NANOTECH MATERIALS

Cool Roof Coat

Technical Manual

2024

(888) 296-6266

nanotechmaterials.com

Welcome Message

For the waterproofing and roof restoration market, **NanoTech Materials Cool Roof Coat** offers an alternative to traditional roof replacement and restoration methods, with heat rejection properties that exceed those of any other protective roof coating on the market. As a high-performance, elastic polymeric protective coating, ASTM tested to Miami-Dade County standards, NanoTech Materials Cool Roof Coat stands up to the most grueling weather conditions, making it a long-lasting alternative to full roof replacement with the added benefit of unprecedented energy efficiency for the building.

About NanoTech Materials

NanoTech Materials, Inc. has revolutionized the science of heat control by integrating its novel Insulative Ceramic Particle™ into common building materials, coatings, and substrates to give them industry-breakthrough heat conservation, rejection, or containment properties. NanoTech products include heat-rejecting roof coatings for buildings, heat-containment fireproofing coatings to protect critical infrastructure from wildfires, and specialized ceramics to contain extreme heat in industrial applications.

NanoTech's Cool Roof Coating represents a paradigm shift in roof technology, going beyond the standard Solar Reflectance Index (SRI) metrics by incorporating its Insulative Ceramic Particle™ to significantly reduce heat transfer.

Disclaimer

- NanoTech Materials specializes in the manufacturing and distribution of roofing materials and is not engaged in architecture or engineering services. NanoTech Materials bears no responsibility for the performance of its products in cases where damage is attributed to factors such as improper building design or construction defects.
- The responsibility for design remains with the architect, engineer, roofing contractor, or owner. The construction details provided in this manual serve as guidance and should not be interpreted as exhaustive. They are not a substitute for sound application practices.
- Under no circumstances does NanoTech Materials assume liability for costs or expenses arising from the pre-existing presence of asbestos-containing materials or any other potentially hazardous substances or materials on the roof to which NanoTech Materials' new roofing materials are applied.
- The information presented in this manual is offered in good faith and, to the best of NanoTech Materials' knowledge, does not infringe upon any patents, whether domestic or foreign.
- NanoTech Materials continuously strives to enhance the performance of its products and periodically updates its products and application specifications. The company retains the right to modify, at its discretion, any of the information, requirements, specifications, or policies provided herein. This manual supersedes all previous catalogs and manuals.

SECTION 1

Substrate Preparation

General Substrate Conditions

Preparation of the roof base is the duty of the installer, who is tasked with identifying and rectifying all conditions outlined in this section.

- Inspect the base surfaces where new roofing will be applied. NanoTech Materials requires an adhesion test to be performed during the inspection of all roof remediation candidates.
- Do not commence the installation of the NanoTech Materials coating system until its compatibility and adhesion have been confirmed through test patches, all preparatory tasks have been completed, and any unsatisfactory conditions have been addressed.
- Ensure proper water drainage from the roof. The base should not retain water for over 48 hours following the cessation of precipitation. NanoTech Materials defines "ponding" as water that remains on the roof surface for more than 48 hours after the end of precipitation. Ponding may also occur due to other water sources, such as improperly routed air conditioning condensate and steam condensate lines.
- Shield nearby surfaces that will not receive the coating.
- Refrain from applying liquid-applied roofing products to bases or surfaces deemed unsuitable by NanoTech Materials or under adverse environmental conditions, as defined in individual spec sheets.
- Bases must be clean, dry, and devoid of any debris prior to the application of any liquid-applied products. NanoTech Materials liquid-applied roofing products are not intended for use on substrates subject to heavy foot traffic. In cases where substantial foot traffic is anticipated, utilize a rooftop walkway system approved by NanoTech Materials.

Always contact NanoTech Material’s Technical Sales Support Services at (888) 296-6266 for questions. NanoTech must approve exposure to any chemicals or products such as those used to clean mechanical equipment.

Proper Preparation

For the correct application of the coating, it's crucial to thoroughly clean the current roof covering. All accumulated dust, chalky residue, bitumen leakage, greases, oils, and any other loose materials must be eliminated before applying the coating. It is imperative to avoid solvent-based cleaners when preparing a roofing substrate for the application of the NanoTech Materials Cool Roof Coat. A pressure washer is the only approved cleaning mechanism. Should pressure washing fail to fully clean the roof, contact the Nanotech Materials support team prior to applying a cleaning agent, to check for chemical compatibility with the coating. Exercise caution during pressure washing to maintain the integrity of the existing roof covering and to prevent damage, particularly to adhered seam areas. The roof should be completely dry before initiating any priming or coating process.

Depending on the results of the adhesion test, the use of a primer might be necessary. Any essential repairs to the roof or flashings should be carried out and given sufficient time to cure where needed. For more detailed information on roof preparation, consult specific sections of this manual.

Existing Roof Substrate Inspection

The roof surface shall be inspected for blisters, ridges, mole runs, unadhered membranes, or in the case of metal roofing rust and pitted metal. All surface defects must be corrected to industry standards as established by the manufacturer or NRCA Repair Manual. Other sources may be submitted for NanoTech’s approval.

Underneath membrane roofing systems, there is usually a layer of insulation. Should the roof have experienced leaks in the past, it's possible that wet insulation may exist within the current roofing structure. Any damp roof insulation must be identified, removed, and replaced before the coating process. While some sections of wet insulation might be detectable simply by feeling the surface as you walk, conducting a moisture survey is advisable for a more precise identification of these areas.

Metal roofs are typically mounted over a solid roofing deck or above purlins and insulation. Inspecting the lower side of the roof deck can help in spotting regions of wet insulation, a deteriorated deck, or other damages that require attention and repair before proceeding with the coating.

Moisture Survey

The contractor is responsible to ensure there is no subsurface moisture present and any insulation remains dimensionally sound. A suitable moisture survey method is to be approved by NanoTech and all moisture identified removed. Additionally, an underside inspection is to be conducted to ensure there are no visible defects or structural concerns.

Repair Standards

Challenges identified from the inspections described above will be corrected. The section outlined below provides general corrective procedures and are not necessarily comprehensive or complete. The applicable building codes for the location of the work must be complied with. Additionally, the standard of repair will include one or more of the following: manufacturer's published requirements, National Roofing Contractor Association's Repair Manual, or other industry standard submitted and approved in writing by NanoTech.

Metal	
Areas of Concern	**Treatment**
Excessive Gaps	•Seal cracks, joints, penetrations, and curbs with suitable materials as recommended. •Contact Technical Sales Support Services for further information
Rust Areas	•Replace severely damaged or rusted seams and fasteners. Replace roof panels with holes due to extensive corrosion. •Treat light rust areas to halt further metal panel deterioration. Ensure surface rust does not exceed 20%.
Seams	•Repair all seams as necessary.
Fasteners	•Retighten or replace all fasteners as required. •Replace all stripped fasteners with new, larger ones. Replace all deteriorated and missing fasteners. •Fully encapsulate all fasteners with flashing grade coating or use repair caps.
Dented / Damaged Panels	•Mechanically remove dents as much as possible. For damaged/broken ribs, use a sheet metal cap, sealing it with flashing grade before fastening the cap with fasteners. •Replace severely damaged roof panels
Open Ridge Vents	•Replace or install sheet metal caps over open ridge vents if rust is inside or the roof is in a harsh environment (e.g., saltwater areas). •Ensure not to seal weep holes on vents.

Damaged Substrate Treatment: Non-Metal	
Areas of Concern	**Treatment**
Wood OSB/Plywood/Tongue & Groove	•Remove and repair areas with rotten, wet, or damaged substrate using similar products. •Fill gaps greater than 1/4” [6mm] between roof panels/penetrations with flashing grade coating. •Retighten or replace all necessary fasteners. •Replace stripped fasteners with larger ones. •Replace all deteriorated and missing fasteners. •Fully encapsulate fasteners with flashing grade.
Spray Polyurethane Foam	•Scarify and re-foam areas where urethane foam has degraded to create a smooth substrate. •Remove and re-foam any wet/damaged foam areas.
EPDM	•Repair areas where EPDM is torn, cracked, or buckled using compatible materials. Replace any wet insulation. •Allow at least 48 hours drying time before applying liquid-applied products.
PVC	•Repair areas where PVC is torn, cracked, or buckled using compatible materials. Replace any wet insulation. •Allow at least 48 hours drying time before applying liquid-applied products.
Mineral & Granule Surfaced BUR or Modified Bitumen (SBS & APP) OR Smooth Surfaced BUR or Modified Bitumen (SBS & APP)	•Remove and repair blistered, buckled, wet, or damaged asphaltic membranes using compatible materials. •New BUR or modified bitumen repair materials must weather for at least 30 days before applying liquid- applied products. •Repair significant cracks (gaps 1/16” [1.6 mm] or greater) using flashing grade coating. •Allow flashing grade coating at least 8 hours drying time before application; thicker applications may require more. •Gravel-surfaced BUR is not suitable for liquid-applied coating.
Corrugated Structural Transite Panels	•Fill gaps greater than 1/4” [6 mm] with closed-cell foam strips or polyurethane foam. •Retighten or replace all necessary fasteners. •Replace stripped fasteners with larger ones. •Replace all deteriorated or missing fasteners. •Fully encapsulate fasteners with flashing grade or Repair Caps. •Repair all horizontal seams as needed. •Consult the Seam Treatment Guide. •Note potential asbestos content. •See Environmental Considerations in Cleaning Procedures for more information.
TPO	•Repair areas where TPO is torn, cracked, or buckled using compatible materials. •Replace any wet insulation. Allow at least 48 hours drying time after cleaning before applying liquid-applied products.

Damaged Substrate Treatment: Non-Metal	
Areas of Concern	**Treatment**
General Surface Prep	• Clean and prepare surfaces for liquid-applied roofing products. Remove dirt, dust, loose particles, grease, oil, laitance, pollution fallout, and contaminants. • Use a stiff bristle push broom and/or pressure washing for cleaning.
Pressure Washing	• Pressure-wash substrate with water/approved cleaner as per Cleaner & Primer Guide. • Minimum working pressure of 2,000 psi for most substrates; 3,000 psi for concrete, EPDM, and metal. • Avoid damaging roof surface or injecting water into substrate. • Allow at least 48 hours drying time before applying liquid-applied products.
Environmental Considerations	• Corrugated or structural transite panels may contain asbestos, which can be hazardous when pressure-washed. It's the Installer's responsibility to check for proper disposal and worker protection. • Use roof wash-off catchment systems where required. Follow state and local requirements for catchments during cleaning.

Substrate Preparation: Metal	
Areas of Concern	**Treatment**
Pre-Finished Metal Panels	•For roof panels with fluoropolymers, or silicone, prepare test patches to determine the need for priming. •Apply primer per specifications if necessary.
Sealer Pockets	•Cap Sealer Pockets with sheet metal for proper sealing with liquid-applied products. •Contact Technical Sales Support Services for more information.
Ponding Water Areas	•Eliminate all ponding water areas before coating application. •Treat unresolvable ponding water areas with NanoTech Materials-approved sealant prior to applying other coatings.
Gutters	•Apply approved sealant with a trowel or brush to the interior or exterior of gutters, incorporating 12” (305 mm) of the recommended fabric at all gutter seams.
Gutter Straps	•Fully encapsulate all gutter straps fastened above roof panels with the recommended coating, including the fasteners.
Neoprene Pipe Boots	•Install neoprene pipe boots before flashing work for certain pipe penetrations. •Seal boots to the roof with approved sealant before mechanically fastening.
Ridge Caps	•Flash all ridge caps with recommended coating and fabric. •Fill voids/open areas in ridge cap with polyurethane foam before applying coating and fabric. For "Z" closures near ridge cap edge, remove exposed sealant and apply seam coating liberally to all sides where they intersect with both the roof panel and ridge cap.
Crickets	•Install sheet metal crickets as per manufacturer's specifications. •Seal new crickets with approved sealant under the flanges before mechanically fastening to the curb unit and metal roof panel. •Stitch-screw cricket flanges to the curb unit and metal roof panel while the approved sealant is still wet using fasteners.
Condensate Lines	•Install condensate lines from HVAC units to gutters as part of the drainage system, adhering to local building codes. Securely fasten condensate lines to panel ribs.
Residual Asphalt	•Remove any existing asphaltic roof coating. Coat any residual asphalt with the recommended coating/primer for the specific system.

Substrate Preparation: Metal	
Skylights	•Treat curb skylights as curb flashings. Seal fiberglass r- panel skylights on all 4 sides with a minimum 6” (152 mm) of recommended coating and fabric. •For polycarbonate corrugated skylights, contact Technical Sales Support Services.
Standing Seam Panels	•Contact Technical Sales Support Services.
Penetrations	•Apply recommended coating and fabric around the base of all penetrations, embedding a minimum 12” (305 mm) width fabric between two coating layers, extending 6” (152 mm) up the vertical and 6” (305 mm) onto the base. •Cut fabric to fit the shape of the penetration to avoid wrinkles.
Rakes	•Seal all fixed rake details with at least 12” (305 mm) of recommended coating and fabric, embedding fabric between two coating layers, extending 6” (152 mm) up the vertical and 6” (152 mm) onto the base. •If fixed rake metal is fastened atop roof panel ribs, trim excess metal and follow horizontal seam flashing procedures. •Fill all voids/open areas with polyurethane foam before applying coating and fabric.
Curb Flashings	•Seal curb flashings, including cricket details, with at least 12” (305 mm) of recommended coating and fabric, embedding fabric between two coating layers, extending 6” (152 mm) up the vertical and 6” (305 mm) onto the base. •Encapsulate all fasteners with recommended coating without bridging. Cut fabric around fasteners for a flat fit.
Parapet Walls	•Seal parapet wall details with at least 12” (305 mm) of recommended coating and fabric, embedding fabric between two coating layers, extending 6” (152 mm) up the vertical and 6” (305 mm) onto the base. •Trim excess metal from parapet wall flashing fastened atop roof panel ribs and follow horizontal seam flashing. Cut fabric around fasteners for a flat fit or use Repair Caps.
Cinch Straps at Panel End Laps	•Re-tighten cinch straps as needed. •Surround each strap and fastener head with a bead of NanoTech Materials-approved sealant. •Inject sealant into the cinch strap water channel, then seal the entire lap, strap, and fastener heads with a minimum 12” (305 mm) width of approved sealant.

Substrate Preparation: Metal	
Corrugated Seam	•Seal all vertical seams of corrugated panels with recommended seam coating system. Feather the coating until seams are no longer visible, brushing parallel to the seam.
Horizontal Seam	•Reinforce all seams with fabric between two layers of recommended coating or flashing grade product. •Feather coating at least 1” (25 mm) beyond each side of the 6” (152 mm) width for water flow over the seam. •Cut fabric around all fasteners for a flat fit. For ribbed roof panels, apply fabric over panel ribs in continuous lengths with a minimum 2” (51 mm) overlap for all fabric splices. •Secure horizontal seams with fasteners on the high side of every other corrugation, spaced no more than 12” (305 mm) on center. •Install two fasteners per flute to make the horizontal seam flush.
Standing "T" Seam	•Flash both vertical seams of the standing "T" with a 1/2” (12 mm) bead of recommended seam coating, brushing it into the seams.
Batten Seam	•Flash both vertical seams of the batten with a 1/2” (12 mm) bead of recommended seam coating. Feather the coating until seams are no longer visible, brushing parallel to the seam.
Standing Seam	•Seal all standing vertical seams with a 1/2” (12 mm) bead of recommended seam coating. Feather the coating until seams are no longer visible, brushing parallel to the seam.
Ribbed Seam	•Seal all vertical seams of ribbed panels with recommended seam coating. Feather the coating until seams are no longer visible, brushing parallel to the seam.
Inverted "J" Seam	•In snowy climates or when leaks are suspected, re- crimp the short leg of the seam under the horizontal portion of the inverted "J" seam. Apply recommended seam coating over the new single lock vertical seam using a brush or trowel. Portable seamers can be used for re-crimping.

Substrate Preparation: PVC	
Areas of Concern	**Treatment**
Penetrations	• Around all penetration bases, apply NanoTech Materials coating and fabric, ensuring a fabric width of at least 12” (305 mm) between two coating layers, extending 6” (152 mm) up the vertical and 6” (305 mm) onto the base. • Shape the fabric to fit the contours of the penetration, ensuring it is wrinkle-free.
Skylights	• Skylight curbs require the same treatment method as curb flashings. • Once flashing is completed and the NanoTech Materials coating is set, apply treatment to aged fiberglass skylight panels.
Gutters	• Use a trowel or brush to apply approved NanoTech Materials approved Sealant to both the interior and exterior of gutters, integrating 12” (305 mm) of the specified fabric at all gutter seams.
Condensate Lines	• Install condensate lines from HVAC units to gutters, aligning with the overall drainage plan. The piping type may vary as per local codes. • Ensure the condensate lines are firmly anchored to the roof.
Sealer Pockets	• Cap Sealer Pockets with sheet metal for effective sealing. Consult NanoTech Materials ancillary systems list for approved products. • For additional information, contact NanoTech Materials Technical Sales Support Services.
Parapet Walls/Curb Flashings	• Mend all open seams and any unstable or failed terminations using similar materials before applying NanoTech Materials coating and an approved fabric. • Seal all parapet wall and curb flashing details with at least a 12” (305 mm) width of NanoTech Materials coating and approved fabric, embedding the fabric between two layers of the coating, extending 6” (152 mm) in both vertical and base directions. • Completely cover all fasteners with NanoTech Materials coating, and tailor the fabric around each fastener for a smooth finish.

Damaged Substrate Treatment: Non-Metal

Areas of Concern	Treatment
Wood OSB/Plywood/Tongue & Groove	•Remove and repair areas with rotten, wet, or damaged substrate using similar products. •Fill gaps greater than 1/4” [6mm] between roof panels/penetrations with flashing grade coating. •Retighten or replace all necessary fasteners. •Replace stripped fasteners with larger ones. •Replace all deteriorated and missing fasteners. •Fully encapsulate fasteners with flashing grade.
Spray Polyurethane Foam	•Scarify and re-foam areas where urethane foam has degraded to create a smooth substrate. •Remove and re-foam any wet/damaged foam areas.
EPDM	•Repair areas where EPDM is torn, cracked, or buckled using compatible materials. Replace any wet insulation. •Allow at least 48 hours drying time before applying liquid-applied products.
PVC	•Repair areas where PVC is torn, cracked, or buckled using compatible materials. Replace any wet insulation. •Allow at least 48 hours drying time before applying liquid-applied products.
Mineral & Granule Surfaced BUR or Modified Bitumen (SBS & APP) OR Smooth Surfaced BUR or Modified Bitumen (SBS & APP)	•Remove and repair blistered, buckled, wet, or damaged asphaltic membranes using compatible materials. •New BUR or modified bitumen repair materials must weather for at least 30 days before applying liquid- applied products. •Repair significant cracks (gaps 1/16” [1.6 mm] or greater) using flashing grade coating. •Allow flashing grade coating at least 8 hours drying time before application; thicker applications may require more. •Gravel-surfaced BUR is not suitable for liquid-applied coating.
Corrugated Structural Transite Panels	•Fill gaps greater than 1/4” [6 mm] with closed-cell foam strips or polyurethane foam. •Retighten or replace all necessary fasteners. •Replace stripped fasteners with larger ones. •Replace all deteriorated or missing fasteners. •Fully encapsulate fasteners with flashing grade or Repair Caps. •Repair all horizontal seams as needed. •Consult the Seam Treatment Guide. •Note potential asbestos content. •See Environmental Considerations in Cleaning Procedures for more information.
TPO	•Repair areas where TPO is torn, cracked, or buckled using compatible materials. •Replace any wet insulation. Allow at least 48 hours drying time after cleaning before applying liquid-applied products.

Substrate Preparation: TPO	
Areas of Concern	**Treatment**
Penetrations	• Apply the suggested coating and fabric around the base of all roof penetrations, embedding a 12” (305 mm) width of fabric between two layers of the coating, extending 6” (152 mm) vertically and 6” (305 mm) onto the base. • Shape the fabric to fit the penetration contour to prevent creasing.
Skylights	• Treat curb skylights similarly to curb flashings. • Once flashing is completed and the NanoTech Materials coating is set, apply treatment to aged fiberglass skylight panels.
Gutters	• Use a trowel or brush to apply approved sealant inside or outside gutters, including 12” (305 mm) of the advised fabric at every gutter joint.
Condensate Lines	• Install condensate lines leading from HVAC units to gutters, integral to the entire drainage system. The specific piping for condensate lines may be subject to local code variations. • Ensure condensate lines are firmly attached to the roof surface
Sealer Pockets	• Seal Sealer Pockets using sheet metal for effective sealing. • For additional guidance, reach out to NanoTech Materials Technical Sales Support Services.
Parapet Walls/Curb Flashings	• Address all open seams and any unstable or failed terminations using similar materials welded in place before applying the advised coating and fabric. • Seal all details of parapet walls within the roofing system with no less than 12” (305 mm) of the advised coating and fabric, embedding the fabric within two layers of coating, extending 6” (152 mm) both vertically and onto the base. • Seal all curb flashings, including details of crickets, with a minimum of 12” (305 mm) of the recommended coating and fabric, embedding the fabric between two layers of the coating and extending it 6” (152 mm) vertically and onto the base. • Coat all fasteners with the recommended coating without causing bridging. • Trim the fabric around each fastener for a smooth, flat surface.

Substrate Preparation: EPDM	
Areas of Concern	**Treatment**
Penetrations	• Apply the suggested coating and fabric around the base of all roof penetrations, embedding a 12” (305 mm) width of fabric between two layers of the coating, extending 6” (152 mm) vertically and 6” (305 mm) onto the base. • Shape the fabric to fit the penetration contour to prevent creasing.
Skylights	• Treat curb skylights similarly to curb flashings. • Once flashing is completed and the NanoTech Materials coating is set, apply treatment to aged fiberglass skylight panels.
Gutters	• Use a trowel or brush to apply approved sealant inside or outside gutters, including 12” (305 mm) of the advised fabric at every gutter joint.
Condensate Lines	• Install condensate lines leading from HVAC units to gutters, integral to the entire drainage system. The specific piping for condensate lines may be subject to local code variations. • Ensure condensate lines are firmly attached to the roof surface
Sealer Pockets	• Seal Sealer Pockets using sheet metal for effective sealing. • For additional guidance, reach out to NanoTech Materials Technical Sales Support Services.
Parapet Walls/Curb Flashings	• Address all open seams and any unstable or failed terminations using similar materials welded in place before applying the advised coating and fabric. • Seal all details of parapet walls within the roofing system with no less than 12” (305 mm) of the advised coating and fabric, embedding the fabric within two layers of coating, extending 6” (152 mm) both vertically and onto the base. • Seal all curb flashings, including details of crickets, with a minimum of 12” (305 mm) of the recommended coating and fabric, embedding the fabric between two layers of the coating and extending it 6” (152 mm) vertically and onto the base. • Coat all fasteners with the recommended coating without causing bridging. • Trim the fabric around each fastener for a smooth, flat surface.

Substrate Preparation: Asphaltic (Smooth and Granulated)	
Areas of Concern	**Treatment**
Penetrations	• Apply the suggested coating and fabric around the base of all roof penetrations, embedding a 12” (305 mm) width of fabric between two layers of the coating, extending 6” (152 mm) vertically and 6” (305 mm) onto the base. • Shape the fabric to fit the penetration contour to prevent creasing.
Skylights	• Treat curb skylights similarly to curb flashings. • Once flashing is completed and the NanoTech Materials coating is set, apply treatment to aged fiberglass skylight panels.
Gutters	• Use a trowel or brush to apply approved sealant inside or outside gutters, including 12” (305 mm) of the advised fabric at every gutter joint.
Condensate Lines	• Install condensate lines leading from HVAC units to gutters, integral to the entire drainage system. The specific piping for condensate lines may be subject to local code variations. • Ensure condensate lines are firmly attached to the roof surface
Sealer Pockets	• Seal Sealer Pockets using sheet metal for effective sealing. • For additional guidance, reach out to NanoTech Materials Technical Sales Support Services.
Parapet Walls/Curb Flashings	• Address all open seams and any unstable or failed terminations using similar materials welded in place before applying the advised coating and fabric. • Seal all details of parapet walls within the roofing system with no less than 12” (305 mm) of the advised coating and fabric, embedding the fabric within two layers of coating, extending 6” (152 mm) both vertically and onto the base. • Seal all curb flashings, including details of crickets, with a minimum of 12” (305 mm) of the recommended coating and fabric, embedding the fabric between two layers of the coating and extending it 6” (152 mm) vertically and onto the base. • Coat all fasteners with the recommended coating without causing bridging. • Trim the fabric around each fastener for a smooth, flat surface.

Substrate Preparation: Structural Concrete	
Areas of Concern	**Treatment**
Penetrations	• Apply the suggested coating and fabric around the base of all roof penetrations, embedding a 12” (305 mm) width of fabric between two layers of the coating, extending 6” (152 mm) vertically and 6” (305 mm) onto the base. • Shape the fabric to fit the penetration contour to prevent creasing.
Skylights	• Treat curb skylights similarly to curb flashings. • Once flashing is completed and the NanoTech Materials coating is set, apply treatment to aged fiberglass skylight panels.
Gutters	• Use a trowel or brush to apply approved sealant inside or outside gutters, including 12” (305 mm) of the advised fabric at every gutter joint.
Condensate Lines	• Install condensate lines leading from HVAC units to gutters, integral to the entire drainage system. The specific piping for condensate lines may be subject to local code variations. • Ensure condensate lines are firmly attached to the roof surface
Sealer Pockets	• Seal Sealer Pockets using sheet metal for effective sealing. • For additional guidance, reach out to NanoTech Materials Technical Sales Support Services.
Parapet Walls	• Mend all cracked, spalled, and open concrete holes with a similar cementitious patch. Repair any loose or malfunctioning seams in concrete using materials akin to those originally used, typically a polyurethane sealant with a closed-cell polyethylene backer rod. • Seal all details of parapet walls within the roofing system with a minimum of 12” (305 mm) of the advised coating and fabric. • Embed the fabric between two layers of the coating, extending 6” (152 mm) up the vertical and onto the base. • Ensure the fabric is precisely cut around all fasteners to lie flat.
Curb Flashings	• Flash all curb flashings, including cricket details, with at least a 12” (305 mm) width of the recommended coating and fabric. • Encase all fasteners with the recommended coating, ensuring not to create bridges. • Trim the fabric around all fasteners to ensure it lies flat.

Adhesion Testing

Adhesion testing is typically carried out to ascertain the compatibility of a base surface for the application of a liquid-applied coating system. NanoTech Materials requires an adhesion test to be performed on all roofing substrates prior to the application of the coating. The use of a primer is required for any substrate which fails an adhesion test. The adhesion test must be repeated once the primer has been applied. If the adhesion test fails a second time, the application is to be rejected.

When conducting adhesion tests:

- The test patches should be clearly marked and photographed to record the outcomes of the adhesion tests.
- For insights regarding the outcomes of adhesion tests, installers can reach out to NanoTech Materials' Technical Sales Support Services

NanoTech Recommends the following test method:

Field Peel Adhesion

Overview: The ASTM D903 "Peel Adhesion" test is a standard procedure in roof coating guidelines, particularly effective for onsite testing with elastomeric materials. This test, along with a similar one, ASTM D3359 "Tape Adhesion," is applicable for evaluating primers and enamels.

Preparation:

- Create a sample section of the intended coating system on the current roof
- surface. Execute any required mechanical surface preparations.
- Replicate cleaning processes via power washing.
- Coat 6" by 2" of the substrate with a single layer of the NanoTech Materials Cool Roof Coat.
- Set up at least three (3) test patches for the initial 100 squares and an additional patch for each subsequent 100 squares in various areas of the roof to test adhesion for any doubtful roof substrates.

Test Method:

- Insert approximately 6" (152 mm) of a precut 1" (25 mm) x 12" (305 mm) fabric strip into the wet coating.
- Keep an extra 6" (152 mm) of the fabric strip free for pulling during the test.
- Add another coating layer to cover the moistened section of the fabric.
- Allow sufficient drying time, which can range from 8 hours to 48 hours depending on the weather. Ensure the test patch is not exposed to rain during the cure time.

Evaluation:

- Employ a force gauge, such as a digital fish scale or a trigger pressure gauge.
- Utilize a loop, staple, or clamp to secure the fabric to the gauge.
- Gently pull the fabric straight upwards at a 90-degree angle; the average force should exceed 2 PLI (Pounds per linear inch of fabric width).

SECTION 2

Abbreviated Specs

Quick Spec - Metal

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.
- An adhesion test is mandatory.
- Power washing is required for surface preparation.
- Rust must be eliminated or remediated using a wire brush or rust inhibitor before coating, and any necessary structural repairs should be carried out with compatible materials including replacement of any overly rusted panels.

Guidelines:

- Consult the Technical Data Sheet for specific application instructions and surface temperature limitations.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Secure or replace existing fasteners and encapsulate them with suitable flashing material.
3. Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding.
4. If necessary, install crickets to redirect water and perform any other necessary sheet metal repairs.
5. Prime rusty areas as indicated in the chart below.
6. Apply a 3-course treatment to horizontal seams. Only use flashing grade for treating overlap and trapezoidal vertical seams. Other vertical seams may not require treatment if the seal/tape on the seam is intact or if they are double-locked. (See Seam Treatment Guide for details)
7. Address all roof penetrations, drains, curbs, and scuppers as per the Substrate Preparation section.
8. Administer the coating according to the instructions in the chart below.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – Metal - Extended Seam

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.
- An adhesion test is mandatory.
- Power washing is required for surface preparation.
- Rust must be eliminated or remediated using a wire brush or rust inhibitor before coating, and any necessary structural repairs should be carried out with compatible materials including replacement of any overly rusted panels.

Guidelines:

- Consult the Technical Data Sheet for specific application instructions and surface temperature limitations.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Secure or replace existing fasteners and encapsulate them with suitable flashing material.
3. Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding.
4. Follow the priming protocol as indicated in the chart below.
5. Address all roof penetrations, drains, curbs, and scuppers as per the Substrate Preparation section.
6. Seal transit gaps wider than 1/16” with compatible caulk prior to seam treatment, as outlined in the Substrate Preparation Seam Treatment Guide.
7. Administer the coating according to the instructions in the chart below.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – Structural Concrete

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure, ensuring levels are below 8%.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding.
- Application should occur at a minimum of 41°F (10°C) with a rising temperature, and no precipitation, dew, fog, or freezing temperatures anticipated within the next 8 hours.
- Concrete substrates must be completely cured.

Guidelines:

- Consult the Technical Data Sheet for detailed instructions on product application and temperature constraints.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-clean the substrate to eliminate any substances that might affect adhesion negatively. Ensure the roof is thoroughly dried.
3. Proceed with priming as directed in the chart below.
4. Address all roof intrusions, drains, curbs, and scuppers as indicated in the Substrate Preparation section.
5. Structural joints should be treated with a backer rod and suitable sealant prior to seam treatment, as outlined in the Seam Treatment Guide.
6. Fill control joints wider than 1/16” (1.6mm) with an appropriate caulk.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – TPO

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.

Guidelines:

- Consult the Technical Data Sheet for detailed instructions on product application and temperature constraints.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-wash the substrate to remove contaminants that could negatively affect adhesion. Allow the roof to completely dry.
3. Proceed with priming as directed in the chart below.
4. Address all roof intrusions, drains, curbs, and scuppers as indicated in the Substrate Preparation section.
5. All loose seams must be 3-coursed. All other seams must be treated with flashing grade only, no fabric required (refer to Seam Treatment Guide for requirements).
6. Apply coating per the chart below.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – EPDM

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.

Guidelines:

- Consult the Technical Data Sheet for detailed instructions on product application and temperature constraints.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-wash the substrate to remove contaminants that could negatively affect adhesion. Allow the roof to completely dry.
3. Proceed with priming as directed in the chart below.
4. Address all roof intrusions, drains, curbs, and scuppers as indicated in the Substrate Preparation section.
5. All loose seams must be 3-coursed. All other seams must be treated with flashing grade only, no fabric required (refer to Seam Treatment Guide for requirements).
6. Apply coating per the chart below.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – Smooth Asphaltic

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.
- New membranes should be allowed to age for a minimum of 30 days, ideally for 90 days prior to coating with the NanoTech Materials Cool Roof Coat.

Limitations:

- Do not apply over substrates with a gravel surface.

Guidelines:

- Consult the Technical Data Sheet for specific instructions on product application and surface temperature limitations.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-wash the substrate to remove contaminants that could negatively affect adhesion. Allow the roof to completely dry.
3. Proceed with priming as directed in the chart below.
4. Address "alligatored" areas, surface cracks, and issues with roof penetrations, drains, curbs, and scuppers as per the Substrate Preparation section.
5. All loose seams must be 3-coursed. All other seams must be treated with flashing grade only, no fabric required (refer to Seam Treatment Guide for requirements).
6. Apply coating per the chart below.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – Granulated Asphaltic

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.
- New membranes should be allowed to age for a minimum of 30 days, ideally for 90 days prior to coating with the NanoTech Materials Cool Roof Coat.

Limitations:

- Do not apply over substrates with a gravel surface.

Guidelines:

- Consult the Technical Data Sheet for specific instructions on product application and surface temperature limitations.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-wash the substrate to remove contaminants that could negatively affect adhesion. Allow the roof to completely dry.
3. Proceed with priming as directed in the chart below.
4. Address "alligatored" areas, surface cracks, and issues with roof penetrations, drains, curbs, and scuppers as per the Substrate Preparation section.
5. All loose seams must be 3-coursed. All other seams must be treated with flashing grade only, no fabric required (refer to Seam Treatment Guide for requirements).
6. Apply coating per the chart below.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Quick Spec – PVC

Necessary Actions:

- Complete a moisture investigation. The roof must be clean, dry, and secure.
- Mend deteriorated areas using equivalent materials and allow sufficient curing time.
- An adhesion test is mandatory.
- Thoroughly power wash the substrate to remove elements that might hinder adhesion. The roof should be fully dry before proceeding
- Application should occur at a minimum of 41°F (10°C) and rising, ensuring no rain, dew, fog, or freezing temperatures are forecasted for the next 8 hours.

Guidelines:

- Consult the Technical Data Sheet for detailed instructions on product application and temperature constraints.

Installation Steps:

1. Conduct an adhesion test prior to applying the coating to confirm a minimum adhesion of 2.0 pounds per linear inch (PLI). Apply test patches at the rates specified in the adhesion testing section.
2. Power-wash the substrate to remove contaminants that could negatively affect adhesion. Allow the roof to completely dry.
3. Proceed with priming as directed in the chart below.
4. Address all roof intrusions, drains, curbs, and scuppers as indicated in the Substrate Preparation section.
5. All loose seams must be 3-coursed. All other seams must be treated with flashing grade only, no fabric required (refer to Seam Treatment Guide for requirements).
6. Apply coating per the chart below.
7. Please consult the specific chart and technical documentation for detailed rates and guidelines for each product used in the installation.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 3

Care & Preventative Maintenance

OVERVIEW

A roof, constantly exposed to various weather elements like heat, cold, UV rays, and physical damage, is often one of the most vulnerable parts of a building's exterior. However, its long-term performance can be significantly enhanced through proper design, quality materials, correct installation, skilled workmanship, and a thorough maintenance program. The investment in a comprehensive maintenance plan is considerably less than the costs associated with repairing or replacing a damaged roofing system.

As a crucial component of the building envelope, the roofing system requires careful attention. Early identification and resolution of potential issues are key to preventing minor problems from escalating. Regular maintenance not only maintains the roof's integrity but also protects the building's contents and minimizes disruptions to its use. Consistent and detailed maintenance schedules can prolong the life of the roofing system and reduce overall life cycle and replacement costs.

UNDERSTANDING THE IMPORTANCE OF PROPER ROOF MAINTENANCE AND REPAIR

All roofing systems, including those that are coated, necessitate routine maintenance and repair. The Roof Coatings Manufacturers Association (RCMA) suggests inspecting roofs and coatings twice yearly, typically in spring and fall, as well as after significant weather events. Additional coating should be applied as needed to repair damage to the coating or the underlying roofing substrate. Application of extra coating is also advisable where the existing coating has worn thin. NanoTech Materials requires the application of a 25 mil topcoat at the ten year inspection mark, in order to recertify the roof for another ten years.

GENERAL CARE AND MAINTENANCE RECOMMENDATIONS

For optimal performance of the roofing system, consider the following general care and maintenance tips:

- Ensure proper drainage to reduce standing water on the roof. Keep the roof surface clear of leaves, pine needles, twigs, paper, dirt, and other debris that might clog drains. Trim back trees or branches that are too close to the roof. Standing water on the roof increases the likelihood of moisture infiltration in case of punctures or other mechanical damages to the roofing membrane.
- Regularly inspect the building's exterior for signs of settlement or movement. Cracks in walls could indicate potential issues with the roof substrate and flashing. Check the condition of overhangs, cornices, fascia, and edging.
- Protect the roofing system from substances that could cause early degradation of the coating or membrane, such as:
    - Petroleum-based liquids
    - Solvents
    - Grease from rooftop units or restaurant vents
    - Oils (new or old) from air conditioning or compressor units
    - Kitchen waste or animal fats
    - Chemicals – Contact Technical

  Support Services for information on chemicals incompatible with the coating
- Use catch pans or other protective measures to shield the roofing membrane from exposure to grease, chemicals, and other substances. Spills should be promptly cleaned to prevent swelling and possible degradation of the roofing system.
- Look for signs of algae, mold, mildew, or other plant growth on the roof, especially in shaded areas prone to water retention.
- If snow removal is necessary, use plastic shovels and exercise caution around protrusions or detailed work areas. Avoid using snow blowers, picks, axes, and sharp-edged shovels on the roof.
- Remove any foreign debris like glass, bolts, nails, screws, metal shavings, and other materials that could puncture or cut the liquid-applied coating or roofing system.
- Limit access to the roof. Most roof damage occurs due to unauthorized or uninformed individuals. Access should be restricted to authorized personnel only, and visitors and maintenance personnel should be informed about necessary precautions. Maintain a log of all visitors and maintenance personnel accessing the roof.
- Instruct maintenance personnel to avoid dropping tools and equipment on the coated roof surface to prevent puncturing the membrane. When working on rooftop HVAC units, antennas, solar panels, satellite dishes, etc., take care not to place tools, metal doors, lids, pans, or sharp objects directly on the coating system surface. Use smooth plywood to protect the coating membrane when moving roof-mounted units or equipment.
- The Building Owner is responsible for repairing any physical damage to the roofing system, either through the original contractor or another certified contractor. Delayed repairs to physical damage can lead to the need for major repairs or replacement of the roof or roof coating system at the Building Owner’s expense.

ANNUAL INSPECTIONS:

- During annual inspections, be aware that the liquid-applied coating can become slippery in wet conditions. Caution is advised when walking on this type of roofing system or coating during or following rainfall, or in the presence of moisture such as dew, frost, or ice. Special attention is needed on lighter colored surfaces where ice or frost may not be as noticeable compared to darker surfaces.

Annual Inspections:

- These involve cleaning and a thorough visual check of the roof coating system. Inspections should assess the overall condition of the coating, as well as the integrity of elements like flashings, vent pipes, protrusions, skylights, drains, gutters, parapet walls and caps, adjoining walls, and mechanical equipment. Additionally, look for signs of biological growth or any other foreign debris.

PREVENTATIVE MAINTENANCE PROGRAM:

- This program includes regular inspections and subsequent corrective measures, designed to extend the life of the roofing system. It's advisable to schedule these preventative maintenance inspections in spring and autumn. Preventative maintenance programs are recommended by the manufacture but are included in the service contract and the responsibility of the installing contractor to coordinate with the end customer.

ADDITIONAL INSPECTIONS:

- Beyond regular annual inspections, additional checks should be planned if the roof encounters unusual physical damage or conditions, including but not limited to:
    - Exposure to extreme weather, such as strong winds, hail, or prolonged heavy rain.
    - Extensive water pooling, debris accumulation, and any damage to building components that might lead to moisture penetration of the roofing membrane. In areas affected by severe conditions, check the coating or liquid-applied system for punctures, tears, abrasions, or detachment.
    - Following repair or replacement of rooftop equipment or during other activities by different trades that could potentially damage the roof.

- It is important to check for spills, debris, sharp objects, punctures, excessive wear, or other damage caused by heavy traffic or alterations to the roof.

CLEANING PROCEDURES:

WARNING: Be cautious of the slippery nature of the liquid-applied coating when wet, especially during cleaning.

- Clear the roof of rocks, branches, leaves, pine needles, and other foreign materials, as well as dirt build-up near drains and other low points. Utilize tools like a plastic rake or a medium-bristle brush for debris removal, applying minimal pressure. Clear any blockages from drains, gutters, and downspouts, ensuring downspouts on multi-level roofs do not discharge directly onto the coated surface below. Trim overhanging trees to reduce leaf and pine needle accumulation and allow sunlight to reach the roof, aiding in the prevention of mildew and algae growth.
- Generously apply diluted Cleaning Concentrate (1 part concentrate to 10 parts water) at low pressure to a section of the roof, using about 0.4 to 0.7 gallons per 100 ft^2 (1.6 to 2.9 L/m^2). Let the cleaner sit for at least 15 minutes. Ensure areas with algae, mold, or mildew are thoroughly soaked. These spots should also be scrubbed with a medium to stiff bristle brush for optimal removal.
- Rinse using a pressure washer (1,200 to 1,500 psi) with clean water directed towards drains. Employ a fan tip on the wand, maintaining a minimum distance of 12 inches (305 mm) from the roof surface. Additional scrubbing with a broom or cleaning pad may be required in dirtier low areas.

IMPORTANT: Use roof wash-off catchment systems where necessary and comply with local and state regulations during the cleaning process.

INSPECTION CHECKLIST

Pre-Inspection

- Before conducting the roof inspection, it's essential to prepare a detailed roof plan to document any defects and observations.
- Inspect the underside of the deck (if accessible) and the exterior of the building before accessing the roof. Look for indications of excessive moisture, staining, or deterioration. These signs can provide insights into not just roof-related issues but also other factors impacting the overall performance of the building envelope.

Area of Concern	Treatment
Parapet Walls & Caps	• Inspect the interface between the roof deck and parapet walls to verify there are no splits or tears and that the coating membrane is properly adhered and intact. Check parapet walls and caps for cracks or breaks that might allow moisture intrusion beneath the coating system.
Minor Repairs	• Areas requiring minor repairs (such as small punctures and tears) identified during the inspection can be fixed with Premium Brush-Grade Acrylic Flashing. More extensive repairs might necessitate the use of Premium Brush-Grade Acrylic Flashing with fabric. For specific project advice, consult GAF's Technical Services.
Roof Drains & Scuppers	• Confirm that roof drains and scuppers are unobstructed and free from debris for effective drainage. Ensure drain covers are secure and properly fastened. Check the surrounding coating for integrity and absence of blisters, tears, and delaminations.
Protrusions	• Scrutinize the reinforced coating around all protrusions, like vent pipes, for splits, tears, or delaminations at the base. Confirm proper cap installation on vent pipes and the secure, self-flashing condition of the coating at the top of all protrusions.
Moisture Analysis (optional)	• If there's concern about moisture penetration into the roof substrate due to damage, consider conducting a non-destructive moisture detection survey. Common methods include nuclear metering and infrared thermography. A moisture meter probe can also be used, though this is destructive and will require repair of the damage.
Skylights	• Examine the reinforcement around skylights, ensuring it is intact and free of blisters, tears, and delaminations.
Gutters	• Maintain clean gutters, clear of debris to promote proper drainage. If drains are coated, inspect the coating for soundness and absence of blisters, tears, and delaminations.
Roof Membrane & Flashings	• Examine the roof coating membrane to ensure it is intact and undamaged, checking for splits, crazing, and cracking. In areas with standing water, inspect for blisters, delamination, or damage due to biological growth on the coating surface.
Roof Mounted Equipment	• Inspect all rooftop equipment to ensure secure attachment to base risers, and that the surrounding coating and reinforcement is sound, free of blisters, tears, and delaminations.
Other Details	• Check the condition of bricks and mortar on chimneys, as well as caulking or joints in metal flashings, including copings, counter-flashings, rooftop units, curbs, caps, expansion joints, etc. Repair or replace caulking as needed.

ROOF SPECIFIC LEAK INVESTIGATION

On metal decks, it's crucial to identify the orientation of deck flutes and deck slope. Water may seep through the roofing system, travel within the lower flutes of the deck, and cause leaks inside the building, particularly in lower areas.

For concrete decks or projects where existing roofing material remains, leaks might stem from moisture trapped in the original installation.

In roofing assemblies with poor insulation, leaks can result from condensation. Therefore, pinpointing the exact location and frequency of the leak is vital. Efforts should be made to seal any sources of air leakage.

1. Initiate leak investigations with a comprehensive visual inspection of the roof area corresponding to where leaks have been reported inside.
2. Examine key details such as drains, vents, scuppers, HVAC and other roof-mounted equipment, parapets, areas of ponded water, etc. In dry conditions, locations of water pooling can often be identified by residues on the roof membrane.
3. Investigate lower roof areas for moisture beneath the coating system (soft insulation can sometimes be felt when walking over these areas).
4. Inspect around mechanical rooftop equipment, drains, skylights, roof hatches, expansion joints, pipes, vents, etc., for any cuts or punctures in the coating membrane.
5. Check metal flashings (edging, coping, expansion joint covers, parapet caps, etc.) for cracks and poorly sealed joints.
6. If the source of the leak isn't visually apparent, wet the system in the suspected leak area and monitor the interior for leaks.
7. An inspection of the deck underside often reveals signs of water leakage and/or air infiltration.

EMERGENCY REPAIRS

NanoTech Materials must be informed of any leaks within 30 days from their discovery. The Building Owner may undertake temporary repairs in an emergency to minimize damage to the building or contents. Such repairs should be executed by qualified personnel and won't affect any existing guarantees or warranties, provided they are reasonable, customary, and do not permanently damage the NanoTech roofing materials. Permanent repairs should be completed by an approved NanoTech contractor, under NanoTech’s guidance for covered leaks, or as directed by the building owner for non-covered leaks.

Repairs should not involve asphalt-based products unless a wet patch type product is needed urgently. If used, wet patch products must be entirely removed when making permanent repairs.

Temporary Dry Surface Emergency Repairs

- Clean the damaged area using a pressure washer (1,200 to 1,500 psi)
- Rinse with clean water and allow the roof to fully dry.
- Apply Premium Brush-Grade Acrylic Flashing and integrate Premium Fabric as necessary for additional reinforcement. Contact NanoTech Technical Support Services before using any other product to confirm compatibility.

SPECIFIC REPAIRS FOR LIQUID-APPLIED COATING SYSTEMS NOT OVER SPRAY POLYURETHANE FOAM (SPF) INSULATION:

- Rectify minor mechanical damage to the liquid-applied coating membrane by employing the specified flashing grade and/or approved urethane caulk, followed by applying the NanoTech Cool Roof Coat product as a top-coat. Ensure thorough removal of the damaged membrane before proceeding with repairs. In cases where the repaired area exceeds 2” (51 mm) in diameter, seek guidance from NanoTech Technical Support Services for appropriate repair procedures.
- In instances where the liquid-applied coating system includes reinforcement fabric, employ the designated flashing grade product and fabric for repair work.

ROOF MODIFICATIONS:

NanoTech Materials must be informed of any planned alterations to the roof before they are executed. The coverage provided by the guarantee or warranty may be jeopardized if:

- NanoTech is not notified of the alterations.
- The required work is not carried out by the original contractor of record (or another NanoTech-certified contractor).
- Products not authorized in the NanoTech ancillary systems list are utilized.
- All alterations, including but not limited to modifications involving roof-top HVAC units, other equipment, pipes, satellite dishes, antennas, conduit, general penetrations, skylights, etc., must be pre- approved.

  NOTE: These maintenance and inspection procedures are provided for reference purposes only. An approved NanoTech-certified contractor or professional roof consultant may offer a more detailed maintenance program. Maintain records of roof damage and maintenance inspections for each building roof.

SECTION 4

General Installation

THESE ARE GENAL INSTALLATION INSTRUCTIONS. REFER TO THE ROOF SUBSTRATE SPECIFICATION FOR MORE DETAILS ON *INSTALLATION*

- **TECHNICAL ADVICE:**
  - The application of this coating should be executed with guidance from the manufacturer's technical representative. For assistance, contact NanoTech Materials Technical Services.
- **REPAIRS:**
  - Address all leaks and seal flashings on the existing substrate using comparable materials as suggested by the original manufacturer prior to the application of NanoTech Materials Roof Coatings. Areas repaired recently may necessitate an appropriate primer. For primer suggestions, consult the NanoTech Materials ancillary systems list.
- **FOR ALL FLASHING SEAMS, CORNERS, AND VERTICAL/SIDE LAPS, SELECT ONE OF THE OPTIONS FROM THE ANCILLARY SYSTEMS LIST OF PRODUCTS**:
  - Use NanoTech Materials Roof Coating, applying it via brush or roller with a minimum width of 6 in (152 mm) over the seam at a rate of at least 1.5 gal/100 ft² (5.7 L/9.3 m²) to achieve a Wet Film Thickness (WFT) of 25 mils (approximately 200 LF/gal or 61 LM/3.8 L). Immediately place a 4 in (102 mm) strip of Reinforcing Polyester Mesh Tape into the wet coating, ensuring full integration into the coating. The Reinforcing Polyester Mesh Tape should be laid out smoothly, devoid of wrinkles, "fish mouths," blisters, or pinholes.
  - Once the initial coating with the embedded Mesh Tape is firm to touch, add another layer of NanoTech Materials Roof Coating at a minimum of 1.5 gal/100 ft² (5.7 L/9.3 m²) for thorough encapsulation of the tape. Allow a drying time of at least 4 – 6 hours (in conditions of 75 ºF (24 °C) and 50% RH) before progressing to the subsequent installation step. Be aware that lower temperatures or higher humidity can prolong drying times. Do not apply NanoTech Materials Roof Coating if rain or heavy dew is anticipated within 8 hours. Aim to apply the product in the morning for optimal drying time during daylight. The product should be walkable in 90 minutes.
  - Apply approved seam sealant at a minimum width of 4 in (102 mm), centered and crested along the seam, with a minimum central thickness of 64 wet mils (approximately 70 LF/gal or 22 LM/3.8 L). Allow the product to cure for 4-6 hours (longer in overcast or low humidity scenarios) before moving to the next installation phase.
- **ROOF EQUIPMENT (HVAC / SLEEPERS):**
  - Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.
- **PRIMER**:
  - Should adhesion tests indicate a need for primer, apply approved Primer in accordance with manufacture's instructions, avoiding any pooling on the surface. The required Minimum Wet Film Thickness (WFT) is 6 - 8 mils. The primer can be applied using one of the following methods: brush, roller, or sprayer. Be mindful to prevent puddling when spraying. Allow the approved Primer to dry completely. Drying times can vary and are dependent on ambient conditions.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.
- Follow these simple guidelines:
    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes when applying from a 5-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes. If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.
- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

ACRYLIC COATING BASE COAT: Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below).

SECOND COAT: Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

NOTE: MINIMUM DRY TIME PER COAT IS 8 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 8 hours. The product should be walkable in 90 minutes.

NOTE ON AIRLESS:

- Use a 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.6 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS: QUALIFICATION

FOR CONTRACTORS

- The Contractor shall be a certified applicator of Nanotech Materials' Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. NanoTech applicators are required to follow all OSHA safety standards. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

TESTING AND LABELING:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

PRODUCT WARRANTY:

- Please check the appendix for the product warranty.

PRODUCT HANDLING AND STORAGE:

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

- Avoid 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 (41-100), 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.

SECTION 5

ASTM Testing

ASTM CERTIFICATIONS FOR ICC, CRRC, AND MIAMI-DADE

Tested by accredited 3rd party lab for Miami Dade. Tests are passed and pending filing with the county.

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

SECTION 6

NanoTech Cool Roof Coat Over Aged Metal Roofing Systems

NanoTech Cool Roof Coat Over Aged Metal Roofing Systems

PART 1 - GENERAL

SUMMARY

- This document outlines a restorative roof coating designed for application over aged metal roofing systems of various profiles. The use is specifically for cases where the metal panel base is structurally sound but needs a refresh in its finish to extend the roofing system's service life.

- The NanoTech Materials Acrylic Roof Coating, when correctly applied along with seam repair and fastener replacement, ensures a weather-resistant seal that safeguards the base from normal environmental wear and tear.

- Appropriate metal surfaces for the NanoTech Acrylic Roof Coating include steel (minimum one year old or treated galvanized steel), anodized aluminum, and pre-finished metal (excluding siliconized and fluorocarbon finishes). It is not suitable on surfaces that collect standing water.

- The contents of this specification serve as a guideline for crafting a project-specific specification. The applicability of this specification for a particular project should be determined by a qualified individual representing the owner. Factors to evaluate and potential corrections to consider include:
    - Identification of the type of existing metal panel roofing system.
    - Ensuring the existing metal panels are securely fastened and undamaged.
    - Verification that the structural elements are in good condition.

- NanoTech Materials requires an adhesion test to be performed during the initial inspection of the roof to determine if the roof is a suitable candidate to receive the coating and if a primer is needed. A coating applicator certified by the product manufacturer should carry out an adhesion test as directed.

SUBMITTALS

PRODUCT DATA:

- Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

APPLICATOR QUALIFICATIONS

- NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
- For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

SUBSTRATE CONDITIONS:

- The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
- The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
- A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer. See NanoTech Materials ancillary systems list for list of approved secondary materials to be used within the NanoTech Materials roofing system.

- The applicator should possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco	KoolSeal	KoolSeal		Karnak 501		

	Alphaguard WB Primer	Storm Patch 4" Fabric	FREEDOMFLASH™ Roof Repair Sealant		Elasto-Brite		
	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- It is essential that metal panels are in good structural condition and firmly attached. Extensive rusting can disqualify certain panels from being an adequate base for the coating, necessitating their replacement when necessary.
- Ensure the substrate is prepared for the task; the surface must be clean, devoid of moisture, and free from any materials that might impair adhesion.
- Confirm that all related tasks in this area, executed under different scopes, are finished and have received approval from the architect, general contractor, or property owner before beginning the waterproofing process.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

Sealer Pocket Treatment:
Cap Sealer Pockets with sheet metal to ensure they can be sealed with liquid-applied roofing products. Consult the manufacturer's technical services for more details.

Rust Area Treatment:
Address rust issues by removing all loose or flaking rust, especially if not removed during pressure washing. Apply a NanoTech Materials approved primer to these areas. Replace roof panels with significant corrosion or holes.

Priming of Pre-Finished Metal Panels:
Apply Primer as per specifications on pre-finished metal panels based on test patch adhesion results. Note that additional primer is not required where Primer is used due to its rust-inhibiting properties. A primer is only required after a failed adhesion test.

Neoprene Pipe Boot Installation:
Install neoprene boots for specific pipe penetrations, sealing them to the roof with sealant before attaching mechanically with fasteners. For more information, contact Nanotech Materials technical services.

Roof Substrate Preparation:
The installer must prepare the roof substrate and correct all listed conditions. Inspect the substrate before the installation of the liquid-applied roofing system and correct any unsatisfactory conditions as per the manufacturer's guidelines.

Deteriorated Seam/Crack Treatment:
Repair all open or delaminated seams using a 3-course method with Nanotech Materials Cool Roof Coat and fabric from the list of NanoTech Materials approved ancillary systems list.

Open Ridge Vent Treatment:
Replace or install sheet metal caps over open ridge vents that show interior corrosion or are located in harsh environments. Ensure that caps prevent water entry while allowing airflow, without sealing the vents' weep holes.

Sheet Metal Cricket Installation:
Install sheet metal crickets in accordance with manufacturer's specifications. Ensure proper sizing and installation to facilitate water drainage and seal new crickets with sealant before mechanically attaching them.

Po**nding Water Area Treatment:**
Efforts should be made to eliminate all ponding water areas on the roof before applying liquid-applied roofing products. Ponding water is water that remains on the roof surface for over 48 hours after precipitation stops.

Repair of Dented/Damaged Panels:
Mechanically repair all dented or damaged metal roof panels. Cover broken ribs with a sheet metal cap and seal before attaching the cap with fasteners. Replace severely damaged panels.

Condensate Line Installation:
Install condensate lines from HVAC units to gutters as part of the overall roofing contract, adhering to local building codes. Ensure the lines are securely fastened.

Fastener Re-tightening and Replacement:
Re-tighten, secure, or replace all necessary fasteners. Stripped fasteners should be replaced with larger diameter ones, and new fasteners added alongside stripped ones.

Thorough Cleaning of Existing Paints and Coatings:
Pressure wash the metal substrate at a minimum of 3,000 psi to remove delaminating paints, coatings, dirt, dust, and waste products. Use a Roto-spray tip for efficient cleaning and remove all existing silicone-based sealants. Please note the NanoTech Materials Cool Roof Coat is an acrylic base and cannot be applied over a silicone. When encountering living organisms such as algae or mold, use a bleach solution during cleaning. Ensure no residual bleach remains on the roof prior to applying the coating. Ensure the roof is fully dry before applying the coating.

Treatment of Residual Asphalt:
Remove as much asphaltic material as possible using pressure washing or other tools.

FLASHING

Substrate Preparation and Flashing Details:
Begin with substrate preparation, including all necessary flashing details. Once this is completed, flash all penetrations, curbs, and details using either 6 inches (152 mm) or 12 inches (395 mm) fabric embedded in butter grade flashing. The flashing should be feathered at the edges to ensure smooth water flow over the flashing areas.

Rake Detailing:
Secure and seal all fixed rake details of the roof using a minimum width of 12 inches (305 mm) butter grade flashing. If the fixed rake metal extends back onto the roof, trim the excess metal, and follow horizontal seam flashing procedures. Fill all voids and open areas with polyurethane foam before applying butter grade flashing and fabric.

Standing Seam Roof Panel Guidance:
For information regarding standing seam roof panels, contact the panel manufacturer.

Parapet Wall Treatment:
All parapet wall details within the roofing system should be secured and sealed with a minimum width of 12 inches (305 mm) butter grade. If parapet wall flashing metal extends back onto the roof, trim any excess metal and follow horizontal seam flashing procedures. Fill all voids and open areas with polyurethane foam prior to application of butter grade flashing with fabric. Ensure the fabric is cut around all fasteners to lie flat, or use fastener covers as an alternative.

Curb Flashing Application:
Flash all curb flashings, including cricket details, with at least a 12 inches (305 mm) width of fabric and butter grade flashing. Encapsulate all fasteners with butter grade flashing, ensuring not to bridge them. Cut the fabric so it lays flat around all fasteners.

Penetration Treatment:
Apply butter grade flashing around the base of all penetrations, extending at least 6 inches (152 mm) onto both vertical and base surfaces. Embed a 12-inch (305 mm) width of fabric with additional butter grade flashing, shaping the fabric to fit the penetration. Flash both the top and bottom of neoprene pipe boots using the same method.

Skylight Flashing:
Treat curb skylights in the same manner as curb flashings. After completing the flashing work and allowing the coating to cure, apply a sealer to any deteriorated fiberglass skylight panels.

Gutter Sealing:
Apply sealant to the interior or exterior of gutters using a trowel or brush, incorporating a 6-inch (152 mm) width of fabric at all gutter seams. Ensure the gutter is completely clean and dry before applying the sealant.

Ponding Water Area Management:
The extent of ponding water conditions will dictate the need for additional preparation. For further guidance, contact the technical services department.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.
- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech’s Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

TESTING AND LABELING:
The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

PRODUCT WARRANTY: PLEASE CHECK THE APPENDIX FOR THE PRODUCT 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 7

NanoTech Cool Roof Coat for Restoring Modified Bitumen and Smooth Built-Up Roofing Systems

NanoTech Cool Roof Coat for Restoring Modified Bitumen and Smooth Built-Up Roofing Systems

PART 1 - GENERAL

SUMMARY

- This specification outlines the use of NanoTech Materials Acrylic Cool Roof Coating as a rejuvenating roof coating solution for smooth and granule-surfaced modified bitumen and smooth built-up roofing membranes (BUR), including mineral surfaced cap sheets. This application is suitable for situations where the existing substrate is in good condition but requires surface restoration due to the natural wear and tear caused by aging and usage.

- Please be aware that this specification does not apply to built-up roof substrates with gravel surfaces. Additionally, it is important to note that this coating is not intended for surfaces prone to excessive water ponding.

- This specification serves as a reference for creating a project specification tailored to the application of NanoTech Materials Cool Roof Coating. It is imperative that a qualified representative of the owner assesses the appropriateness of this specification for the specific project at hand.
    - Several crucial conditions and corrective measures to be mindful of include:
        - Identification of the existing roofing system type is essential.
        - Ensure that all existing membranes are either fully adhered or mechanically attached and remain in good condition.
        - Confirm the structural integrity of the decking material.

- NanoTech Materials requires an adhesion test be performed during the initial inspection process to assess if the roof is a suitable candidate for the coating and if a primer is needed. These adhesion tests, in accordance with General Instructions Adhesion Testing Procedures, should be carried out by a Coating Applicator who is licensed by the product manufacturer.

SUBMITTALS

- **PRODUCT DATA**:
    - Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

- **APPLICATOR QUALIFICATIONS:**
    - NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
    - For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

- **SUBSTRATE CONDITIONS:**
    - The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
    - The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
    - A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer.

- The applicator must possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard WB Primer	KoolSeal Storm Patch 4" Fabric	KoolSeal FREEDOMFLASH™ Roof Repair Sealant		Karnak 501 Elasto-Brite		

	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- Prior to proceeding, a comprehensive evaluation is necessary, which includes conducting a nuclear or infrared scan. Any wet roofing materials identified during this process must be promptly removed and replaced.
- Structural repairs for the roof's components must be carried out and completed as required.
- It is imperative to confirm that drains, vents, ducts, gutters, metal cap flashing, or any other penetrations have been appropriately replaced or adjusted as needed.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

Moisture Assessment: Conduct a moisture evaluation on the roofing system to determine its readiness for a new liquid-applied roofing system. Replace any areas found to be wet or in a state of deterioration.

Roof Substrate Preparation: The installer is responsible for preparing the roof substrate and rectifying all conditions mentioned in this section. The installation of the liquid-applied roofing system should not proceed until all unsatisfactory conditions are corrected to the manufacturer's standards.

Repair of Damaged/Deteriorated Membrane: Areas of the membrane that are torn, cracked, or buckled must be repaired using similar or compatible materials. Wet insulation should also be replaced. Allow a drying period of 24 hours before applying further liquid-applied roofing products.

Addressing Ponding Water: The installer must attempt to mechanically remove all areas of ponding water from the roof before applying liquid-applied roofing products. Ponding water is water that remains on the roof for over 48 hours post-rainfall. Areas where ponding water cannot be resolved should be treated with a flexible sealant before applying further liquid-applied roofing products. Consult the list of NanoTech Materials approved ancillary systems for compatible sealant options.

Seam Repairs: All delaminated or open seams should be repaired using a method approved by the manufacturer.

Securing Sealer Pockets: Sealer Pockets should be covered with sheet metal to enable effective sealing with liquid-applied roofing products.

Condensate Lines: Install condensate lines from HVAC units to gutters as part of the comprehensive drainage system. The type of piping may vary based on local building codes.

Membrane Cleaning: For new asphaltic substrates (less than 5 years old), use pressured air and a dry broom for cleaning. If excessive dirt on new asphaltic membranes cannot be removed by dry cleaning, power wash and clean with a cleaning concentrate. Ensure no residue from the cleaning agent remains on the roof prior to coating. For aged substrates (5 years or older), thoroughly pressure wash the roof with water at approximately 2,000 psi, adjusting based on the roof's condition. Remove all dirt, dust, chalking, and loose materials without damaging the roof surface or forcing water into the system. Use hot water and mild detergent for grease or oil removal, and bleach for treating mildew or algae, followed by pressure washing.

Primer Application: Smooth BUR and APP substrates must be primed using a suitable primer at a rate of 0.5 - 1.0 gallon per 100 square feet. Granular-surfaced SBS and APP, as well as non-modified mineral-surfaced cap BUR, do not require priming

FLASHING

Initial Steps and Flashing Details: Commence with preparing the substrate, including all necessary flashing details. Once this is completed, flash all penetrations, curbs, and details using a choice of either 6 inches (152 mm) or 12 inches (305 mm) fabric and butter grade flashing, according to provided detailed guidelines. Be sure to taper the edges of the butter grade flashing for efficient water flow over the flashed areas. Consult list of NanoTech Materials approved ancillary systems appropriate butter grade options.

Parapet Wall Treatment: All parapet wall details within the roofing system need to be secured and sealed with at least 12 inches (305 mm) width of fabric and butter grade flashing. Ensure to fill any voids or open areas with polyurethane foam prior to the application of the fabric and flashing.

Curb Flashing Procedure: Ensure that all curb flashings, including cricket details, are flashed with a minimum width of 12 inches (305 mm) of fabric and butter grade flashing. Fully encapsulate all fasteners with butter grade flashing, avoiding any bridging. The fabric should be precisely cut to lay flat around all fasteners.

Penetration Flashing Process: Apply butter grade flashing around the base of any penetrations, ensuring an extension of at least 6 inches (152 mm) onto both vertical and base areas. Embed a 12-inch (305 mm) width of fabric with additional butter grade flashing as required, shaping the fabric to fit the penetration. Flash both the top and bottom of all neoprene pipe boots as described.

Skylight Treatment: Treat curb skylights in the same manner as curb flashings. After the flashing work is completed and the coating has cured, apply a protective sealer to any deteriorated fiberglass skylight panels.

Gutter Sealing Technique: For gutter interiors or exteriors, apply sealant using a trowel or brush, incorporating a 12-inch (305 mm) width of fabric at all gutter seams. Make sure the gutters are thoroughly clean and dry before sealant application.

Managing Ponding Water Areas: The severity of ponding water conditions will dictate the required additional preparation steps. Contact the technical services department for further guidance and information.

Inspection of Work and Flashing Details: Conduct a thorough inspection of preliminary work and flashing details, looking for any potential problems like gaps, cracks, fish mouths, air pockets, etc., to ensure that the work is complete and meets the required standards.

ROOF EQUIPMENT (HVAC / SLEEPERS):

Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.
- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech's Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

Testing and Labeling:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

Product Warranty:

Please check the appendix for the product 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 8

NanoTech Cool Roof Coat for PVC Substrates

NanoTech Cool Roof Coat for PVC Systems

PART 1 - GENERAL

SUMMARY

- This specification outlines the use of NanoTech Materials Cool Roof Coating as a rejuvenating roof coating solution for PVC roofing systems

- This specification serves as a reference for creating a project specification tailored to the application of NanoTech Materials Cool Roof Coating. It is imperative that a qualified representative of the owner assesses the appropriateness of this specification for the specific project at hand.
    - Several crucial conditions and corrective measures to be mindful of include:
        - Identification of the existing roofing system type is essential.
        - Ensure that all existing membranes are either fully adhered or mechanically attached and remain in good condition.
        - Confirm the structural integrity of the decking material.

- NanoTech Materials requires an adhesion test be performed during the initial inspection process to assess if the roof is a suitable candidate for the coating and if a primer is needed. These adhesion tests, in accordance with General Instructions Adhesion Testing Procedures, should be carried out by a Coating Applicator who is licensed by the product manufacturer.

SUBMITTALS

PRODUCT DATA:

- Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

APPLICATOR QUALIFICATIONS:

- NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
- For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

SUBSTRATE CONDITIONS:

- The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
- The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
- A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer.

- The applicator should possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard WB Primer	KoolSeal Storm Patch 4" Fabric	KoolSeal FREEDOMFLASH™ Roof Repair Sealant		Karnak 501 Elasto-Brite		

	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- Prior to proceeding, a comprehensive evaluation is necessary, which includes conducting a nuclear or infrared scan. Any wet roofing materials identified during this process must be promptly removed and replaced.
- Structural repairs for the roof's components must be carried out and completed as required.
- It is imperative to confirm that drains, vents, ducts, gutters, metal cap flashing, or any other penetrations have been appropriately replaced or adjusted as needed.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

- **Roof Substrate Preparation:** The responsibility of preparing the roof substrate lies with the installer, who must address and rectify all issues outlined in this section. The installation of the liquid-applied roofing system should not commence until all unsatisfactory conditions have been adequately resolved to the satisfaction of the product manufacturer.
- **Moisture Assessment:** Conduct a thorough moisture examination on the roofing system to evaluate its readiness for a new liquid-applied roofing system installation. Any areas found to be wet or in a state of deterioration should be removed and replaced accordingly.
- **Repair of Damaged/Deteriorated Membrane**: Repair any sections of the membrane that are torn, cracked, or buckled using materials similar or compatible with those produced by the membrane manufacturer. Additionally, any wet insulation must be replaced as part of the repair process. Allow a drying period of 24 hours before applying other liquid-applied roofing products.
- **Repairing Deteriorated Seams:** All delaminated or open seams must be repaired using a method approved by the manufacturer.
- **Addressing Ponding Water:** The installer must strive to eliminate all areas of ponding water on the roof before applying liquid-applied roofing products. Ponding water is identified as water that remains on the roof for over 48 hours after rainfall has ceased. Areas where ponding water cannot be resolved should be treated with a flexible sealant prior to the application of other liquid-applied roofing products.
- **Securing Sealer Pockets:** Sealer Pockets should be covered with sheet metal to allow them to be sealed effectively with liquid-applied roofing products.
- **Installation of Condensate Lines:** Condensate lines from HVAC units should be connected to gutters as part of the overall drainage system. The specific type of piping used for these lines may vary according to local building regulations.
- **Cleaning the Membrane:** The roofing substrate must be thoroughly cleaned using a pressure washer with water. The ideal working pressure is around 2,000 psi, but this may vary based on the roof's condition, to remove all dirt, dust, chalking, and loose materials without damaging the roof surface or forcing water into the system. Use hot water and a mild detergent for grease or oil removal. If mildew or algae are present, treat these areas with bleach before pressure washing the surface.

FLASHING

Initial Steps: Begin with substrate preparation and detailing of all flashings. Following substrate preparation, flash all details, penetrations, and curbs using either 6 inches (152 mm) or 12 inches (305 mm) fabric and butter grade flashing, as per detailed instructions. Ensure the butter grade flashing is tapered at the edges for smooth water flow over the flashing details.

Ponding Water Areas: Address the severity of any ponding water issues by determining the need for additional preparation steps. Consultation with the manufacturer's technical services department for guidance is advisable.

Gutters: Apply sealant to gutters, either inside or outside, using a trowel or brush. This should involve a 12-inch (305 mm) width of fabric at all gutter seams, ensuring the gutters are completely clean and dry before the sealant application.

Inspection of Preliminary Work/Flashing Details: Thoroughly inspect for any issues like gaps, cracks, fish mouths, air pockets, etc., to confirm the completeness and quality of the work.

Skylights: Similar treatment as curb flashings should be applied to curb skylights. After completing the flashing work and allowing the coating to cure, apply a sealer to any deteriorated fiberglass skylight panels.

Penetrations: Around the base of penetrations, apply butter grade flashing, extending it at least 6 inches (152 mm) onto both vertical and base surfaces. Use additional butter grade flashing to embed a 12-inch (305 mm) width of fabric, cutting it to fit the shape of the penetration. Flash the top and bottom of all neoprene pipe boots using the same method.

Parapet Walls: All parapet wall details within the roofing system must be securely sealed using a minimum width of 12 inches (305 mm) fabric and butter grade flashing.

Curb Flashings: Flash all curb flashings, including cricket details, with a minimum width of 12 inches (305 mm) fabric and butter grade flashing. All fasteners should be encapsulated with butter grade flashing, making sure the fabric is cut appropriately to lay flat around them.

ROOF EQUIPMENT (HVAC / SLEEPERS):

Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.

- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **FIELD QUALITY CONTROL**
  - If any deviations from the specified standards are detected by either the Applicator or the owner's representative, it is the duty of the Applicator to make the necessary corrections.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech's Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

Testing and Labeling:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

Product Warranty:

Please check the appendix for the product 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 9

NanoTech Cool Roof Coat For TPO Substrates

NanoTech Cool Roof Coat for TPO Systems

PART 1 - GENERAL

SUMMARY

This specification outlines the use of NanoTech Acrylic Cool Roof Coating as a rejuvenating roof coating solution for TPO roofing systems.

- This specification serves as a reference for creating a project specification tailored to the application of NanoTech Materials Cool Roof Coating. It is imperative that a qualified representative of the owner assesses the appropriateness of this specification for the specific project at hand.
    - Several crucial conditions and corrective measures to be mindful of include:
        - Identification of the existing roofing system type is essential.
        - Ensure that all existing membranes are either fully adhered or mechanically attached and remain in good condition.
        - Confirm the structural integrity of the decking material.

- NanoTech Materials requires an adhesion test be performed during the initial inspection process to assess if the roof is a suitable candidate for the coating and if a primer is needed. These adhesion tests, in accordance with General Instructions Adhesion Testing Procedures, should be carried out by a Coating Applicator who is licensed by the product manufacturer.

SUBMITTALS

PRODUCT DATA:

- Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

APPLICATOR QUALIFICATIONS:

- NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
- For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

SUBSTRATE CONDITIONS:

- The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
- The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
- A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer.

- The applicator should possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard WB Primer	KoolSeal Storm Patch 4" Fabric	KoolSeal FREEDOMFLASH™ Roof Repair Sealant		Karnak 501 Elasto-Brite		

	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- Prior to proceeding, a comprehensive evaluation is necessary, which includes conducting a nuclear or infrared scan. Any wet roofing materials identified during this process must be promptly removed and replaced.
- Structural repairs for the roof's components must be carried out and completed as required.
- It is imperative to confirm that drains, vents, ducts, gutters, metal cap flashing, or any other penetrations have been appropriately replaced or adjusted as needed.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

Roof Substrate Preparation:
The installer is responsible for preparing the roof substrate and addressing all listed conditions. Do not commence the installation of the liquid-applied roofing system until all unsatisfactory conditions are corrected as per the manufacturer's guidelines.

Moisture Survey and Replacement:
Perform a moisture survey on the roofing system to evaluate its suitability for the new roofing system. Any wet or deteriorated areas identified should be removed and replaced.

Ponding Water Area Treatment:
Efforts should be made to mechanically remove all ponding water areas on the roof before applying the roofing products. Treat areas of ponding water that cannot be eliminated with a sealant prior to the application of other roofing products.

Damaged Membrane Repair:
Repair any torn, cracked, or buckled areas of the membrane using similar or compatible products. Replace any wet insulation as part of the roofing repair. Allow a 24-hour drying time before applying other roofing products.

Seam Repair:
Address and repair all delaminated or open seams using a method approved by the manufacturer.

Sealer Pocket Sealing:
Cap Sealer Pockets with sheet metal for effective sealing with the roofing products.

Condensate Line Installation:
Install condensate lines from HVAC units to gutters, forming part of the overall drainage system. The type of piping may vary based on local building codes.

Membrane Cleaning Process:
Thoroughly pressure wash the roof substrate with water, using a working pressure of approximately 2,000 psi, to remove dirt, dust, chalking, and loose materials. Use hot water and mild detergent for grease or oil removal, and treat areas with mildew or algae with bleach before pressure washing. Ensure no residual cleaning agents remain on the roof prior to applying the coating.

FLASHING

Flashings, Penetrations, and Curbs:
Start with substrate preparation and attend to all flashing details. After this, all flashings, penetrations, and curbs should be flashed using either 6 inches (152 mm) or 12 inches (305 mm) fabric and butter grade flashing. Ensure that the butter grade flashing is feathered at the edges for effective water flow.

Parapet Wall Sealing:
Secure and seal all parapet wall details within the roofing system using a minimum width of 12 inches (305 mm) fabric and butter grade flashing. Fill any voids and open areas with polyurethane foam before applying the fabric and flashing.

Curb Flashing Application:
Apply at least a 12-inch (305 mm) width of fabric and butter grade flashing for all curb flashings, including cricket details. Ensure all fasteners are encapsulated with butter grade flashing and avoid bridging fasteners. The fabric should be cut to lay flat around all fasteners.

Penetration Treatment:
Apply butter grade flashing around the base of penetrations, extending at least 6 inches (152 mm) onto both the vertical and the base. Embed a 12-inch (305 mm) width of fabric using additional butter grade flashing as necessary, cutting the fabric to fit the shape of the penetration. Flash both the top and bottom of neoprene pipe boots similarly.

Skylight Flashing:
Treat curb skylights in the same manner as curb flashings. Once the flashing work is completed and the coating has cured, apply a sealer to any deteriorated fiberglass skylight panels.

Gutter Sealing:
Apply sealant to the interior or exterior of gutters using a trowel or brush, incorporating a 12-inch (305 mm) width of fabric at all gutter seams. Ensure the gutter is completely clean and dry before applying the sealant.

Ponding Water Area Management:
The extent of ponding water issues will dictate the need for additional preparation. For guidance, consult the technical services department.

Inspection of Preliminary Work and Flashings:
Conduct a thorough inspection of preliminary work and flashing details for any problem areas such as gaps, cracks, fish mouths, air pockets, etc., to ensure that the work is complete and satisfactory.

ROOF EQUIPMENT (HVAC / SLEEPERS):

Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.

- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **FIELD QUALITY CONTROL**
    - If any deviations from the specified standards are detected by either the Applicator or the owner's representative, it is the duty of the Applicator to make the necessary corrections.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes.

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech's Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

Testing and Labeling:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

Product Warranty:

Please check the appendix for the product 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 10

NanoTech Cool Roof Coat For EPDM Substrates

NanoTech Cool Roof Coat For EPDM Systems

PART 1 - GENERAL

SUMMARY

- This specification outlines the use of NanoTech Materials Acrylic Cool Roof Coating as a rejuvenating roof coating solution for EPDM roofing systems

- This specification serves as a reference for creating a project specification tailored to the application of NanoTech Materials Cool Roof Coating. It is imperative that a qualified representative of the owner assesses the appropriateness of this specification for the specific project at hand.
    - Several crucial conditions and corrective measures to be mindful of include:
        - Identification of the existing roofing system type is essential.
        - Ensure that all existing membranes are either fully adhered or mechanically attached and remain in good condition.
        - Confirm the structural integrity of the decking material.

- NanoTech Materials requires an adhesion test be performed during the initial inspection process to assess if the roof is a suitable candidate for the coating and if a primer is needed. These adhesion tests, in accordance with General Instructions Adhesion Testing Procedures, should be carried out by a Coating Applicator who is licensed by the product manufacturer.

SUBMITTALS

PRODUCT DATA:

- Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

APPLICATOR QUALIFICATIONS:

- NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
- For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

SUBSTRATE CONDITIONS:

- The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
- The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
- A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer.

- The applicator should possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard	KoolSeal Storm Patch	KoolSeal FREEDOMFLASH™		Karnak 501 Elasto-Brite		

	WB Primer	4" Fabric	Roof Repair Sealant				
	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- Prior to proceeding, a comprehensive evaluation is necessary, which includes conducting a nuclear or infrared scan. Any wet roofing materials identified during this process must be promptly removed and replaced.
- Structural repairs for the roof's components must be carried out and completed as required.
- It is imperative to confirm that drains, vents, ducts, gutters, metal cap flashing, or any other penetrations have been appropriately replaced or adjusted as needed.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

Roof Substrate Preparation:
The installer is responsible for preparing the roof substrate and addressing all listed conditions. Do not commence the installation of the liquid-applied roofing system until all unsatisfactory conditions are corrected as per the manufacturer's guidelines.

Moisture Survey and Replacement:
Perform a moisture survey on the roofing system to evaluate its suitability for the new roofing system. Any wet or deteriorated areas identified should be removed and replaced.

Ponding Water Area Treatment:
Efforts should be made to mechanically remove all ponding water areas on the roof before applying the roofing products. Treat areas of ponding water that cannot be eliminated with a sealant prior to the application of other roofing products.

Damaged Membrane Repair:
Repair any torn, cracked, or buckled areas of the membrane using similar or compatible products. Replace any wet insulation as part of the roofing repair. Allow a 24-hour drying time before applying other roofing products.

Seam Repair:
Address and repair all delaminated or open seams using a method approved by the manufacturer.

Sealer Pocket Sealing:
Cap Sealer Pockets with sheet metal for effective sealing with the roofing products.

Condensate Line Installation:
Install condensate lines from HVAC units to gutters, forming part of the overall drainage system. The type of piping may vary based on local building codes.

Membrane Cleaning Process:
Thoroughly pressure wash the roof substrate with water, using a working pressure of approximately 2,000 psi, to remove dirt, dust, chalking, and loose materials. Use hot water and mild detergent for grease or oil removal, and treat areas with mildew or algae with bleach before pressure washing. Ensure no residual cleaning agents remain on the roof prior to applying the coating.

FLASHING

Flashings, Penetrations, and Curbs:
Start with substrate preparation and attend to all flashing details. After this, all flashings, penetrations, and curbs should be flashed using either 6 inches (152 mm) or 12 inches (305 mm) fabric and butter grade flashing. Ensure that the butter grade flashing is feathered at the edges for effective water flow.

Parapet Wall Sealing:
Secure and seal all parapet wall details within the roofing system using a minimum width of 12 inches (305 mm) fabric and butter grade flashing. Fill any voids and open areas with polyurethane foam before applying the fabric and flashing.

Curb Flashing Application:
Apply at least a 12-inch (305 mm) width of fabric and butter grade flashing for all curb flashings, including cricket details. Ensure all fasteners are encapsulated with butter grade flashing and avoid bridging fasteners. The fabric should be cut to lay flat around all fasteners.

Penetration Treatment:
Apply butter grade flashing around the base of penetrations, extending at least 6 inches (152 mm) onto both the vertical and the base. Embed a 12-inch (305 mm) width of fabric using additional butter grade flashing as necessary, cutting the fabric to fit the shape of the penetration. Flash both the top and bottom of neoprene pipe boots similarly.

Skylight Flashing:
Treat curb skylights in the same manner as curb flashings. Once the flashing work is completed and the coating has cured, apply a sealer to any deteriorated fiberglass skylight panels.

Gutter Sealing:
Apply sealant to the interior or exterior of gutters using a trowel or brush, incorporating a 12-inch (305 mm) width of fabric at all gutter seams. Ensure the gutter is completely clean and dry before applying the sealant.

Ponding Water Area Management:
The extent of ponding water issues will dictate the need for additional preparation. For guidance, consult the technical services department.

Inspection of Preliminary Work and Flashings:
Conduct a thorough inspection of preliminary work and flashing details for any problem areas such as gaps, cracks, fish mouths, air pockets, etc., to ensure that the work is complete and satisfactory.

ROOF EQUIPMENT (HVAC / SLEEPERS):

Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.

- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **FIELD QUALITY CONTROL**
    - If any deviations from the specified standards are detected by either the Applicator or the owner's representative, it is the duty of the Applicator to make the necessary corrections.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes.

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech's Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

Testing and Labeling:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

Product Warranty:

Please check the appendix for the product 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

SECTION 11

NanoTech Cool Roof Coat for Structural Concrete Substrates

NanoTech Cool Roof Coat for Structural Concrete Systems

PART 1 - GENERAL

SUMMARY

- This specification outlines the use of NanoTech Acrylic Cool Roof Coating as a rejuvenating roof coating solution for Structural Concrete roofing systems.

- This specification serves as a reference for creating a project specification tailored to the application of NanoTech Materials Cool Roof Coating. It is imperative that a qualified representative of the owner assesses the appropriateness of this specification for the specific project at hand.
    - Several crucial conditions and corrective measures to be mindful of include:
        - Identification of the existing roofing system type is essential.
        - Ensure that all existing membranes are either fully adhered or mechanically attached and remain in good condition.
        - Confirm the structural integrity of the decking material.

- NanoTech Materials requires an adhesion test be performed during the initial inspection process to assess if the roof is a suitable candidate for the coating and if a primer is needed. These adhesion tests, in accordance with General Instructions Adhesion Testing Procedures, should be carried out by a Coating Applicator who is licensed by the product manufacturer.

SUBMITTALS

PRODUCT DATA:

- Submit the standard product package from the manufacturer, including specifications, installation instructions, and general information for each waterproofing material.

APPLICATOR QUALIFICATIONS:

- NanoTech Materials Cool Roof Coat must be installed by a certified NanoTech Materials Installer in order to ensure the roof is in proper condition to receive the NanoTech Materials Cool Roof Coat.
- For more information on joining the NanoTech Materials Cool Roof Coatings Program contact Technical Support Services.

SUBSTRATE CONDITIONS:

- The applicator is to present a comprehensive inspection report to the owner, confirming the condition of the substrate and highlighting any defects not specifically mentioned in relation to the coating installation.
- The surface must be clear of any loose dirt, stones, debris, moisture, and must be stable. All preparatory work in the area designated for the application must be completed before the coating is installed.
- A thorough inspection of the substrate by the applicator is required before beginning the coating application. The substrate must be accepted by both the architect/owner and the applicator. Commencing work signifies acceptance.

QUALIFICATIONS

- All primary waterproofing materials should come from a single manufacturer. Any secondary materials must be recommended by the primary manufacturer.

- The applicator should possess a minimum of five (5) years of experience in applying waterproofing materials as specified and hold a current Letter of Good Standing from the waterproofing manufacturer.

- **PRE-INSTALLATION CONFERENCE**: Arrange a meeting at the job site before installation starts with representatives from the coating manufacturer, applicator, general contractor, architect, and other relevant parties. Discuss methods, procedures, substrate conditions, scheduling, and safety considerations.

DELIVERY, STORAGE, AND HANDLING

- The owner or their representative must reject any damaged or non-conforming materials, which should be promptly removed from the site.

- Store coating materials as per the manufacturer's recommendations and in compliance with all relevant safety regulations (local, state, and federal). Consult all pertinent data, including Safety Data Sheets, Product Data Sheets, product labels, and specific personal protection instructions.

- Ensure proper ventilation and protect against hazardous fumes and overspray for workers and other trades near the application site.

WARRANTY

Renewable Lifetime Labor & Material Warranty: NanoTech offers lifetime warranties against leaks when elite licensed contractors are utilized. The initial period is for ten (10) years and provided annual maintenance has been performed, may be indefinitely renewed every five (5) years subject to the terms and conditions for renewal. See a sample copy for details **Material Only:** For clients who do not desire or need the leak warranty, NanoTech still warrants its material for a period of ten (10) years. See a sample copy for details.

PROTECTION OF BUILDING AND OCCUPANTS:

- All areas not designated for coating application, including windows, doors, exterior walls, parking lots, and vehicles, must be shielded from any potential overspray. Protective materials should be fastened securely to withstand wind and ventilated to prevent accumulation of moisture if they hinder regular airflow.
- Warning signs indicating the risk of overspray should be displayed within a 400 ft (122 m) radius of the application site.
- To avoid indoor contamination, all ventilation systems drawing air into the building should be deactivated during the coating process.
- Any damage to surfaces caused by the application process must be repaired at no cost to the property owner.
- Post no smoking signs as required by local fire regulations.

SUBSTRATE

- Initiate the specified work only after the completion of substrate construction, preparation, and all detailed work.

EQUIPMENT

- Position all equipment used in the operation in a manner that does not disrupt daily activities or pose a risk to occupants, the building, or materials present on the site. Ensure that all spray equipment is properly grounded during use.

PART 2 - PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch Stitchbond Polyester	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard WB Primer	KoolSeal Storm Patch 4" Fabric	KoolSeal FREEDOMFLASH™ Roof Repair Sealant		Karnak 501 Elasto-Brite		

	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

The NanoTech Materials Cool Roof Coat may be used as a full system, in place of an associated ancillary system in the following instances:

- Approved roofing systems which are sound, free of contaminants, and do not require remediation beyond cleaning, as determined during inspection.
- At penetrations which are tied to or have no movement and installed in accordance with original manufacture's specifications. Examples include pipes, sealer pockets, HVAC curbs, exhaust fans, etc.
- Under supports.
- At scuppers and drains with no ponding water.
- At the installation of a walkway system*
    - System must include a layer of mesh with sand 3' wide
- Seams at horizontal to vertical transitions. Apply at 6" in either direction.
- Seams in metal flashings including gravel guard, coping, curb seams (welded or mechanically fastened) including curb corners.
- Over fastened seams in metal systems installed in accordance with manufacturer's instructions.
- As a tie-in to adjacent single-ply or metal systems.

NanoTech Materials must sign off on contractor inspection and remediation plan including the intent to use NanoTech Materials Cool Roof Coat as a full system for any of the above uses prior to beginning the work.

When utilizing mesh, apply the first 25 mils of NanoTech Cool Roof Coat as a base, followed by a layer of mesh fabric, from approved ancillary systems list, followed by the second layer of 25 mils of NanoTech Materials Cool Roof Coat.

ASTM CERTIFICATIONS AND TESTING FOR ICC, CRRC, AND MIAMI-DADE

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

PART 3 - EXECUTION

EXAMINATION

- Prior to proceeding, a comprehensive evaluation is necessary, which includes conducting a nuclear or infrared scan. Any wet roofing materials identified during this process must be promptly removed and replaced.
- Structural repairs for the roof's components must be carried out and completed as required.
- It is imperative to confirm that drains, vents, ducts, gutters, metal cap flashing, or any other penetrations have been appropriately replaced or adjusted as needed.

PREPARATION

The Roof must be pressure washed and fully dry before beginning the application of the NanoTech Materials Cool Roof Coat.

Roof Substrate Preparation:
The installer is responsible for preparing the roof substrate and addressing all listed conditions. Do not commence the installation of the liquid-applied roofing system until all unsatisfactory conditions are corrected as per the manufacturer's guidelines.

Moisture Survey and Replacement:
Perform a moisture survey on the roofing system to evaluate its suitability for the new roofing system. Any wet or deteriorated areas identified should be removed and replaced.

Ponding Water Area Treatment:
Efforts should be made to mechanically remove all ponding water areas on the roof before applying the roofing products. Treat areas of ponding water that cannot be eliminated with a sealant prior to the application of other roofing products.

Damaged Membrane Repair:
Repair any torn, cracked, or buckled areas of the membrane using similar or compatible products. Replace any wet insulation as part of the roofing repair. Allow a 24-hour drying time before applying other roofing products.

Seam Repair:
Address and repair all delaminated or open seams using a method approved by the manufacturer.

Sealer Pocket Sealing:
Cap Sealer Pockets with sheet metal for effective sealing with the roofing products.

Condensate Line Installation:
Install condensate lines from HVAC units to gutters, forming part of the overall drainage system. The type of piping may vary based on local building codes.

Membrane Cleaning Process:
Thoroughly pressure wash the roof substrate with water, using a working pressure of approximately 2,000 psi, to remove dirt, dust, chalking, and loose materials. Use hot water and mild detergent for grease or oil removal and treat areas with mildew or algae with bleach before pressure washing. Ensure no residual cleaning agents remain on the roof prior to applying the coating.

Primer Application:
Apply Primer over the entire surface to be coated. See NanoTech Materials Ancillary Systems list for approved primers for Concrete substrates.

FLASHING

Skylight Treatment:
Curb skylights should be treated similarly to curb flashings. Once the flashing work is finished and the coating has cured, apply a sealer to any deteriorated fiberglass skylight panels.

Substrate Preparation and Flashing:
Begin with thorough preparation of the substrate, addressing all necessary flashing details. After completing the substrate preparation, flash all details, penetrations, and curbs with either 6 inches (152 mm) or 12 inches (305 mm) fabric and butter grade flashing as detailed in the drawings. The edges of the butter grade flashing should be feathered to facilitate water flow.

Parapet Wall Sealing:
All parapet wall details within the roofing system should be secured and sealed using a minimum width of 12 inches (305 mm) fabric and butter grade flashing. Fill any voids and open areas with polyurethane foam before applying the fabric and flashing.

Penetration Flashing Process:
Apply butter grade flashing around the base of all penetrations, extending at least 6 inches (152 mm) onto both the vertical and base areas. Embed a 12-inch (305 mm) width of fabric using additional butter grade flashing as needed, shaping it to fit the penetration. Flash both the top and bottom of the neoprene pipe boots similarly.

Gutter Sealing Technique:
Apply sealant to the interior or exterior of gutters using a trowel or brush, incorporating a 12-inch (305 mm) width of fabric at all gutter seams. Ensure the gutters are clean and dry before sealant application.

Curb Flashing Application:
Flash all curb flashings, including cricket details, with a minimum width of 12 inches (305 mm) fabric and butter grade flashing. Encapsulate all fasteners with butter grade flashing, ensuring not to bridge them. Cut the fabric so it lays flat around all fasteners.

Ponding Water Area Management:
The severity of ponding water conditions will dictate the need for additional preparation steps. For guidance, contact the technical services department.

Inspection of Preliminary Work and Flashings:
Conduct a thorough inspection of all preliminary work and flashing details for any issues such as gaps, cracks, fish mouths, air pockets, etc., to ensure completeness and satisfaction of the work.

ROOF EQUIPMENT (HVAC / SLEEPERS):

Units resting on 4 in x 4 in (101.6 mm x 101.6 mm) wooden sleepers should be raised to allow for cleaning, priming (as necessary per adhesion test results), and coating of the membrane beneath them as per the guidelines in this document. A protective slip sheet should be placed under the sleepers to safeguard the coating system. If units are not elevated from the deck to facilitate this process, the unaddressed area will be exempt from warranty coverage.

PRODUCT CIRCULATION GUIDELINES:

- This is a high-solids, acrylic emulsion formulation that is a non-Newtonian fluid. 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.

- Follow these simple guidelines:

    - Agitate the product using a helicoidal paddle and a mixer with high rpm capability for at least 10 minutes if applying from a five-gallon bucket.
    - Agitate the product for at least 5 minutes and up to 10 minutes for a product that has been left standing in a bucket for more than 45 minutes.
    - If product is shipped in a drum or tote the product should be agitated utilizing an EvenMix dual paddle tote mixer for a minimum of 45 minutes.

- The life of the product after being opened and resealed is 30 days or less, depending on how well the leftover product has been sealed in a container that does not allow air circulation. Inspect and remove any cured resin or solid bits from a used bucket, if any, before using leftover product and follow agitation guidelines.

- **ACRYLIC COATING BASE COAT:** Apply NanoTech Materials Roof Coating at an average rate of 1.5 gal/100 ft² (5.7 L/9.25 m²) to achieve a Wet Film Thickness (WFT) of 25 mils. The application should not exceed 1.5 gal/100 ft² (5.7 L/9.25 m²) per coat. NanoTech Materials Roof Coating can be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Ensure all surfaces are coated, including expansion joint covers and flashings. Apply an extra coat around all edges and penetrations. Adjust drying times as necessary for environmental conditions (see note below). For metal roofing systems NanoTech Materials strongly advises rolling the ridges and spraying the flat components of the roof to ensure even coverage throughout the roof surface and the avoidance of coating build up in the corners.

- **SECOND COAT:** Repeat the application of NanoTech Materials Roof Coating at the same rate to achieve the specified WFT and DFT. Follow the same application techniques as the base coat. Allow sufficient drying time, adjusting for environmental factors.

- **FIELD QUALITY CONTROL**
    - If any deviations from the specified standards are detected by either the Applicator or the owner's representative, it is the duty of the Applicator to make the necessary corrections.

- **NOTE: MINIMUM DRY TIME PER COAT** IS 4 – 6 HOURS AT 75 ºF (24 °C) AND 50% RH. Expect longer drying times in cooler temperatures or higher humidity. Avoid applying NanoTech Materials Cool Roof Coat if rain or heavy dew is expected within 4 hours (6-8 hours in high humidity conditions). Apply in the morning to maximize drying time during daylight. The coating should be walkable in 90 minutes.

NOTE ON AIRLESS SPRAYERS: Generally recommended to use 2,000 – 3,000 psi (13.8 MPa – 20.7 MPa) at the gun tip, with a flow rate of 1.0 –3.0 gal/min (3.8 L – 11.4 L/min) and tip sizes ranging from 0.025 – 0.040 in (0.64 – 1 mm). Larger spray units are beneficial for longer hoses on bigger projects. For assistance in selecting the best equipment for specific project needs, contact NanoTech Materials Technical Services.

- Any deviations from the specified standards identified by the Applicator or the owner's representative must be rectified by the Applicator.

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

RECOMMENDED EQUIPMENT FOR APPLICATION (ROLLER):

- Paint roller
- Paint brush
- Wet Mil Gage

CLEANING AND USAGE:

- Clean the spraying machine 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.

MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:

- The NanoTech Cool Roof Coat system requires the application of two layers of 25 wet mils, building up to a WFT of 50 mils. The coating will have a 15% - 20% shrink rate, dry curing to a DFT of 40 mils.
- The coated surface should not be subjected to foot traffic for at least three (3) days following application. Any damage caused to the surface by other trades will not be the responsibility of the Applicator.

ADDITIONAL PRODUCT DETAILS:

Qualification for Contractors

- The Contractor shall be a certified applicator of Nanotech's Cool Roof coatings product and recommends that the applicator have a minimum of three years of experience applying elastomeric roof coatings. Nonetheless, NanoTech, at its sole discretion, reserves the right to decide if a Contractor meets the level of experience necessary to be registered as a certified applicator.

Testing and Labeling:

- The NanoTech Cool Roof Coat is produced in NanoTech facilities certified to the ISO9001:2015 quality management standards. 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@nanotechmaterials.com . Please include the LOT # information from the product label.

Product Warranty:

Please check the appendix for the product 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.

Seams and Details				
Treatment	**Product**	**Total (Gal/Sq)**	**Linear (linear ft./gal)**	**DFT (mils)**
3-Coursed Rates	Premium Brush-Grade Acrylic Flashing & Fabric	4.0	30	43
Flashing Grade Only Rates	Premium Brush-Grade Acrylic Flashing	2.0	100	19

Seams and Details		
Treatment	**Product**	**Rate (Gal/Sq)**
Cleaner	Cleaning Concentrate (Diluted)	0.5 - 0.7
Primer - Rusty Areas	Metal Roof Primer	0.3 - 0.5

Coating					
Warranty	**NanoTech Cool Roof Coat**	**Coverage per 1 Gallon**	**1st Coat (mils)**	**2nd Coat (mils)**	**DFT (mils)**
10 Year Rolling	Sprayed	51 sq. ft.	25	25	40
	Rolled	63 sq. ft.	25	25	40

Appendix

Safety Data Sheet: NanoTech Cool Roof Coating

SECTION 1. IDENTIFICATION

Product Name	NanoTech Cool Roof Coat
Company Name	Nanotech Materials, Inc
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:	jmeyers@nanotechmaterials.com

Trade name: NanoTech 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):


GHS08


GHS09

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
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

First-aid measures general: 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 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, CO_2). Oxides of aluminum. Oxides of titanium.

Reference to Other Sections
Refer to section 9 for flammability 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.
Methods 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 avoid 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: 5 - 38 °C
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 PREOTECTION

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
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	White
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 para 4

Relative density	between 1,100 e 1,600 kg/m3 (Between 1.1 e 1.6 g/cm3 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 100ºC
Chemical stability	Stable at room temperature
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 not 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. DISPOSITAL 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.

SECTION 14. TRANSPORT INOFORMATION

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

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 convection (CWC) Toxic Chemicals and Precursors List None Known

Revision Date: 12/18/2023

Technical Data Sheet

This is the TDS for the NanoTech Cool 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	White
Appearance	Emulsion
Aspect	White or slightly beige
Odor	There is no predominant odor
PH	Not applicable
Fusion point	Not applicable
Freezing point	
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	>450°(
Viscosity	No data available

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 48 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 a t m o s t 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 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 Materials Inc. deploys high material efficiency and minimizes waste in production through the recycling of raw materials.

Performance
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@nanotechmaterials.com

ASTM Certifications for ICC, CRRC, and Miami-Dade

Tested by accredited 3rd party lab for Miami Dade. Tests are passed and pending filing with the county.

NanoTech Testing Parameters			
Test Parameter	**ASTM D6083 Type I**	**ASTM D6083 Type II**	**Pass/Fail**
Viscosity - ASTM D2196	12,000-85,000 cP	2000-100,000 cP	43000
Volume Solids - ASTM D2697	Greater than 50%	Greater Than 45%	Pass
Weight Solids - ASTM D1644	Greater than 60%	Greater Than 50%	Pass
% Elongation (Initial) - ASTM D2370	Min. 100%	Min. 100%	3.12
Tensile Strength (Initial) - ASTM D2370	Min. 200 psi	Min. 200 psi	Pass
% Elongation (1,000 hours - ASTM D2370	Min. 100%	Min. 100%	Pass
Permeance - ASTM D1653	Max. 50 perms	Max. 50 perms	Pass
Water Swelling - ASTM D471	Max. 20% (mass)	Max. 20% (mass)	0.049
Peel Strength - ASTM D903	2.0 lbf/in (wet)	2.0 lbf/in (wet)	16.3 lbf/in
Fungi Resistance - ASTM G21	Zero Rating	Zero Rating	0
Tear Resistance - ASTM D624	Greater than 60 lbf/in	Greater Than 60 lbf/in	77.6 lbf/in
Low Temperature Flexibility -(1,000 hours) - ASTM D522	Min. ½ in. at -26 °C	Min. ½ in. at -10	Pass
Accelerated Weathering (1,000 hours) -ASTM D4798	No cracking or checking	No cracking or checking	Pass
Fire Rating – ASTM E108/ ASTM E84	Flame index spread = 5		Class A
	Smoke Developed Index = 15		
Hail Testing – TAS 114	Product meets the performance requirements to withstand a moderate hail event		Class MH

Warranty Details

NanoTech Cool Roof Coat Material Warranty

NanoTech Materials Inc. warrants that its NanoTech Cool Roof Coat is manufactured free of defects. Several factors outside of the control of NanoTech Inc. can impact the results of the NanoTech Cool Roof Coat including but not limited to weather conditions, equipment, condition of the roof and substrate and applicator workmanship – NanoTech Materials, Inc. as the manufacturer does not guarantee the end results of application including the overall suitability of the substrate to be coated or installation errors resulting from poor application. NanoTech Materials, Inc. takes no responsibility for product applied to unsound or derelict structures.

NanoTech Materials, Inc. will provide product to reapply, at no additional cost, for any product for which a physical defect of the material can be demonstrated and for which proof of purchase documentation can be provided. Any material that is visually defective in the original packaging or during opening of the original packaging should not be used and should be kept as evidence and analysis. Application of visually defective product to a roof will void this warranty. Discarding of visually defective product will void this warranty. Proof of application date is required.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY: THIS LIMITED WARRANTY IS IN LIEU OF ANY OTHER WARRANTIES EXPRESS OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. NANOTECH INC. SHALL HAVE NO LIABILITY OF ANY KIND BEYOND PRODUCT REPLACEMENT, INCLUDING FOR CONSEQUENTIAL, EXEMPLARY OR INCIDENTAL DAMAGES RESULTING FROM ANY DEFECTS OR ANY DELAYS CAUSED BY REPLACEMENT OR OTHERWISE.

Limited Lifetime Labor & Material Renewable Warranty

Agreement NanoTech Materials, Inc. Cool Roof Coat

COVERED PRODUCT:
NanoTech Materials, Inc. Cool Roof Coat
Applied by: [INSERT CONTRACTOR'S NAME]

BUYER:
Name:_____Roof Name/Section:_____

Facility Address:_____Project Size_____

Contractor:_____
Name:_____

THE WARRANTY AND WARRANTY TERM

NanoTech Materials, Inc. (NanoTech) warrants to you that the NanoTech Cool Roof Coat (the "Product") will not leak as a result of a manufacturing or installation defect for an initial period of ten (10) years after installation, beginning [INSERT DATE OF INSTALL], subject to the limitations in this Limited Warranty and as long as:

- The Product is installed in accordance with the NanoTech Cool Roof Coat Technical Manual (the "Technical Manual") in effect at the time of installation as verified by a NanoTech inspection resulting in project acceptance for warranty upon project completion. A project acceptance form signed by the NanoTech warranty manager, an officer from the installing contractor and an officer for the Owner is required for the written warranty to be issued and considered active; additionally
- The project must be paid in full. No warranty will be considered active until the project is paid in full.

The warranty may be renewed thereafter every five (5) years indefinitely after the following has been performed:

1. NanoTech inspects the roof for the current reinspection fee. All defects or required work identified in this inspection must be completed.
2. Owner's annual maintenance records have been received for review.
3. Renewal fee for five-year extension is received.

WHO IS COVERED BY THIS LIMITED WARRANTY: LIMITATIONS ON TRANSFERABILITY AND ASSIGNABILITY

You are covered by this Limited Warranty if (a) you are the original owner of the property on which the Product is installed, and the installation is complete; or (b) you are the subsequent owner of the property on which the Product is installed and NanoTech approves transfer or assignment of this Limited Warranty to you following an inspection of the property by NanoTech or a designated NanoTech agent. NanoTech reserves the right, at its sole discretion, to deny transfer or assignment of this Limited Warranty based on the inspection.

This Limited warranty is not otherwise transferable or assignable by contract or by operation of law, either directly or indirectly.

WARRANTY ELIGIBILITY REQUIREMENTS

1. To obtain the limited systems warranty, the Product must be installed by a NanoTech Certified Contractor in accordance with the Technical Manual.

2. NanoTech Certified Contractors must perform the following tests prior to installation and undertake any corrective action indicated by the test results:

    a. Complete pre-installation remediation report with NanoTech certified inspector in accordance with the Technical Manual and remediate the roof appropriately per the report.

    b. When the inspection report deems it necessary, complete a moisture survey of the substrate in accordance with the Technical Manual, undertake any corrective action indicated by the survey, and provide proof that the roof is free of moisture issues in accordance with the Technical Manual.

    c. Complete a successful adhesion test on the roof in accordance with the Technical Manual.

3. For roof remediation required prior to coating, NanoTech Certified Contractors must provide documentation proving that they used ancillary system products from the below NanoTech approved list.

4. NanoTech Certified Contractors must perform the following tests during installation in accordance with the Technical Manual:

    a. Check mil gauge thickness every third square to confirm adherence to thickness specifications in accordance with the Technical Manual.

    b. Check mil gauge thickness each time the substrate changes to confirm adherence to thickness specifications in accordance with the Technical Manual.

WARRANTY EXCLUSIONS

This Limited Warranty does NOT cover leaks or other conditions that NanoTech, in its sole discretion, finds to be caused by any of the following:

1. Leaks caused from underlying material not provided by NanoTech.

2. Improper workmanship in applying the Product or any other roof component.

3. Lack of roof maintenance.

4. Unusual weather conditions or natural disasters, including, but not limited to, wind in excess of seventy-two (72) miles per hour, hail, floods, hurricanes, lightning, tornadoes, and earthquakes.
5. Damage due to:
    a. movement or cracking or other failure of the roof deck or building;
    b. Failure of any existing materials other than those provided by NanoTech
    c. improper installation or failure of any materials used in any roof base or insulation or materials other than the Product;
    d. infiltration or condensation of moisture through the walls, copings, building structure, or surrounding materials;
    e. expansion or contraction of any counterflashing or metal work;
    f. chemical attack on the Product including, but not limited to, exposure to grease and oil;
    g. use of materials that are incompatible with the Product;
    h. improper preparation of the substrate over which the Product is installed; or
    i. architectural, engineering, or design defects or flaws in existing roof and building.
6. Installation of the Product over buildings with high humidity conditions unless approved by a NanoTech certified inspector.
7. Conditions that prevent positive drainage or areas of roof that pond water.
8. Any condition that is not in strict accordance with application instructions from the Technical Manual.
9. Traffic of any nature on the roof outside of installation and routine inspection and repairs (excludes designated walk pads).
10. Impact of foreign objects, including damage caused by objects blown onto the roof by wind.

NOTIFICATION OF CLAIM

In order to report a claim, within thirty (30) days after discovery of a leak, the NanoTech Certified Contractor, original owner of the property, or subsequent owner of the property to whom this Limited Warranty has been transferred subject to the requirements set forth above MUST notify NanoTech in writing by email at info@nanotechmaterials.com and provide proof of purchase, proof of application date, and proof that the original owner making the claim owns the subject property.

The property owner providing notice to its contractor does NOT constitute notice to NanoTech. Within a reasonable time after proper notification, NanoTech will evaluate your claim and resolve it in accordance with the terms of this Limited Warranty. NanoTech may require the claimant to submit, at its sole expense, photographs of the reported problem and samples of the claimant's Product for testing. The claimant should retain this document as well as the proof of purchase and lot numbers from the packaging for its records in the event that it need to file a claim.

EXCLUSIVE REMEDY

In the event of a leak that NanoTech finds, in its sole discretion, to be caused by a manufacturing defect of the Product during the warranty term, NanoTech's sole responsibility is to provide (1) replacement Product for that portion of the Product that NanoTech finds, in its sole discretion, leaks as a result of the manufacturing defect and (2) the labor necessary to install the replacement Product, not to exceed the cost of installation. The extent of replacement Product required will be made solely by NanoTech. The labor claim paid will be made solely by NanoTech and will not exceed the original cost of installation. NanoTech reserves the right, at its sole discretion, to provide a monetary refund instead of replacement Product.

Installed replacement Product is subject to this Limited Warranty for the remainder of the original warranty period. Installed replacement Product does not extend or otherwise modify the warranty period for the replacement Product or any remaining Product unaffected by the replacement installation.

ADDITIONAL LIMITATIONS AND EXCLUSIONS OF WARRANTY

Repair or replacement of the roof deck or other roof-related materials other than the Product is NOT included.

Ancillary system components needed from the below list are NOT included within the scope of this Limited Warranty.

NanoTech's MAXIMUM LIABILITY is the original cost of the Product and Product installation only.

DISCLAIMER OF ALL OTHER WARRANTIES

Except as otherwise expressly stated in this Limited Warranty, no other representation or warranty, express or implied, is made. NANOTECH EXPRESSLY DISCLAIMS ALL OTHER REPRESENTATIONS AND WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. No person or organization is authorized to alter this warranty on behalf of NanoTech, either orally or in writing. Some States do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

ADDITIONAL EXCLUSION/LIMITATION OF DAMAGES, LIABILITY, AND REMEDY

THE ABOVE-MENTIONED STATES NANOTECH'S ENTIRE AND EXCLUSIVE LIABILITY AND THE ORIGINAL INSTALLER AND OWNER OF THE PROPERTY'S EXCLUSIVE AND SOLE REMEDY FOR ANY DAMAGES OR CLAIM MADE IN CONNECTION WITH THE SALE, PURCHASE, OR USE OF THE PRODUCT. NANOTECH SHALL IN NO EVENT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND SUCH SPECIAL, INCIDENTAL, INDIRECT, OR CONSEQUENTIAL DAMAGES ARE DISCLAIMED TO THE FULLEST EXTENT PERMITTED BY LAW. No representative, employee, or agent of NanoTech, or any other person, has the authority to assume any additional or other liability or responsibility for NanoTech. Some States do not

allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Limited Warranty gives you specific legal rights and you may also have other rights which vary from state to state.

ARBITRATION AND CHOICE OF LAW

This Limited Warranty will be governed by and construed in accordance with the internal laws of the State of Texas. Any controversy or claim arising out of or relating to this Limited Warranty, or the breach thereof, shall be settled by arbitration administered by the American Arbitration Association ("AAA") in accordance with its Commercial Arbitration Rules. Judgment on the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. Claims shall be heard by a panel of three arbitrators. Within thirty (30) days after the commencement of arbitration, NanoTech and the Buyer or NanoTech Certified Contractor, as applicable, shall select one person to act as arbitrator and the two selected arbitrators shall select a third arbitrator within thirty (30) days of their appointment. If the arbitrators selected are unable or fail to agree upon the third arbitrator, the third arbitrator shall be selected by the AAA. The arbitrators shall be neutral and shall be attorneys with at least fifteen (15) years' experience or a former judge. The place of arbitration shall be Harris County, Texas. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages. Neither a party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of the parties.

SEVERABILITY

If any requirement, limitation, disclaimer, or exclusion of this Limited Warranty is found to be unenforceable for any reason, all other requirements, limitations, disclaimers, and exclusions shall remain enforceable to the fullest extent permitted by law.

NANOTECH APPROVED ANCILLARY SYSTEM PRODUCTS

NanoTech Approved Ancillary System Products							
Cleaner	***Primer***	***Fabric***	***Sealant/Seam Sealer/Flashing***	***Mastic***	***Emulsions***	***Bleed Blocker***	***Pond Filler***
GAF United Cleaning Concentrate	GAF Acrylex 400 Primer	HydroStop Fabric	Henry 289 White Roofing Sealant - Elastomeric	Kool Seal Storm Patch Acrylic Cement	Tremco - TremLastic S	Smartcoat 200 Asphalt Bleed Blocker	Henry 176 – PondPatch – Leveler + Filler
Mule-Hide - 115 Cleaner	Mule-Hide A-125 Metal Roof Primer	iHenry 296 ElastoTape Repair Fabric	iHenry 107 Asphalt Emulsion Sealer & Dampproofer	ClearSeal® A101	Karnak 298-Alumion-R	GacoFlex A4271 BleedTrap™ Base Coat	Neptune Wetsuit Undercover
GacoFlex GacoWash Concentrated Cleaner	GacoPrime LVOC Primer	iGacoFlex 66s Reinforcinf Polyester Mesh Tape	Smartcoat 300/301/370 Sealant	Sika - Mastic TG	Henry 587 Dura Brite White Elastomeric	Neptune - REFLEX™ Base coat Bleed Blocker	Neptune Wetsuit 1 Part
Smartcoat 100 Roof Wash Karnak 799 Spray n Wash	GacoFlex E5320 Primer	GacoFlex AF4700 Acrylic SeamSeal	Henry ® 295 Metal Seam Sealer	Neptune Wetsuit Trowel and Fiber Trowel	GacoRoof E5320		
Tremco - Alphaguard SI Prep Cleaner	Smartcoat 210 Universal Primer	Certainteed SmartCoat 500 6 Inch	505MS Karnaflex Sealant		Rust-Oleum 1080 Roof Primer		

		Stitchbond Polyester					
	Karnak Elastockote 502-C	Karnak 5540 Resat- Mat	Mule Hide A-200 Flashing Grade		Karnak 535 AF Elasto-Kote		
	Tremco Alphaguard WB Primer	KoolSeal Storm Patch 4" Fabric	KoolSeal FREEDOMFLASH™ Roof Repair Sealant		Karnak 501 Elasto-Brite		
	407 EPDM & SPF (EPDM AND SPF BASE COAT)	Sika FlexiTape	Sikaflex®-11 FC		Sika Vapor Retarder Primer WB (US)		
	Henry - Pro-Grade® 294 Base Coat and Sealer	Netptune - Invisilink™	Sikaflex®-1A				
	Mule-Hide - A-300 Base (TPO)		502MS Karnaflex Sealant (White)				
	Mule-Hide - A-300 Base		Neptune - REFLEX™ Flashing Grade				
	KoolSeal Storm Patch Rust Inhibitor Primer						
	Kool Seal® Elastomeric Base Coat (KS0034600)						
	Kool Seal® Acrylic Concrete Primer						
	Neptune Wetsuit Prime Mate Primer						
	Firestone Quickprime Plus						
	Sika Vapor Retarder Primer WB (US)						
	Sika® Bonding Primer WB						

SIGNED:

NanoTech Materials, Inc.: _____

Representative: _____

[INSERT CONTRACTOR'S NAME]: _____

Representative: _____