



Atlas Minerals & Chemicals, Inc.



# DATA SHEET

5-21PI (4-15)  
Supersedes 5-21PI (8-13)

## CARBO-VITROBOND® CORROSION RESISTANT MORTAR

### DESCRIPTION AND TYPICAL USES

CARBO-VITROBOND is a 100% carbon filled, plasticized, hot-pour, sulfur based mortar. It is easily melted, does not settle out in the pot, has very little odor, pours smoothly and freely and is dense and strong. The principle use of CARBO-VITROBOND is for corrosive conditions involving hydrofluoric acid or fluoride salts. It has the same chemical resistance as VITROBOND as well as fluoride resistance. CARBO-VITROBOND can be used as a bonding agent for acid resistant brick in lining reaction vessels, storage tanks, towers, trenches, sumps, processing tanks and equipment, pickling tanks for stainless steel and waste treatment tanks. It is also used in the installation of corrosion resistant industrial floors. CARBO-VITROBOND may be used in a variety of special applications. Consult ATLAS' Technical Service Department for specific information.

### CHEMICAL RESISTANCE

CARBO-VITROBOND is resistant to non-oxidizing and dilute oxidizing acids, such as hydrofluoric acid and acidic and neutral salts, including fluoride salts, at temperatures up to 190°F (88°C). It cannot be used above that point due to crystalline changes that occur in sulfur at high temperatures. CARBO-VITROBOND is used only where hydrofluoric acid or fluoride salts are present since VITROBOND possesses similar chemical resistance and is a more economical mortar. CARBO-VITROBOND is not recommended for use with alkalis, aliphatics, aromatics or chlorinated hydrocarbons, ketones or esters. Refer to the chemical resistance chart for specific information.

### MIXING AND APPLICATION

Break up CARBO-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 280°F (138°C) to 300°F (149°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

### PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
Density	ASTM C905	125 lb./cu. ft. (2.00 g./cc.)
Bond Strength, 7 days @ 77°F (25°C)	ASTM C321	200 psi. (1.38 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	7,000 psi. (48.3 MPa)
Flexural Strength, 7 days @ 77°F (25°C)	ASTM C580	1,200 psi. (8.27 MPa)
Coefficient of Thermal Exp., in./in./°F (cm./cm./°C)	ASTM C531	2.3 x 10 <sup>-5</sup> (4.1 x 10 <sup>-5</sup> )
Thermal Shock, Retained	ASTM C287	40%
Tendency of Aggregate to Settle	ASTM C287	0.10

by covering with wet burlap to cut off air supply and removing source of heat. If molten CARBO-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.

### PACKAGING

#### CARBO-VITROBOND

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

#### CARBO-VITROBOND CHIPS

25 lb. (11.3 kg.) carton

### 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.

### PRODUCT SPECIFICATION

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

**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](http://www.atlasmin.com).**

**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 CARBO-VITROBOND® CORROSION RESISTANT MORTAR (5-21PI)

	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	R	R

	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	R	R
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	N
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.