



Atlas Minerals & Chemicals, Inc.



DATA SHEET

5-20PI (4-15)
Supersedes 5-20PI (8-13)

VITROBOND® CORROSION RESISTANT MORTAR

DESCRIPTION AND TYPICAL USES

VITROBOND is a plasticized, hot-pour, silica filled sulfur based mortar which was introduced by ATLAS in 1931 as its first corrosion resistant mortar. Since that time, VITROBOND has become the industry standard for economical hot-pour cements. The exclusive formulation of VITROBOND produces a compound with the following unique combination of properties:

- Improved thermal shock resistance, yet does not impart the objectionable odor usually associated with sulfur cements.
- Specially selected aggregate that will not settle out upon melting.
- Molten cement that is extremely fluid and pours quite easily without lumps.

VITROBOND is used principally with acid resistant brick to construct corrosion resistant masonry sheathing to protect vessels, processing tanks and equipment, storage tanks, pickling tanks, manholes, waste treatment tanks and sumps. It is also used in the installation of corrosion resistant industrial floors. VITROBOND may be used in a variety of special applications. Consult ATLAS' Technical Service Department for specific information. More highly plasticized varieties of VITROBOND are used in the installation of corrosion resistant joints for vitrified clay pipe. VITROBOND complies with the specifications of ASTM C287 for chemical resistant sulfur mortar.

CHEMICAL RESISTANCE

VITROBOND is resistant to non-oxidizing acids, dilute oxidizing acids and acidic and neutral salts at temperatures up to 190°F (88°C). It cannot be used in areas subject to hydrofluoric acid or fluoride salts or with alkalis, aliphatic, aromatic or chlorinated hydrocarbons, ketones or esters. Refer to the chemical resistance chart for specific information.

PACKAGING - VITROBOND

50 lb. (22.7 kg.) carton containing 5 lb. (2.3 kg.) ingots

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
Density	ASTM C905	136 lb./cu. ft. (2.18 g./cc.)
Bond Strength, 48 hours @ 77°F (25°C)	ASTM C321	120 psi. (0.83 MPa)
Tensile Strength, 48 hours @ 77°F (25°C)	ASTM C307	700 psi. (4.83 MPa)
Compressive Strength, 48 hours @ 77°F (25°C)	ASTM C579	7,000 psi. (48.3 MPa)
Flexural Strength, 48 hours @ 77°F (25°C)	ASTM C580	1,800 psi. (12.4 MPa)
Coefficient of Thermal Exp., in./in./°F (cm./cm./°C)	ASTM C531	2.1 x 10 ⁻⁵ (3.8 x 10 ⁻⁵)
Strength Retained after Thermal Shock	ASTM C287	400 psi. (2.75 MPa)
Tend. of Aggregate to Settle, Max. Variation from Unity	ASTM C287	0.15

VITROBOND CHIPS

25 lb. (11.3 kg.) carton

MIXING AND APPLICATION

Break up VITROBOND ingots and place in a suitable clean, dry kettle. Melt over low heat, stirring occasionally with metal rod or ladle. Recommended pouring temperature is from 275°F (135°C) to 295°F (146°C). Use of a thermometer is suggested for best results. Discard material if heated above 320°F (160°C) or if ignited. Sulfur fires can be extinguished by covering with wet burlap to cut off air supply and removing heat source. If molten VITROBOND foams due to entrapped air, continue heating and stirring until the liquid becomes smooth again.

For installation information, refer to the specific ATLAS Data Sheet or contact ATLAS' Technical Service Department for assistance.

STORAGE AND SHELF LIFE

Store all materials in a cool, dry environment. Keep all the materials out of direct sunlight. Ideal storage temperature is 75°F (24°C). In unopened original containers, the materials referred to in this Data Sheet have a shelf life of approximately one year.

NOTE: ATLAS makes it a practice to continuously update and enhance our CCM (Corrosion Resistant Construction Materials) products. For the most recent version of any Data Sheet, please visit our Web site at www.atlasmin.com.

PRODUCT SPECIFICATION

The system shall be VITROBOND as manufactured by Atlas Minerals & Chemicals, Inc.

PRECAUTIONS

The materials referred to in this Data Sheet are for Industrial Use Only. They contain materials that present handling and potential health hazards. Consult Safety Data Sheets and the container labels for complete precautionary information.

TECHNICAL SERVICES

ATLAS maintains a staff of Technical Service Representatives who are available to assist you with the use of ATLAS products. In the event of difficulties with the application of ATLAS materials, the installation should be stopped immediately and ATLAS' Technical Service Department consulted for assistance.

WARRANTY

ATLAS warrants that its products will be free from defects in workmanship and materials under normal use for a period of one (1) year from the date of shipment by ATLAS (provided the products are installed before the expiration of the shelf life). THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR THE PURPOSE FOR THIS PRODUCT WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ATLAS' LIABILITY FOR ALLEGED BREACH OF THIS WARRANTY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT (BUT NOT INCLUDING REMOVAL OF THE DEFECTIVE PRODUCT OR INSTALLATION OF REPLACEMENT PRODUCTS). ATLAS SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES DURING THE WARRANTY PERIOD OR THEREAFTER. **ATLAS' WARRANTY IS VOIDED IF PAYMENT FOR PRODUCT IS NOT RECEIVED IN FULL.**

CHEMICAL RESISTANCE OF VITROBOND® CORROSION RESISTANT MORTAR (5-20PI)

	80°F	H
Acetaldehyde	C	N
Acetic Acid, to 10%	R	R
Acetic Acid, Glacial	N	N
Alum or Aluminum Sulfate	R	R
Aluminum Chloride, Nitrate	R	R
Ammonium Chloride, Nitrate, Sulfate	R	R
Ammonium Hydroxide	N	N
Amyl Acetate	N	N
Amyl Alcohol	N	N
Aniline	N	N
Aqua Regia	N	N
Barium Chloride, Nitrate, Sulfate	R	R
Barium Hydroxide	N	N
Barium Sulfide	N	N
Benzene	N	N
Benzene Sulfonic Acid, 10%	R	R
Benzoic Acid	R	R
Boric Acid	R	R
Bromine Water	N	N
Butyl Acetate	N	N
Butyl Alcohol	R	R
Butyric Acid	R	N
Cadmium Chloride, Nitrate, Sulfate	R	C
Calcium Bisulfite	R	R
Calcium Chloride, Nitrate, Sulfate	R	R
Calcium Hydroxide	N	N
Carbon Disulfide	N	N
Carbon Tetrachloride	N	N
Chlorine Dioxide, Water Solution	N	N
Chlorine, Dry	C	N
Chlorine, Wet	N	N
Chlorine Water	N	-
Chloroacetic Acid, to 10%	C	N
Chlorobenzene	N	N
Chloroform	N	N
Chromic Acid, to 20%	R	C
Chromic Acid, above 50%	N	N
Citric Acid, to 10%	R	R
Copper Chloride, Nitrate, Sulfate	R	C
Dichloroacetic Acid, 10%	C	N
Dichlorobenzene	N	N
Diethyl Ether	N	N
Ethyl Acetate	N	N
Ethyl Alcohol	R	R
Ethyl Sulfate	N	N
Ethylene Dichloride	N	N
Ethylene Glycol	R	R
Fluosilicic Acid	N	N

	80°F	H
Formaldehyde	R	R
Formic Acid	C	N
Gasoline	N	N
Glycerine	R	R
Gold Cyanide	R	R
Hexane	N	N
Hydrobromic, Hydrochloric, Hydrocyanic Acid	R	R
Hydrofluoric, Hydrofluosilicic Acid	N	N
Hydrogen Peroxide	N	N
Hydrogen Sulfide Gas, Dry or Wet	R	R
Iron Chloride, Nitrate, Sulfate	R	R
Isopropyl Ether	N	N
Kerosene	N	-
Lactic Acid	R	R
Lead Acetate, Nitrate	R	R
Linseed Oil	R	C
Magnesium Chloride, Nitrate, Sulfate	R	R
Magnesium Hydroxide	N	N
Maleic Acid	R	C
Mercuric Acetate	R	R
Methyl Acetate	N	N
Methyl Alcohol	R	R
Methyl Ethyl Ketone	N	N
Methyl Sulfate	N	N
Mineral Oil	N	N
Mineral Spirits	N	N
Muriatic Acid	R	R
Nickel Chloride, Nitrate, Sulfate	R	R
Nitric Acid, to 20%	R	R
Nitric Acid, 40%	R	N
Nitric Acid, above 50%	N	N
Nitrobenzene	N	N
Oleic Acid	R	C
Oxalic Acid	R	R
Perchloric Acid, to 30%	N	N
Phenol, to 5%	N	N
Phosphoric Acid	R	R
Phosphorous Acid	R	R
Phosphorous Trichloride	N	N
Phthalic Acid	R	N
Picric Acid	N	N
Potassium Bicarbonate	R	C
Potassium Carbonate	R	N
Potassium Chloride, Nitrate, Sulfate	R	R
Potassium Cyanide, Ferricyanide, Ferrocyanide	R	N
Potassium Hydroxide	N	N
Pyridine	N	N
Rochelle Salt	R	R

	80°F	H
Salicylic Acid	R	R
Silver Nitrate	R	R
Sodium Acetate	R	R
Sodium Bicarbonate	R	C
Sodium Carbonate	R	N
Sodium Chloride, Nitrate, Sulfate	R	R
Sodium Cyanide	R	R
Sodium Hydroxide	N	N
Sodium Hypochlorite	N	N
Sodium Sulfide	N	N
Sodium Sulfite, Thiosulfate	R	R
Soya Oil	R	C
Stearic Acid	R	C
Sulfur Dioxide Gas, Dry or Wet	R	R
Sulfur Trioxide Gas, Dry	R	R
Sulfur Trioxide Gas, Wet	C	N
Sulfuric Acid, to 50%	R	R
Sulfuric Acid, 80%	R	C
Sulfuric Acid, 93%	C	N
Sulfuric Acid, above 93%	N	N
Sulfurous Acid, to 10%	R	R
Tannic Acid	R	R
Tartaric Acid	R	R
Tin Chloride, Sulfate	R	R
Toluene	N	N
Trichloroethylene	N	N
Trisodium Phosphate	C	N
Tung Oil	R	C
Urea	R	R
Xylene	N	N
Zinc Chloride, Nitrate, Sulfate	R	R

(4-15)

KEY

R – Recommended

N – Not Recommended

C – Conditional; May be serviceable if the contaminant is immediately removed or washed off the surface.

H – Up to temperature limitations of the mortar. When the chemical boils below this point, resistance is shown to the boiling point.

Note - The information presented in the chemical resistance tables is based on judgments derived from laboratory testing and field service performance. The tables have been prepared as a guide to performance. No guarantee of results is made or implied and no liability in connection with this information is assumed. The information presented herein should be supplemented by in-service testing. The data furnished in the tables may be revised on the basis of further testing.