



SILICONE ROOF SYSTEM APPLICATION OVERVIEW

The KNIGHTSHIELD Silicone Coating System application guidelines provide detailed material usage rates for the successful installation of KNIGHTSHIELD products necessary to assure adherence to our Warranty requirements. KNIGHTSHIELD products can be installed over single-ply roof systems (TPO, EPDM, PVC), asphaltic systems (modified bitumen, roll roofing and built-up), metal and previously coated roofs. KNIGHTSHIELD Silicone roof coating system is a complete roof restoration system that will be a viable alternative to the high cost of a full roof replacement, providing your existing roof meets all of the necessary requirements to accept a silicone coating system. When installed in accordance with these instructions, KNIGHTSHIELD is designed to provide a 100% waterproof, fluid applied roofing system that is fully supported by our warranty options. KNIGHTSHIELD products Should not be used over any of the following roof substrates: Shingles, metal roofs that are less than 28 gauge or metal roofs coated with Kynar, stone ballast covered roofs, any cold storage structures or coal tar roofing systems.

KNIGHTSHIELD® KS-5100 Silicone Application Rates					
Product Assembly Type		Single-ply (TPO, EPDM, PVC)	Metal	Granulated Modified	BUR/Smooth Modified
10 - Year Warranty					
Primer	KS-5900 Bleed Block	N/A	N/A	1.25 gal./sq. (20 WMT)	1.00 gal./sq. (20 WMT)
Top Coat	KS-5100 Silicone	1.50 gal./sq. (24 WMT)	1.50 gal./sq. (24 WMT)	2.25 gal./sq. (24 WMT)	1.50 gal./sq. (24 WMT)
15 - Year Warranty					
Primer	KS-5900 Bleed Block	N/A	N/A	1.25 gal./sq. (20 WMT)	1.00 gal./sq. (20 WMT)
Top Coat	KS-5100 Silicone	2.00 gal./sq. (32 WMT)	2.00 gal./sq. (32 WMT)	2.75 gal./sq. (44 WMT)	2.00 gal./sq. (32 WMT)
20 - Year Warranty					
Primer	KS-5900 Bleed Block	N/A	N/A	1.25 gal./sq. (20 WMT)	1.00 gal./sq. (20 WMT)
Top Coat	KS-5100 Silicone	2.50 gal./sq. (40 WMT)	2.50 gal./sq. (40 WMT)	3.25 gal./sq. (52 WMT)	2.50 gal./sq. (40 WMT)
Ancillary products for all warranted assemblies					
Application		Product	Product description	Coverage	
Option 1.	Flashings, penetrations & seams	KS-5600	Flashing sealant	100 linear ft. per 2.5 gal. pail applied 1/8" thick	
Option 2.	Flashings, penetrations & seams	KS-5100	Silicone	350 linear ft. per 5 gal. bucket	
		Polyester Fabric	Reinforcement	300 linear feet per 6" X 300' roll	
**Optional Primer		Must pass adhesion test	Primer for TPO, PVC, Metal	KnightShield® representative approval	
Fastener head treatment		KS-5700	Fasteners & pitch pockets	Approximate coverage (130 fasteners per 10 oz. tube)	
Walk-Pad		KS-5200	Silicone walk-pad	4 gal. per sq. (64 WMT)	

Warranty: KNIGHTSHIELD Silicone roof coating systems warranty durations are based on the coating thicknesses. See the above coverage rate chart for requirements. Coverage rates do not take into account material loss due to specific application methods such as spraying. Other factors that affect material loss are surface texture, waste, etc. Coverage rates are applicable for previously coated and non-coated roofs.

Safety statements: Use caution when applying and walking on coated surfaces. Coated surfaces can be extremely slippery and can create a fall hazard resulting in injury or death. All air intake ventilation equipment should be turned off to prevent odor from entering building.

Existing surface examination

I. Existing surface suitability:

- A. Surface to be coated must be dry, clean and free of dirt, oil, grease, frost, loose and flaking particles of rust, laitance or mortar.
- B. Ensure all penetrations, scuppers, skylights, gutters and any mechanical unit curbs are secure, watertight and functional.
- C. All exposed fasteners must be secure and tight; remove and replace loose fasteners with larger diameter fasteners.
- D. Remove and replace any damaged, existing substrate:
 1. Single ply:
 - a. You must remove all wet insulation and damaged materials by cutting an X centered over the area to be repaired and replace insulation with matching materials.
 - b. To reset the single ply material, fold back into place and repair or patch with similar materials or seam repair tape.
 2. Modified Bitumen/BUR:
 - a. Remove, replace and repair wet areas with like materials. Overlap all existing roofing in accordance with NRCA standard roofing practices.
 - b. All seams must be coated with KS-5600 at 1/8" thickness and minimally 3" on each side of the seam.
 3. Metal:
 - a. Remove and replace all damaged, corroded, or compromised metal panels, gutters, pipe penetrations, fascia, ridge caps or flashings.
 - b. Surface rust should be removed by wire brushing, wire wheel or sandblasting until all loose rust is removed and smooth before installing an approved rust inhibiting primer. Allow primer to cure completely before proceeding.
 - c. Any previous mastic repairs, whether at seams, laps or fasteners, must be removed.

II. Adhesion testing requirements: (Granulated modified bitumen is exempt from adhesion testing)

- A. Requirements:
 1. After visually inspecting the roof for low spots, color changes due to ponding water or any areas that have multiple substrate systems, choose at least one test spot per substrate to ensure the silicone will adhere to all areas. Refer to page 8 on the installation guidelines.
 2. Minimum 2.0 pli adhesion strength must be achieved for test to qualify for warranty eligibility.
 3. Results less than 2.0 pli will require our KS-5800 primer and retesting.

III. Moisture scan or testing:

- A. Acceptable moisture scanning and testing can be but is not limited to:
 1. Infrared thermography
 2. Impedance testing
 3. Nuclear scan
 4. Roof core cut samples
- B. Contractor requirements necessary for a successful installation:
 1. Installation contractor will verify the existing substrate to be coated is leak free and dry prior to installing KS-5100 for warranty eligibility.
 2. Contractor will evaluate the existing roof for moisture in the insulation, roof deck, penetrations and previously repaired areas. Blistering will occur if the roof coating is installed over wet materials.

IV. Temperature and weather requirements:

- A. The temperature of the surface to be coated should be between 35° and 120° F (2° and 50° C).

Existing surface preparation

I. Cleaning:

- A. Pressure wash*** all surfaces with 2000 psi or greater to remove old flaking coatings, dust, dirt, rust, debris and chalking. You should only use a fan tip attachment to alleviate damaging the existing roof surface and you should never force water into any seams, laps or flashings.
- B. Algae and mildew on single ply systems may need to be treated with KS-6100 (If you use any cleaners on hard to remove stains or algae, you must thoroughly rinse these chemicals before applying the silicone coating or you risk adhesion failure).
- C. Oil or grease from roof top ventilation units must be removed as they will inhibit adhesion. Clean these areas with mild soap and water. (If you use any soap or cleaners, you must thoroughly rinse them off before applying the silicone coating or you risk adhesion failure).
- D. *** (We recommend only using clean water where possible. Power washing should be the choice when cleaning metal or single ply membrane surfaces. You may use an air lance wand @ 185 psi to clean modified bitumen and BUR surfaces. This method will save you time, water and not having to wait for the roof to dry).

II. Flashings and seams:

- A. All flashings, penetrations and drains should be sealed with KS-5600 before the roof coating is installed. *Seams that are tight and closed can be sealed or pre-coated with KS-5100. Warranty options dictate if seam treatment is required.*
- B. Open, loose or damaged seams:
 1. Modified bitumen/BUR/single ply seams. Secure loose seams with fasteners and plates where necessary. Apply KS-5600 on all plates and fasteners before applying KS-5100 with repair fabric over the repaired area and overlap the tight seams on either side at least 2".
 2. Metal seams. All old and existing mastic repairs must be removed. Any vertical or horizontal seams that are open more than 1/8" should be "stitched" with fasteners and sealed with KS-5600 or KS-5100 with imbedded repair fabric. All Horizontal seams must be sealed with either KS-5600 1/8" thick extending 3" on each side of the seam or KS-5100 with fabric.

III. Primers:

- A. Modified bitumen/BUR. Primer is only necessary if the adhesion test results less than 2.0 pli OR if bleed through is a concern for the appearance of the finished roof. Use KS-5800 2 part primer.
- B. Metal. Primer is only necessary if the metal has surface rust or if the adhesion test results less than 2.0 pli. Contact your KNIGHTSHIELD representative for primer approval.
- C. Single ply membranes. Primer is only necessary if the adhesion test results less than 2.0 pli.

Application of roof coating

I. Roof coating application: Coverage rate chart should be referred to in order to meet warranty requirements

- A. Clean and prepare the existing surface to be coated (follow the preparation section in the application guide above).
- B. Mix the roof coating with a drill and mixer blade until consistent viscosity is reached (before application).
- C. Install KS-5100 following the application guide.
 1. Some existing surfaces may require additional coats to obtain consistent and uniform coverage to reach (DMT) dry mil thickness.
- D. Multiple coat systems.
 1. KS-5100 is primarily a top coat, however, it can be used as a base coat for multiple coat warranty requirements.
 2. Before recoating, ensure the first coat is fully cured prior to additional applications.
 3. First coat must be clean prior to additional applications.
 4. Apply additional applications perpendicular to the previous coat.

II. Optional Walkways:

- A. Clean previous coating following the preparation section in the application guide above.
- B. Apply KS-5200 Walk pad roof coating where desired at a rate of 4 gallon per square (64 WMT)
- C. Broadcast KS-6000 granules into the wet roof coating at a rate of 18 pounds per 100 sq ft.
- D. Allow walkway to dry before lightly brushing loose particles from the roof to avoid particle travelling to the drains or gutters.