in single or multiple layers to form a tough but flexible homogenous membrane

FEATURES:

- ANSI/NSF 61 approved for potable water
- Meets global migration standard US – FDA: 21 CFR 175 – 300
- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Performs in constant process temperatures from -40 °F to 250 °F (-40 °C to 120 °C)
- Maintains high physical properties on weathering
- Superior elongation and tear properties
- Seamless, resilient, flexible and durable
- Excellent corrosion protection
- High impact and abrasion resistance
- Continuous thermal stability
- Resistant to many solvents, acids and alkalis (consult NCSI)
- Low permeability waterproofing membrane

TYPICAL USES:

- Potable water treatment plants and potable water pipelines
- Concrete / Steel water storage tanks
- Desalination and water treatment plants
- Catering facilities, food processing plants, food preparation areas
- Dairies and livestock farming facilities
- Cold storage facilities and refrigerated vehicles
- Pharmaceutical, sterile and clean - room areas
- Aquariums, ponds, aqueducts and reservoirs

COLORS:

Standard medium grey only. 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B
275-gallon (1045 liter) totes.

COVERAGE:

Nukote ST-pw 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).

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	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 materials (ASTM D792)	A: 9.39, B: 8.43 lbs./gal	A: 1.13, B: 1.01 kg/ liter
Viscosity at 158 ºF/70 ºC in cps ±10% (ASTM D4878)	A-260, B-380	A-260, B-380
Shelf life @ 77 ºF /25 ºC	12 to 18 Months	12 to 18 Months
Tensile strength (ASTM D412-C)	3000 to 3800 psi	21 to 27 MPa
Elongation (ASTM D412-C)	400-475 %	400-475 %
Hardness (ASTM D2240)	45 to 55 Shore D	45 to 55 Shore D
Flexibility (2mm mandrel ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.037-0.038grains/hr-ft^2	0.2 to 0.3gms/hr-m^2
Water absorption -24 hours (ASTM D570)	~ 1 %	~1%
Crack Bridging @ -13 ºF/-25 ºC (ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D642)	450 to 500 pli	75 to 85 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 200 in-lbf	> 20 J (N-m)
Fire Rating (ASTM E108)	Meets Class A for Flame spread	
Flash point Pensky Martin	>200 ºF	>93 ºC
Service temperature (Dry)	-40 ºF to 250 ºF	-40 ºC to 120 ºC
Abrasion Resistance (ASTM D4060) weight loss	< 8 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time	6 to 20 seconds	
Tack free time (DFT & Temperature dependent)	30 to 45 Seconds	
Post cure time	24 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

STORAGE:

Twelve to 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

MIXING:

Nukote ST-pw might not be diluted under any circumstance. Thoroughly mix Nukote ST-pw Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained. Always use dedicated spray equipment.

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. For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote ST-pw 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.

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 10%	R	Pottasium Hydroxide 10%	R
Acetic Acid 10%	R	Pottasium Hydroxide 20%	RC
Sea water	R	Sodium Hydroxide 20%	R
Waste Water	R	De ionized Water	R
Water @ 176 ºF (80 ºC)	R	Diesel Fuel, Gasoline (unleaded)	R
Hydrogen Sulphide (gas)	R	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.

DESCRIPTION:

Nukote PLC ® is a polyurethane polyurea hybrid designed for multipurpose uses. It is developed specifically for steel and duct iron pipeline and steel structures in buried and exposed applications. It is 1:1 plural component, 100% solids, rapid curing coating suitable as a standalone corrosion protection liner on carbon steel and ductile iron. Nukote PLC can be coated to any thickness in multiple pass. Nukote PLC cures to develop high resistance to abrasion, chemical attack and cathodic disbondment. Nukote PLC provides excellent adhesion to most substrates when used with a suitable Nukote primer. It displays good adhesion even without primer on well prepared steel substrates.

FEATURES:

- 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
- Resistant to many solvents, acids and alkalis (consult NCSI)
- Simple inexpensive field jointing and repair material

TYPICAL USES:

- Below and above grade pipeline applications
- Fresh or saltwater submersed pipeline applications
- 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
- Tanks and primary containments lining

COLORS:

Black, standard medium grey. 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B
275-gallon (1045 liter) totes.

COVERAGE:

Nukote PLC 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:

Nine to twelve 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	40 ft^2/gal @ 40 mils	1m^2/ lit/mm
Specific Gravity of materials (ASTM D792)	A: 9.09, B: 9.01 lbs./gal	A-1.09, B-1.08 kg/ liter
Viscosity at 158 °F/70 °C in cps ±10% (ASTM D4878)	A-120, B-160	A-120, B-160
Shelf life @ 77 °F /25 °C	09 to 12 Months	09 to 12 Months
Tensile strength (ASTM D412-C)	3800 - 4000 psi	27 - 28 MPa
Elongation (ASTM D412-C)	20-30 %	20-30 %
Hardness (ASTM D2240)	70 to 80 Shore D	70 to 80 Shore D
Flexibility – 180 (ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.040-0.046 grains/hr-ft^2	0.35 to 0.4 gms/hr-m^2
Water absorption -24 hours (ASTM D570)	~ 1.25 %	~1.25 %
Cathodic disbondment (ASTM G8)	< 8mm	< 8mm
Tear strength (ASTM D642)	370 to 485 pli	65 to 85 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 75 in-lbf	> 8 J (N-m)
Flammability (FMVSS-571.302) Title 49 ,Transportation	Pass	Pass
Flash point Pensky Martin	>200 °F	>93 °C
Service temperature (Dry)	-20 °F to 250 °F	- 30 °C to 120 °C
Abrasion Resistance (ASTM D4060) weight loss	< 60 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time	6 to 10 seconds	
Tack free time (DFT & Temperature dependent)	60 to 120 Seconds	
Post cure time	24 hours	

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 might not be diluted under any circumstance. Pre-condition both A and B side to 80 °-90 °F(25 °- 30 °C) Thoroughly mix Nukote PLC Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained. Always use dedicated spray equipment.

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 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 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. For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote PLC 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. 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

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 10%	R	Pottasium hydroxide 10%	R
Acetic Acid 10%	R	Pottasium hydroxide 20%	RC
Sea water	R	Sodium Hydroxide 20%	RC
Water @ 80 ºC	R		
Diesel Fuel	R		
Gasoline Unleaded	R		
Motor Oil, Brake Fluid	RC		

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.

DESCRIPTION:

NUKOTE PU-pw is a pure aromatic polyurethane modified specifically to meet requirements for use in coating substrates utilised for storage and transmission of potable and drinking water. It is an ANSI/NSF 61 compliant and approved pure polyurethane barrier material Nukote PU-pw is tested and approved by many countries for applications on substrates in contact with potable water and food products. It is a plural component, 2:1 fast curing, 100% solids product suitable for steel, concrete and other substrates as a chemical, corrosion and abrasion resistant liner. This aromatic rigid polyurethane coating displays good chemical resistance and thermal stability. It is applied by a dedicated airless spray in single or multiple layers to form a tough but flexible uniform membrane

FEATURES:

- ANSI/NSF 61 approved for potable water
- Meets global migration standard US – FDA: 21 CFR 175 – 300
- 100% solids with zero VOC
- Fast reactivity and cure time resulting in fast return-to-service time
- Applicable in temperatures from -10 ºC and upwards
- Performs in constant temperatures from -10 ºC to +80 ºC dry
- Retains physical properties at -10 ºC to +80 ºC
- Good elongation properties
- Seamless, resilient, flexible and tough
- Impact, tear and abrasion resistance
- Resistant to many solvents, acids and alkalis (consult NCSI)

TYPICAL USES:

- Potable water treatment plants and potable water pipelines
- Concrete / steel water storage tanks
- Desalination and water treatment plants
- Catering facilities, food processing plants, food preparation areas
- Dairies and livestock farming facilities
- Cold storage facilities and refrigerated vehicles
- Pharmaceutical, sterile and clean - room areas
- Aquariums, ponds, aqueducts and reservoirs

COLORS:

Off-white. Custom colors, blended to match any RAL number, are available upon request subject to minimum quantity.

PACKAGING:

150-gallon (570-liter) drum sets, shipped in 3 metal drums of 50 gallons (190 liters) of side A and 100 gallons (380 liters) side B.
15-gallon (57-liter) kits, shipped in 3 plastic pails of 5 gallons (19 liters) of side A and 10 gallons (38 liters) side B.

Also available in totes.

COVERAGE:

Nukote PU-pw may be applied at any rate to achieve the desired thickness.

Calculation for theoretical coverage: 80 Ft^2 /gal @ 20 mils (2 m^2/liter @ 500 micron).

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	**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 materials (ASTM D792)	A: 9.99, B: 8.7 lbs./gal	A-1.20, B-1.05 kg/ liter
Viscosity at 158 ºF/70 ºC in cps ±10% (ASTM D4878)	A-125, B-500	A-125, B-500
Shelf life @ 77 ºF /25 ºC	12 to 15 Months	12 to 15 Months
Tensile strength (ASTM D412-C)	2600 to 3000 psi	18 to 22 MPa
Elongation (ASTM D412-C)	20-30 %	20-30 %
Hardness (ASTM D2240)	60 – 70 Shore D	60 - 70 Shore D
Flexibility (2mm mandrel ASTM D522)	Pass	Pass
Water absorption -24 hours (ASTM D570)	~ 1 %	~ 1 %
Tear strength (ASTM D642)	350 - 400 pli	60 – 70 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 150 in-lbf	> 17 J (N-m)
Flash point Pensky Martin	>200 ºF	>93 ºC
Service temperature (Dry)	14 ºF to 176 ºF	-10 ºC to 80 ºC
Service temperature (immersion)	122 ºF	50 ºC
Abrasion Resistance (ASTM D4060) weight loss	< 20 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:2	
Gel time	80-100 seconds	
Tack free time (DFT & Temperature dependent)	5 minutes	
Touch Dry	20 minutes	
Hard dry	60 minutes	
Post cure	24 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

STORAGE:

Twelve to fifteen months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture. Store Side A (isocyanate) between 70 ºF and 95 º F (22 º and 35 ºC). The use of drum heaters is encouraged to reduce material viscosity at low temperatures

MIXING:

Nukote PU-pw might not be diluted under any circumstance. Thoroughly mix Nukote PU-pw Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained. Always use dedicated spray equipment.

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:

This material must be applied utilizing high-pressure, heated plural component spray proportioning equipment, able to proportion and maintain a 1:2 ratio such as those manufactured by Graco®. The proportioning equipment utilized must be capable of supplying correct pressure and heat for the appropriate hose length on a consistent basis. Suitable equipment is Graco extreme 'Hydro-Cat' 45:1 Airless Spray unit at 2500 psi and with solvent flush capability. For optimum performance, the substrate should be hydro or abrasive blasted. The material temperature for spraying for side A (isocyanate) is 105º F (40 ºC) and side B (resin) is 122 ºF (50 ºC) .Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote PU PW should always be applied over a suitable recommended primer for getting maximum adhesion. Steel should be cleaned to SA2.5 and minimum 75µm profile. Please review your specific project with regional Nukote entities for liner thickness. For all submersed and buried applications, a primer is recommended.

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. Moisture sensitive

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 Polyurethane immersed in chemicals and tested as per modified ASTM D 3912.

Chemicals	Resistance	Chemicals	Resistance
Hydrochloric acid upto 15%	R	Ammonium Hydroxide 20%	R
Sulphuric Acid 30 %	R	Ammonium Hydroxide 50%	RC
Phosporic Acid 60%	R	Sodium hydroxide 50%	R
Acetic Acid 5%	R	Pottasium hydroxide 20%	RC
Sea water	R	Ferric and Ferrous Chloride	R
Water @ 50 ºC	R	Sodium hypochlorite 17%	R
Diesel,	R	Octane, Heptane,Pentane	R
Fuel Oil 2,4,6	R	Motor Oil and Hydraluic oils	R
JP 5	R	Gasoline	RC

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.

DESCRIPTION:

Nukote XT plus is a fast set, rapid curing modified polyurea designed for use in application on concrete, steel or other substrates for protection against high acidic, alkaline chemicals in combination with moderate heat or pressure. Nukote XT plus is designed for acid and base environments and is a 100% solids flexible, aromatic, two component spray applied polyurethane polyurea. Nukote XT plus is suitable where anaerobic and aerobic waste by-products combined with elevated temperatures are expected. The product is commonly specified in conjunction with other Nukote products in monolithic compositions or as a geotextile composite for applications in immersion as liner or in secondary containment of chemical storage tanks. This aromatic polyurea elastomer exhibits good long term chemical resistance, thermal stability and UV resistance.

FEATURES:

- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Performs in constant process temperatures from -40 °F to 250 °F (-40 °C to 120 °C)
- Maintains high physical properties on weathering
- Seamless, resilient, flexible and tough
- Superior chemical resistance –acids and bases (consult NCSI)
- Good corrosion protection in chemical immersion
- Low permeability waterproofing and protective membrane

TYPICAL USES:

- Water, waste water and storm water plants and infrastructures
- Mining containment, process equipment and distribution
- Oil & gas and petrochemical containment and distribution
- Treated water and desalination process, containment and distribution
- Power generation; thermal, hydro, gas and nuclear process and containment
- Primary & secondary containment of most liquid systems
- Landfill containment.

COLORS:

Standard medium grey only. 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B
275-gallon (1045 liter) totes.

COVERAGE:

Nukote XT 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:

Nine to twelve months in factory delivered, unopened drums kept at 77° F (25° C). Keep away from extreme heat, freezing, and moisture. The use of drum heaters is encouraged to reduce material viscosity at low temperatures. Isocyanate or A side is sensitive to thermal cycling and low temperature if exposed and may require heating and filtering in extreme case of crystallization. Contact Nukote Technical service for the procedure

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	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 materials (ASTM D792)	A: 9.35, B: 8.43 lbs./gal	A: 1.12, B: 1.01 kg/ liter
Viscosity at 158 ºF/70 ºC in cps ±10% (ASTM D4878)	A-260, B-450	A-260, B-450
Shelf life @ 77 ºF /25 ºC	09 to 12 Months	09 to 12 Months
Tensile strength (ASTM D412-C)	2250 to 2600 psi	14 to 21 MPa
Elongation (ASTM D412-C)	50-100 %	50-100 %
Hardness (ASTM D2240)	45 to 50 Shore D	45 to 50 Shore D
Flexibility (2mm mandrel ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.035-0.038grains/hr-ft^2	0.2 to 0.3gms/hr-m^2
Water absorption -24 hours (ASTM D570)	~ 1 %	~1%
Crack Bridging @ -13 ºF/-25 ºC (ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D642)	250 to 350 pli	40 to 45 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 175 in-lbf	> 16 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 250 °F	-40 °C to 120 °C
Abrasion Resistance (ASTM D4060) weight loss	< 20 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time	6 to 20 seconds	
Tack free time (DFT & Temperature dependent)	30 to 45 Seconds	
Post cure time	24 hours	
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 XT plus might not be diluted under any circumstance. Thoroughly mix Nukote XT plus Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained. Always use dedicated spray equipment.

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 6as 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. For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote XT plus 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.

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 15%	R	Sodium Hydroxide 50%	R
Sulphuric Acid 50%	R	Ammonium Hydroxide 20%	R
Phosporic Acid 15%	R	Pottasium hydroxide 20%	R
Acetic Acid 10%	R	Sodium Bicarbonate 30%	R
Nitric Acid 25%, HF 10%	R	Sodium Hypochlorite 14%	R
Water @ 176 ºF (80 ºC)	R	Calcium Hydroxide 30%	R
Diesel	R	Hydrogen sulphide (gas)	R
Hydraulic Oil	R	Sewage	R
Perchloric acid 60%	R	Hydrogen proxide	R

R = Resistant RC = Slight surface change or discolouration with no loss of hardness
Contact NCSI for more on chemical resistance details and list of chemicals tested

WARRANTIES AND DISCLAIMERS:

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DESCRIPTION:

NUKOTE HTD® is a high performance polyurea designed and developed to protect buried and exposed pipeline. It performs well as an anticorrosion protective liner in many industrial applications on steel, concrete, GRP, FRP and many other substrates. Nukote HTD is a two-component, 100% solids, pure polyurea that significantly outperforms coatings traditionally used in transmission lines and industrial applications used in conjunction with cathodic protection systems. Nukote HTD is modified version of Nukote HT suitable in applications requiring more flexural modulus, hardness and stiffness. Nukote HTD is specifically formulated for application through NCSI designed 360 RINGTECH ™ robotic pipe coating equipment as well as Nukote automated pipe lathes.

FEATURES:

- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Performs in constant temperatures from -40 °F to 250 °F (-40 °C to 120 °C)
- Retains physical properties on weathering
- Excellent elongation and tear properties
- Seamless, resilient, flexible, tough
- Puncture resistant
- Excellent corrosion protection
- Excellent impact and abrasion resistance
- Excellent thermal Stability
- Resistant to many solvents, acids and alkalis (consult NCSI)
- Excellent for cold bends
- Coated pipes can be transported and installed immediately
- Excellent performance with cathodic protection
- Suitable for field joints

TYPICAL USES:

- Below and above grade pipeline applications
- Fresh, saltwater submersed pipeline applications
- Waste water, effluent transmission lines
- Field jointing and pipeline repairs
- Steel, concrete piles, penstocks, cooling water towers, offshore jackets and platforms
- Steel and concrete protection in power, paper & pulp mills, petrochemical industries

COLORS:

Standard medium grey only. 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B
275-gallon (1045 liter) totes.

COVERAGE:

Nukote HTD 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).

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	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 materials (ASTM D792)	A: 9.35, B: 8.43 lb./gal	A: 1.12, B: 1.01 kg/ liter
Viscosity at 158 ºF/70 ºC in cps ±10% (ASTM D4878)	A-260, B-380	A-260, B-380
Shelf life @ 77 ºF /25 ºC	12 to 18 Months	12 to 18 Months
Tensile strength (ASTM D412-C)	3300 to 3800 psi	24 to 28 MPa
Elongation (ASTM D412-C)	200-300 %	300-300 %
Hardness (ASTM D2240)	55-65 Shore D	55-65 Shore D
Cathodic disbondment (ASTM G8-30 days), (ASTM G95)	< 0.12", < 0.16"	< 3mm. < 4mm
Flexibility (2mm mandrel ASTM D522)	Pass	Pass
Water vapour transmission rate (ASTM E96)	0.037-0.038grains/hr-ft^2	0.2 to 0.3gms/hr-m^2
Water absorption -24 hours (ASTM D570)	~ 1 %	~1%
Crack Bridging @ -13 ºF/-25 ºC(ASTM C1305), 25 cycles	Pass	Pass
Tear strength (ASTM D642)	250 to 350 pli	45 to 60 Kn/m
Impact Resistance (ASTM G14), No Holidays	> 200 in-lbf.	> 20 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 250 °F	-40 °C to 120 °C
Abrasion Resistance (ASTM D4060) weight loss	< 12 mg loss Taber CS 17 wheel 1Kg/1000 rev	
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time	5 to 15 seconds	
Tack free time (DFT & Temperature dependent)	30 to 45 Seconds	
Post cure time	24 hours	
(The above properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters and variations are possible and expected). The above values are as per NCSI Standard lab practices & methodology at various film thickness)		

STORAGE:

Twelve to eighteen months in factory delivered, unopened drums. Keep away from extreme heat, freezing, and moisture. The use of drum heaters is encouraged to reduce material viscosity at low temperatures.

MIXING:

Nukote HTD might not be diluted under any circumstance. Thoroughly mix Nukote HTD Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained, usually accomplished through the dedicated spray equipment.

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 to minimum NACE-2/SSPC SP-10Sa 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 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 as per ICRI Guideline No.03732 for optimum performance.

Refer to NCSI surface preparation manual for detailed procedures for different types of substrates.

APPLICATION:

Contact Nukote regional representative for more information on Nukote RINGTECH 360 and automated lathe.This material must be applied utilizing high-pressure, heated plural component spray proportioning equipment, such as H-EXP-2 or equivalent capable of delivering materials without loss of pressure or drop in temperature for the appropriate hose length on a consistent basis. For optimum performance, the substrate should be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote HTD should always be applied over a suitable primer for maximum adhesion... For all submersed applications, a primer is absolutely essential, after proper preparation. The required DFT's are function of the project requirements and hence please review your specific project with Nukote technicians available regionally for correct recommendation. On horizontal surface applications, a texture "stipple" coat can be applied for non-skid purposes, after reaching the initial desired film thickness.

EQUIPMENT CLEAN UP:

Cured product may be disposed of without any restrictions. The uncured Isocyanate and resin portions should be mixed together and disposed of in a normal manner. "drip-free" 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 use on the 'A' component for storage after opening.

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 at ambient conditions. 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 10%	R	Pottasium Hydroxide 10%	R
Acetic Acid 10%	R	Pottasium Hydroxide 20%	RC
Sea water	R	Sodium Hydroxide 20%	R
Waste Water	R	De ionized Water	R
Water @ 176 ºF (80 ºC)	R	Diesel Fuel, Gasoline (unleaded)	R
Hydrogen Sulphide (gas)	R	Motor Oil, Brake Oil	RC
Sodium Hydroxide-50%	RC	Hydraulic Oil	R

R- Resistant, RC – Slight surface change,discolouration with no loss of hardness.

WARRANTIES AND DISCLAIMERS:

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DESCRIPTION:

NUKOTE PP300 is a specialized, high performance polyurea coating designed and developed to protect buried and exposed structures. It is a great choice when increased tensile strength is needed. It can be applied in a variety of industrial facilities including power, manufacturing and mineral processing industries in addition to AWWA Type III and IV PIP applications. Nukote PP300 is a two-component, 100% solids, pure polyurea with tensile properties that outperform typical coatings used in industrial applications. This aromatic Polyurea Elastomer displays good resistance to a broad range of chemicals including hydrogen sulfide, methane, excellent thermal stability, abrasion resistance and UV resistance. Nukote PP300 exhibits excellent adhesion to most substrates with or without use of a suitable Nukote primer.

FEATURES:

- 100% solids with zero VOC
- Fast reactivity and cure time resulting in almost immediate return-to-service time
- Performs in constant temperatures from -40 °F to 250 °F (-40 °C to 120 °C)
- Retains physical properties on weathering
- Excellent elongation and tear properties
- Puncture resistant
- Excellent corrosion protection
- Excellent abrasion resistance
- Excellent thermal Stability
- Resistant to many solvents, acids and alkalis (consult NCSI)

TYPICAL USES:

- Spray PIP structural replacement liners for concrete and steel pipe
- Erosion, abrasion, vibration, and control applications
- Concrete structures where higher tensile and tear properties are desired
- Carbon fiber inlay applications for structural reinforcement
- Mining Slurry Lines
- Sludge Catchers

COLORS:

Standard medium grey only. Custom colors, blended to match most RAL numbers, are available upon request subject to minimum order quantity.

PACKAGING:

100-gallon (380-liter) drum sets, shipped in metal drums of 50 gallons (190 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
275-gallon (1045 liter) totes.

COVERAGE:

Nukote 300P 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).

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	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	1 m^2 / l @ 1 mm
Specific Gravity of materials (ASTM D792)	A:10.3, B:10.1 lb./gal	A:1.23, B:1.21 kg/ liter
Viscosity at 77 ºF /25 ºC in cps ±10% (ASTM D4878)	A-100 ± 20 B-2000 ± 500	A-100 ± 20 B-2000 ± 500
Shelf life @ 77 ºF /25 ºC	12 Months	12 Months
Tensile strength (ASTM D412-C)	8000 ± 500 psi	55 ± 3 MPa
Elongation (ASTM D412-C)	2 ± 1 %	2 ± 1 %
Hardness (ASTM D2240)	85 ± 2 Shore D	85 ± 2 Shore D
Flexural Strength	14,000 psi	99 MPa
Flexural Modulus	477,000 psi	3,300 MPa
1% Secant Modulus	737,000 psi	5,000 MPa
2% Secant Modulus	629,000 psi	4,300 MPa
Water absorption -24 hours (ASTM D570)	<0.5 %	<0.5 %
100% Elastic Modulus (ASTM D 638)	59500 psi	410 MPa
Rupture Modulus (ASTM D 638)	111,700 psi	770 MPa
Flash point Pensky Martin	>200 °F	>93 °C
Service temperature (Dry)	-20 °F to 200 °F	-30 °C to 90 °C
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Gel time @ 160 ºF /70 ºC	15 - 20 seconds	
Tack free time@ 160 ºF /70 ºC (DFT & Temperature dependent)	60 - 90 Seconds	
Post cure time	24 hours	
(The above properties and values are dependent on equipment settings, spray gun, mix chamber temperature, pressure and related parameters and variations are possible and expected). The above values are as per NCSI Standard lab practices & methodology at various film thickness)		

STORAGE:

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

MIXING:

Nukote PP300 shall not be diluted under any circumstance. Thoroughly mix Nukote PP300 Part B resin material with air driven power equipment until a homogeneous mixture and color is obtained, usually accomplished through the dedicated spray equipment.

SURFACE PREPARATION:

Metal:

All surfaces shall be clean and free from contamination. The surface shall be assessed and treated in accordance with ISO 8504, Abrasive blast the surface to minimum NACE-2/SSPC SP-10Sa 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 level depending prior to application of PP300.

Concrete:

The surface shall 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 surfaces at or below grade level shall be tested for moisture. On-grade or below-grade concrete surfaces shall have a moisture barrier installed to protect them from moisture transmission. The surface preparation shall meet and conform to Joint NACE 6/SSPC-SP 13 standards and achieve a surface profile of CSP 3 to CSP 6 as per ICRI Guideline No.03732 for optimum performance.

Refer to NCSI surface preparation manual for detailed procedures for different types of substrates.

APPLICATION:

This material must be applied utilizing high-pressure, heated plural component spray proportioning equipment, similar as those manufactured by GlasCraft®, Gusmer® and Graco®. The proportioning equipment utilized must be capable of supplying correct pressure and heat for the appropriate hose length on a consistent basis.

For optimum performance, the substrate shall be abrasive blasted. Concrete substrates should be allowed to cure a minimum of 30 days. On concrete, Nukote 300P should always be applied over a suitable primer for maximum adhesion. Please review your specific project with Nukote technicians. For all submersed applications, a primer is absolutely essential. Recommended DFTs are a function of the project performance specifications, please contact a Nukote technician for assistance developing project and application specifications. On horizontal surface applications, a texture “stipple” coat can be applied for non-skid purposes, after reaching the initial desired film thickness.

EQUIPMENT CLEAN UP:

Cured product may be disposed of without hazardous materials restrictions. The uncured Isocyanate and resin portions shall be mixed together and disposed of in accordance with local regulations. A “drip-free” container shall 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 to any opened containers is recommended strongly prior to storage.

WARNING:

This product contains Isocyanate and curatives.

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.

DESCRIPTION:

Nukote HLT-SR is a unique surface treatment for concrete consisting of specialized reactive chemicals, lithium-colloidal silica matrix, and a super duty siliconate water repellant. HLT-SR can be used as a concrete surface treatment to reduce micro porosity in cementitious materials or as a complementary pre-primer treatment for Nukote's unique advanced polymer coatings.

When applied to concrete or any pozzolanic material, Nukote HLT-SR penetrates to seal, densify and thereby harden cementitious surfaces. Nukote HLT-SR is formulated to penetrate and block capillaries, voids, and fine shrinkage cracks by reacting with free calcium hydrates to form an insoluble, permanent barrier. It improves water resistance, water repellency, and surface properties of cementitious materials - including concrete. Nukote HLT-SR also reduces the risk of coating failures associated with moisture migration and outgassing. Concrete surfaces treated with Nukote HLT-SR last longer, cost less to maintain, and resist wear, abrasion and dusting.

Nukote HLT-SR is recommended for use as a pre-priming surface treatment on floorings, liners in immersion application, and adhered waterproofing membranes - including structures under hydrostatic pressure. Nukote HLT-SR may be used as a standalone surface treatment in certain applications.

FEATURES:

- Environmentally friendly with zero VOC
- Reduces the porosity and increases durability of the concrete surface
- Densifies and hardens new and old concrete
- Improves chemical resistance and reduces water absorption
- Improves resistance to staining and dusting
- Improves concrete quality, durability, liquid repellency
- Effective chloride and electrolyte barrier
- Re-alkalizes carbonated concrete
- Reduces risk of moisture out-gassing, pin-holing, and blisters in polyurea, polyurethane elastomers, or other top coats

TYPICAL USES:

- As a densifier on floors subject to medium or heavy traffic
- As a water resistant surface treatment for concrete and masonry
- As a sealer for micro leaks in walls and basements
- As a moisture barrier to protect different types of flooring and floor coverings
- As a concrete densifier and hardener
- As part of liquid and gas barrier used in containment applications with concrete structures
- As part of a rehabilitation plan for deteriorated and contaminated concrete
- Waterproofing wet, damp or below grade concrete (Contact Nukote for specific application instructions for this application)

COLORS:

Cloudy liquid dries to clear

PACKAGING:

50-gallon (190-liter) drums
5-gallon (19-liter) plastic pails
275-gallon (1045 liter) totes.

COVERAGE:

Nukote HLT-SR may be applied at any rate dependent on ambient temperature, surface porosity, and absorption rate of liquids into the concrete.
Recommended application rate on typical concrete is 150 ft^2/gal to 200 ft^2/gal (4 m^2/l to 5 m^2/l) for broom finish or 200 ft^2/gal to 250 ft^2/gal (5 m^2/l to 6 m^2/l) for burnished finish.

STORAGE:

Twelve months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture.

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	**US**	**Metric**
Solids by volume (ASTM D2697)	10%	10%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	150-200 ft^2/gal	4-5 m^2/ lit
Specific Gravity of material (ASTM D792)	8.76 lbs./gal	1.05 kg/ liter
Shelf life @ 77 ºF /25 ºC	12 Months	12 Months
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	N/A	
Gel time	N/A	
Tack free time (Temperature, humidity and wind dependent)	4 hours	
Post cure time (Temperature, humidity and wind dependent)	24 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

MIXING:

Nukote HLT-SR shall not be diluted under any circumstances. The product is ready to use.

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. 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.

Remove any coating, curing compound or surface finish that may interfere with penetration of HLT-SR into the concrete. Place a few drops of water on the surface to test surface porosity. If the water does not absorb immediately, additional surface preparation is required to "open up" the surface by grinding, sweep blasting, or similar technique. In hot climates, slightly dampen the surface with a mist coat of water. Apply the Nukote HLT-SR at the recommended rate with a low pressure spray overlapping by 50% on each pass. Carry out surface treatment and polyurea application to Nukote specifications.

APPLICATION:

Apply with low-pressure spray apparatus or flood coat. For optimum performance, the substrate should be abrasive blasted. New concrete substrates should be allowed to cure a minimum of 7 days.

EQUIPMENT CLEAN UP:

Immediate and thorough flushing with clean water while material is still wet. Dried material may require sanding or grinding for removal.

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening.

WARNING:

This product may etch glass or dull shiny aluminum.
Nukote HLT-SR overspray and mist should be controlled and confined to the immediate work area, and a face mask and respirator are recommended
Nukote HLT-SR is not suitable for use on surfaces contaminated by strong acids. Clean and neutralize these conditions prior to application of Nukote HLT-SR.

WARRANTIES AND DISCLAIMERS:

Nukote Coating Systems International, a Nevada, USA LLC warrants the 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 application by the applicator. Nukote Coating Systems has no role in the application of the finished product other than to manufacture and supply the material. It is vital the person applying this product understands the product and is fully trained and certified in the use of the equipment and application methods. 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.

DESCRIPTION:

Nukote HLT-Prime (HLT-P) combines three important features into one treatment system: surface activation as a pre-primer, micro-crack sealing with a silica matrix, and water repellency. HLT-P provides heavy duty surface activation via a reactive colloidal siliconate. HLT-P promotes coating adhesion to concrete, by cross-linking organic and inorganic macro molecules. The reactive lithium silicate colloid penetrates and binds inside micro cracks to available cement hydrates to seal voids and improve surface micro-profiles. Combined with the siliconate water replant, HLT-P provides superior positive and negative pressure water blocking and repellency. HLT-P is formulated to promote aggressive bonding between concrete and Nukote polymer coatings. .

Nukote HLT-P reduces the risk of coating failures due to moisture migration and outgassing by blocking moisture migration through the substrate. Nukote HLT-P is suitable for use as a pre-primer under flooring, liners, and adhered waterproofing membranes - including structures subject to hydrostatic pressure. Consult Nukote for a project specific surface evaluation to assist in selecting the best combination of products and application techniques.

FEATURES:

- Environmentally friendly with zero VOC
- Improves wet adhesion and stability
- Good wetting properties
- Fast reaction time and matrix formation
- Effective chloride and electrolyte barrier
- Re-alkalizes carbonated concrete
- Suitable for use on old and new substrates
- Reduces risk of moisture out-gassing which can cause pin-holing and blisters in polyurea, polyurethane elastomers, or other polymer top coats

TYPICAL USES:

- As an adhesion promoter and surface activator under polymeric coatings: polyurea, polyurethane, epoxy
- Ideal for smooth and good quality concrete and beneficial application on older or weathered concrete

COLORS:

Cloudy liquid dries to clear

PACKAGING:

50-gallon (190-liter) drums
5-gallon (19-liter) plastic pails
275-gallon (1045 liter) totes.

COVERAGE:

Nukote HLT-P may be applied at any rate depending on ambient temperature, surface porosity, and absorption rate of the concrete.
Recommended application rate on typical concrete is 150 ft^2/gal to 200 ft^2/gal (4 m^2/l to 5 m^2/l) for broom finish or 200 ft^2/gal to 250 ft^2/gal (5 m^2/l to 6 m^2/l) for burnished finish.

STORAGE:

Twelve months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat freezing conditions

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	10%	10%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	150-200 ft^2/gal	4-5 m^2/ lit
Specific Gravity of material (ASTM D792)	9.18 lbs./gal	1.1 kg/ liter
Shelf life @ 77 ºF /25 ºC	12 Months	12 Months
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	N/A	
Gel time	N/A	
Tack free time (Temperature, humidity and wind dependent)	4 hours	
Post cure time (Temperature, humidity and wind dependent)	24 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

MIXING:

Nukote HLT-P shall not be diluted under any circumstances. The product is ready to use.

SURFACE PREPARATION:

Concrete:
The surface shall be dry and free of loose bodies, scale, oil, 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. 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.

Remove any coating, curing compound or surface finish that may interfere with HLT-P penetrating into the surface. Place a few drops of water on the surface to test surface porosity. If the water does not absorb immediately, additional surface preparation may be required to “open up” the surface by grinding, sweep blasting, or similar technique. In hot climates, slightly dampen the surface with a mist coat of water.

APPLICATION:

Apply with low-pressure spray apparatus, brush or flood coat. For optimal performance, the substrate shall be abrasive blasted. The product shall be applied as a thin, uniform film over the entire surface. Apply the Nukote HLT-P at the recommended rate with a low pressure spray overlapping by 50% on each pass. HLT-P shall be applied 12 to 14 hours

after any patch or repair mortars have achieved full cure and at least 7 days after placement of new concrete. The surface may be damp but not wet at the time of application. Complete surface treatment and any applied coatings to Nukote specifications.

EQUIPMENT CLEAN UP:

Immediate and thorough flushing with clean water while material is still wet. Dried material may require sanding or grinding for removal.

LIMITATIONS:

Do not open containers until ready to use and reseal containers after opening.
HLT-SR is not suitable for use on surfaces contaminated by strong acids. Clean and neutralize these conditions prior to application of HLT-SR

WARNING:

This product may etch glass or dull shiny aluminum.
Nukote HLT-P overspray and mist should be controlled and confined to the immediate work area, and a face mask and respirator are recommended.
Nukote HLT-P is not suitable for use on surfaces contaminated by strong acids. Clean and neutralize these conditions prior to application of Nukote HLT-P.

WARRANTIES AND DISCLAIMERS:

Nukote Coating Systems International, warrants the 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 application by the applicator. Nukote Coating Systems has no role in the application of the finished product other than to manufacture and supply the material. It is vital the person applying this product understands the product application and handling requirements and is fully trained and certified in the use of the equipment and application methods. 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.

DESCRIPTION:

The NUKOTE CW two-step application process decontaminates surfaces at the molecular level, eliminating visually undetectable levels of highly corrosive substances, providing a uniform receptive surface prior to coatings application. The result is that protective coatings are more durable, more corrosion resistant and, therefore, substantially less likely to require frequent maintenance cycles - in other words; assets last longer and cost less to maintain. NUKOTE CW is simple, safe and straightforward.

TYPICAL USES:

- **After Surface Preparation and Prior to Protective Coating** - for use anywhere a protective coating will be applied to a metal substrate and extended coating performance is desirable. Coatings applied over a **NUKOTE CW** cleaned surfaces significantly outperform and extend coating service life when compared to coatings applied over substrates prepared according to conventional surface preparation standards. **NUKOTE CW** does not leave any residue and is not film-former; it can be used with any coating system.
- **Before and After Welding – NUKOTE CW** improves welding by removing contaminants that negatively affect puddling and weld porosity. **NUKOTE CW** also cleans weld flame residue and other surface contamination after welds have cooled.
- **New Construction / Fabrication – NUKOTE CW** expedites new steel construction by aiding in the removal of mill scale so that blasting time and blast media usage can be minimized.

Note* - **NUKOTE CW** *may be applied before or after oxidation of the steel occurs. Contact* ***NCSI *for further information.*

COLORS:

Clear to slightly opaque liquid gel.

PACKAGING:

NUKOTE CW1 P1-G is supplied as a powder in clear plastic bags and packaged in plastic pails. Each bag makes 5 gallons of useable material.

COVERAGE:

100 ft_2: per 1US gallon / 2.5 m^2 per liter of mixed, **NUKOTE CW1.** Be sure to allow for normal loss factors during mixing, handling and application when estimating practical coverage.
Typical Thickness: 12 to 16 mils / 0.30 TO 0.40 mm

STORAGE:

PROCESSING PROPERTIES (Under standard lab conditions)	
Mix Ratio	One (1) five (5) pound / 2.3 kg bag per 5 gallons / 19 liter of activated carbon filtered or good quality chlorine free water
Dry to Touch	Dry to touch within 20 – 30 minutes depending on relative humidity, wind and air movement, air temperature and substrate temperature.

MIXING:

NUKOTE CW1 is supplied as a powder in clear plastic bags and packaged in plastic pails. Each bag makes 5 gallons / 19 Liters of useable material. Empty one bag into a 5-gallon /19 Liter clean plastic or metal pail filled with 2-½ gallons / 9.5 Liters activated carbon filtered water, RO water or chlorine free potable water. Do not use galvanized buckets. Blend with Jiffy mixer style powered mixing tool until all white granules have dissolved, the mixed liquid is clear and lump free, and a gel forms. Add the remaining 2-½ gallons / 9.5 Liters of activated carbon filtered water, RO water or chlorine free potable water and blend all materials until completely mixed. Continue mixing as needed until the mixed material forms a gel. At temperatures between 32° F. (0° C.) and 50° F. (10° C.) allow one-hour induction time; at temperatures between 50° F. (10° C.) and 70° F. (21° C.) allow one-half hour induction time. If gel does not form while mixing NUKOTE CW1 at higher temperatures, simply allow induction time until gelling occurs.

Mix Ratio One (1) five (5) pound / 2.3 kg bag per 5 gallons / 9.5 Liters of activated carbon filtered or good quality chlorine free water.

SURFACE PREPARATION:

Substrates to be treated must first undergo a cleaning process to remove mil scale, pit rust and other visible surface interference materials. A pre-cleaning process of an SSPC SP-1 solvent cleaning to high-pressure water washing, UHP, abrasive blast cleaning, etc. is typically necessary prior to the application of **NUKOTE CW1**

APPLICATION:

NUKOTE CW1 may be applied by airless or conventional spray, using clean equipment suitable for waterborne, mild acid product. Use new fluid hose or hose that has been dedicated to the use and application of **NUKOTE CW1** After use, flush pumps and hoses thoroughly with the mixed **NUKOTE CW2**.

(Alternate) Airless sprayer. If airless spray equipment, hoses and gun have been used previously for applying paint, flush with strong solvent, then with potable water and last with a single rinse of deionized water. When possible, use new fluid hose. Use a large wide-fan tip, and hold the gun close to the surface being prepared. For Airless spray, use the minimum pressure required producing a working fan; tip sizes and fan width may range from .017 to .025, depending on size and complexity of surfaces to be coated. For Conventional spray, use a plastic pot liner whenever possible. Use a gun, needle and tip combination suitable for spraying light bodied paints. Use 20-35 PSI minimum pot pressure and sufficient atomization pressure to produce a uniform fan. Test spots or small areas of **NUKOTE CW1** may be removed using **NUKOTE CW2** in a hand spray bottle, or by scrubbing with a clean scrub brush dipped in **NUKOTE CW2** and then rinsing the area with additional **NUKOTE CW2.**

NUKOTE CW1 may be applied using wet abrasive blast equipment as part of a wet abrasive blast surface preparation process, where the wet abrasive blast application equipment is compatible. *Contact **NCSI** for further information.*

NUKOTE CW2 prepared surfaces may be painted as soon as the substrate is fully dry.

NUKOTE CW prepared surfaces will not “rust back” or “flash rust,” if contaminants have been thoroughly removed, but atmospheric contaminants may settle on the **NUKOTE CW** prepared surface if left exposed and uncoated. **NUKOTE CW2** only areas, which can be coated soon after the substrate is dry, preferably during the same shift or the same workday.

After drying, carbon steel surfaces prepared with the **NUKOTE CW** two step system the surface may exhibit a wide variety of appearances, from a bright mirror-like finish to a dull gray appearance. Such variation is normal and depends on the composition of the steel, method of surface preparation, anchor profile (if any) and other factors. Effectiveness

of the **NUKOTE CW** process may be confirmed by testing the surface for residual iron salts using Potassium Ferricyanide impregnated paper.

EQUIPMENT CLEAN UP:

Thoroughly flush all equipment with potable water according to normal maintenance procedures. Dispose of cleanup waste in accordance with all local ordinances.

LIMITATIONS:

Do not coat surfaces prepared with **NUKOTE CW1**, which have not been properly prepared with **NUKOTE CW2**.

Do not coat surfaces prepared with **NUKOTE CW1** with tap water or with anything other than **NUKOTE CW2** treated water.

In cool, humid conditions increasing airflow over the substrate may speed up drying time. Be careful not to contaminate the surface.

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.

DESCRIPTION:

The **PREMERA CW** two-step application process decontaminates surfaces at the molecular level, eliminating visually undetectable levels of highly corrosive substances, providing a uniform receptive surface prior to coatings application. The result is that protective coatings are more durable, more corrosion resistant and, therefore, substantially less likely to require frequent maintenance cycles- in other words; assets last longer and cost less to maintain. **PREMERA CW** is simple, safe and straightforward.

TYPICAL USES:

- **After Surface Preparation and Prior to Protective Coating** - for use anywhere a protective coating will be applied to a metal substrate and extended coating performance is desirable. Coatings applied over a **PREMERA CW** cleaned surfaces significantly outperform and extend coating service life when compared to coatings applied over substrates prepared according to conventional surface preparation standards. **PREMERA CW** does not leave any residue and is not film-former; it can be used with any coating system.
- **Before and After Welding – PREMERA CW** improves welding by removing contaminants that negatively affect puddling and weld porosity. **PREMERA CW** also cleans weld flame residue and other surface contamination after welds have cooled.
- **New Construction / Fabrication – PREMERA CW** expedites new steel construction by aiding in the removal of mill scale so that blasting time and blast media usage can be minimized.

Note* - **PREMERA CW** *may be applied before or after oxidation of the steel occurs. Contact* ***NCSI *for further information.*

COLORS:

Clear to opaque liquid.

PACKAGING:

PREMERA CW2 is a liquid material supplied in 5-gallon /19 Liter pails. Each 5-gallon / 19 Liter container of **PREMERA CW2** concentrate makes 500 gallons /1900 Liters of useable product when properly mixed with deionized water.

COVERAGE:

200 ft.2/ US gallon: 19m2/3.8 Liter of properly mixed **PREMERA CW2**. Be sure to allow for normal loss factors during mixing, handling and application when estimating practical coverage.

STORAGE:

Store on pallets out of direct sunlight, do not allow to freeze

PROCESSING PROPERTIES (Under standard lab conditions)	
Mix Ratio	1 gallon / 3.8 Liter: 100 gallons/380 Liter activated carbon filtered or good quality potable water.
Dry to Touch	Dry to touch within 20 – 30 minutes dependent on relative humidity, dependent on wind and air movement, air temperature and substrate temperature.

Working Pot Life	30 days. Mix only as much PREMERA CW2 as is needed for the project or can be used within thirty days after mixing.

MIXING:

PREMERA CW2 is a liquid material supplied in 5-gallon pails. Each 5-gallon container of **PREMERA CW2** concentrate makes 500 gallons of useable product when properly mixed with deionized water.

Mix Ratio 1 gallon/3.8 Liters: 100 gallons/380 Liters activated carbon filtered or good quality potable water.

Once units of **PREMERA CW2** have been mixed, they should remain covered until applied. *Contact **NCSI** Technical Support for further assistance.*

SURFACE PREPARATION:

PREMERA CW2 is to be used after proper application of **PREMERA CW1**. Consult the **PREMERA CW1** product data sheet for detailed surface preparation and application instructions for **PREMERA CW1.**

APPLICATION:

(PREFERRED) 2,000-5,000 psig pressure washer. Flush pressure washer with potable water and then with a single rinse of good quality water if the pressure washer has previously been used to dispense chemicals or soap. Use a medium width fan tip or a swirl tip and hold the tip close to the surface being washed.

(Alternate) Airless sprayer. If airless spray equipment, hoses and gun have been used previously for applying paint, flush with strong solvent, then with activated carbon filtered or chlorine free water. When possible, use new fluid hose. Use a large wide-fan tip, and hold the gun close to the surface being **PREMERA CW2** cleaned. Continue **PREMERA CW2** cleaning until all **PREMERA CW1** residues has been removed from the surface. Do not leave **PREMERA CW1** residue on the **PREMERA CW2**
cleaned surface.

Test spots or small areas of **PREMERA CW1** may be removed using **PREMERA CW2** in a hand spray bottle, or by scrubbing with a clean scrub brush dipped in **PREMERA CW2** and then rinsing the area with additional **PREMERA CW2.**

PREMERA CW1 may be applied using wet abrasive blast equipment as part of a wet abrasive blast surface preparation process, where the wet abrasive blast application equipment is compatible. *Contact **NCSI** for further information.*

PREMERA CW2 prepared surfaces may be painted as soon as the substrate is fully dry. In cool, humid conditions increasing airflow over the substrate may speed up drying time. Be careful not to contaminate the surface.

PREMERA CW2 prepared surfaces will not “rust back” or “flash rust,” if contaminants have been thoroughly removed, but atmospheric contaminants may settle on the **PREMERA CW** prepared surface if left exposed and unpainted.

PREMERA CW2 only areas, which can be coated soon after the substrate is dry, preferably during the same shift or the same workday.

EQUIPMENT CLEAN UP:

Thoroughly flush all equipment with potable water according to normal maintenance procedures. Dispose of cleanup waste in accordance with all local ordinances.

LIMITATIONS:

Do not coat surfaces prepared with **PREMERA CW1**, which have not been properly prepared with **PREMERA CW2**.

Do not coat surfaces prepared with **PREMERA CW1** with tap water or with anything other than **PREMERA CW2** treated water.

WARRANTIES AND DISCLAIMERS:

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DESCRIPTION:

Nukote Polyprime II is a two component 1:1 ratio, rapid setting, low temperature curing liquid applied, aromatic urethane polyurea primer suitable for metal substrates. Nukote Polyprime II is easy to apply, sets quickly, and has excellent physical properties. It can also be used in concrete, and masonry

FEATURES:

- Very high solids
- Non Toxic
- Fast setting
- Odorless
- Chemical resistance
- Low temperature curing -10 °F (-12 ºC)
- Remains Flexible in Wide Range of Temperatures

TYPICAL USES:

- Low temperature and rapid cure primer for metal and other substrates

COLORS:

Standard color is Black. A clear amber and gray are also 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
10-gallon (38-liter) kits, shipped in plastic pails of 5 gallons (19 liters) each of side A and side B 275-gallon (1045 liter) totes.

COVERAGE:

Nukote Polyprime II spread rate is 400 ft^2/ gal at 4 mils (9.9 m2/liter at 100 microns) thickness without factoring any loss

STORAGE:

Twelve to fifteen months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture.

MIXING:

Nukote Polyprime II might not be diluted under any circumstance. Polyprime II should be applied using a 1:1 heated proportioning dispensing system Product should be Pre conditioned to 80 ºF (27 ºC)

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening. Containers that have been opened must be used as soon as possible. Surfaces must be dry, clean and free of foreign matter. Not UV stable. Will discolour in exterior applications

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	99%	99%
Volatile organic compounds (ASTM D2369)	0.12lb./gal	5 gm/ lit
Theoretical coverage	400 ft^2/gal @ 4 mils	10m^2/ lit @ 100 microns
Specific Gravity of materials (ASTM D792)	A: 9.21, B: 7.85 lbs./gal	A:1.106, B:0.94kg/ liter
Viscosity at 77 ºF /25 ºC in cps ±10% (ASTM D4878)	A-20, B-20	A-20, B-20
Shelf life @ 77 ºF /25 ºC	12 - 15 Months	12-15 Months
Flash point Pensky Martin	>150 ºF	> 66 ºC
Hardness (ASTM D 2240)	65-75	65-75
Tensile Strength (ASTM D 412)	3600-4400 Psi	25-30 Mpa
Elongation ASTM D 412	7%	7%
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Pot Life	2 to 3 minutes	
Tack Free	5-10 minutes	
Maximum Recoat time	20-30 minutes	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

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 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.***

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.

APPLICATION:

Must be applied utilizing a 1:1 proportioning dispensing system or an airless spray system with a static mixer. Allow primer to be tack free 5-10) minutes before over coating. The product is suitable for application in extreme cold weather 10 °F (-12 °C).

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.
Nukote Polyprime II is difficult to clean up after it has cured. Equipment should be cleaned with environmentally safe solvent, as permitted under local regulations, immediately after use.

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening. Containers that have been opened must be used as soon as possible. Surfaces must be dry, clean and free of foreign matter. Not UV stable. Will discolour in exterior applications.

WARNING:

This product contains Isocyanate and solvent.

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.

NUKOTE EP PRIME II

DESCRIPTION:

Nukote EP Prime II is two component, high solids, liquid applied, low viscosity epoxy-polyamine primer surfacer with unique penetrating characteristics. It helps to seal the pores and capillaries and minimize out gassing.

FEATURES:

- High solids with low VOC
- Low Odor
- Excellent Adhesion
- Low Viscosity
- Long open time.

TYPICAL USES:

- Concrete
- Masonry
- Cement renders

COLORS:

Grey: Part-A: Black, Part-B: White

PACKAGING:

2-gallon (7.6-liter) kit: One 1-gallon (3.78-liter) can of Part-A black liquid and one 1-gallon (3.78-liter) can of Part-B white liquid.

10-gallon (38-liter) kit: One 5-gallon (19-liter) pail of Part-A black liquid and one 5-gallon (19-liter) pail of Part-B white liquid.

COVERAGE:

Nukote EP Prime II spread rate is 367 ft^2/ gal at 4 mils (9.15 m2/liter at 100 microns) thickness without factoring any loss or concrete porosity.

MIXING:

Nukote EP Prime II might not be diluted under any circumstance. Consult NCSI technical department for application on highly porous surface where thinning may be required.

The volume mixing ratio is 1 part Part-A Black Liquid to 1 part Part-B White Liquid. Nukote EP Prime II Part-A and Part-B should be thoroughly mixed individually prior to combining to ensure a homogeneous material. The combined components should be thoroughly mixed using mechanical mixer at slow speed or for at least 5 minutes if mixed by hand.

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening. Containers that have been opened must be used as soon as possible. Surfaces must be dry, clean and free of foreign matter. Not UV stable. Nukote EP Prime II should be ideally over coated within 10 hours after it has become tack free. Containers that have been opened must be used as soon as possible. It is difficult to clean up after it has cured. Mix no more material than can be used within 20-30 minutes.

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	91.5 +-2%	91.5 +-2%
Volatile organic compounds (ASTM D2369)	0.76 lb./gal	91 gm/ lit
Theoretical coverage	367 ft^2/gal @ 4 mils	9.15m^2/lit@100microns
Specific Gravity of materials (ASTM D792)	A:11.18,B:16.44 lbs./gal	A:1.34, B:1.97kg/ liter
Viscosity at 77 ºF /25 ºC in cps ±10% (ASTM D4878)	30-60	30-60
Shelf life @ 77 ºF /25 ºC	12 -15 Months	12 - 15 Months
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Pot life	30 minutes	
Tack free time (DFT & Temperature dependent)	3 to 5 hours	
Max recoat Time	10 to 12 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

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. 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.

STORAGE:

Twelve to fifteen months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture.

APPLICATION:

Nukote EP Prime II can be applied using an airless sprayer, brush, or Phenolic resin core roller. Allow Nukote EP Prime II to become tack free before applying the coating. Recommended surface temperature should be greater than 50 °F (10 °C) and at least 7 °F (3 °C) above the dew point. Nukote EP Prime II is very sensitive to heat and moisture. Higher temperatures and/or high humidity will significantly accelerate the cure time and pot life. Use caution in batch sizes and thickness of application. Low temperature and/or low humidity extend the cure time. Highly porous surface will require more than one coat and contact NCSI for thinner and thinning details

EQUIPMENT CLEAN UP:

Cured product may be disposed of without restriction. Uncured 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.
Nukote EP Prime II is difficult to clean up after it has cured. Equipment should be cleaned with an environmentally safe solvent, as permitted under local regulations, immediately after use.

LIMITATIONS:

Do not open until ready to use, and store in a sealed container after opening. Containers that have been opened must be used as soon as possible. Surfaces must be dry, clean and free of foreign matter. Not UV stable. Nukote EP Prime II should be ideally over coated within 10 hours after it has become tack free. Containers that have been opened must be used as soon as possible. It is difficult to clean up after it has cured. Mix no more material than can be used within 20-30 minutes.

WARNING:

This product contains epoxy and curatives.

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.

DESCRIPTION:

Nukote IC Prime is a single component, low solids, liquid applied aromatic urethane polyurea primer. It has been specifically designed and blended for use as an inter-coat adhesion primer-promoter primarily for polyurea and elastomeric surfaces. It can be used when the over coating open window of Nukote polyurea have been exceeded, day joints, for overlapping on aged Polyurea, with Polyurea, Polyurethane and Polyurethane hybrids and in repair and upgrade.

FEATURES:

- Fast Re-coat Time
- Excellent Adhesion
- Low Odor
- Low Viscosity

TYPICAL USES:

- Polyurea to Polyurea bonding
- Polyurea to Polyurethane Bonding

COLORS:

Amber

PACKAGING:

1-gallon (3.8-liter) can, 5-gallon (19-liter) pail

COVERAGE:

Nukote spread rate is 420 ft^2/ gal at 1 mils (10.4 m2/liter at 25 microns) thickness without factoring any loss

STORAGE:

Six to nine months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture.

MIXING:

Nukote IC Prime might not be diluted under any circumstance. Before application, Nukote IC prime must be mixed thoroughly. Closed-top metal cans can be shaken or rolled to mix material.

APPLICATION:

Can be applied utilizing an airless sprayer, brush, or phenolic resin core roller. Apply a thin coat of not more than 0.8 to1.2 mils (20-30 microns) and ensure the entire surface is wetted. Allow Nukote IC Prime to be tack free, dry at 70 °F (21 ºC) and 50% relative humidity for 30-45 minutes before applying the coating. Surface temperature should be greater than 50 °F (10 °C) and at least 37 °F (3 °C) above the dew point. Nukote IC Prime is very sensitive to heat and moisture. Higher temperatures and/or high humidity will significantly accelerate the cure time. Thickness of application and lower temperature and/or low humidity extend the cure time.

SURFACE PREPARATION:

Degrease the surface with proprietary degreaser to remove all contaminants that can interfere with bonding of new coating to existing one. Abrade using 80 grit abrasive pad using a power sander. Remove all dust clean it with acetone or iso-propyl alcohol, allow the solvent to evaporate and apply IC prime as instructed.

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	26%	26%
Volatile organic compounds (ASTM D2369)	6.55 lb./gal	786 gm/ lit
Theoretical coverage	420 ft^2/gal @ 1 mils	10.4 m^2/lit@25 microns
Specific Gravity (ASTM D792)	8.93 lbs./gal	1.07kg/ liter
Viscosity at 77 ºF/25 ºC in cps ±10% (ASTM D4878)	200 ± 20	200 ± 20
Shelf life @ 77 ºF /25 ºC	06 to 09 Months	06 to 09 Months
Flash point Pensky Martin	199 ºF	92 ºC
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	N/A	
Tack free time (DFT & Temperature dependent)	1 to 2 hours	
Maximum recoat time	3 to 4 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

EQUIPMENT CLEAN UP:

Equipment should be cleaned with an environmentally safe solvent, as permitted under local regulations, immediately after use.

LIMITATIONS:

Containers that have been opened must be used as soon as possible. Not UV stable. Do not dilute Nukote IC Prime. Nukote IC prime should be over coated as soon as it is tack free and within 2 hours after it has become tack free.

WARNING:

This product contains Isocyanate.

WARRANTIES AND DISCLAIMERS:

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NUKOTE Metal Prime I

DESCRIPTION:

Nukote Metal Prime I is a two component, high solids, liquid applied, epoxy-polyamine adhesion promoting primer suitable for Carbon steel.

FEATURES:

- Low Odor
- High Solids
- Low Solvent
- Excellent Adhesion
- Low Viscosity
- Faster over coating

TYPICAL USES:

- Concrete
- Glass Reinforced Plastics
- Polyurethane Elastomeric Surfaces
- Metal
- Plywood

COLORS:

Part-A: Blue, Part-B: Yellow

PACKAGING:

2-gallon (7.6-liter) kit: One 1-gallon (3.78-liter) can of Part-A Black Liquid and one 1-gallon (3.78-liter) can of Part-B White Liquid.

10-gallon (38-liter) kit: One 5-gallon (19-liter) pail of Part-A Black Liquid and one 5-gallon (19-liter) pail of Part-B White Liquid.

COVERAGE:

Nukote Metal Prime I may be applied at 4.5 ± 1 mils.
Calculation for theoretical coverage: 300 ft^2/gal @ 4.5 mil (7.4 m^2/liter @ 102 microns).

STORAGE:

Twelve to fifteen 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 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	90%	90%
Volatile organic compounds (ASTM D2369)	0.75 lb./gal	90 gm/ lit
Theoretical coverage	300 ft^2/gal @ 4.5 mil	7.4m^2/ lit @ 102 microns
Specific Gravity of materials (ASTM D792)	A: 9.1, B: 8.93 lbs./gal	A: 1.09, B: 1.07 kg/ liter
Viscosity at 77º F/25º C in cps ±10% (ASTM D4878)	600 ± 20	600 ± 20
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	1:1	
Pot life @ 75° F / 24° C & 50% RH	20 to 30 minutes	
Tack free time (DFT & Temperature dependent)	4 to 5 hours	
Touch dry	1 to 2 hours	
Hard dry	6 to 8 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

MIXING:

This product cannot and must not be thinned or diluted under any circumstances.

The volume mixing ratio is 1 part Part-A Black Liquid to 1 part Part-B White Liquid. Nukote Metal Prime I Part-A and Part-B should be thoroughly mixed individually prior to combining to ensure a homogeneous material. The combined components should be thoroughly mixed using mechanical mixer at slow speed or for at least 5 minutes if mixed by hand.

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 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:

Nukote Metal Prime I can be applied using an airless sprayer, brush, or Phenolic resin core roller. Allow Nukote Metal Prime Ito become tack free before applying the coating. Recommended surface temperature should be greater than 50° F (10° C) and at least 37° F (3° C) above the dew point. Nukote Metal Prime I is very sensitive to heat and

moisture. Higher temperatures and/or high humidity will significantly accelerate the cure time and pot life. Use caution in batch sizes and thickness of application. Low temperature and/or low humidity extend the cure time.

EQUIPMENT CLEAN UP:

Equipment should be cleaned with an environmentally safe solvent, as permitted under local regulations, immediately after use.

LIMITATIONS:

Not UV stable. Do not dilute Nukote Metal Prime I. Mix no more material than can be used within 45 minutes. Containers that have been opened must be used as soon as possible. Nukote Metal Prime I is difficult to clean up after it has cured. Surfaces must be dry, clean and free of foreign matter.

WARNING:

This product contains Epoxy and curatives.

WARRANTIES AND DISCLAIMERS:

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DESCRIPTION:

Nukote HLT-Prime (HLT-P) combines three important features into one treatment system: surface activation as a pre-primer, micro-crack sealing with a silica matrix, and water repellency. HLT-P provides heavy duty surface activation via a reactive colloidal siliconate. HLT-P promotes coating adhesion to concrete, by cross-linking organic and inorganic macro molecules. The reactive lithium silicate colloid penetrates and binds inside micro cracks to available cement hydrates to seal voids and improve surface micro-profiles. Combined with the siliconate water replant, HLT-P provides superior positive and negative pressure water blocking and repellency. HLT-P is formulated to promote aggressive bonding between concrete and Nukote polymer coatings. .

Nukote HLT-P reduces the risk of coating failures due to moisture migration and outgassing by blocking moisture migration through the substrate. Nukote HLT-P is suitable for use as a pre-primer under flooring, liners, and adhered waterproofing membranes - including structures subject to hydrostatic pressure. Consult Nukote for a project specific surface evaluation to assist in selecting the best combination of products and application techniques.

FEATURES:

- Environmentally friendly with zero VOC
- Improves wet adhesion and stability
- Good wetting properties
- Fast reaction time and matrix formation
- Effective chloride and electrolyte barrier
- Re-alkalizes carbonated concrete
- Suitable for use on old and new substrates
- Reduces risk of moisture out-gassing which can cause pin-holing and blisters in polyurea, polyurethane elastomers, or other polymer top coats

TYPICAL USES:

- As an adhesion promoter and surface activator under polymeric coatings: polyurea, polyurethane, epoxy
- Ideal for smooth and good quality concrete and beneficial application on older or weathered concrete

COLORS:

Cloudy liquid dries to clear

PACKAGING:

50-gallon (190-liter) drums
5-gallon (19-liter) plastic pails
275-gallon (1045 liter) totes.

COVERAGE:

Nukote HLT-P may be applied at any rate depending on ambient temperature, surface porosity, and absorption rate of the concrete.
Recommended application rate on typical concrete is 150 ft^2/gal to 200 ft^2/gal (4 m^2/l to 5 m^2/l) for broom finish or 200 ft^2/gal to 250 ft^2/gal (5 m^2/l to 6 m^2/l) for burnished finish.

STORAGE:

Twelve months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat freezing conditions

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Solids by volume (ASTM D2697)	10%	10%
Volatile organic compounds (ASTM D2369)	0 lb./gal	0 gm/ lit
Theoretical coverage	150-200 ft^2/gal	4-5 m^2/ lit
Specific Gravity of material (ASTM D792)	9.18 lbs./gal	1.1 kg/ liter
Shelf life @ 77 ºF /25 ºC	12 Months	12 Months
PROCESSING PROPERTIES (Under standard lab conditions)		
Mix Ratio V/V	N/A	
Gel time	N/A	
Tack free time (Temperature, humidity and wind dependent)	4 hours	
Post cure time (Temperature, humidity and wind dependent)	24 hours	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Variations are possible and expected.		

MIXING:

Nukote HLT-P shall not be diluted under any circumstances. The product is ready to use.

SURFACE PREPARATION:

Concrete:
The surface shall be dry and free of loose bodies, scale, oil, 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. 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.

Remove any coating, curing compound or surface finish that may interfere with HLT-P penetrating into the surface. Place a few drops of water on the surface to test surface porosity. If the water does not absorb immediately, additional surface preparation may be required to “open up” the surface by grinding, sweep blasting, or similar technique. In hot climates, slightly dampen the surface with a mist coat of water.

APPLICATION:

Apply with low-pressure spray apparatus, brush or flood coat. For optimal performance, the substrate shall be abrasive blasted. The product shall be applied as a thin, uniform film over the entire surface. Apply the Nukote HLT-P at the recommended rate with a low pressure spray overlapping by 50% on each pass. HLT-P shall be applied 12 to 14 hours

after any patch or repair mortars have achieved full cure and at least 7 days after placement of new concrete. The surface may be damp but not wet at the time of application. Complete surface treatment and any applied coatings to Nukote specifications.

EQUIPMENT CLEAN UP:

Immediate and thorough flushing with clean water while material is still wet. Dried material may require sanding or grinding for removal.

LIMITATIONS:

Do not open containers until ready to use and reseal containers after opening.
HLT-SR is not suitable for use on surfaces contaminated by strong acids. Clean and neutralize these conditions prior to application of HLT-SR

WARNING:

This product may etch glass or dull shiny aluminum.
Nukote HLT-P overspray and mist should be controlled and confined to the immediate work area, and a face mask and respirator are recommended.
Nukote HLT-P is not suitable for use on surfaces contaminated by strong acids. Clean and neutralize these conditions prior to application of Nukote HLT-P.

WARRANTIES AND DISCLAIMERS:

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DESCRIPTION

Premera AE T7S is a very thin layered adhesion promoter formulated using controlled chemical nanotechnology. It removes the need to sand between layers of paint and other materials. Premera AE T7S bonds layers of material together making mechanical abrasion is a thing of the past.

FEATURES

- Stain and water repellant
- Slow evaporation, extended window time to overcoat
- Provides Covalent bonding at a molecular level and becomes one with the surface they are applied to and create a superior barrier
- provides anti-graffiti protection
- Can be used on almost any substrate – concrete, steel, wood, stones, tiles and fabric
- Breathable
- Penetrate the surface of the substrate
- Virtually invisible
- Repel moisture, stains and mold from within the substrate. Long-lasting, easy to clean
- Reduced maintenance costs
- Extended life of the substrate

TYPICAL USES

- Serves as adhesion layer between coating and substrate, or between two coatings
- Can be applied on Painted or unpainted iron; aluminum, copper and other metals; hot rolled steel, cold rolled steel, stainless steel; powder coated and galvanized surfaces; wood, rubber, plastic, fiberglass and glass.

COLORS

Clear to slight straw yellow liquid

PACKAGING

1 quarts, 1 gallon buckets, 5 gallon pails, 55 gallon drums, 275 gallon totes

COVERAGE

Calculation for theoretical coverage: 900 – 1500 Ft2 /gal @ Recommended spread rate 1 – 1.5 mils Wet, 0.4 – 0.9 mils Dry

STORAGE

Twelve to fifteen months in factory delivered, unopened drums. Store on pallets and keep away from extreme heat, freezing, and moisture. Store at temperatures between 50 °F and 100 °F (10 °C and 37 °C).

MIXING

Ready to use. There is no need for mixing or diluting.

TECHNICAL DATA (All values @ 77 ºF / 25 ºC)	US	Metric
Volatile organic compounds (ASTM D2369)	< 0.27 lb./gal	< 32 gm/ liter
Theoretical coverage	900 – 1500 Ft2 /gal @ 0.4-0.9 mils DFT	22-37 m²/liter @ 10-23 microns
Specific Gravity of materials (ASTM D792)	8.3-8.7 lbs./gal	1-1.04 kg/ liter
Shelf life @ 77 ºF /25 ºC	12-24 Months	12-24 Months
Flash point - pensky martin	<77 ºF	< 253 ºC
Application Temperature	45 – 105 ºF	7 – 77 ºC
PROCESSING PROPERTIES (Under standard lab conditions)		
Touch Dry	90 minutes	
Dry Through	90 minutes	
Recoat interval	90 minutes	
Properties and values are highly dependent on equipment, spray gun, mix chamber temperature, pressure and related parameters. Values are slightly different for clear. Variations are possible and expected.		

SURFACE PREPARATION

Make sure the surface is clean, dry, in sound condition, and free of any contaminants including oil, dust, grease, dirt, and silicone sealers. Apply T7S in an ambient temperature between 7-40 degrees Celsius, 90% RH or less, and, if applying outdoors, make sure that there will be no rain or dew for 5 hours after completing the coating process. Wind may affect the quality of the finish and it may be necessary to erect a windshield. T7S may be sprayed, rolled or brushed. Best results and greater coverage are achieved when it is sprayed.

APPLICATION:

- Spraying:

Use a portable alcohol and acetone-proof sprayer with a grey or red tip or and HVLP spray gun with a 1.0 size tip and the pressure set at approximately 25 psi. Spray test-patterns until you achieve an elongated pattern 20-25 cm long and 5 cm wide in the middle with sufficient fluid to cover but not to puddle. Work with a waste bucket so that you start and finish your spraying in the bucket and avoid drips on the surface being coated. When you are satisfied with the spray pattern apply one coat to the surface in a cross-hatch pattern to provide sufficient even coverage.

- Rolling:

Use an ultra-smooth high-density foam roller and apply T7S as quickly as possible in a cross-hatch pattern. Do not press down on the roller.

- Brushing:

Use a good-quality brush and choose a size suitable for the area to be coated.
Apply T7S in a cross-hatch pattern. Do not over-work the coating. Keep the lid on the tin to stop evaporation.

EQUIPMENT CLEAN UP

After application, equipment should be cleaned by pouring a solvent (acetone, methyl acetate, TBA, or similar) into device and spraying out to "flush out" any remaining product from the lines. After one flush out, repeat for 2 total flushes.

LIMITATIONS

As treated and untreated surfaces look similar, finish work on an obvious point such as a corner or mark where you have stopped. When you start work again you can apply over the dry edge without sanding.

WARRANTIES AND DISCLAIMERS

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