

Silplate® Mass S High-Temperature Coating

New Construction and Maintenance Solutions For High-Temperature Furnaces

The Silplate® family of products was developed by Unifrax to meet the demanding performance requirements of the steel industry. The uses of high-performance fibers, refractory oxides and proprietary binder systems have significantly improved the physical and thermal characteristics of conventional refractory ceramic fiber product forms. These developments have resulted in a new class of insulating materials that extend the benefits of Low Bio Persistent (LBP) fibers into applications that were not practical with existing insulating products.

Silplate structural insulation is recognized by many global steel makers as the preferred backup insulation in iron and steel transfer vessels. This material combines high compression strength, thermal stability, and excellent insulating performance when used as backup insulation in transfer ladles, torpedo cars, and steel tundishes.

The first products developed in the Silplate family were a series of insulating boards. Recently Unifrax engineers expanded the product portfolio by introducing a series of mastic coatings based on the Silplate technology. Silplate Mass S coating combines LBP fibers, refractory oxides and Poly Crystalline wool fibers with an inorganic binder system to create a wet mix.

Based on its composition, Silplate Mass S is an “unclassified” material that can be applied as a hot face lining over brick, castable or edge grained fiber linings.



Once dried, this mastic provides a hard, tough armor-like shell over the surface of the substrate material. The cured Silplate Mass S surface is highly resistant to flame impingement and flue gas velocities common in industrial furnaces and kilns.

At high temperatures (>1300°C/2372°F) Silplate Mass S forms magnesium silicate, creating a ceramic bond between the fibers and fillers in the material. This bond provides high physical stability to the lining surface and protects the backup material over which it is applied. The ceramic bond makes the product extremely stable at high temperatures. This thermal stability protects the substrate material from thermal shrinkage and reduces maintenance to the hot face lining.

Installation Techniques

Silplate Mass S may be installed using a variety of techniques. We strongly recommend that you contact Unifrax for installation procedures best suited for your application. Some installation techniques include:

- Silplate Mass S Module System – contact Unifrax Application Engineering for more details.
- Placement through a furnace or vessel casing with a pneumatic pump to repair lining hot spots.
- Troweled on the surface of the refractory or edge grained fiber lining to increase service temperature.
- Pumped, troweled or gunned over existing linings to caulk cracks and extend lining life.
- Hot gunning over an existing furnace lining to replace lost or damaged refractory.

Typical Applications



Hot Spot Repair

Mineral wool is frequently used as backup insulation behind refractory brick or castable furnace linings. Over time this backup insulation may degrade due to burnout of the organic binders, over compression

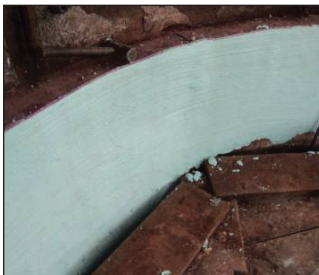
or shrinkage of the material. The hot spots which result from the failure of the backup insulation are easily repaired without shutting down the unit. Silplate Mass S may be pumped in through the casing or poured in place to stabilize the working lining.



Shop Fabrication of Ducts and Stacks

Silplate Mass S is troweled in place over the module face to provide a lining surface resistant to high gas velocities and temperature. The material is easy to install in the shop. Prior to

shipment, the lining should be dried out by heating the lining surface to 300°F. The construction technique is ideally suited to the fabrication of furnaces and vessels that must be shipped for field assembly.



Application Over Refractory Linings

Silplate Mass S may be applied in thicknesses up to 1" ($\frac{1}{2}$ " in overhead applications) over the refractory or fiber surface. The mastic coating can be placed by gunning or hand troweling over the

new or existing linings. Application of Silplate Mass S will increase resistance to gas velocity, protect the lining from direct flame impingement, and repair or eliminate cracking due to thermal shrinkage.



Door for Heat Recovery Coke Oven

Installation of Silplate Mass has permitted the successful application of ceramic fiber door linings in the severe environment of the heat recovery coke oven. The door lining

pictured here features the "hard module" concept with a Silplate Mass layer protecting the fiber lining from high temperatures, chemical attack and mechanical abuse.

Industries Served



Silplate Mass S can be installed successfully over a wide range of applications. The material can be used to improve new linings or repair existing furnaces in the industries listed below:

- Iron and Steel
- Forging
- Aluminum
- Refining
- Chemical Processing
- Ceramic
- Power Generation
- Incineration
- Metals Processing



Silplate Mass S Physical and Chemical Characteristics

Description		Silplate Mass S		Silplate Mass S
Classification Temperature	°C	1500	°F	2732
Max Temperature	°C	1500	°F	2732
Wet Density	Kg/m ³	1280	Lb/ft ³	80
Dry Density	Kg/m ³	800	Lb/ft ³	50
Basic Composition		Magnesia-Silica		Magnesia-Silica
Shrinkage @ 1400°C	%	~ 1.0%	%	~1.0%
Shrinkage @ 1500°C	%	~1.5%	%	~1.5%

The test data shown are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

Main Characteristics

- Low thermal conductivity
- Excellent thermal shock resistance
- Strong adhesion to any surface
- Low thermal shrinkage
- Surface hardness
- Mechanical strength
- Resistance to Flue Gas Velocity


For additional information about product performance, to identify the recommended product for your application, or for a specific heatflow calculation, please contact the Unifrax Application Engineering Group at 716-768-6460.

Application Methods

- Trowel
- Gunning
- Pouring
- Molding
- Pump Injection

Data are average results of tests conducted under standard procedures and are subject to variation.

Refer to the product Safety Data Sheet (SDS) for recommended work practices and other product safety information.



Form C-1561
Effective 4/16
© 2016, Unifrax I LLC
All Rights Reserved
Printed in USA
Page 4 of 4

The following is a registered trademark of Unifrax: Silplate.

The test data shown are average results of tests conducted under standard procedures and are subject to variation. Results should not be used for specification purposes.

Product Information Sheets are periodically updated by Unifrax. Before relying on any data or other information in this Product Information Sheet, you should confirm that it is still current and has not been superseded. A Product Information Sheet that has been superseded may contain incorrect, obsolete and/or irrelevant data and other information.



Unifrax I LLC
Corporate Headquarters
600 Riverwalk Parkway
Suite 120
Tonawanda, NY 14150
Telephone: 716-768-6500
Internet: www.unifrax.com
Email: info@unifrax.com