BUILDING TRUST

PRODUCT DATA SHEET

Sika Thoroseal®-581

(formerly MSeal 581)

AIR BARRIER AND WATERPROOF CEMENT-BASED COATING FOR CONCRETE AND MASONRY

PRODUCT DESCRIPTION

Sika Thoroseal®-581 is a Portland cement-based coating for concrete and masonry that resists both air infiltration and positive as well as negative hydrostatic pressure. Polymer-modified with Sika Thoroseal® Acryl 60, Sika Thoroseal®-581 creates a low maintenance and highly durable waterproof barrier.

USES

- General
- Vertical and light-pedestrian horizontal surfaces
- Interior and exterior
- Above and below grade
- Alternative to mechanical finishing or rubbing of concrete
- Waterproofing basement and retaining walls
- Foundations
- Bridges and tunnels (non-traffic barring surface)
- Water cisterns
- Flashing of rough opening concrete or masonry openings
- Refer to the Specific Application section for installations such as Stucco, Below grade, water tanks, etc.

Substrates

- Cast-in-place and precast concrete
- Block, brick, and porous stone

CHARACTERISTICS / ADVANTAGES

- Waterproof to help protect building interiors from dampness and moisture damage
- Air barrier reduces air infiltration
- Resistant to both positive and negative hydrostatic pressure, making Sika Thoroseal®-581 suitable for use below grade interior and exterior and in water treatment construction
- Breathable, allowing interior moisture to escape without damaging the coating
- Compatible with high-performance coatings, including a wide range of architectural coatings and textured finishes
- Hides minor surface defects and blemishes in architectural concrete
- Available in ten landscape colors and custom colors (with minimum order quantities)
- Certified to the NSF/ANSI Standard 61 for potable water contact

PRODUCT INFORMATION

Chemical Base	Contains cement, graded sand, and proprietary additives.
Packaging	50 lb (22.7 kg) polyethylene-lined bags for Sika Thoroseal®-581 white, standard gray, all landscape colors, and custom colors

	50 lb (22.7 kg) pails for Sika Thoroseal®-581 white and standard gray
Shelf Life	1 year when properly stored
Storage Conditions	Transport and store in unopened containers and keep in a clean, dry place protected from rain, dew, and humidity. Do not stack bags more than two pallets high. If dry onsite storage of bags is unavailable or if the project is located in a very wet, humid climate zone, then specify Sika Thoroseal®-581 packaged in 50 lb (22.7 kg) metal pails.
Appearance / Color	▪ White and standard gray ▪ Custom and landscape colors are available for 5,000 lbs (2,268 kg) minimum order. ▪ One landscape color: pearl gray
Density	129 lbs/ft³ (2,080 kg/m³) when cured (Lab Method)

TECHNICAL INFORMATION

Abrasion Resistance	Passed, 3,000 L sand		(Fed. Spec. TT-P-141B)
Surface hardness	7 days	35	(Fed. Spec. TT-P-0035 (para 4.4.9))
	14 days	47	
	21 days	52	
	Tested with Barber Colemen Impressor tested with Requirement min = 30, max = 60		
Impact Strength	No chipping(gardener impact tester)		(Fed. Spec. TT-P-0035 (Cement paints para. 3.4.8))
Compressive Strength	7 days	4,200 psi (29 MPa)	(ASTM C 109)
	28 days	6,030 psi (42 MPa)	
Modulus of Elasticity in Compression	28 days	2.72 x 10^6 psi (1.87 x 10^4 MPa)	(ASTM C 469)
Flexural Strength	7 days	360 psi (2.5 MPa)	(ASTM C 348)
	28 days	1,027 psi (7 MPa)	
Tensile Strength	7 days	250 psi (2 MPa)	(ASTM C 190)
	28 days	440 psi (3 MPa)	
Tensile Adhesion Strength	418 psi (2.9 MPa)		(Test by tensile bond)
Coefficient of Thermal Expansion	6.99 x 10^{-6} in/in/°F (5 x 10^{-7} mm/mm/°C) at 28 days		(ASTM C 531)
Water Absorption	3.6% after boiling water submersion at 24 hours		(ASTM C 67 (Section 7.3))
Resistance to wind-driven rain	8 hrs = excellent		(Fed. Spec. TT-P-0035 (Para 4.4.7))
Water Penetration under Pressure	**Positive resistance to hydrostatic pressure** 752 hrs at 200 psi (1.4 MPa), 461 head ft, air-cured at 70 °F (21 °C), 50% rh	No leakage, no softening	(CRD C 48, modified)
Water Penetration under Negative Pressure	**Negative resistance to hydrostatic pressure** 664 hrs at 200 psi (1.4 MPa), 461 head ft, air-cured at 70 °F (21 °C),50% rh	Limited dampness	(CRD C 48, modified)

Permeability to Water Vapor	12 perms (0.10698 metric permeability) 18 x 10^3 resistance	(ASTM E 96 (water-vapor transmission) Swedish standard SS-02-15-82)
Permeability to CO2	1⁄16 in (1.6 mm), Equivalent to 3⁄4" (19 mm) new concrete	(Lab Method Diffusion)
Microbiological Resistance	**Fungus resistance** No growth; meets all requirements at 21 days	(Fed. Spec. TT-P-29B)
UV Exposure	Xenon arc, 5,000 hrs = no failure Carbon Arc, 500 hrs = no failure	(ASTM G 26) (ASTM G 23)
Behavior after Artificial Weathering	500 hrs, no cracking, loss of adhesion, checking, or other defect	(Atlas Type DMC weatherometer)
Light fastness of colour pigments	**Standard Reflectance** Gray Sika Thoroseal®-581 64.2 White Sika Thoroseal®-581 88.1	(ASTM D 2244 using Hunterlab D-25 meter)
Freeze-Thaw Stability	No change after 200 cycles	(ASTM C 666 (Procedure B))
Salt resistance	No defect after 300 hours	(ASTM B 117)
Design Considerations	Flame spread BS476: Part 7:1971 Water Penetration ASTM E 514 Adhesion ASTM C 297 Sika Thoroseal®-581/CMU Sika Thoroseal®-581/concrete Stuccobase /Sika Thoroseal®-581 ASTM C 926 Stucco/Sika Thoroseal®-581 Shear bond ANSI 118.4 or similar StuccoBase/Sika Thoroseal®-581/CMU StuccoBase/Sika Thoroseal®-581/concrete	

APPLICATION INFORMATION

Coverage	▪ 225 ft^2/50 lbs (20.9 m^2/22.7 kg) bag as a base coat at 1⁄16" (1.6 mm) dry-film thickness. ▪ 450 ft^2/50 lbs (41.8 m^2/22.7 kg) bag as a topcoat at 1⁄32" (0.8 mm) dry-film thickness. Coverage will vary depending on surface texture and porosity.	
Set Time	10 min at 70 °F (21 °C), 50% rh	(lab method)
Final set time	90 min at 70 °F (21 °C), 50% rh	(Lab Method)

BASIS OF PRODUCT DATA

Results may differ based upon statistical variations depending upon mixing methods and equipment, temperature, application methods, test methods, actual site conditions and curing conditions.

ENVIRONMENTAL, HEALTH AND SAFETY

For further information and advice regarding transportation, handling, storage and disposal of chemical products, user should refer to the actual Safety Data Sheets containing physical, environmental, toxicological and other safety related data. User must read the current actual Safety Data Sheets before using any products. In case of an emergency, call CHEMTREC at 1-800-424-9300, International 703-527-3887.

APPLICATION INSTRUCTIONS

- Sika Thoroseal®-581 must be modified with Sika Thoroseal® Acryl 60 to achieve the properties listed in the technical data section.
- Do not apply to substrates with active water leaks or moving cracks; patch all leaking static cracks and holes with SikaSet® Waterplug. Repair any other nonmoving

cracks or voids with the appropriate Sika repair product and repair all moving cracks or voids with the appropriate sealant.
- Do not apply in rain or when rain is expected within 24 hours. Do not apply above 90 °F (32 °C) or below 40 °F (4 °C) or when temperatures are expected to fall below 40 °F (4 °C) within 24 hours. For hot and cold temperature applications, store Sika Thoroseal®-581, Sika Thoroseal® Acryl 60, and water at 50 °F (10 °C) to 70 °F (21 °C) before use.
- Hot substrates will affect working time and material strength.
- Variations between inside and outside temperatures may result in condensation on below-grade walls treated with Sika Thoroseal®-581. This can be alleviated by assuring that adequate ventilation exists.
- Windy, dry, or hot conditions may require rewetting of Sika Thoroseal®-581 during cure and the use of polyethylene barriers.
- Before specifying Sika Thoroseal®-581 for water retaining structures, conduct tests to determine water quality. Sika Thoroseal®-581 is not intended for continuous contact with acid or sulfate-containing water. Very soft water will have an adverse effect on Sika Thoroseal®-581.
- Service temperatures: immersion, up to 140 °F (60 °C); cleaning water, up to 200 °F (93 °C); dry air, up to 220 °F (104 °C).
- On all projects, it is recommended that a sample be prepared on-site and approved prior to the commencement of the work. The site sample should confirm the color, texture, and workmanship required until the job is finished and accepted. Retain the sample until final approval is secured.
- Allow Sika Thoroseal®-581 to cure for 7–10 days before immersion in water.
- Proper application is the responsibility of the user. Field visits by Sika personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

SURFACE PREPARATION

1. Surface preparation is extremely important for proper adhesion. Substrates must be sound and free of dust, dirt, laitance, paints, oils, grease, curing compounds, or any other contaminants. Verify substrate has properly cured. Concrete should obtain 80% of design strength, typically achieved within 3–14 days. If efflorescence is present, mechanically remove it before proceeding. For extreme cases where this is not adequate, contact Technical Service.
2. Patch all holes and non-moving cracks before installation with the appropriate Sika product.
3. Relieve hydrostatic pressure in concrete block with weep holes.
4. Roughen or brush blast extremely smooth surfaces such as precast and cast-in-place concrete to ensure good mechanical adhesion of Sika Thoroseal®-581.
5. Completely saturate the substrate with water and allow the surface to dry before the application starts. A damp surface will prevent surface drag on the material, keep the substrate cool, and eliminate flash drying.

MIXING

1. Mix Sika Thoroseal®-581 with a mixing liquid consisting of a blend of Sika Thoroseal® Acryl 60 diluted with water. The maximum dilution ratio is one part Sika Thoroseal® Acryl 60 (1½ quarts) to three parts water (4½ quarts). Approximately 6 quarts of mixing liquid is needed per 50 lbs of Sika Thoroseal®-581 powder. Up to 2 additional quarts of mixing liquid may be added when used as a rubbing compound.
2. For best results, mechanically mix Sika Thoroseal®-581 with a slow-speed drill and mixing paddle. Gradually add the powder to the mixing liquid while the drill is running.
3. When properly blended, Sika Thoroseal®-581 will have the lump-free consistency of smooth, heavy batter.
4. Allow the Sika Thoroseal®-581 and Sika Thoroseal® Acryl 60 mixture to rest undisturbed for a minimum of 10 minutes to fully wet out all the powder. Then mix the wet mixture and apply. A small amount of mixing liquid can be added to the mixture.
5. Pot life is 60–90 minutes at 70 °F (21 °C). At high temperatures and low relative humidity, pot life can be significantly less.

APPLICATION

1. Apply Sika Thoroseal®-581 with a tampico brush or broom or equivalent stiff fiber brush or textured spray equipment. Spray applications of the first coat require back brushing or brooming to properly fill voids and achieve uniformity and optimum adhesion.
2. It is essential to work the first coat thoroughly into the substrate to completely fill and cover all voids, holes, and nonmoving cracks. Finish with a horizontal stroke for an even coat.
3. Allow to cure for 24 hours, then apply the second coat and finish with a vertical stroke. Above grade, the second coat can be replaced with a Sika high-build architectural coating to achieve better color uniformity.
4. On block or masonry walls, allow 5–7 days before applying a second coat to eliminate joint read-through or shadowing.
1. Sika Thoroseal®-581 shall be applied to CMU or concrete substrates in accordance with and prepared per Sika Thoroseal®-581 Technical Guide.
2. Mix Sika Thoroseal®-581 with a mixing liquid consisting of a blend of Sika Thoroseal® Acryl 60 diluted with water. The dilution ratio is one part Sika Thoroseal® Acryl 60 to three parts water.
3. Apply Sika Thoroseal®-581 at standard recommended thicknesses with a stiff fiber brush using a two-coat application. Allow the first coat to cure for 24 hours and then apply a second coat perpendicular to the first coat.
4. Allow Sika Thoroseal®-581 to cure and then directly apply Sika Stuccobase per manufacturer specifications or Portland Cement Plaster (Stucco) per

ASTM C 926. Nominal thickness shall be 5/8".

APPLICATION METHOD / TOOLS

Above-grade interior or exterior applications in positive pressure situations (direct contact with rain or standing water with a low head of pressure)

1. A 50 lb (22.7 kg) bag of Sika Thoroseal®-581 will provide the following coverage at the designated material usage.
2. Recommended Coverage:

- First Coat: 2 lbs/yd² (1.1 kg/m²) = 225 ft2/50 lb bag (20.9 m2/22.7 kg bag)
- Second Coat: 1 lb/yd² (0.54 kg/m²) = 450 ft2/50 lb bag (41.8 m²/22.7 kg bag)
- Total: 3 lbs/yd² (1.6 kg/m²), cured nominal thickness of 1⁄16" (1.6 mm). Coverage will vary depending on surface texture and porosity.

1. A 3 lbs/yd2 (1.6 kg/m²) application rate does not eliminate surface irregularities such as struck mortar joints. To hide surface irregularities, spray and back-brush a base coat of Sika Thoroseal®-581 at 2 lbs/yd² (1.1 kg/m²) and allow it to cure for 5–7 days. If additional leveling is required use Sika Thoroseal®-581 Plaster Mix.

Below-grade Interior Applications

1. The standard application is 3 lbs/yd² (1.6 kg/m²).
2. For high hydrostatic pressure conditions (over 15 psi [0.10 MPa]), increase the application rate to 4 lbs/yd² (2.2 kg/m²) and waterproof from the positive side wherever possible.

Below-grade Exterior Applications

1. Use Sika Thoroseal®-582 F (see Form No. 1019907) For high hydrostatic pressure conditions (over 15 psi [0.10 MPa]), apply a base coat of Sika Thoroseal®-582 F at 2 lbs/yd² (1.1 kg/m²) and allow to cure for 5–7 days.
2. Then apply Sika Thoroseal®-581 at 2 lbs/yd² (1.1 kg/m²). If additional leveling is required use Sika Thoroseal®-581 Plaster Mix. A steel trowel finish is recommended.
3. For both below-grade interior and below-grade exterior applications where water might move between vertical walls and slab or footer, it is recommended to cut out and place a SikaSet® Waterplug cove at the wall and floor junction prior to the application of the Sika Thoroseal®-581 base coat.
4. Sika Thoroseal®-581 can be covered with an extruded polystyrene insulation board during the second coat application. The board must be fully coated with Sika Thoroseal®-581 and embedded into the still-wet coating already in place on the walls. Use care when placing the coated board because it should not be moved or slipped. Once placed, do not move the board. After curing, prepare the above-grade portions of the boards by roughening or removing the surface skin and then coating them with Sika Thoroseal®-581 to protect them from UV light degradation.

Waterproofing Potable Water Tanks or Reservoirs

1. Install Sika Thoroseal®-581 as directed in the general Application instructions.
2. After Sika Thoroseal®-581 has fully cured, wash down the Sika Thoroseal®-581 surface with saline solution (salt brine, 1 lb salt per 1 gallon water).
3. Leave the saline solution on the entire Sika Thoroseal®-581 surface for at least 24 hours.
4. Rinse off the saline solution completely. If needed, reapply the saline solution until the final rinse water is completely clean and clear.

CLEANING OF TOOLS

Promptly clean hands and all tools with warm water while the product is still wet. Cured material may only be removed mechanically.

LEGAL DISCLAIMER

- **KEEP CONTAINER TIGHTLY CLOSED**
- **KEEP OUT OF REACH OF CHILDREN**
- **NOT FOR INTERNAL CONSUMPTION**
- **FOR INDUSTRIAL USE ONLY**
- **FOR PROFESSIONAL USE ONLY**

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