

SilPruf™ SCS9000 NB

Non-staining Silicone Weatherproofing Sealant

Product Description

SilPruf SCS9000 NB is a 100% silicone polymer sealant formulated to reduce or eliminate dirt pickup, surface streaking, and substrate staining. SilPruf SCS9000 NB is a premium one-component, medium-modulus, neutral cure silicone sealant useful on a wide variety of materials in new or remedial applications. Supplied as a paste, SilPruf SCS9000 NB produces a durable silicone rubber joint sealant upon cure.

Key Features and Typical Benefits

Performance

- **Silicone Durability** – Cured silicone rubber exhibits excellent long term resistance to natural weathering including: extreme temperatures, ultraviolet radiation, rain and snow, with negligible change in elasticity.
- **Adhesion** – Primerless adhesion to many substrates and finishes. May be considered a candidate for use with numerous construction-related materials, including: glass, polycarbonate, vinyl, numerous plastics, treated and untreated wood, fluoropolymer and powder coated paints, conversion-coated and anodized aluminum, brick, terracotta, ceramic and porcelain materials, concrete and natural stones. Some finishes or substrates may require a primer.
- **Movement Capacity** – Can accommodate 50% movement in both extension and compression and has excellent recovery after cycling.
- **Low VOC Content** – Significantly lower than the requirements of the U.S. Green Building Council's Leadership in Energy and Environmental Design (L.E.E.D.) program. Neutral cure byproduct with low odor.
- **Thermal Stability (cured state)** – Once cured, the material remains flexible over a range of -55°F (-48°C) to 250°F (121°C) and up to 350°F (177°C) under intermittent short term exposure.

Application

- **Stable Consistency (uncured state)** – applied as a lightweight paste, the consistency of which remains relatively unchanged over a wide temperature range. The paste may be easily gunned and tooled under hot and cold conditions.

- **Extended Work Life** – Designed to allow the user sufficient time for installation and tooling.
- **Low Sag or Slump** – Useful for application to horizontal, vertical or overhead surfaces.

Aesthetics

- **Premium Formulation** – Special formulation offers a cleaner silicone option when sealing visible building joints. The cured sealant has a reduced tendency to attract airborne contaminants and minimize the subsequent streaking that can occur when rainwater washes over joints. The reduced dirt pickup characteristic allow it to be used as a substitute for organic sealants but with the delivery of traditional silicone weatherability and long life performance. In addition, the potential for staining from fluid migration is effectively reduced when sealing natural stones, including: marbles, granites and limestones.
- **Finish** – Matte finish produces a non-glossy surface appearance.

Product Compatibility

- Compatible with the following silicone coatings: SilShield™, Optic™, Enduris™, and Elemax™.
- Compatible with the following silicone products: IGS3713, IGS3723, IGS3760, RGS7700, SCS2000, SCS2350, SCS2700, SCS2800, SCS2811, SSG4000, SSG4000E, SSG4400, SSG4600, SSG4650, SSG4800J, SWS, US1100, UST2200.

Potential Application

SilPruf SCS9000 NB is recommended for the following applications:

Natural Stone

- Useful on natural stones when staining from migration in undesired.

Weatherproofing

- Between dissimilar or similar materials in either new or remedial glazing and sealing applications.
- Around window perimeters and punched openings.

Adhesive

- Useful for adhering UltraSpan US1100 and UST2200 pre-cured silicone weatherstrip product line

Packaging

SilPruf SCS9000 NB is available in the following configurations:

- 10.1 fl oz (299 ml) plastic caulking cartridges
- 20 fl oz (591.5 ml) foil sausage packs
- 2 gallon (7.6 L) plastic pails
- 5 gallon (18.9 L) plastic pails

Colors

SilPruf SCS9000 NB is available in 13 standard colors, and can be custom colored.



Typical Physical Properties

Typical property values of SilPruf SCS9000 NB as supplied and cured are set forth in the tables below. Typical product data values should not be used as specifications. Assistance with specifications is available by contacting MPM at +1 (877) 943-7325.

Typical Properties—Supplied

Property	Value ⁽¹⁾	Test Method
Consistency	Paste	N/A
Polymer	100% silicone	N/A
VOC	37 g/l	WPSTM C1454
Work Life (tooling time)	30-40 minutes	N/A
Tack Free Time	1-2 hours (@ 73°F, 50% RH)	ASTM C679
Sag/Slump	0.1" max.	ASTM D2202

Typical Properties—Cured

Property	Value ⁽¹⁾	Test Method
Hardness, Durometer (Type A Indentor)	27	ASTM D2240
Ultimate Tensile Strength	244 psi (1.68 MPa)	ASTM D412
Ultimate Elongation	629%	ASTM D412
Tear Strength; die B	30.8 ppi	ASTM D624
Peel Strength (average) (2-day cure @ 73°F (23°C) 50% RH)	36.8 pli	ASTM C794
Joint Movement Capability	±50%	ASTM C719
Staining (Masonry)	None	ASTM C1248
Service Temperature Range (after cure)	-55°F to +250°F (-48°C to 121°C)	N/A
Weathering and U.V. Resistance	Excellent	MPM 20 yr. study
Cure Time (1/4" or 6 mm deep section) @ 73°F (23°C) 50% RH	2-3 days	N/A
Full Cure (most common bead sizes)	10-14 days	N/A

(1) Typical properties are average data and are not to be used as or to develop specifications.

Installation

Sealants may not adhere or maintain long-term adhesion to substrates if the surface is not prepared and cleaned properly before sealant application. Using proper materials and following prescribed surface preparation and cleaning procedures is vital for sealant adhesion. IN ALL CASES IT IS IMPORTANT TO CONFIRM THE ACCEPTIBILITY OF EACH SEALANT-SUBSTRATE COMBINATION WITH A LAB OR SITE ADHESION TEST PRIOR TO PROCEEDING WITH PROJECT INSTALLATION. MPM can provide lab and field adhesion testing information and suggestions to user upon request.

Difficult or nearly impossible to see on a joint substrate, frost is likely to develop on substrates when temperatures drop near the freezing point. Since frost and moisture will interfere with proper sealant adhesion, it is important to confirm that substrates are dry prior to application of the sealant..

Surface Preparation

Porous Materials (concrete, masonry, brick, stone, etc.)

- Joints must be clean, dry and sound prior to application of the sealant. All contaminants, impurities, or other adhesion inhibitors (such as moisture/frost, oils, concrete form release agents, old sealants, asphalt and other surface treatments, etc.) must be removed from the surfaces to which the sealant is intended to adhere.
- Clean where necessary by wire brush, mechanical abrading, grinding, sanding, saw cutting, blast cleaning (sand or water), or a combination of these methods to provide a stable clean surface for sealant application.
- Remove dust and other remaining loose particles with a soft bristle brush or by using an oil-free air blow.
- Polished stone surfaces and smooth sawn edges can be cleaned using a solvent dampened rag (allow sufficient time for solvent to evaporate prior to application of the sealant). When handling solvents, refer to manufacturer's MSDS for information on handling, safety and personal protective equipment.
- Cleaning of surfaces should be done within 1 to 2 hours of when the sealant is to be applied.
- Since porous materials can absorb and retain moisture, it is important to confirm that substrates are dry prior to application of the sealant.

Non-Porous Materials (glass, metals, plastics, ceramics, etc.)

- Clean by using a two-rag wipe technique – wet one rag with solvent and wipe the surface with it, then use the second rag to wipe the wet solvent from the surface BEFORE it evaporates (allowing the solvent to dry on the surface without immediately wiping with a second cloth can negate the cleaning procedure because the contaminants may simply be re-deposited as the solvent dries). In all cases where used, solvents should be wiped dry with a clean, white cloth or other lint-free wiping material. Change the cleaning rags frequently, as they become dirty. It is easier to see the dirt accumulating on the rag if white rags are used. Do not dip used cleaning rags into the cleaning solvent as this can contaminate the solvent (cleaning with contaminated solvent can result in sealant adhesion issues). Always use clean solvent-resistant containers for solvent use and storage.
- Isopropyl Alcohol (IPA) is a commonly-used solvent and has proven useful for most non-porous substrates encountered in architectural construction applications. Xylene and Toluene have also been found useful on many substrates. When handling solvents, refer to manufacturer's MSDS for information on handling, safety and personal protective equipment.
- Architectural coatings, paints and plastics should be cleaned with a solvent approved by the manufacturer of the product or which does not harm or alter the finish. Cleaning of surfaces should be done within 1 to 2 hours of when the sealant is to be applied.

Installation—continued

Priming

SilPruf SCS9000 NB attains primerless adhesion to many commonly encountered construction materials. However, some materials with variable surface characteristics may require the use of a primer to help obtain durable long-term adhesion. Prior to use, trial applications should be made to check adhesion to the specific materials to be used on the project. See the MPM primer datasheets for product specific information on use and priming instructions. PRIMER APPLICATION IS NOT A SUBSTITUTE FOR SURFACE PREPARATION. Consult MPM Technical Services for sealant/ primer/substrate recommendations. CAUTION: primers may contain solvents. When handling solvents, refer to manufacturer's MSDS for information on handling, safety and personal protective equipment.

Masking

Where appropriate, the use of masking tape is recommended to ensure a neat job and to protect adjoining surfaces from over-application of sealant. Masking tape can prevent contact of sealant with adjoining surfaces that otherwise would be permanently marred or damaged by such contact or by cleaning methods required to remove the sealant. When tooling, use care not to spread the sealant over the face of the substrates adjacent to the joint or masking as the silicone can be extremely difficult to remove on rough or porous substrates. Do not allow masking tape to touch clean surfaces to which the silicone sealant is to adhere (adhesive on masking tape can interfere with adhesion of silicone). Masking tape should be removed immediately after tooling the sealant and before the sealant begins to cure (tooling time).

Sealant Application

- Apply sealant in a continuous operation, horizontally in one direction and vertically from the bottom to the top of the joint opening, applying positive pressure adequate to properly fill and seal the joint width.
- Tool or strike the sealant with a concave tool applying light pressure to spread the material against the back-up material and the joint surfaces to ensure a void-free application.
- In glazing applications, tool the sealant at the sill so that precipitation and cleaning solutions will not pool.
- Excess sealant should be cleaned from glass, metal and plastic surfaces while still uncured. On porous surfaces the excess sealant should be allowed to progress through the initial cure or set-up. It should then be removed by abrasion or other mechanical means.

- Due to the smooth consistency of SilPruf SCS9000 NB, tooling agents such as water, soap, or detergent solutions are not necessary or recommended. Dry tooling is recommended.
- Sealant is best applied when the temperature is above 40°F (4°C) as frost or moisture are less likely to be present on the surfaces to be sealed. However, SilPruf SCS9000 NB can be applied in colder temperatures; refer to MPM technical bulletin "Cold Weather Sealing Guidelines" for additional information.

NOTE: Special attention to cleaning and sealant application is required under the following conditions:

- Occurrence of severe wind during application may cause undue stress on the curing structural silicone.
- Extremely high or low temperatures – optimum application temperature range is 10-35°C (50-95°F). For applications below 10°C (50°F), the potential for dew point and frost must be considered. For applications in higher temperatures, sealant must not be applied when substrate temperatures are in excess of 50°C (120°F).
- The cure rate of this product is dependent upon temperature and the availability of atmospheric moisture. Under Standard Conditions (relative humidity of 50 ± 5% at an air temperature of 23 ± 1°C [73.4 ± 2°F]) this material can attain a cured thickness of 2-3 mm per 24 hours (assuming ample access to atmospheric moisture). As temperature decreases, the cure rate slows down (and vice versa). Low moisture environments will also reduce the cure rate. Near-confined spaces which limit the overall access to atmospheric moisture will cure only from that surface which has access to the atmosphere. Colder temperatures can significantly increase cure times and can open the possibility of sealant irregularities if joint movement occurs while sealant is not fully cured. The following reference provides additional information on Movement-During-Cure of sealant joints: ASTM C1193 – Standard Guide for Use of Joint Sealants; section 12.5.

Installation—continued

Suggested References

In addition to the guidelines provided on this datasheet, MPM recommends that designers and users of SilPruf SCS9000 NB familiarize themselves with the latest editions of following industry guidelines and best practices:

1. ASTM C1193 Standard Guide for Use of Joint Sealants.
2. ASTM C1472 Standard Guide for Calculating Movement and Other Effects When Establishing Sealant Joint Width.
3. SWR Institute's Applying Liquid Sealants Applicator Training Program.

Joint Designs and Dimensions

Joint Movement

The dimensions of joints in typical construction applications change daily as a result of solar heat gain and building sway, and through- out the year due to seasonal changes. The movement in a sealant bead installed on the sun-side of a building or during the hottest portion of the day will be almost entirely in extension during the cold season or cycle, while the movement of a bead installed during the coldest condition will be almost entirely in compression during the hotter season or cycle. In addition to these above movements, the designer should consider the effect of construction tolerances in his/her project to minimize the occurrence of over-sized or under-sized joints during construction. All moving (dynamic) joints must be designed so as not to allow three-sided adhesion of the sealant to occur (reference ASTM C1193). Three-sided adhesion hinders the ability of the sealant to extend and compress freely as desired and can lead to early joint failure.

Joint Width

When using SilPruf SCS9000 NB, the designed joint width must be at least twice the total anticipated joint movement. For example, if the total anticipated movement in an expansion joint in which SilPruf SCS9000 NB is to be installed is 1/4" (6 mm), the designed joint width must be at least 1/2" (12 mm). The designer may want to consider additional width to accommodate construction tolerances (reference ASTM C1472). Large panels or lites should allow a minimum width of 1/4" (6 mm) for the sealant bead, mostly to allow for a proper installation (very small/narrow beads become difficult to install and can accommodate less movement). Glazing of plastic or larger-sized metal panels may require larger than usual joint widths due to the greater movement potential (higher coefficients of thermal expansion). Consult with MPM Technical Services for recommendations on large or unusual applications.

Butt Jointing

A thin installation of silicone sealant can better accommodate more movement than a deep installation, as the deeper bead will result in additional stress being imposed on both the sealant and the bonding surfaces during joint movement.

Figure 1 illustrates the general guidelines for installation of SilPruf SCS9000 NB into a typical butt joint configuration of widths up to 2" (5 cm).

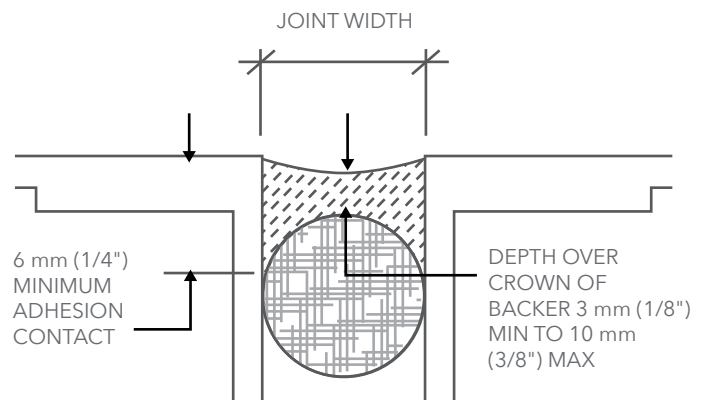
The recommended sealant profile is as follows:

- Is an hourglass shape with the depth of the sealant over the crown of the backer rod to be no thinner than 1/8" (3 mm) and no thicker than 3/8" (10 mm), and
- A minimum of 1/4" (6 mm) of adhesive bonding contact must be made to all surfaces to which the sealant is to adhere.

When used in joints exceeding 2" (5 cm) in width the recommended sealant profile is as follows:

- Is an hourglass shape with the depth of the sealant over the crown of the backer rod to be no thinner than 1/4" (6 mm) and no thicker than 3/8" (10 mm), and
- A minimum of 3/8" (10 mm) of adhesive bonding contact must be made to all surfaces to which the sealant is to adhere.

Figure 1



Installation—continued

Joint Backer Materials

Backer materials, typically the backer rod, provides the following benefits to aide in the correct application of SilPruf SCS9000 NB:

1. Controls and provide the desired sealant depth.
2. Creates a formed joint cavity that allows for the desired hourglass sealant shape.
3. Provides a firm backup that helps attain full wetting of the substrates when the sealant is tooled.
4. Acts as a bond breaker to eliminate adhesion on the backside of a joint (three-sided adhesion).

A non-gassing polyethylene, polyolefin or a polyurethane foam rod is the recommended back-up material for use with SilPruf SCS9000 NB. If the joint is too shallow to allow foam rod, use a polyethylene tape (as a bond breaker to eliminate three-sided adhesion). On porous substrate applications, a closed cell backer rod is recommended (open cell backer materials absorb and hold water which can affect long-term sealant adhesion on these materials). The Backer rod should be 25-50% greater (confirm with manufacturer of backer rod as to type selected) than the width of the joint, thereby providing continuous pressure against the joint walls; and expanding and contracting with the joint movement without pushing the sealant out of the joint during the compression cycle or falling away during the extension cycle. Rubber backup materials may stain the sealant and are not recommended, unless tested and verified for compatibility.

Applicable Standards

SilPruf SCS9000 NB sealant meets or exceeds the requirements of the following specifications:

American Society for Testing & Materials International:

- ASTM C920 Standard Specification for Elastomeric Joint Sealants; Type S, Grade NS, Class 50, Use A, G, M, O

U.S. Federal Specifications: (widely referenced but canceled Sept. 1996)

- TT-S-001543A Sealing Compound: Silicone Rubber Base (for Caulking, Sealing & Glazing in Buildings and Other Structures)
- TT-S-00230C Sealing Compound: Elastomeric Type, Single Component (for Caulking, Sealing & Glazing in Buildings and Other Structures)

Canadian General Standards Board (currently inactive)
CGSB-19.13-M87 Sealing Compound, One-Component, Elastomeric, Chemical Curing.

International Organization for Standardization

- ISO 11600 - Type G & F - 25 LM

Technical Services

Additional technical information and literature may be available. Laboratory testing & application engineering are available upon request. Contact MPM Technical Services for additional information.

Limitations

SilPruf SCS9000 NB is not recommended:

- For use underwater or in other applications where the product will be in continuous contact with water.
- For use in food contact applications.
- When painting of the cured sealant is desired (unless appropriate specialized paint products are used).

SilPruf SCS9000 NB should not be applied or used:

- As a structural adhesive in Structural Glazing applications
- Under exceedingly hot or cold conditions (see Sealant Application section for additional information).
- On wet, damp, frozen or contaminated surfaces.
- On excessively basic or acidic substrates.

Precautions

- This material requires atmospheric moisture to cure from paste to rubber and may not attain its listed final cured rubber properties when used in designs or applications where the silicone is encapsulated and without access to atmospheric moisture.
- Due to the inherent variability of natural materials it is recommended that stain testing be performed on all natural stone types prior to use to ascertain the visual acceptability of any particular sealant-stone combination. Contact Momentive Performance Materials (MPM) Technical Services for additional information.
- Some materials that bleed plasticizers or oils can cause a discoloration on the surface of sealants. When sealing to or over items such as: rubberized gaskets, bituminous-based materials, butyl or oil-based products, oily woods, tapes, etc., MPM recommends that compatibility testing be performed prior to application to confirm the suitability of these materials when in contact with each other.
- Silicone materials are hydrophobic in nature and if inadvertently over-applied onto adjacent joint surfaces (even if removed immediately), can create a waterproofing effect on some substrate types visible when the substrate is wet. See section on Masking.

Patent Status

Nothing contained herein shall be construed to imply the non existence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

Product Safety, Handling and Storage

Customers considering the use of this product should review the latest Material Safety Data Sheet and label for product safety information, handling instructions, personal protective equipment if necessary, and any special storage conditions required. Material Safety Data Sheets are available at www.siliconesforbuilding.com or, upon request, from any MPM representative. Use of other materials in conjunction with MPM sealants products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

Customer Service Centers

Americas	+1 800 295 2392 Toll free Email: commercial.services@momentive.com
Latin Americas	Brazil +55 11 4534 9650 Direct Number Email: contato@momentive.com Mexico +52 55 2169 7670 Direct Number Email: commercial.services@momentive.com
EMEIA - Europe, Middle East, Africa, and India	Europe +39 05 1092 4300 Direct Number Middle East, Africa and India + 91 44 7121 2207 Direct Number* *All Middle Eastern countries, Africa, India, Pakistan, Bangladesh, Sri Lanka Email: 4information.eu@momentive.com
APAC - Asia Pacific	China 800 820 0202 Toll free +86 21 3860 4892 Direct Number Japan Sales: JP.Silicones@momentive.com Korea +82 2 6201 4600 Direct Number South East Asia, Australia & New Zealand +60 3 9206 1543 Direct Number* *South East Asia countries (Malaysia, Singapore, Thailand, Indonesia, Vietnam, Philippines, Cambodia, Myanmar / other countries located in Pacific region).
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