

Pro-Seal Liquid Steel structural repair material



A reinforced nano polycarbon structural reclamation system

Pro-Seal Liquid Steel Primer[®]

Extremely High strength primer

Product Description

Pro-Seal Liquid Steel Primer[®] is a low viscosity, 100% solids polycarbon/polycarbonated integrated technology polyamine copolymer compound. This technology results in tolerance for surface moisture on application in adverse conditions. Pro-Seal Liquid Steel Primer[®] cures at temperatures as low as 2°C and has the ability to, cure in the presence of moisture.

Advantages

- Excellent bonding/adhesion
- Holds the blast on steel substrates
- Tolerant to a wide variety of field conditions

Chemical Resistance

Pro-Seal Liquid Steel Primer[®] is resistant to most acids and alkalis. For specific resistance information contact our technical department at 800.349.7325 or information@prosealproducts.com

Surface Preparation

Concrete: Abrasive blasting or scarification to remove laitance and surface contaminants is recommended. Concrete must be thoroughly cured, free of oils, curing compounds, form release agents and dust. The substrate must be dry at the time of application. Use ASTM D 4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, contact our technical department at 800.349.7325 or information@prosealproducts.com for proper fluid removal instructions.

Metal For immersion or intermittent splash and spillage conditions, abrasive blast to “white metal” in

accordance with Steel Structures Painting Council Specifications SP-5 or NACE Specification #1. For fumes and dry environments, abrasive blast to “near white” in accordance with SP-10 or NACE #2. A minimum surface profiles of 3.0mm is required.

Mixing Raitio

Liquid Steel Primer Resin	3
Liquid Steel Primer Hardener	1

Application

Mechanically premix Liquid Steel Primer resin (Part A) individually prior to adding hardener (Part B). After initial mixing, add Liquid Steel Primer hardener and mix one to three minutes. Apply catalyzed Liquid Steel Primer at 2 to 5 wet mm using a brush or a short nap roller. Primed surface must be dry and free of foreign matter at time of application. DO NOT THIN

Technical

Information	Value
Coverage rate Concrete* Steel	150-200ft ² /gal 250-325ft ² /gal
Storage	Cool, dry, away from direct sunlight and fire hazards
Shelf life	18 months when stored properly
Packaging	1 5 30 gallon

*Coverage may vary depending on density of concrete

Handling Properties Working Time

Temperature	Minimun	Time
10°C		2 hours
21°C		45 minutes
32°C		25 minutes

Time to Recoat

Temperature	Minimun	Time
10°C	9 hours	4 weeks
21°C	5 hours	4 weeks
32°C	3 hours	2 weeks



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Safety

Store the product in a cool, dry area (10°C-30°C) away from the direct sunlight, flame, or other hazards. Liquid Steel Primer contains polycarbon/polycarbonate resins and a polyimine adduct catalyst. This product's components have been formulated to optimize physical characteristic such as strength and chemical resistance while minimizing hazardous physical and health factors encountered during application.

Pro-Seal Liquid Steel Paste Fillers[®]

*Pro-Seal Liquid Steel Power Patch[®] and
Pro-Seal Liquid Steel Aero Graph[®]*

Product Description

Pro-Seal Liquid Steel Paste Filler[®] is a polycarbon /polycarbonate patching/filling compound that is used to fill defects in concrete. For steel use Pro-Seal Liquid Steel Aero Graph[®] prior to the application of Liquid Steel Structural Reclamation System. These patching compounds provide excellent adhesion to concrete or steel <.0005% shrinkage and superior chemical resistance.

Uses

- Filling in defects in concrete
- Repairing cracks in concrete
- Smoothing steel welds
- Smoothing pitted steel

Advantages

- Uniform consistency
- Two component system eliminates air borne dust
- Ease of application

- Provides smooth surface to receive epoxy systems
- Solvent free
- Low blush
- Can be accelerated fro low temperature cures.

Chemical Resistance

Pro-Seal Liquid Steel Paste Fillers[®] are resistant to synthetic and mineral lubricants, most acids, alkalis, and solvents. For specific resistance information contact our technical department at 800.349.7325 or information@prosealproducts.com

Substrate

Concrete: Abrasive blasting or scarification to remove laitance and surface contaminants are recommended. Concrete must be cured, free or oils, curing solutions and form release agents, dust and must be dry at the time of the application. Use ASTM D 4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, contact our technical department at 800.349.7325 or information@prosealproducts.com for proper fluid removal instructions.

Metal:

For immersion or intermittent splash and spillage conditions, abrasive blast to "white metal" in accordance with Steel Structures Painting Council Specifications SP-5 or NACE Specification #1. For fumes and dry environments, abrasive blast to "near white" in accordance with SP-10 or NACE #2. A minimum surface profiles of 3.0mm is required.

Application Instructions

Liquid Steel Power Patch is a two-component patching/filling compound for concrete consisting of resin and hardener.



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Liquid Steel Aero Graph is a two-component patching/filling compound for steel consisting of resin and hardener.

1. Pour Liquid Steel Paste Filler resin and hardener into a clean pail. Stir well for 2 minutes or longer and scrape the sides and bottom of the pail to assure that a uniform blend is attained. A jiffy type mechanical mixer operated at low speed is recommended for best results. Do not mix more than 4 liters at a time
2. Apply by trowel or putty knife. Stroke in several directions to fill the holes and voids. Normally only a very thin film should remain on the substrate
3. For areas that require higher filling contact our technical department at 800.349.7325 or information@prosealproducts.com.
4. It is not necessary to re-prime the area if coating application is within the recommended re-coat time.

Mixing Ratio

Product	Solids	Weight	Volume
Liquid Steel Powe Patch		50	1
Liquid Steel Power Patch	100%	50	1
Liquid Steel Aero Graph		66.6	3
Liquid Steel Aero Graph	100%	33.3	1

Handling Properties Working Time

Temperature	Power Patch	Aero Graph
10°C	30 minutes	30 minutes
21°C	20 minutes	20 minutes
32°C	10 minutes	10 minuters

Time to re-coat

Temperature	Power Patch	Aero Graph
10°C	4 hours	4 hours
21°C	3 hours	3 hours
32°C	2 hours	2 hours



Pro-Seal Liquid Steel Saturant[®]

High strength saturant resin

Product Description

Pro-Seal Liquid Steel Saturant[®] is used to provide a high-build laminate system, which combines the proven strength of carbon, fiberglass, and other reinforcing with 100% solids thermosetting polycarbon/polycarbonate polyamine copolymer resin.

Advantages

- May be applied to a variety of substrates
- Seamless surfacing provides vapor barrier
- Maximun impact and chemical resistance
- Not affected by most temperature variations

Chemical Resistance

For specific resistance information contact our technical department at 800.349.7325 or information@prosealproducts.com

Substrate

Suitable substrates include concrete, concrete block and steel surfaces

Surface Preparation

Abrasive blasting or scarification to remove laitance and surface contaminants is recommended. Concrete must be cured, free of oils, curing solutions and form release agents, dust and must be dry at the time of the application. Use ASTM D 4263 (plastic sheet test method) to ensure concrete is moisture free. If moisture is detected, contact our technical

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department at 800.349.7325 or information@prosealproducts.com for proper fluid removal instructions.

Holes, voids, and cracks should be treated prior to application of Pro-Seal Liquid Steel Saturant.

Technical

Information	Value
Reinforcement layer approximately	35-55ft ² /gal*
Application temperature	8°C
Packaging	Standard 4-gallon unit

*Depending on type of reinforcement

Application Instruction

Crack Repair: All cracks .10 mm must be injected with Pro-Seal

- Primer:** Use only Liquid Steel Primer. Mechanically mix resin, then hardener, and then blend for 1-3 minutes. Apply by roller at 2-5 mm wet film thickness. Do not entrain air while mixing.
- Paste Filler:** Fill all holes, voids, cracks etc. with appropriate Pro-Seal Liquid Steel Paste Filler before the application of Liquid Steel Saturant. Consult manufacturer for appropriate application techniques. A minimum of 5-6 minutes is required before saturant installation.
- Reinforcement Layer for Standard System:** Mechanically mix Liquid Steel Saturant Resin and Liquid Steel Saturant Hardener. Apply an even, uniform base coat with medium nap roller at recommended coverage ranging from 35-55ft²/gal. Depending on reinforcement, contact our technical department at 800.349.7325 or information@prosealproducts.com for specifics. Hand-apply reinforcing materials into the saturant. Be sure to remove all air pockets and smooth to the contour of the surface. Use a spring steel or plastic trowel to press material into Liquid Steel Saturant. Apply an additional coat of saturant over the reinforcing material at the rate of from 35-55ft²/gal. If a topcoat is required, it must be installed within 24 hours. Always use Liquid Steel TopCoat on U.V. exposed applications

Mixing Ratio

Product	Solids	Weight	Volume
Liquid Steel Saturant Resin		66.6	3
Liquid Steel Saturant Hardener		33.3	1

Handling Properties Working Time

Temperature	Minimum	Time
10°C		2 hours
21°C		1 hours
32°C		30 minutes

Time to Place in Service

Temperature	Minimum	Time
10°C		68 hours
21°C		96 hours
32°C		72 hours

Pro-Seal Liquid Steel Carbon Fiber *HM-300 & HTS 300-G®*

Products Description

Pro-Seals High tensile strength carbon fiber reinforcing materials that are encapsulated in Liquid Steel to create a wrap or blanket composite that provides a full range of high-performance structural integrity reclamation characteristics.

Liquid Steel Structural Reclamation System is a fast-economical structural repair bonding system that in most cases, can replace external steel, bonding to the exterior structural membranes. The Liquid Steel System reduces, down time, installation time and the construction cost of repairs.

Advantages

- Increases strength
- Flexural
- Confinement



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Pro-Seal Liquid Steel structural repair material



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- Fatigue enhancement
- Control of crack propagation
- Strength to thickness ratio
- Economical
- Shear
- Blast resistance
- Light weight
- Durable
- Fast installation

Uses Walls, beams, and slabs

- Columns and chimneys
- Silos and tanks
- Pipes and tunnels
- Much more

Pro-Seal Liquid Steel HM-300[®] is a high modulus Carbon Fiber reinforcement material

Fiber density	1.82g/cm ³
Fiber modulus	1.80 x 106kg/cm ³
Fiber area weight density	300 g/cm ²
Design thickness (1)	0.165mm
Design tensile strength (2)(3)	30,000 kg/cm ³
Design tensile modulus (2)(3)	1.81 x 106kg/cm ³
Tensile elongation	Ultimate 0.8%
Sheet width	50 cm
Packaging	60.9 cm width x 82.m ² length = 50m ² per roll

Pro-Seal Liquid Steel HTS 300-G[®] is a high tensile strength carbon fiber reinforcement material

Fiber density	1.82g/cm ³
Fiber modulus	1.35 x 106kg/cm ³
Fiber area weight density	300 g/cm ³
Design thickness (1)	0.165mm
Design tensile strength (2)(3)	35,000 kg/cm ³
Design tensile modulus (2)(3)	2.35 x 106kg/cm ³
Tensile elongation	Ultimate 1.5%
Sheet width	50 cm
Packaging	60.9 cm width x 82.m ² length = 50m ² per roll

Notes

(1) Sheet design thickness mm is based on total thickness of fibers only in a unit width. From experience the actual cured thickness of a sheet average is 0.6-1.0 mm

(2) Design tensile strength (kg/cm²) is derived from the strength of modulus per sheet width divided by the design of thickness.

(3) Allowable tensile strength is suggested to be 1/3 of the ultimate tensile strength for long-term applications and 2/3 of the ultimate tensile strength for short-term applications. Contact our technical department at 800.349.7325 or information@prosealproducts.com for specifics.

Pro-Seal Liquid Steel TopCoat[®]

Single component interior and exterior U.V. protective coating

Product Description

Pro-Seal Liquid Steel TopCoat[®] is a U.V. protective, fire resistant polycarbon/polycarbonate single component, pigmented water borne emulsion system that is designed for concrete and asphalt surfaces and as a topcoat for Liquid Steel System. The TopCoat may be installed in interior or exterior



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applications and must be installed over all U.V. exposed Liquid Steel applications.

Uses

- TopCoat for the Liquid Steel System
- Asphalt coating
- Exterior wall coating
- Interior wall coating
- Use where U.V. exposure exists

Advantages

- Permits migration of moisture vapor from the substrate because it is breathable
- U.V. resistant
- Weather resistant, excellent color retention
- Re-coatable and repairable
- Heat reflective when applied over asphalt
- Fire resistant

Technical

Information	Value
Storage	10°C-32°C in a dry place away from direct sunlight or other hazardous conditions
Shelf life	18 months*
ASTM E 84	
Flame spread	14
Fuel contribution	0
Fire rating, class	1A
ASTM D 2240	
Shore hardness	71
Cure time @ 22°C	24 hours
Weight per liter	2.84 liters
Packaging	18.93 liters pail

*when stored properly

Limitations

- Not to be used as a waterproofing membrane
- Do not use in areas of moderate to aggressive chemical exposures
- Do not use in high traffic areas
- Do not use over surface contaminants such as curing compounds, grease oil, wet concrete, or other

Surface Preparation

1. Surface and air temperature must be at least 10°C during installation and initial cure
2. Surface must be clean and free from any defects, or laitance.

Application Instructions

1. Apply by brush, roller, or airless spray equipment
2. Recommended thickness is typically in the range of 8-10 mm DFT (2 coats)

Cautions

Keep out of reach of children. May cause skin or eye irritation. May be harmful if swallowed. Do not induce vomiting. Use in well ventilated areas. Contact a physician immediately and always seek a physician's advice regarding first aid. Use only in commercial or industrial applications. Use only on intended surfaces. Contact manufacturer for specific application uses. See material safety data sheet for additional cautions.

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Saddle Strapping to increase structural values



Interior and exterior column reinforcement to recapture and maintain structural values



Wall reinforcement to recapture and retain structural values



Entire structural reclamation projects **Limited Warranty**

We warrant our product to be free of defects in material and workmanship; and to be in accordance with our company quality control standards. All data, statements, and recommendations made herein are based upon information we believe to be reliable, but are made without any representation, guarantee, or warranty of accuracy. Our products are sold on the condition that the user himself will evaluate them, as well as our recommendations, to determine their suitability for the user's own purpose before adoption. Also, statements regarding the use of our products or processes are not to be construed as recommendations for their use in violation of any patent rights or in violation of any applicable laws or regulations. Liability under any condition shall be limited to replacement of material only. Pro-Seal Products® offers extended long term warranty's when systems are applied by an authorized applicator on Pro-Seal approved projects.



Averhead slab reinforcement systems



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