

DESCRIPTION

Nukote Metalshield is a plural component system composed of metals and ceramics in a polymeric binder, providing excellent performance in corrosive and abrasive environments, at ambient or elevated temperatures. This product is designed for industrial use at constant process temperatures of no higher than 250°C and intermittent temperatures of no higher than 350°C and will maintain its physical properties on aging even in constant elevated temperature conditions.

Nukote Metalshield is resistant to many chemicals including high levels of H₂SO₄ in ambient or elevated process temperatures.

FEATURES

- Self priming on steel substrates
- Inflammable without carbonization
- Excellent abrasion resistance
- Applicable on damp and wet surfaces
- Superior impact resistance
- Strong chemical resistance
- Spray or brush and roll applied
- Low VOC content

TYPICAL USES

- Internal coating for flow lines
- External coating for flow lines
- Petroleum bulk carriers
- Petroleum and chemical tanks
- Petroleum and chemical process equipment
- Offshore rigs and platforms
- Sour gas pipelines and process equipment

COLORS

Two standard colors of dark gray and white.

This product is not ultraviolet color stable and requires top coating when direct prolonged UV is expected or when color stability is desired.

PACKAGING

Nukote Metalshield is available in 11.11 liter kits shipped in metal pails. Larger package may be available dependent on order size. Contact Nukote technical personnel for details.

COVERAGE

Metalshield may be applied at any rate to achieve any desired thickness. Theoretical coverage for 0.2mm thickness is one liter per 4.25 sq. meters.

SURFACE PREPARATION

Standard abrasive blast techniques are the preferred method of preparing surfaces prior to application of any Nukote Product. Preparation can also be accomplished by use of proper hand tools to remove all oxidation or other loose particulates. Follow any surface preparation with proper chemical wipe to remove residues and latents prior to application of any Nukote Coating of Primer product.

PHYSICAL PROPERTIES @ 24°C

Solids By Volume	95%
Volatile Organic Compounds	162 g/l
Theoretical Coverage @ 500 Microns	1.7 m ² /L
Weight Per Liter in Kilograms	A:1.8 B:1.8
Viscosity (cps) @ 25°C	A:450
Viscosity (cps) @ 25°C	B:350
Shelf Life @ 10°C to 50°C	12 to 18 Months
Tensile Strength @ 25°C ASTM D-412	39 N/mm ²
Elongation @ 25°C ASTM D-412	15% to 25%
Hardness (Rockwell B Scale)	>130
Adhesive Strength	15.6 MPa
Fire Rating UBC	Class 1
Flash Point Pensky-Martin	254°C
Permeability (US Perms)	0.5
Service Temperatures Constant	<=250°C
Service Temperatures Intermittent	<=350°C
Abrasion Resistance ASTM D-4060	<15g loss 1000g/1000 Cycles CS 17 Wheel

PROCESSING PROPERTIES @125 MICRONS 24°C/54% RH

Gel Time (Adjustable)	1 hour
Tack Free Time (125 microns)	2 hours
Pot Life	30 min.
Post Cure Time	48 hours
Mix Ratio by weight	5 : 1
by volume.....	3 : 1

CLARIFICATION OF PROPERTY VALUES

The physical properties shown in the above table are defined in a range of values to allow for compliance when testing of sprayed films or laboratory draw down films. Results derived from independent testing will fall within the ranges shown if the testing performed complies with the standards utilized for each individual property shown. Results vary dependent on several factors, including: the equipment utilized, product mix ratios, application pressures, application temperatures, ambient temperatures, dry film thickness, age of the sample tested, etc. Results also vary dependent on the film type tested with laboratory draw down films deriving higher properties than sprayed films. Test results from films of at least 30-days in age will provide higher values than results from younger films as chemical cross-linking requires this time period to complete.

MIXING

Mix product 5:1 by weight and 3:1 by volume (Hardener to Base). MOS grade MEK should be used as thinner to obtain better properties. Standard dose for thinner is 200cc/kg (base+hardener). Dilute the base and hardener with thinner separately and stir well. Then mix the two thoroughly using commercial mixing equipment or a 25mm drill and mixing paddle combination for 5 minutes to ensure that dry and liquid components are all in solution prior to application. Mixing this product by hand or with small drills and mixing paddles is not acceptable as improper mix will result.

When environment temperature is below 10°C, the product can be indirectly heated to 20-25°C. This will make mixing easier and accelerate curing.

Notice: Before diluting, do not mix the base with the hardener. Otherwise chemical reaction will take place and the materials can not be sprayed. The base material shall be diluted evenly and thoroughly. No more thinner should be added to the mixed material during application. Leftover should not be used by adding thinner.

APPLICATION

This product can be applied by common single component airless spray equipment, brush, rollers or trowels. Trowel able material is ordered as a repair grade product. Brush roll and spray material is ordered as an application grade product. After mixing to specification the product is applied over properly repaired substrates in the method most suitable for the application type. Complete application details are provided with each lot of product shipped.

EQUIPMENT CLEANUP

Cured product may be disposed of without restriction. The un-cured product 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.

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.

LIMITATIONS

Do not open until ready to use, and store in a sealed container after opening. Adding a nitrogen blanket is strongly recommended.

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.

Please read all information in the general guidelines, product data sheets, guide specifications and material safety data sheets (MSDS) before applying material. Published technical data and instructions are subject to change without notice. Contact your local NCSI representative or visit our website for current technical data and instructions.

Nukote Coating Systems International, LLC has a general product warranty and project specific warranties. Both warranties are backed by years of industry experience and insurance policies with a multinational insurance company. For information on the general product warranty please see below or contact NCSI for more information. For project specific warranties, these are available on a case-by-case basis. NCSI technicians must sign off on the specification, and in most cases a NCSI technician will be onsite during application to inspect surface preparation and application. For more detailed warranty contact a NCSI office.

NCSI has a comprehensive training program for our qualified applicators and distributors. Please contact your local NCSI office or representative or visit our website for information on our training program or for current technical data and instructions.

LIMITED WARRANTY

NCSI warrants its products to be free of manufacturing defects. Polyurea and other multi-component products are technically manufactured at the time they are mixed. When mixed in accordance with NCSI guidelines, NCSI warrants the product will meet NCSI's technical specifications. NCSI warrants its products, when properly installed over a properly prepared substrate, will perform as designed and specified.

Unless otherwise stated in writing, NCSI's sole responsibility shall be to replace the defective product. There are no other warranties by NCSI of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. NCSI shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. NCSI shall not be responsible for use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee is being issued with respect to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature or physical movement of the substrate or structural defects are also excluded from the limited warranty. NCSI reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.

DISCLAIMER

All guidelines, recommendations, statements, and technical data contained herein are based on information and tests we believe to be reliable and correct, but accuracy and completeness of said tests are neither guaranteed nor to be construed as a warranty, either expressed or implied.

It is the user's responsibility to satisfy themselves by their own, independent tests, to determine suitability of the product for their own intended use, application and job situation. The user assumes all risk and liability resulting from his use of the product. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements, whether in writing or oral, other than those contained herein shall not be binding upon the manufacturer, unless in writing and signed by a NCSI corporate officer. Technical and application information is provided for the purpose of establishing a general profile of the material and proper application procedures.

Test performance results were obtained in a controlled environment and NCSI makes no claim that these tests or any other tests accurately represent all environments.