



Nano Shield

Cool Roof Coat

Technical Manual

Nano Shield Cool Roof Coat

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Contents

Contents	3
Safety Precautions	4
Equipment Needed	4
Recommended Equipment for Application (Sprayer):	5
Cleaning and Usage	5
Manufacturer's Specifications	5
Cool Roof Maintenance	6
Product Circulation Guidelines	6
Substrate Qualification and Preparation	7
Roof Coating Preparation	9
Use of Primers	10
Coating Application	10
Additional Product Details	11
Qualification for Contractors	11
Testing and Labeling	11
Product Warranty	11
Product Handling and Storage.....	11
Appendix	12
Safety Data Sheet.....	12
Technical Data Sheet	17
Testing For ASTM Certifications	19
Warranty Details	20

Nano Shield Cool Roof Coat

Safety Precautions

NanoTech Inc. has as a core value the safety of all the lives that our company touches.

As a material science company, we have a relentless commitment to safety, from our R&D protocols through our day-to-day production operations, to our training materials for our end users. Safety for us, however, is not just physical. We strive for a culture of tolerance and respect across our operations. We are an inclusive and diverse team, where all talented individuals are welcome and respected.

The purpose of this manual is to ensure your safety and to provide installation instructions for proper adhesion and performance in accordance with manufacturers specifications. Installation of the Nano Shield Cool Roof Coat may require the use of ladders, ramps, stairs, and other equipment that will allow the installer to scale heights required to install the product on top of a structure. Adding a liquid coating can make surfaces slippery and increase the chance of falling. Professionally install Nano Shield Cool Roof Coat with harnesses and fall protection in accordance with OSHA standards. Always mix product on a flat even surface. NanoTech, Inc. recommends placing a tarp, cardboard, plastic sheet, or other similar substrate under the bucket to mitigate splashing and reduce the chance of product sticking to undesired surfaces and/or creating a slip, trip, or fall hazard.

Always install Nano Shield Cool Roof Coat in accordance with OSHA (latest edition) standards.

For product-specific safety guidelines, refer to the Safety Data Sheet (SDS) in the Appendix.

Equipment Needed

Necessary equipment for proper installation of Nano Shield Cool Roof Coat may include, but is not limited to, the following:

- Gloves
- Eye protection
- Industrial scissors
- Chalk line
- Flat or serrated squeegee
- Utility knife
- Measuring tape
- Rags
- Writing/marketing instruments
- T-square/straight edge
- Stir sticks
- Rollers and brushes
- Protective sheeting
- Masking/painters tape
- Wire brush
- Trowels

Nano Shield Cool Roof Coat

Recommended Equipment for Application (Sprayer):

- Graco Gas/Hydraulic Sprayer with 2.5 GPM minimum intake
- Tested Models:
 - GH 300
 - GH 675
 - Graco Tip, Part No. GR286655
 - Graco Tip Guard, Part No. GR243161
- OR
- Paint roller/Paint brush
- Acrylic adhesive primer (optional- see roof substrate guidelines)
- Acrylic compatible rust inhibitor (optional – see roof substrate guidelines)
- Wet Mil Gauge

Cleaning and Usage

Clean the sprayer immediately after use to avoid curing of the resin inside the pump and the hose. Follow the manufacturer's standards on cleaning procedures.

Use and service the spraying machine following the manufacturer's recommendations.

Manufacturer's Specifications

Nano Shield Cool Roof Coat is a high-performance, elastic, polymeric coating used in the protection of roofs, walls, and the total building envelope. This product acts to directly protect the surface and reduce the heat absorbed from structures exposed to direct sunlight. Nano Shield Cool Roof Coat operates through high reflectance, high emissivity, and low thermal conductivity. These properties combined act as a thermal barrier, making the product highly efficient, and reduce degradation caused by ultra-violet (UV) radiation. This allows existing roofing materials to maintain flexibility, durability, and longevity. By greatly reducing heat transfer into the structure, this product lowers energy consumption therefore cutting carbon emissions produced by HVAC systems.

Thoroughly review The Safety Data Sheet (SDS) and Technical Data Sheet (TDS) that can be found in the Appendix. The SDS and TDS contain important information regarding:

- Safety information for personnel and the environment
- First aid measures
- Chemical composition and classification
- Material handling and storage
- Regulatory and legal information
- Other relevant information

Nano Shield Cool Roof Coat

Nano Shield Cool Roof Coat Maintenance

The properties that allow this coating to be effective are a combination of high emissivity, high reflectivity, and low thermal conductivity.

Emissivity and reflectivity are surface phenomena and can only be effective while the coating is directly exposed to sunlight and is unobstructed by dirt, debris, or any other material on top of the coating that may block sunlight.

Maintain Nano Shield Cool Roof Coat by regularly inspecting and immediately remediating the surface for the following deficiencies:

- Bulging
- Blistering
- Holes
- Rips
- Tears
- Dirt
- Debris
- Grime/oils/chemicals
- Other damage or changes in appearance that appear to be out of the ordinary

Proper maintenance includes the swift removal of foreign organic and non-organic substances (tree limbs/branches, plastic, metal, rocks, oils, and/or chemicals etc. on the roof from foot traffic, maintenance of other roof top systems (HVAC), or wind and storm debris.

Lightly pressure wash to remove dirt, dust, and foreign substances from roof surface.

Maintain at least 18" separation from the spray tip to the coating to prevent damaging the product.

Foreign residue or grime should be easily removed by using plain water or a soap and water mixture and soft brush. For stubborn substances or organic growth use a 5:1 water-to-bleach mix to clean the product.

For roof inspections, please ensure the coating is unobstructed by foliage, dirt, etc. and directly exposed to the sun. This is a very typical maintenance protocol for all cool roof coatings.

In the event of roof damage, degradation, or deficiency, please contact us at info@thenanoshield.com for questions and information on how best to repair your Nano Shield Cool Roof Coat.

Product Circulation Guidelines

This is a high-solids, acrylic emulsion formulation. This means that the product must be thoroughly agitated to lower its viscosity from a solid state to a liquid state. If the product is left standing in the packaging, or in the application machine, or any container after agitation for more than 45 minutes, it must be agitated again to prevent its viscosity from increasing back to a solid state from a liquid state.

Nano Shield Cool Roof Coat

To prepare the product:

- Agitate the product using a ribbon style paddle and a mixer with high rpm capability, for at least 5 minutes.
- Repeat mixing process for product that has been left standing for more than 45 minutes.
- Product is thoroughly mixed and ready for application when it takes on a heavy paint-like consistency.

New product shelf-life is 12 months from date of manufacture. Product that has been opened and resealed has an approximate shelf-life of 30 days or less depending on how long opened containers have been exposed to open air. Inspect and remove any cured resin or solids from a used bucket, if any, before using leftover product and follow agitation guidelines.

Substrate Qualification and Preparation

Examination

Before applying the Nano Shield Roof Coat, examine the roof, which is the product's substrate. A thorough underside walkthrough to look for visually apparent defects followed by an inspection of the entire roof surface is required. Any potential issues with the deck or underside securement of equipment must be reported to the owner.

Visually inspect the roof and ensure that:

- The roof has positive drainage, defined as no standing water 48 hours after precipitation.
- The roof's insulation and all surfaces are structurally sound, well-secured, dry, clean, and free of oil, grease, rust, dirt, excess mortar, frost, laitance, loose and flaking particles, or contaminants. NanoTech does not warrant performance over wet substrates. Construction that does not allow the condition of insulation or substrate components to be identified will incorporate the following:

A moisture survey will supplement the visual inspection with one or more of the following:

- Infrared thermography
 - Nuclear scan
 - Electric capacitance/impedance testing
 - Roof core cut samples
 - The contractor is responsible for all wet substrate conditions are corrected.
- Condition of flashing details adjacent to protrusions, penetrations, roof-mounted equipment, curbs, walls, parapets, drains, and roof edge are acceptable and will maintain a weather-tight installation after being properly detailed and coated.

Nano Shield Cool Roof Coat

ACCEPTABLE REPAIRS ARE DEFINED AS:

1. Those made in conformance with the existing roof manufacturer's published requirements for the specific defect.
2. Those made in compliance with the National Roofing Contractors Association Repair Manual (NRCARM), latest edition. In cases where bituminous membrane repairs utilize mastics or other wet products, the material will be allowed to fully cure prior to receiving the Nano Shield coating. Trowel-grade material and reinforcement may be used in place of repairs calling for mastics and reinforcement after an adhesion and compatibility test have been performed following the same procedures, reducing the need for cure time. Repair tape may be submitted for approval on single-ply applications. Coal-tar pitch, contamination, and other materials are not compatible with this product. NanoTech must be consulted prior to use.

Repairs Include:

Built-up and Modified Roofs: Blisters, inner ply delamination, splits, tears, mole runs, dry laps, inadequately secured flashing as defined by the NRCARM and moisture-laden substrates.

Single-ply Membranes: Probe all seams, correcting as necessary, membrane delamination, splits, tears, and moisture-laden substrates.

NanoTech does not provide design services. When replacing defective substrate material, match existing components or consult a design professional. For warranty purposes only, NanoTech must review all associated work, including substrate repairs or modifications, for acceptance under the terms of the NanoTech limited systems warranty.

Adhesion Test

It is extremely important that Nano Shield Cool Roof Coat adhere well to the roof/substrate. An adhesion test is required prior to application. Perform an adhesion test in test patches on all membrane substrates before applying any coating, primer, or flashing material. The adhesion test determines if the existing roof is compatible with the proposed surface coating. A roof section is defined as an area of roof separated by elevation, an expansion joint, a control joint, or a different construction. Additionally, areas of roof installed at different times or exposed to varying conditions are to be considered individual roofs.

Important note: Each recommended complimentary system may have a specific adhesion test method as per each manufacturers specification. The adhesion test method outlined below is written specifically for Nano Shield Cool Roof Coat as a stand-alone product or with a primer and no other materials in accordance with ASTM D 903. This standard requires the installer to perform one adhesion test for every 10,000 sq. ft. AND/OR any time the substrate changes and is performed as follows:

1. A minimum of two samples is required.
2. Clean two areas of at least 12 inches by 12 inches.
3. Clean one area and allow to dry.

Nano Shield Cool Roof Coat

4. Clean a second area, allow to dry, prime the area, and let it cure per manufacturers specification.
 - a. For new roofs with EPDM and TPO systems, apply a primer at 20 mils specific to rubberized membranes and perform a separate pull test to ensure adhesion.
5. Coat the primed and unprimed areas with 20 mils of coating in swaths that are 4" wide and 7" long.
6. While the coating is still wet, embed 2"x 12" polyester fabric across a test patch such that there is a 1" border around the embedded section. Leave a 6-inch-long dry section outside of the test patch. There should be a 6"x2" piece of fabric embedded and a 6"x2" piece of fabric exposed.
7. Apply a second coat of product to each test sample to totally encapsulate flashing fabric and let it cure for at least 56-72 hours.
8. Tie a knot in the loose end of the fabric and secure to your calibrated fish scale.
9. Pull the dry end of the flashing fabric at a 90-degree angle with calibrated scale to failure of adhesion and record your results.

There are two types of adhesive failure, and a passing test will depend on which type of failure you experience:

1. Adhesive Failure - the fabric will remove the product from the substrate entirely.
 - a. Record the pounds registered on the scale.
 - b. Minimum successful adhesion for the industry is 2 lb. per linear inch.
2. Cohesive Failure – the fabric will pull the product apart but will not remove material from substrate.
 - a. This is an automatic pass for adhesion.

An adhesion test is considered a failed test if the test results produce adhesive failure at a rate of less than 2 lb. per linear inch.

Roof Coating Preparation

Prior to applying Nano Shield Cool Roof Coat:

1. Mask off areas with tape and protective film that are not intended to receive a coating.
2. Surface Cleaning:
 - a. Before cleaning a roof, verify the local water runoff ordinances and restrictions.
 - b. Smooth- or granule-surfaced Styrene Butadiene Styrene (SBS), granule-surfaced Atactic Polypropylene (APP), and Built-Up Roofing (BUR) must have all loose granules, dust, and dirt removed from the surface of the membrane by broom and/or vacuum. For gravel-surfaced BUR membranes, gravel should be removed by spudding and power vacuuming.
 - c. Hand-remove any rocks, branches, or other large foreign objects. Remove heavy deposits of dirt, leaves, pine needles and other debris using a broom or air blower. Use a stiff broom to agitate dirty surfaces.
3. Carefully power-rinse the roof with clean water using a minimum 2,000 psi (13,790 kPa) pressure washer. Do not force water into the roof system or damage roof surfaces.

Nano Shield Cool Roof Coat

- a. Maintain 18" separation between the sprayer tip and the roofing surface when pressure washing substrate to prevent damage.
 - b. Remove grease, oils, or contaminants which may interfere with adhesion using warm water and mild detergent. Treat areas of algae, mildew, or fungus with a 5:1 solution of household water and bleach. Rinse the roof to ensure removal of all detergents or anything else that could reduce adhesion.
4. Allow roof surfaces to dry thoroughly before applying the coating. Consult the appropriate OEM roof type specification before power washing if in doubt.

Here are several roof types and recommended ways to clean them:

BUR Smooth	Modified Bitumen	Metal	EPDM	TPO	PVC
Wet vac or pressure wash	Wet vac or pressure wash	Pressure wash	Pressure wash or bristle brush and detergent	Pressure wash or bristle brush and detergent	Pressure wash or bristle brush and detergent

Use of Primers

For metal roof and metal components, apply a commercial-grade, rust-inhibitive primer from the Nano Shield list of approved compatible ancillary products, and in accordance with the primer manufacturer's recommendations. Then perform a pull test for adhesion compatibility.

Prime all new EPDM and TPO surfaces with 20 dry-mils primer specific to rubberized membranes and perform a pull test to ensure adhesion.

Coating Application

In an instance where a complete multi-part system is required for installation beyond Nano Shield Cool Roof Coat, installer must document and install all complimentary components from list of approved compatible ancillary products in accordance with specific manufacturers specifications. This includes any necessary adhesion tests, mil thickness requirements, and components required for a complete system before applying Nano Shield Cool Roof Coat.

The overall weather conditions, roof surface temperature, surface moisture, ambient temperature, relative humidity, and wind velocity affect the curing time of this product.

This product cures by water evaporation only. The application requires a minimum temperature of 41 F and rising. Do not apply at temperatures greater than 120°F. Do not apply if the dew point is within 5 degrees of the temperature.

Under no condition is the application of this product to be exposed to rain or freezing temperatures for a period no less than 48 hours.

Nano Shield Cool Roof Coat

Apply the product in layers of at most 25 wet mils, building up the total wet film thickness of 50 wet mils. Ensure that each applied layer is cured (dry) before applying subsequent layers. The 50 wet mils will cure to a total of 40 dry mils. There is an approximate 15-20% shrinkage rate from wet to dry film thickness deposition.

For reference, each sprayed layer will be roughly 25 wet mils. Check with a wet mil gauge for thickness once every 300 sq. ft. or more as is necessary to ensure deposition thickness is consistent. When coating over a walk pad, it may be necessary to stripe the edges to identify the left and right limits. Use an all-weather acrylic paint or order Nano Shield Cool Roof Coat in the desired color for striping.

Additional Product Details

Qualification for Contractors

The contractor shall be a registered applicator for Nanotech Inc. for application of Nano Shield Roof Coat and shall have a minimum of three years of experience applying elastomeric roof coatings.

Testing and Labeling

The Nano Shield Roof Coat is produced in NanoTech facilities using a stringent ISO9001:2015 quality control framework. Routine in-house and third-party laboratory testing is performed, and full traceability of all product components is maintained. Any questions or concerns related to the product and or its application should be directed to info@thenanoshield.com. Please include the LOT # information from the product label.

Product Warranty

Please check the appendix for the Nano Shield Cool Roof Coat limited systems warranty.

Product Handling and Storage

For safe handling of this product read the SDS and TDS and follow these guidelines:

- Avoid contacting and breathing the material.
- Use only in a well-ventilated area.
- As with all chemicals, good industrial hygiene practices should be followed when handling this material.
- Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

For storing this product:

- Store in a cool, dry place, and not exposed to the elements.
- Keep container(s) closed when not in use.
- Store locked up.
- Store in a well-ventilated place.
- Keep cool.
- Storage temperature: 41-100°F.
- Keep only in the original container.
- Protect against the elements.

Appendix

Safety Data Sheet

This is the SDS for the Nano Shield Roof Coat product.

SECTION 1. IDENTIFICATION

Product Name	Nano Shield Cool Roof Coat
Company Name	NanoTech
Address	3000 N Sam Houston Parkway E, Houston, TX 77032, USA
Phone and fax	+1-979-557-9519
Emergency phone	+1-979-557-9519
Email address	jmeayers@theNanoShield.com

Trade name: Nano Shield Cool Roof Coating

Material number: 2022001

Primary product use: Thermal barrier for roofs

Chemical family: White elastomeric coating

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS-US Classification

Carc. 2

2.2 Label elements

GHS-US labelling

0

Hazard pictograms (GHS-US):



Signal word (GHS-US): Warning

Hazard statements (GHS-US): H351 - Suspected of causing cancer.

Precautionary statements (GHS-US):

- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P280 - Wear protective gloves, eye protection.
- P308+P313 - If exposed or concerned: Get medical advice/attention
- P405 - Store locked up.
- P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste.

SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Substance / Mixture: Acrylic emulsion mixture

Substance Name: Roof Coating

CAS number	Components	% by Mass
Not classified	Water based resin	15-50
1309-48	Inorganic semiconductors	2 to 20

Nano Shield Cool Roof Coat

598-62-9	Carbonate	10 to 50
7732-18-5	Water	10 to 50
Not classified	Nano Shield powder	2 to 20
1346-67-7	Alumina	5 to 20
N / A	Inert pigment	5 to 30
Not classified	Thickener	0.5 to 3.3
Not classified	Defoamer	0.1 to 2.6
Not classified	Dispersant	0.1 to 3.7

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

Seek medical attention immediately if you feel unwell after in contact with this product. When seeking medical advice, show the medical practitioner the product label if possible. If exposed or concerned, obtain medical advice/attention immediately.

First aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing. Assure fresh air breathing.

First aid measures after skin contact: Wash with water and soap. Rinse with water. Wash skin with plenty of running water.

First aid measures after eye contact: Obtain medical attention if pain, excessive blinking, or redness persists. Direct contact with the eyes is likely to be irritating. Rinse eyes with water as a precaution.

First aid measures after ingestion: Drink plenty of water. Get medical advice/attention. Call a poison center or a doctor if you feel unwell.

4.2. Most important symptoms and effects (both acute and delayed):

Symptoms/injuries: Not expected to present a significant hazard under anticipated conditions of normal use.

Symptoms/injuries after skin contact: May cause moderate irritation.

Symptoms/injuries after eye contact: Irritation of the eye tissue.

Symptoms/injuries after ingestion: No data available.

Chronic symptoms: No effects known.

SECTION 5. FIRE MEASURES

Product is not combustible.

Extinguishing Media

Suitable Extinguishing Media: Carbon dioxide, dry chemical, foam, water spray, fog.

Explosion Hazard: Vapors are heavier than air and may travel along the ground to an ignition source some distance from material handling point. Ignition sources include pilot lights, smoking, heaters, electric motors, sparks from electrical switches, and static discharges.

CAUTION: Never use cutting torch on empty containers. Residual solvent vapor in empty container may ignite or explode. Any application to hot surfaces requires special precautions. During emergency conditions, overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

Hazardous Combustion Products: Carbon oxides (CO, CO₂). Oxides of aluminum. Oxides of titanium.

Reference to Other Sections

Nano Shield Cool Roof Coat

Refer to Section 9 for flammable properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures

General measures: Handle in accordance with good industrial hygiene and safety practice.

For Non-Emergency Personnel

Evacuate and isolate the area and prevent access. Remove ignition sources. No flames, smoking or flares in hazard area. Notify management. Avoid breathing vapor or mist and put on protective equipment. Control source of the leak.

For Emergency Personnel

See Section 8 for any specialized clothing recommendations.

Environmental Precautions

Prevent entry to sewers and public waters.

Methods and material for containment and cleaning up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Absorb and/or contain spill with inert material.

For Cleaning Up: Clear up spills immediately and dispose of waste safely.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling: Harmful or irritating material. Avoid contacting and breathing the material. Use only in a well-ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling.

Conditions for Safe Storage: Store in a cool dry place. Keep container(s) closed.

Materials to Avoid/Chemical: Oxidizing agents

Incompatibility:

Conditions for safe storage, including any incompatibilities

Technical measures: Comply with applicable regulations.

Storage conditions: Keep container closed when not in use. Store locked up. Store in a well-ventilated place. Keep cool.

Incompatible products: Strong bases. Strong acids.

Storage temperature: 41-100°F.

Storage area: Keep only in the original container. Protect against frost.

Special rules on packaging: Keep only in original container. Meet all legal requirements.

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION

Control measures: Not applicable

Engineering Measures: Not applicable

Personal protection

Appropriate engineering controls	Ensure good ventilation of the workstation
Recommended clothing - Skin Protection	Gloves, long-sleeved shirt, and boots to prevent contact
Breath protection	Ventilation and dust mask are recommended when applying
Hand protection	Gloves - Recommended Use
Eye Protection - Face	Recommended wearing glasses*

*Note: As with all reflective coatings, the use of dark sunglasses is recommended to minimize the effects of prolonged exposure to bright white and reflective colors when working in daylight.

Nano Shield Cool Roof Coat

Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment
Environmental exposure controls	Avoid release to the environment
Other protective equipment	Not required
Thermal Dangers	Not applicable
Other information	Do not eat, drink, or smoke during use

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Color	Light beige
Appearance	Emulsion
Aspect	White or slightly beige
Odor	There is no predominant odor
PH	Not applicable
Fusion point	Not applicable
Freezing point	0°C
Initial boiling point	100°C
Evaporation Rate	<1
Flash point	Not applicable
Flammability	Nonflammable
Lower / Upper Flammability and Explosive Limits	Not applicable
Vapor pressure	No data available
Vapor density	(Ar = 1) 3 to 4
Relative density	between 1,100 e 1,600 kg/m ³ (Between 1.1 e 1.6 g/cm ³ density) a 15°C
Non-volatile solids	> 60%
Solubility in water	Soluble in water
Auto-ignition temperature	Not applicable
Decomposition Temperature	> 150°C
Viscosity	3000 cP

SECTION 10. STABILITY AND REACTIVITY

Reactivity	Reacts at ambient temperatures and above 100°C
Chemical stability	Stable at room temperature

Nano Shield Cool Roof Coat

Possibilities of hazardous reactions	Not applicable
Conditions to avoid	Direct incidence of heat upon storage. Provide minimal natural ventilation of the environment
Incompatible materials	Not applicable
Unconcentrated acids and bases, dilute acid atmosphere	Not applicable
Hazardous decomposition products	Not applicable

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity	Not applicable
Skin corrosion / irritation	Skin contact may cause mild irritation
Serious eye damage / eye irritation	Does not cause serious eye damage. Direct contact with eyes may cause irritation.
Respiratory or skin sensitization	Not applicable
Germ cell mutagenicity	Not applicable
Carcinogenicity	Not applicable
Reproductive toxicity	Not applicable
Specific target organ toxicity - single exposure	Not applicable
Specific target organ toxicity - repeated exposure	Not applicable
Aspiration hazard	No inhalation hazards

Component Toxicology Data

Chemical Component	Oral LD50	Dermal LD50	Inhalation LC50
Inorganic semiconductors	Oral LD50 Rat > 25,000 mg/kg	Dermal LD50 Rabbit > 10,000 mg/kg	Inhalation LC50 (4h) Rat > 6.82 mg/L

SECTION 12. ECOLOGICAL INFORMATION

Ecology - general: The product is neither considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

Ecology - water: Very toxic to aquatic life with long lasting effects

Eco toxicity	Not applicable
Persistence and degradability	Not applicable
Bio accumulative potential	Not applicable
Soil Mobility	Not applicable
Other adverse effects	Not applicable

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods: Dispose of contents/container in accordance with licensed collector's sorting instructions.

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to avoid release to the environment. Do not discharge into drains or the environment. Do not discharge into the sewer.

Ecology - waste materials: Avoid release to the environment.

Recommended Methods for Final Destination	Residues of this material do not constitute a hazard. It must be disposed of in an appropriate place. It should not be incinerated in sealed packaging.
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Nano Shield Cool Roof Coat

SECTION 14. TRANSPORT INFORMATION

National and international regulations

Land	It does not require specific regulation. It can be transported as a common cargo.
Hydro-ways	It does not require specific regulation. It can be transported as a common cargo.
Air	It does not require specific regulation.

For product classified as hazardous for transport (as modal): Not applicable

Section 15. REGULATORY INFORMATION

Specific health and environmental safety regulations for the chemical	Not applicable
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SECTION 16. OTHER INFORMATION

Important information, but not specifically described in previous sections	Not applicable
References	Not applicable

Further information

Note on the Chemical Weapons convention (CWC) Toxic Chemicals and Precursors List None Known

Revision Date: 8/10/2022

Technical Data Sheet

This is the TDS for the Nano Shield Roof Coat product.

Cool Roof Coating

Product Description

High-performance, elastic polymeric coating used in the protection of roofs, walls, and buildings. The product acts in the direct protection of the surface and in the reduction of the heat absorbed from structures exposed to sunlight, due to its reflectance, emissivity, and low constant of thermal conductivity properties. Due to its efficiency, this product reduces the degradation caused by the incidence of UV radiation and allows the maintenance of flexibility, resistance, and longevity of existing roofing materials. As heat transfer is reduced, this product helps reduce energy consumption in buildings and also reduce the amount of carbon-based gases in the atmosphere from cooling systems.

Benefits

- Reduction of energy consumption
- Low flame spread
- Low thermal conductivity
- High reflectance and high emissivity
- Functions with direct or indirect sunlight
- Reduction of carbon gas emissions
- Highly flexible

Specifications

Color	Light beige
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Nano Shield Cool Roof Coat

Appearance	Emulsion
Aspect	White or slightly beige
Odor	There is no predominant odor
PH	Not applicable
Fusion point	Not applicable
Freezing point	0°C
Initial boiling point	100°(
Evaporation Rate	<1
Flash point	Not applicable
Flammability	Non flammable
Lower/ Upper Flammability and Explosive Limits	Not applicable
Vapor pressure	No data available
Vapor density	(Ar = 1) 3 for 4
Relative density	between 1,100 e 1,600 kg/m3 (between 1.1 e 1.6 g/cm ³ density) a 15°C
Non-volatile solids	> 60%
Solubility in water	Soluble in water
Auto-ignition temperature	Not applicable
Decomposition Temperature	> 150°C
Viscosity	3000 cP

Applications

This product is primarily designed for outdoor use. For the application of this product, you must wear protective clothing, gloves, and glasses.

For a high-quality application, a minimum ambient temperature of 41°F and rising with a maximum relative humidity of 70% must be respected. Never apply the product at temperatures below 41°F, as the product is water-based and freezing will cause irreversible damage. This product should not be exposed to rain, water, or any other liquids during application and for 8 hours after the final layer has been applied. See application manual for more details.

Before starting the application, repair the entire coverage of the roof with suitable products. When possible, the product should be applied on a clear and/or sunny day. Application can be carried out using a 3/4" external paint roller or professional airless sprayer. For a detailed application process, consult our application manual.

For quality and performance gains, the material should be applied in thin layers of at most 25 wet mils (typically one pass of an airless sprayer). Apply the second coat perpendicular to the first and so on. The consumption of the product will be 5 gallons per 200 square feet. Total deposition thickness for best performance is 50 wet mils which will cure (dry to) 40 dry mils. Allow a minimum of 4 hours between coats. A complete cure requires takes 24 to 48 hours. All roof surfaces must maintain adequate drainage.

The product must be stored at temperature ranging from 41-100°F. Freezing will result in irreversible product loss.

Packing and Handling

Nano Shield Cool Roof Coat

Delivery Form

White Dispersion – Acrylic emulsion.

Packaging

Generally, the product is packed in plastic bucket containers with 26.5 Kg of product but can be packed in different types of packaging systems, such as 55-gallon drums and totes.

People

Nontoxic and non-flammable. The product is safe around humans in closed enclosures.

Planet

NanoTech Inc. deploys high material efficiency and minimizes waste in production through recycling of raw materials.

Performance

Joint developments with customers on formulations.

Consistent high-quality production.

Safety

For regulatory protocols such as the classification and labeling as dangerous substances of goods, please refer to our corresponding Material Safety Data Sheet.

Contact Us

info@thenanoshield.com

Testing For ASTM Certifications

Product testing will be conducted at Intertek unless otherwise noted.

Test	Standard
TAS 110	
Table 1 - Liquid Properties <ul style="list-style-type: none"> • Viscosity • Volume Solids • Weight Solids 	ASTM D6083/6083M-21 <ul style="list-style-type: none"> • ASTM D2196 • ASTM D2697 • ASTM D1644
Table 2 – Cured Film Properties <ul style="list-style-type: none"> • Initial % elongation • Initial Tensile Strength • Final % elongation • Permeance • Water swelling • Accelerated weathering (1000 h and 2000 h) • Tensile Strength after Accelerated weathering (1000 h and 2000 h) • Adhesion (to all substrates to qualify) • Fungi resistance • Tear resistance • Low-temperature flexibility 	ASTM D6083/6083M-21 <ul style="list-style-type: none"> • ASTM D2370 • ASTM D2370 • ASTM D2370 • ASTM D1653 • ASTM D471 • ASTM D4798 • ASTM D2370 • ASTM D903 • ASTM G21 • ASTM D624 • ASTM D522
COOL ROOF RATING COUNCIL (CRRC)	
Solar Reflectance	ASTM E1918 ANSI/CRRC S100
Thermal Emittance	ASTM C1371 ANSI/CRRC S100
Thickness – Fluid Applied Coatings	ASTM D1669, D1005, D7091
Solar Reflectance Index	CRRC-1 ASTM E1980