Atlas Minerals & Chemicals, Inc.

DATA SHEET

5-30PI (1-99[3])
Supersedes 5-30PI (1-98 & 1-93)

ALKOR® MORTAR

DESCRIPTION
ALKOR MORTAR is a specially formulated furan mortar for chemical resistant brick construction.

TYPICAL USES
ALKOR MORTAR is recommended for pickling tanks, floors, containment dikes, sumps and trenches requiring the chemical, physical or thermal resistance of brick construction.
With its broad range of chemical resistance and 350°F (177°C) temperature resistance, ALKOR MORTAR is ideal for the chemical processing and metal treatment industries.

CHEMICAL RESISTANCE
ALKOR MORTAR is resistant to organic acids, solvents, oils, greases and salts. It is also resistant to many inorganic acids and alkalies. Refer to the chemical resistance chart for specific information. ALKOR MORTAR complies with the specifications of ASTM C395 and ANSI A118.5 for chemical resistant furan resin mortars.

AVAILABLE COLORS
ALKOR MORTAR is available in black only.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
Density	ASTM C905	102 lb./cu. ft. (1.63 g./cc.)
Bond Strength, 7 days @ 77°F (25°C)	ASTM C321	Brick fails
Tensile Strength, 7 days @ 77°F (25°C)	ASTM C307	900 psi. (6.21 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	1,800 psi (12.4 MPa)
Coefficient of Thermal Exp., in./in./°F (cm./cm./°C)	ASTM C531	1.2×10^{-5} (2.2×10^{-5})
Water Absorption	ASTM C413	0.2%
Temperature Resistance Continual	—	350°F (177°C)
Linear Shrinkage	ASTM C531	0.4%

PACKAGING
ALKOR MORTAR
156 lb. (70.8 kg.) Unit Consisting of:
One - 5-gal. pail of Resin (48 lb. [21.8 kg.])
Two - bags of Powder (54 lb. [24.5 kg.]) ea.

FURAN CATALYST LT Powder
20 lb. (9.1 kg.) bag

ESTIMATING TABLE – ALKOR MORTAR

Brick Size	Installed Thickness	Pieces per Sq. Ft.	1/8" Wide x Full Depth Joint Square Feet per Unit 156 lb. Unit	1/8" Setting Bed & 1/8" Wide x Full Depth Joint Square Feet per Unit 156 lb. Unit
8" x 3-7/8" x 1-3/16"	1-3/16"	4.431	330 sq. ft.	100 sq. ft.
8" x 3-7/8" x 1-3/8"	1-3/8"	4.431	285 sq. ft.	95 sq. ft.
8" x 4" x 1-3/8"	1-3/8"	4.297	295 sq. ft.	95 sq. ft.
8" x 4" x 1-1/2"	1-1/2"	4.297	270 sq. ft.	95 sq. ft.
8" x 3-3/4" x 1-1/8"	1-1/8"	4.574	345 sq. ft.	100 sq. ft.
8" x 3-3/4" x 2-1/4"	2-1/4"	4.574	170 sq. ft.	75 sq. ft.
8" x 3-3/4" x 2-1/4"	3-3/4"	7.462	70 sq. ft.	45 sq. ft.
8" x 3-3/4" x 4-1/2"	3-3/4"	3.832	115 sq. ft.	60 sq. ft.
8" x 3-3/4" x 4-1/2"	4-1/2"	4.574	90 sq. ft.	55 sq. ft.

Bed Joint over membrane at 1/8": 145 sq. ft. per 156 lb. unit

Material estimating quantities may vary depending on job conditions and application techniques. Material quantities above are theoretical and do not include a safety factor.

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.

1227 Valley Road, PO Box 38 ● Mertztown, PA 19539-0038 ● 800-523-8269 ● 610-682-7171 **FAX** 610-682-9200 **E-MAIL** sales@atlasmin.com

MIX RATIO CHART – ALKOR MORTAR

ALKOR MORTAR	Parts by Weight	Weight	Volume
ALKOR MORTAR Resin	100	4 lb. (1.8 kg.)	52 fl. oz. (1.5 lieters)
ALKOR MORTAR Powder	225	9 lb. (4.1 kg.)	153 fl. oz. (4.5 liters)
Batch Size		13 lb. (5.9 kg.)	0.127 cu. ft. (3.6 liters)

TYPICAL WORKING & SETTING TIMES OF THE ALKOR MORTAR

Temperature	Working Time	Support Foot Traffic	Cure Before Steam Cleaning
60°F (16°C)	20-25 min.	8-10 hours	48 hours
75°F (24°C)	15-20 min.	3-4 hours	24 hours
85°F (29°C)	10-15 min.	2-3 hours	18 hours

TEMPERATURE DURING APPLICATION

Store ALKOR MORTAR at 70°F (21°C) to 80°F (27°C) for 24 hours prior to use. The best working characteristics of the materials will be attained when the temperature of the substrate, air, masonry units and ALKOR MORTAR components are between 70°F (21°C) and 85°F (29°C). Minimum temperature for installation is 60°F (16°C).

FURAN CATALYST LT Powder is required for installations when the temperature of the substrate, air and masonry units are between 34°F (1°C) and 60°F (16°C).

WAXING OF THE BRICK

For applications where staining would be objectionable, paraffin wax must be applied to the surface face of the brick. Factory waxed brick are available. The wax coating and excess mortar are removed from the surface of the brick by steam cleaning. Use a minimum 60 psi. nozzle pressure for cleaning. Refer to the "Typical Working & Setting Times" chart for the minimum cure time before steam cleaning.

For most industrial applications, such as tanks, sumps and containment dikes, a wax coating is not applied to the surface face of the brick. The residual material does not affect the performance of the brick lining system.

MIXING OF THE ALKOR MORTAR

Mixing of the components should be with a KOL type mixer with a 5-gallon capacity. The mixing speed should be between 60 and 75 RPM.

156 lb. (70.8 kg.) Unit

The following mixing instructions are for a batch size of 13 lb. (5.9 kg.):

a. Place 52 fluid ounces (1.5 liters) of the ALKOR MORTAR Resin in the 5-gallon capacity mechanical mixer.
b. Slowly add 9 lb. (4.1 kg.) of ALKOR MORTAR Powder. The 9 lb. (4.1 kg.) of ALKOR MORTAR Powder has an approximate volume of 153 fluid ounces (4.5 liters).
c. Mix the combined components for approximately two minutes or until all the powder is thoroughly dispersed.

Note: The amount of the powder may be varied slightly to obtain the desired consistency. Decreasing the powder component will decrease the estimated coverage and will increase the cure time of the mortar. **THE POWDER MUST BE WITHIN 5%, BY WEIGHT, OF THE SUGGESTED AMOUNT.**

APPLICATION OF THE ALKOR MORTAR

ALKOR MORTAR can be used as a mortar for chemical resistant brick construction, a bed joint over an impervious membrane or with RED FURNANE® SETTING BED (Data Sheet 5-55PI).

BED JOINT: Apply the mortar with a 3/16" V-notched trowel held at a 45 degree angle. Place a sufficient amount of mortar to provide a continuous bond coat to the specified thickness. Do not apply more mortar than can be covered in 20 to 30 minutes at 75°F (24°C) or before the mortar begins to set. Refer to the "Typical Working & Setting Times" chart.

BRICK JOINTS: Install the mortar using conventional bricklaying techniques. Apply the mortar to two sides of the brick forming a "V" profile. Place the brick on the setting bed and slide it into place to attain a 1/8" (3.2 mm.) wide joint. Strike excess mortar before the mortar begins to set.

FURAN CATALYST LT

FURAN CATALYST LT Powder blended with ALKOR MORTAR Powder is required for installations when the temperature of the substrate, air and masonry units are between 34°F (1°C) and 60°F (16°C). The ALKOR MORTAR components and FURAN CATALYST LT Powder should be stored at the working conditions for a maximum of 24 hours prior to use. The minimum temperature for installation is 34°F (1°C).

Refer to the "Typical Mix Ratios" chart. Quantities listed in the chart are starting points and may be slightly modified to conform to job site conditions. **NEVER MIX FURAN CATALYST LT POWDER DIRECTLY WITH THE ALKOR MORTAR RESIN.**

TYPICAL MIX RATIOS – FURAN CATALYST LT

Temperature	ALKOR MORTAR Resin	ALKOR MORTAR Powder	FURAN CATALYST LT Powder
34°F (1°C)	4 lb. (1.8 kg.) 52 fl. oz. (1.5 liters) 100 parts by weight	6 lb. 12 oz. (3.1 kg.) 115 fl. oz. (3.4 liters) 169 parts by weight	2 lb. 4 oz. (1.0 kg.) 38 fl. oz. (1.1 liters) 56 parts by weight
40°F (4°C)	4 lb. (1.8 kg.) 52 fl. oz. (1.5 liters) 100 parts by weight	7 lb. 3 oz. (3.3 kg.) 122 fl. oz. (3.6 liters) 180 parts by weight	1 lb. 13 oz. (816 g.) 31 fl. oz. (0.9 liters) 45 parts by weight
50°F (10°C)	4 lb. (1.8 kg.) 52 fl. oz. (1.5 liters) 100 parts by weight	7 lb. 11 oz. (3.5 kg.) 130 fl. oz. (3.8 liters) 191 parts by weight	1 lb. 5 oz. (612 g.) 23 fl. oz. (0.7 liters) 34 parts by weight
60°F (16°C)	4 lb. (1.8 kg.) 52 fl. oz. (1.5 liters) 100 parts by weight	8 lb. 2 oz. (3.7 kg.) 138 fl. oz. (4.1 liters) 202 parts by weight	14 oz. (408 g.) 15 fl. oz. (0.4 liters) 23 parts by weight

TYPICAL WORKING & SETTING TIMES OF THE FURAN CATALYST LT

Temperature	Working Time	Support Foot Traffic	Cure Before Steam Cleaning
34°F (1°C)	15-20 min.	20-24 hours	48 hours
40°F (4°C)	15-20 min.	14-18 hours	48 hours
50°F (10°C)	15-20 min.	8-10 hours	24 hours
60°F (16°C)	15-20 min.	5-7 hours	24 hours

MIXING OF THE ALKOR MORTAR WITH FURAN CATALYST LT

The following mixing instructions are for a batch size of 13 lb. 4 oz. (6.0 kg.):

a. Determine the ambient temperature and corresponding amounts of ALKOR MORTAR Powder and FURAN CATALYST LT Powder from the "Typical Mix Ratios" chart.
b. In a clean, dry 5-gallon plastic pail, combine FURAN CATALYST LT Powder and ALKOR MORTAR Powder. Mix thoroughly for approximately two minutes.
c. Place 52 fluid ounces (1.5 liters) of ALKOR MORTAR Resin in a second 5-gallon plastic pail in the 5-gallon capacity mechanical mixer.
d. Slowly add the blended powder as prepared in Step (b).
e. Mix the combined components for approximately two minutes or until all the powder is thoroughly dispersed.

CLEANING OF TOOLS AND EQUIPMENT

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

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

STORAGE AND SHELF LIFE

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

PRODUCT SPECIFICATION

The mortar shall be ALKOR MORTAR as manufactured by Atlas Minerals & Chemicals, Inc. and be certifiable for use in USDA inspected facilities and comply with the requirements of ASTM C395 and ANSI A118.5. The mortar shall consist of a furfuryl alcohol (furan) resin binder with a carbon/silica powder and be resistant to organic acids, organic solvents and inorganic acids.

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 ALKOR® MORTAR (5-30PI)

	80°F	140°F
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	R	R
Amyl Acetate	R	R
Amyl Alcohol	R	R
Aniline	N	N
Aqua Regia	N	N
Barium Chloride, Nitrate, Sulfate	R	R
Barium Hydroxide	R	R
Barium Sulfide	R	R
Benzene	R	R
Benzene Sulfonic Acid, 10%	R	R
Benzoic Acid	R	R
Boric Acid	R	R
Bromine Water	N	N
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	R	R
Carbon Disulfide	R	R
Carbon Tetrachloride	R	R
Chlorine Dioxide, Water Solution	N	N
Chlorine, Dry	C	N
Chlorine, Wet	N	N
Chlorine Water	N	-
Chloroacetic Acid, to 10%	R	R
Chlorobenzene	R	R
Chloroform	R	R
Chromic Acid	N	N
Citric Acid, to 10%	R	R
Copper Chloride, Nitrate, 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	RA	RA

	80°F	140°F
Formaldehyde	R	R
Formic Acid	R	R
Gasoline	R	R
Glycerine	R	R
Gold Cyanide	R	R
Hexane	R	R
Hydrobromic Acid	N	N
Hydrochloric Acid	R	R
Hydrocyanic Acid	R	R
Hydrofluoric Acid	RA	RA
Hydrofluosilicic Acid	RA	RA
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	R	R
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	N	N
Nitrobenzene	R	R
Oleic Acid	R	R
Oxalic Acid	R	R
Perchloric Acid	N	N
Phenol	N	N
Phosphoric Acid	R	R
Phosphorous Acid	R	R
Phosphorous Trichloride	C	N
Phthalic Acid	R	R
Picric Acid	N	N
Potassium Bicarbonate, Carbonate	R	R
Potassium Chloride, Nitrate, Sulfate	R	R
Potassium Cyanide	R	R
Potassium Ferricyanide, Ferrocyanide	R	R
Potassium Hydroxide	RA	RA

	80°F	140°F
Pyridine	C	N
Rochelle Salt	R	R
Salicylic Acid	R	R
Silver Nitrate	R	R
Sodium Acetate	R	R
Sodium Bicarbonate, Carbonate	R	R
Sodium Chloride, Nitrate, Sulfate	R	R
Sodium Cyanide	R	R
Sodium Hydroxide, to 30%	R	RA
Sodium Hydroxide, above 30%	RA	RA
Sodium Hypochlorite, to 3%	C	N
Sodium Hypochlorite, above 3%	N	N
Sodium Sulfide, Sulfite	R	R
Sodium Thiosulfate	R	R
Soya Oil	R	R
Stearic Acid	R	R
Sulfur Dioxide Gas, Dry or Wet	R	R
Sulfur Trioxide Gas, Dry	R	R
Sulfur Trioxide Gas, Wet	N	N
Sulfuric Acid, to 50%	R	R
Sulfuric Acid, above 50%	N	N
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	R	R
Tung Oil	R	R
Urea	R	R
Xylene	R	R
Zinc Chloride, Nitrate, Sulfate	R	R

(1-99[3])

KEY

R- Recommended

N- Not Recommended

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

A- Silica Filler may be attacked. Use CARBO-ALKOR for these applications.

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.