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P3 Protect is a spray-applied product, based on Spray-Lock Concrete Protection (SCP) colloidal silica technology, which provides a permanent improvement that increases the durability and life cycle of Portland cement concrete.

ABOUT THIS PRODUCT

P3 Protect penetrates into the accessible capillary system, reacting with the available free alkali found within, and primarily forming calcium silicate hydrate (C-S-H). It can be used at time of placement as the choice for curing and protection, or P3 Protect can be used on existing clean, hardened, permeable concrete.

P3 Protect technology will protect the concrete surface from deterioration that can occur due to biological and environmental attack. The permanent concrete permeability reduction provided allows improved resistance to chlorides and other salts, animal waste, mold/mildew, surface contamination, and carbonation exposures. With a superior cure (equal to or better than 28-day wet cure), the need for a curing membrane is eliminated, allowing foot traffic in just one to three hours.

P3 Protect provides permanent concrete protection while also providing improved conditions which allow concrete to reach its full performance potential.



TYPICAL APPLICATION RATE

Concrete
240 ft² per 1 gallon
(5.9 m² per 1 liter)

PERFORMANCE

Test Method Standard	Typical % Improvement
ASTM C1556	42%
ASTM C666	78%

Recommended Equipment for Applications

Important: When using an airless sprayer on freshly placed concrete, be sure to adjust pressure settings so that no surface damage occurs. The use of centrifugal pumps is not recommended.

Use a low to medium pressure sprayer complete with an extension wand and fan tip spray size of 0.019-0.021 inches (0.48-0.53 mm) for vertical or overhead applications and fan tip spray size of 0.024-0.031 inches (0.61-0.79 mm) for flatwork applications.

Alternate spray system: Use an agricultural sprayer using an approximate 5 gallons per minute (18.93 liters per minute) diaphragm pump and fan tip spray size of 0.30-0.60 gallons per minute (1.14-2.27 liters per minute) for vertical or overhead applications and fan tip spray size of 0.50-1.0 gallons per minute (1.89-3.79 liters per minute) for flatwork applications. A backpack or Hudson type sprayer should be used if only applying one bucket or fewer of material.

Recommended Application Method

Important: Spray in a 50% overlapping pattern.

For slab applications, hold wand perpendicular to the surface and spray 6 inches (15 cm) from the surface. Apply product using the prescribed application rate for the area. If pooling or dry areas are observed while applying, use a broom to distribute material so that the product remains uniform throughout the application area. Do not allow excess material to dry on the slab. Remove excess P3 Protect product with a foam squeegee, broom, wet vac, or mop.

Note: Product not removed from the slab may become slippery in a wet condition.

Treated area can be opened to foot traffic one hour after treatment and all heavy equipment traffic 24 hours after treatment.

For vertical and overhead applications, hold sprayer wand perpendicular to the surface and spray 6 inches (15 cm) from the surface. Very light and repeated spray passes should be made over the same area using the prescribed application rate. For vertical application, begin at the bottom and go to the top.

Time of Placement

P3 Protect can be used at the time of placement. Application should be performed after final troweling has been completed and concrete can take foot traffic without damage. Final concrete finish must be unburnished prior to application.

Concrete Finish

The concrete surface finish is a key part of the P3 Protect application process. The surface finish should be discussed with the concrete foreman and the superintendent prior to concrete placement. The surface, if hard troweled, should be finished in an open fashion (unburnished), avoiding a burnished or black surface finish. P3 Protect needs a porous (open-matte) finish to penetrate into the concrete and perform as intended. SCP recommends observing the concrete finishers during the finishing process to ensure the concrete is not burnished.

P3 Protect can be applied to hand finished surfaces, broom finished surfaces, and bull floated surfaces.

Note: Extra time may need to be allowed for concrete to set on broom finished surfaces to ensure no damage to concrete from foot traffic.

Accelerators

Accelerators are often used during colder months to accelerate the setting of the concrete. These admixtures will also accelerate the action of P3 Protect. If these admixtures are used (check batch tickets), applicators should test a small area prior to a full application. Tests should be conducted periodically. A test section measuring approximately 3 ft x 3 ft (0.914 m to 0.914 m) is recommended. Apply P3 Protect product to this area and wait 15 minutes. If the P3 Protect product begins to appear milky and turns into a gel or feels very slippery, then the accelerator is still active. Re-test until the product remains unchanged from its normal consistency. Once the SCP product remains unchanged on a test area for a minimum of 15 minutes, full application can begin.

Existing Concrete

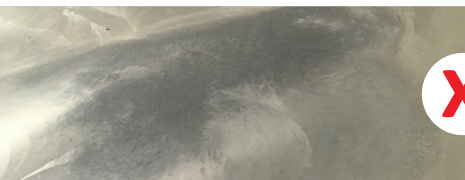
The concrete surface needs to be structurally sound. If there are any concerns, consult with an engineer on the project or consult with a structural engineer. Any weak or degraded concrete surface or concrete exhibiting signs of scaling, delamination, or spalling must be mechanically removed to achieve a solid substrate. The concrete should be free of contaminants such as dirt, wax, oil, grease, curing compounds, adhesives, paint, or any other material that could prohibit P3 Protect from entering the concrete matrix. Always perform a water absorption test to determine if the product will be able to penetrate into the concrete surface.

Admixtures

The use of moisture vapor reducing admixtures (MVRA), integral waterproofing admixtures, or latex admixtures **should not be used** when utilizing P3 Industrial spray-applied technology.

Typically Applied Concrete Products

There are many concrete additives on the market. Some of these will work in conjunction with P3 Protect, some will not.



If a monomolecular evaporation retarder (MMER) is used on the concrete, the MMER should be applied in accordance with the manufacturer's recommendations.

When specified, curing compounds (ASTM C309 or ASTM C1315 products) can be used but should only be used after the P3 Protect product application. If a curing compound is used prior to the P3 Protect product application, remove the curing compound prior to treatment.

ENVIRONMENTAL CONDITIONS

Hot Weather

One of the challenges of hot weather applications is rapid evaporation and unwanted gelling. SCP recommends pre-wetting concrete when surface temperature is above 90°F (32.2°C). Pre-wetting consists of spraying a light coat of water directly in front of P3 Protect product application. This process helps in preventing rapid evaporation of P3 Protect from the surface of the slab, allowing for better penetration into the hot concrete. P3 Protect should be removed before allowing to dry on the slab.

Cold Weather

Challenges faced during cold weather applications include low temperature application, accelerator addition, and shorter days. The minimum air and concrete temperature at which P3 Protect can be applied is 35°F (1.7°C) and rising. If an accelerator is used in the concrete mix, test a small area as described in the [Accelerators section](#) of this document. With shorter days during the winter months, longer set times could push P3 Protect application to a later time when temperatures are too cold. Application may need to take place the following morning. If this is the case, the concrete company may need to protect the concrete with blankets or other means.

Rain Event

A rain event is defined as liquid precipitation that is sufficient enough to cause standing water on the concrete structure. If a light mist is observed that causes no standing water, this is not considered a rain event and application does not require interruption.

If a rain event begins during an application, the portion of the slab that has been treated and squeegeed off is considered treated. If a portion of the slab is being treated and not squeegeed when it rains, P3 Protect will need to be reapplied after rain has stopped. Mark the area last treated so that you have a reference on where to resume application after the rain event. After rain has stopped, the slab should be squeegeed to remove all standing water. Application can continue as normal, beginning after the last treated section of the slab.

POST-APPLICATION

Traffic

Foot traffic is allowed one hour after application. Equipment traffic is allowed after 24 hours or when the design professional decides the concrete is strong enough to handle the load.

Control Joints

SCP requests that control joints are cut **after** P3 Protect has been applied. If the control joints are cut prior to the placement of P3 Protect, the area will need to be cleaned to remove the residue dust from the cutting. ***P3 Protect can react with the dust creating a slick surface.***



NOTES

- » **Not suitable** for use where coatings, coverings, or flooring may be applied.
- » Like fresh concrete itself and other alkaline materials, product may etch glass, shiny aluminum, and brass if left to dry on the surface. Simply remove while wet.
- » **DO NOT** apply on frozen substrate

Packaging/Storage

P3 Protect is packaged in 5, 55, and 275 gallons. Product shall ideally be stored in a location that is dry and between 35°-100°F (2°-38°C) ambient temperature. Optimal storage is at the middle of the temperature range. Protect from freezing and direct sunlight. 5-year shelf life under proper storage conditions.

General Information

For safe handling information on this product, see the Safety Data Sheet (SDS).

Warranty

SCP warrants the product to be free from material defects provided that the product was sold within its identified shelf life and stored according to guidelines on product packaging. SCP's sole liability shall be limited to the purchase price paid by the customer for SCP product for the quantity of defective material.

To the greatest extent permitted by law, this Limited Warranty is in lieu of all other warranties, expressed or implied. Seller disclaims all other warranties, expressed or implied, oral or written, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose.

Mock-ups, testing, or sample applications to determine fitness of products for a particular use are the responsibility of the user. In-house and independent testing supports the instructions and claims made in this document. Due to the variation in job conditions, surface preparations, concrete substrates, and application methods, SCP cannot ensure uniformity in product performance.

PRODUCT ATTRIBUTES

Color

Translucent White

Odor

None

Specific Gravity

1.10

pH

11.5 +/-

Flammability

0 (non-flammable)

VOC/VOS Content

0.0 g/ml

Clean-up Solvent

Water

Environmental Impact

None/Neutral

User Status

Friendly

QUESTIONS?



423.305.6151

SCPTech@spraylock.com

NOTE TO SPECIFIER: Be sure to obtain the latest version of this Guide Specification.

This Guide Specification is not a completed document ready for use. It must be edited (i.e., deleting, adding, or modifying text) as required to suit project requirements.

The design professional and the contracting parties of the Contract Documents are responsible for the accuracy of issued project specifications, including use of this SCP™ Guide Specification.

Contact SCP™ for instructions for other applications not included in this specification.

SCP™ (SPRAY-LOCK CONCRETE PROTECTION™) SHALL NOT BE LIABLE FOR DAMAGES ARISING OUT OF THE USE OF THIS GUIDE

CSI 3-PART SHORT-FORM GUIDE SPECIFICATION

EDIT TO SUIT PROJECT REQUIREMENTS

SECTION

SCP™ SPRAY-APPLIED COLLOIDAL SILICA CONCRETE TREATMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes SCP™ spray-applied, penetrating, colloidal silica concrete treatments and substrate protection, applied after finishing for new and existing concrete.

1.2 PRE-POUR/ PREINSTALLATION MEETINGS

- A. Pre-pour/ preinstallation meeting: SCP™ personnel or approved representative should be in attendance, in-person or by phone, at the pre-pour/ preinstallation meeting for concrete placement to discuss the requirements for concrete member preparation and product application.

1.3 SUBMITTALS

- A. Product Data: For each type of product.

1.4 QUALITY ASSURANCE

- A. Material Requirements: Concrete mixes need to be Portland cement based and designed in accordance with ACI and ASTM requirements.

- B. Manufacturer Qualifications: ISO 9001 Certified Manufacturer with a minimum 5 years' experience and capable of providing field service representation.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery, storage, and handling shall be according to the manufacturer's written recommendations, industry guidelines, and/or Division 01 requirements whichever is more stringent.

1.6 FIELD CONDITIONS

- A. Environmental Requirements per manufacturer's written recommendations, Division 01, and as follows:
 - 1. Allow surfaces to attain a temperature of 35 deg F (1.7 deg C) and rising before proceeding with product application.
 - 2. Product should not be allowed to freeze.
 - 3. Protect application surfaces during periods of exposure to high winds.
 - 4. Surfaces to be treated should not be frozen or have frost on them. In addition, standing water should be removed prior to treatment.
 - 5. Surfaces over 90 deg F and Direct Sunlight Conditions: Spray a fine mist of water on the surface before the application of SCP™ treatment to help alleviate premature chemical reaction and/or drying from taking place prior to achieving maximum penetration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. SCP™ Spray-Applied Penetrating Colloidal Silica Concrete Treatment Performance:
 - 1. ASTM C 1556 Standard Test Method for Determining the Apparent Chloride Diffusion Coefficient of Cementitious Mixtures by Bulk Diffusion: Treated, normal strength concrete typically provides at least a 30% reduction of chloride diffusion from untreated concrete
 - 2. ASTM C 666 Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing: Treated, normal strength concrete typically provides at least a 40% reduction of freeze/ thaw damage from untreated concrete

<p>NOTE TO SPECIFIER: Retain or revise paragraph and subparagraphs below for USGBC LEED v4 requirements.</p>

- B. Low-Emitting Materials:
 - 1. General Emissions Evaluation: Building products shall be tested and determined compliant according to California Department of Public Health (CDPH) Standard Method v1.1–2010, using the applicable exposure scenario.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide spray-applied products by Spray-Lock Concrete Protection, LLC, 5959 Shallowford Road, Suite

405, Chattanooga, TN 37421; (office) 423.305.6151 / (fax) 423.305.6150;
www.concreteprotection.com

- B. SCP™ penetrating colloidal silica concrete treatments shall conform to the information provided in the most current product data sheet supplied by Spray-Lock Concrete Protection.

2.3 ACCESSORIES

- A. Large Surface Areas and/or Volumes: Low-pressure, high-volume sprayer less than 100 psi (0.69 MPa), or medium-pressure airless sprayer less than 500 psi (3.4 MPa). Please refer to the manufacturers Product Data Sheet for more information on sprayer requirements and additional equipment.
- B. Small to Medium Surface Areas and/or Volumes: Pump or backpack sprayer for areas under 1000 sq ft (9.3 sq m), or sprayers indicated for large surface areas above.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare according to SCP™'s written instructions.

3.2 APPLICATION

- A. Apply using the SCP™'s written instructions.

END OF SECTION

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : P³ Protect
Substance name : Amorphous Colloidal Silica

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Concrete treatment

1.3. Details of the supplier of the safety data sheet

Spray-Lock, Inc.
5959 Shallowford Road Suite 405
Chattanooga, TN 37421 - USA
T 423-305-6151
info@spraylock.com

1.4. Emergency telephone number

Emergency number : +1 (423) 305-6151

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Not classified

2.2. Label elements

GHS-US labelling

No labelling applicable

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

None.

SECTION 3: Composition/information on ingredients

3.1. Substance

Proprietary Formula

Name	Product identifier	%
Silicon Dioxide	(CAS No) 7631-86-9	< 50
Water	(CAS No) 7732-18-5	> 70

3.2. Mixture

This mixture does not contain any substances to be mentioned according to Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Move the affected person away from the contaminated area and into the fresh air.
First-aid measures after skin contact : In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.
First-aid measures after eye contact : In case of contact, immediately flush eyes with plenty of water. If easy to do, remove contact lenses, if worn.
First-aid measures after ingestion : If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : Not a normal route of exposure.
Symptoms/injuries after skin contact : May cause skin irritation.
Symptoms/injuries after eye contact : May cause eye irritation.
Symptoms/injuries after ingestion : Not a normal route of exposure.

4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

P³ Protect

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder, water spray, foam, carbon dioxide.
Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not combustible.

5.3. Advice for firefighters

Protection during firefighting : Keep upwind of fire. Wear full fire-fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Keep unnecessary personnel away from the release.

6.2. Methods and material for containment and cleaning up

For containment : Stop leak, if possible without risk.
Methods for cleaning up : Dilute spill directly with plenty of water and drain to sewer.

6.3. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke.
Hygiene measures : Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed. Protect from sunlight. Do not freeze. Store at temperatures between 2 °C (35 °F) and 38 °C (100 °F).

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

None

8.2. Exposure controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.
Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : None necessary under normal conditions of use. Wear gloves if handling large quantities.
Eye protection : Wear eye protection.
Skin and body protection : Wear suitable protective clothing.
Respiratory protection : In case of inadequate ventilation wear respiratory protection.
Environmental exposure controls : Maintain levels below Community environmental protection thresholds.
Other information : Handle according to established industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Translucent
Color : Clear
Odor : Odorless
Odor threshold : Not applicable
pH : 11.2 - 11.5
Melting point : 0 °C (32 °F): Water / 1,713 °C (3,115 °F) Amorphous Silicon Dioxide

P³ Protect

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

Freezing point	: 0 °C (32 °F): Water
Boiling point	: 100 °C (212 °F): Water
Flash point	: Not applicable
Relative evaporation rate (butylacetate=1)	: 0.3
Flammability (solid, gas)	: Not flammable
Explosive limits	: Not applicable
Explosive properties	: Not applicable
Oxidising properties	: Not applicable
Vapor pressure	: 3.1690 kPa @ 25°C (0.0313 iatm @ 77°F)
Relative density	: 1.10
Relative vapor density at 20 °C	: 1.73 x 10 ⁻⁵
Solubility	: Not applicable
Partition coefficient: n-octanol/water	: Not applicable
Auto-ignition temperature	: Not applicable
Decomposition temperature	: > 2,000 °C
Viscosity, kinematic	: 24 cSt @ 25 °C (77 °F)
Viscosity, dynamic	: 26 cP @ 25 °C (77 °F)

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under normal storage conditions.

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Heat. Incompatible materials.

10.5. Incompatible materials

Acids.

10.6. Hazardous decomposition products

Not applicable.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified.

P ³ Protect	
LD50 oral rat	No data available
LD50 dermal rabbit	No data available
LC50 inhalation rat	No data available

Skin corrosion/irritation	: Based on available data, the classification criteria are not met.
Serious eye damage/irritation	: Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation	: Based on available data, the classification criteria are not met.
Germ cell mutagenicity	: Based on available data, the classification criteria are not met.
Carcinogenicity	: Based on available data, the classification criteria are not met.
Reproductive toxicity	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure)	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (repeated exposure)	: Based on available data, the classification criteria are not met.
Aspiration hazard	: Based on available data, the classification criteria are not met.

P³ Protect

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

Symptoms/injuries after inhalation	: Not a normal route of exposure.
Symptoms/injuries after skin contact	: May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: Not a normal route of exposure.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: No known significant effects or critical hazards.
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12.2. Persistence and degradability

P³ Protect

Persistence and degradability	Not established.
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12.3. Bioaccumulative potential

P³ Protect

Bioaccumulative potential	Not established.
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12.4. Mobility in soil

No information available

12.5. Other adverse effects

No information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations	: This material must be disposed of in accordance with all local, state, provincial, and federal regulations. This material is not subject to RCRA, EPCRA, CERCLA regulations.
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SECTION 14: Transport information

Department of Transportation (DOT)

Not regulated for transport

Additional information

Other information	: No information available.
Special transport precautions	: Do not handle until all safety precautions have been read and understood.

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

15.2. US State regulations

P³ Protect

State or local regulations	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.
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SECTION 16: Other information

Date of issue	: 02/04/2019
Revision date	: 02/12/2021
Other information	: None.

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

31-SDS-P³ Protect
Date: 02/12/2021
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