Atlas Minerals & Chemicals, Inc.

DATA SHEET

5-52PI (1-93[3])
Supersedes 5-52PI (1-84)

VITREX® K MORTAR

DESCRIPTION AND USES

VITREX K MORTAR is a potassium silicate corrosion resistant mortar which sets by chemical action. When cured, VITREX K MORTAR exhibits outstanding chemical resistance to dilute and high concentrations of oxidizing and non-oxidizing acids at temperatures to 1,700°F (927°C). Due to its excellent thermal and chemical resistance, VITREX K MORTAR is suitable for jointing acid resistant masonry sheathings in stacks, chimneys, ducts, absorbers, scrubbers and other high temperature process equipment. VITREX K MORTAR complies with the specifications of ASTM C466 for chemically setting silicate and silica chemical resistant mortar.

CHEMICAL RESISTANCE

When cured, VITREX K MORTAR is resistant to many organic and inorganic acids, salts and solvents. Chemical resistant masonry sheathings jointed with VITREX K MORTAR provide excellent protection against aggressive corrosives, such as sulfuric, nitric and chromic acids at most concentrations. VITREX K MORTAR is not recommended for use with alkalies, hydrofluoric acid or fluoride salts.

AVAILABLE COLORS

VITREX K MORTAR is available in white only.

PACKAGING

VITREX K MORTAR
155 lb. (70.3 kg.) Unit Consisting of:
One - 5-gal. pail of Liquid (50 lb. [22.7 kg.])*
Two - bags of Powder (52 lb. 8 oz. [23.8 kg.]) ea.

*VITREX K Liquid is also available in a 550 lb. (249.5 kg.) drum which requires 22 bags of Powder (52 lb. 8 oz. [23.8 kg.] ea.).

MIXING OF THE VITREX K MORTAR

VITREX K MORTAR is prepared by mixing 2.1 parts of VITREX K Powder to one part of VITREX K Liquid by weight. When preparing the mortar, it is recommended that the liquid be placed in the mixing container and the powder added to the liquid. Mix ratios may be varied slightly without harm to the material to accommodate environmental conditions. Mechanical mixing of the mortar is recommended using a KOL or equivalent mixer.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
Density	ASTM C905	115 lb./cu. ft. (1.84 g./cc.)
Bond Strength, 7 days @ 77°F (25°C)	ASTM C321	150 psi. (1.04 MPa)
Tensile Strength, 7 days @ 77°F (25°C)	ASTM C307	600 psi. (4.14 MPa)
Compressive Strength, 7 days @ 77°F (25°C)	ASTM C579	5,000 psi. (34.5 MPa)
Flexural Strength, 7 days @ 77°F (25°C)	ASTM C580	1,800 psi. (12.4 MPa)
Water Absorption	ASTM C413	18%
Linear Shrinkage	ASTM C531	2.8%

When mechanically mixing, the batch size should not exceed 30 lb. (13.6 kg.). When mixing by hand, use a shallow mixing pan (stainless steel, aluminum or porcelain). Thoroughly mix only the amount of mortar that can be used in 20 minutes. The mortar cannot be used after it begins to stiffen. Do not attempt to retemper. Remove all material from the mixing container before another batch is mixed. When working at temperatures above 85°F (29°C), use small batches no larger than 6 lb. (2.7 kg.). If the working life is still too short, cool the VITREX K Liquid before using. When working at temperatures below 60°F (16°C), keep both the powder and the liquid in a warm storage area (75°F [24°C]) for 24 hours prior to use. Minimum air and substrate temperature for application is 50°F (10°C).

APPLICATION OF THE VITREX K MORTAR

VITREX K MORTAR is buttered on chemical resistant brick using the Bricklayer's method to achieve a nominal 1/8" (3.2 mm.) joint thickness. Brick should be clean, dry and at a moderate temperature before installing. Temperature at the time of installation

TYPICAL WORKING & SETTING TIMES OF THE VITREX K MORTAR

Temperature	Working Time	Setting Time
60°F (16°C)	60-90 min.	4-1/2 to 5-1/2 hours
70°F (21°C)	30-40 min.	2-1/2 to 4 hours
80°F (27°C)	15-25 min.	1-1/2 to 2-1/2 hours
90°F (32°C)	5-10 min.	1 to 1-1/2 hours

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should be between 60°F (16°C) and 85°F (29°C). When the temperature is below 60°F (16°C), a portable heater should be used to bring the temperature up to the minimum. After the joints have hardened, it is not necessary to acid treat the finished structure. During and after completion of the installation, the area must be kept clean, dry and free from foreign matter, such as dirt, portland cement, plaster and other contaminants which would interfere with the setting of the cement.

CLEANING OF TOOLS AND EQUIPMENT

Steel wool, soap and warm water will remove the materials referred to in this Data Sheet from mixing tools and equipment if cleaning is done immediately after use. Solvents, such as methyl ethyl ketone, toluene or xylene, will have to be used after the material has begun to harden. Fully hardened material will have to be removed by mechanical means.

Dispose of residues and wastes in accordance with the directions in the Material Safety Data Sheets and government regulations.

STORAGE AND SHELF LIFE

Store all materials in a cool, dry environment. Keep all materials out of direct sunlight. Ideal storage temperature is 75°F (24°C). Protect from freezing. If VITREX K Liquid freezes, warm to 100°F (38°C) and stir vigorously before using. In unopened original containers, VITREX K Powder has a shelf life of approximately nine months. VITREX K Liquid has a shelf life of approximately one year.

PRODUCT SPECIFICATION

The system shall be VITREX K MORTAR 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 Material 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.**

Note: Atlas makes it a practice to continuously update and enhance our CCM (Corrosion Resistant Construction Materials) products. This may result in slight discrepancies between our printed Data Sheets and the current version. For the most recent version of any Data Sheet, please visit our Web site at www.atlasmin.com

CHEMICAL RESISTANCE OF VITREX® K (5-52PI)

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

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

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

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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.