Technical Data Sheet

PIP VM-CS

Colloidal Silicate

PROTECTIVE INDUSTRIAL POLYMERS
7875 Bliss Parkway North Ridgeville, OH 44039
440-327-0015 440-353-0549 - FAX

DESCRIPTION:

PIP VM-CS is a clear in situ concrete treatment developed to create a permanent dense colloidal gel that extremely limits slab permeability. **PIP VM-CS** penetrates deeply into the concrete substrate and reacts with free alkali and/or alkaline hydrates internally producing an extremely dense silica hydro-gel that fills the micro spaces and voids around aggregate. This hydro-gel permanently seals the matrix limiting water, vapor or contaminant movement.

USES:

PIP VM-CS was developed for use where environmental concerns create the need to permanently seal the slab from within. It can also be installed where more concrete density needed, additional or bonding strength is required. **PIP VM-CS** was designed for use on new or old concrete installations and reduces the potential for internal chemical reactions by converting alkali to a neutral compound structure. The use of **PIP VM-CS** will also help protect concrete from damages caused by freeze-thaw cycles, especially where salt or calcium chloride has been or will be used.

When used properly, **PIP VM-CS** is an ideal product for concrete or other masonry surfaces to be painted or coated. **PIP VM-CS** can help prevent peeling, cracking and loss of bond caused by capillary moisture and internal chemical reactions.

PIP VM-CS will not alter the appearance of the surface or physical characteristics and will enhance surface traction quality, making it ideal for stand alone use on all new on decks, streets, airport runways, basements, parking garage decks, sidewalks, driveways and more. Also, **PIP VM-CS** severely retards the rusting or corroding of imbedded steel.

ADVANTAGES:

- Limits moisture and vapor transmission
- Reduces undercutting of coatings in wet environments
- Penetrates floors 3” to 6”
- Permanently integrally seals concrete
- Preserves matrix integrity
- Increases surface abrasion resistance
- Adds density
- Improves thermal resistance
- Increases strength
- Improves past carbonation effects
- Zero VOC/VOS content
- Improves acid/chemical resistance
- Lowers internal chemical reaction potential
- Lowers creep potential

APPLICABLE STANDARDS:

- ASTM C-67 Section 7 Water absorption
- ASTM-67 Section 9 Suction
- ASTM-C-67 Section 10 Efflorescence
- ASTM C-666 Freeze-thaw resistance
- ASTM C-23-69 Artificial weathering
- ASTM C-666 Salt attack resistance
- ASTM C 518 Thermal conductivity resistance
- ASTM D 5084-91 Permeability
- AASHTO T260 Chloride ion content
- AASHTO T259-78 Chloride ion penetration
- USDA Approved for use in food processing areas
- VOC/VOS Compliant

PRECAUTIONS:

- Spills or spray droplets in contact with glass should be removed immediately by flushing with water.
- DO NOT ALLOW TO DRY, as etching can occur.
- Some discoloration of aluminum can occur.
- Do not apply **PIP VM-CS** when air and/or substrate temperatures are less than 37°F/2.8°C and will not decrease to less than 37°F/2.8°C for 6 hours.
- Do not use in very high moisture transmission situations without prior approval by Protective Industrial Polymers Technical Department.

MATERIAL PROPERTIES:

VOC:	Zero
Solids upon application:	100%
Solids as packaged:	Zero
Odor:	None
Toxicity:	None
Flammability:	None
Flash Point:	None
Waste disposal:	Non-hazardous
Physical:	Clear Liquid
Freeze:	Allowed
Freeze Temperature:	32°F/0°C
Boiling Point:	230°F/110°C
Weight per gallon:	9.2 lbs/4.16kg
pH :	12±
R Factor:	+ 20
Shelf life:	Indefinite

PRODUCT COVERAGE:

Coverage rate is 150- 200sq.ft. per gallon or 3.5m2 - 4.9m2 per liter.

INSPECTION AND APPLICATION:

Caution! Refer to SDS and follow all precautions and instructions prior to and during installation.

MOISTURE: Moisture and moisture vapor transmission rates are dynamic in nature and may change over time. Initial testing does not guarantee future results. If the relative humidity of the concrete substrate is over 75% (using ASTM F2170), Protective Industrial Polymers must be consulted and issue a written moisture mitigation recommendation prior to product use.

JOB CONDITIONS:

- Do not apply **PIP VM-CS** when air or substrate temperatures are less than 37°F/2.8°C or may reach this temperature within 24 hours of application
- Contact with glass, stainless steel or aluminum should be avoided and immediately flushed with water if contacted
- DO NOT ALLOW TO DRY on glass, as etching can occur
- Some discoloration of aluminum can occur if contacted
- Must be applied to a porous surface without coatings or heavy build up of oil or grease
- Do not dilute with water or add any other material.
- Ambient and substrate temperatures MUST be greater than 37°F/2.8°C for 24 hours during install and 24 hours after

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• Surfaces must not exceed 90°F during installation (may be cooled with water prior to application-no puddles)

APPLICATION PROCEDURE:
For Established Cured Concrete:
1. It is highly recommended and best practice to clean and remove as much concrete dust as possible prior to application of the VM-CS. This is best done by auto scrubbing.
2. To achieve deepest penetration and reaction into the slab, the concrete should be dampened with water by using the same sprayer set up and technique used to apply the VM-CS as seen below. Do not puddle water.
3. Apply **PIP VM-CS** with a high pressure airless sprayer using a 0.17 - 0.19" degree fan tip within 15 minutes of dampening the concrete for best results. Position the spray tip approximately 8"-10" (200-300mm) from the concrete surface, using an overlapping spray pattern. Apply at a rate of 200 sq. ft per gallon (5 SM/L by applying in two passes applying the second pass immediately after the first has penetrated the surface (normally 5 to 20 minutes). DO NOT ALLOW TO DRY. Apply the second application at 90° to the first (cross shape).
4. Completely saturate the substrate but DO NOT PUDDLE.
5. Use a clean broom to distribute ALL puddles immediately following application.
6. Application on inclined or pitched surfaces should begin at the lowest elevation and proceed to highest.
7. Wait until purging has stopped (up to 72 hours on new concrete) before the moving to the next step.
8. Displaced or purged contaminants, un-reacted surface pre-treatment, minerals or liquids must be thoroughly washed or mechanically removed prior to the application of **PIP VM-IP** or other Protective Industrial Polymers coatings**.** Failure to do so may cause adhesion failure of the coating.
9. Active water or hydrostatic movement on walls or floors will require additional applications applied immediately following the first and continuing until transmission stops.
10. Cracks and joints should be sealed with **PIP JF-Epoxy, PIP JF-Polyurea** or **PIP 1800 Flex** after application of epoxy primer.

CLEAN-UP & SAFETY: Read and follow SDS instructions. Post notice that treated surfaces may be slippery until completely penetrated. No special clothing, breathing apparatus, goggles or gloves are necessary in open areas but appropriate respirator s in enclosed areas is recommended to avoid possible irritation due to breathing. VM-CS will etch glass and discolor stainless steel and aluminum if allowed to dry. Clean up with water and mild soap.

SHELF LIFE: Indefinite for unopened containers.

PACKAGING: **PIP VM-CS** is available in 5 gallon/18.9 liter pails and 55 gallon/208.2 liter plastic drums.

MAINTENANCE: Special maintenance of treated area is not required.

TECHNICAL SUPPORT: For application questions, please contact your salesman or PIP technical service at 440-327-0015.

WARRANTY AND CONDITIONS OF USAGE

WARRANTY AND LIMITATION OF LIABILITY: Protective Industrial Polymers Inc. ("PIP") warrants that its products shall conform to the manufacturer's written specifications and shall be free from defects for one (1) year from the date of purchase. PIP MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES AND DISCLAIMS THE SAME, INCLUDING, WITHOUT LIMITATION, FAILURE OF THE PRODUCT DUE TO ACTS OF GOD, FLOODING, EXTREME OR ABNORMAL TEMPERATURES, HUMIDITY AND MOSITURE, STRUCTURAL CONDITIONS, SITE PREPARATION AND CONDITIONS, ACCIDENTS, DAMAGE CAUSED BY INSTALLATION OF MACHINERY, EQUIPMENT OR FIXTURES WITHOUT ADEQUATE FLOOR PROTECTION OR WITHOUT ADEQUATE TIME FOR CURING, FAILURE TO COMPLY WITH CONDITIONS OF USAGE (SPECIFIED BELOW), VANDALISM, NEGLIGENT OR INTENTIONAL ACTS OF THIRD PARTIES OR OTHER CASUALTIES. If any PIP product fails to conform to this warranty, PIP shall either replace the product at no cost to Buyer or refund the cost of the product, in PIP's sole discretion. Replacement of any product or a refund of the cost of any product shall be the sole and exclusive remedy available to buyer, and buyer shall have no claim for incidental, special or consequential damages, including, without limitation, business interruption damages. Any warranty claim must be made within one (1) year from the date of delivery of products. PIP does not authorize anyone on its behalf to make any written or oral statements which in any way alter PIP's warranty or installation and storage information or instructions in its product literature or on its packaging labels. Any installation of PIP products which fails to conform to such installation information or instructions or the "Conditions of Usage" (specified below) shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of PIP's products for the Buyer's intended purposes.

CONDITIONS OF USAGE: Installation of all products purchased must be by professional installers periodically published by PIP or otherwise approved by PIP in writing. Modification to any of PIP's products voids the warranty. The installer shall maintain a written contemporaneous record of field conditions (including, without limitation, surface and atmospheric conditions, usage rates, and lot numbers of products installed). PIP reserves the right of inspection of any installed product, installation and maintenance records and records of field conditions and may conduct additional testing as is reasonably required to investigate any warranty claims. Warranty shall only apply for products or materials that have been paid for in full. Moisture Vapor Transmission (MVT) and ASR (Alkali Silica Reaction) Disclaimer and Exclusion: Although rare, some floors at or below grade level are sometimes subjected to saturation by moisture from beneath the concrete floor slab. This moisture can travel through the concrete and collect between floor toppings creating the potential for delaminating from hydrostatic pressure and or ASR. Conditions contributing to this include heavy rainfall, broken pipes, excess hydration within fresh concrete, and other factors or defective and old concrete. These factors are difficult, if not impossible to predict. PIP recommends testing for MVT and/or the presence of ASR in the concrete substrate prior to applying any polymer floor topping. The recommended test method for MVT is ASTM F 2170-11. ASR can be predicted by a higher than normal pH within the concrete. If high pH should be detected, it is recommended a lab test for ASR. If and when delamination of the floor occurs because of a moisture condition that exists beneath or in the concrete slab or failure of the concrete due to ASR, this Limited Warranty does not extend to such delaminating or topping failure. This writing constitutes the sole and only agreement of warranty relating to PIP products.