



Atlas Minerals & Chemicals, Inc.



# DATA SHEET

3-17PI (1-99<sup>2</sup>)

Supersedes 3-17PI (1-98) & 3-17CN (12-94)

## FURATHANE GROUT

### DESCRIPTION

FURATHANE GROUT is a 100% carbon filled, specially formulated furan grout for chemical resistant brick and tile construction.

### TYPICAL USES

FURATHANE GROUT is recommended for floors requiring the chemical, physical or thermal resistance of brick and tile construction. With its broad range of chemical resistance and 350°F (177°C) temperature resistance, FURATHANE GROUT is excellent for food processing, food preparation and beverage and pharmaceutical facilities that sanitize with caustic and acid-based solutions.

### CHEMICAL RESISTANCE

FURATHANE GROUT is resistant to food and food by-products, organic acids, solvents, oils, greases and salts. It is also resistant to many inorganic acids and alkalis including hydrofluoric acid, phosphoric acid and sodium hydroxide. Refer to the chemical resistance chart for specific information. FURATHANE GROUT complies with the specifications of ASTM C658 and ANSI A118.5 for chemical resistant furan resin grouts.

### METHOD OF INSTALLATION

FURATHANE GROUT is designed to be installed by the Tiler's method. The quarry tile or brick pavers are set in a bond coat of RED FURNANE® SETTING BED (Data Sheet 5-55PI) with a nominal 1/4" space between the masonry units. After the bond coat has set, FURATHANE GROUT is floated into the joints.

### AVAILABLE COLORS

FURATHANE GROUT is available in black only.

### PACKAGING - FURATHANE GROUT

**36 lb. 14 oz. (16.7 kg.) Unit Consisting of:**

- Two - 1-gal. cans of Resin (8 lb. [3.6 kg.]) ea.
- Two - bags of Powder (10 lb. 7 oz. [4.7 kg.]) ea.

**110 lb. 10 oz. (50.2 kg.) Unit Consisting of:**

- One - 5-gal. pail of Resin (48 lb. [21.8 kg.])
- Two - bags of Powder (31 lb. 5 oz. [14.2 kg.]) ea.

### FURAN CATALYST LT Powder

20 lb. (9.1 kg.) bag

## PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	TYPICAL VALUE
Density	ASTM C905	96 lb./cu. ft. (1.54 g./cc.)
Bond Strength, 7 days @ 77°F (25°C)	ASTM C321	Brick fails
Bond Strength, Figure 8 Briquet, 7 days @ 77°F (25°C)		670 psi. (4.62 MPa)
Tensile Strength, 7 days @ 77°F (25°C)	ASTM C307	800 psi. (5.5 MPa)
Compressive Strength, 7 days @ 77°F (25°C)	ASTM C579	5,200 psi. (35.9 MPa)
Flexural Strength, 7 days @ 77°F (25°C)	ASTM C580	1,900 psi. (13.1 MPa)
Coefficient of Thermal Exp., in./in./°F (cm./cm./°C)	ASTM C531	2.9 x 10 <sup>-5</sup> (5.2 x 10 <sup>-5</sup> )
Water Absorption	ASTM C413	0.3%
Temperature Resistance Continual		350°F (177°C)
Linear Shrinkage	ASTM C531	0.5%

### ACID WASHING OF THE JOINTS

Setting tile in a conventional or latex modified sand cement setting bed requires acid washing of the joints prior to application of the grout. After the setting bed is dry, brush the open joints with a dilute muriatic acid solution (one part acid to five parts water by volume). After approximately 20 minutes, flush with clear water and allow to dry.

### TEMPERATURE DURING APPLICATION

Store FURATHANE GROUT 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 FURATHANE GROUT 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

## ESTIMATING TABLE - FURATHANE GROUT

### FLOOR AREA

Brick / Tile Size	Pieces per Sq. Ft.	1/4" Wide x Full Depth Joint – Square Feet per Unit	
		36 lb. 14 oz. Unit	110 lb. 10 oz. Unit
6" x 6" x 1/2"	3.686	117 sq. ft.	350 sq. ft.
6" x 6" x 3/4"	3.686	78 sq. ft.	230 sq. ft.
8" x 3-7/8" x 1"	4.231	51 sq. ft.	155 sq. ft.
8" x 3-7/8" x 1-3/16"	4.231	43 sq. ft.	130 sq. ft.
8" x 3-7/8" x 1-3/8"	4.231	37 sq. ft.	110 sq. ft.
8" x 4" x 1/2"	4.107	105 sq. ft.	315 sq. ft.
8" x 4" x 1-3/8"	4.107	38 sq. ft.	115 sq. ft.
8" x 4" x 1-1/2"	4.107	35 sq. ft.	105 sq. ft.

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

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.

### MIXING OF THE FURATHANE GROUT

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.

#### 36 lb. 14 oz. (16.7 kg.) Unit:

The following instructions are for a 1/2 unit batch size of 18 lb. 7 oz. (8.4 kg.):

- Place the contents of one 1-gallon can, 8 lb. (3.6 kg.), of FURATHANE GROUT Resin in the 5-gallon capacity mechanical mixer.
- Slowly add one of the 10 lb. 7 oz. (4.7 kg.) bags of FURATHANE GROUT Powder.
- Mix the combined components for approximately two minutes or until all the powder is thoroughly dispersed.

#### 110 lb. 10 oz. (50.2 kg.) Unit:

The following mixing instructions are for a batch size of 18 lb. 7 oz. (8.4 kg.):

- Evenly divide the contents of one of the 31 lb. 5 oz. (14.2 kg.) bags of FURATHANE GROUT Powder into three equal parts by volume using three clean, dry 5-gallon plastic pails. Each pail should contain 10 lb. 7 oz. (4.7 kg.) or approximately 6 fluid quarts (5.6 liters) of powder.
- Place 104 fluid ounces (3.1 liters) of FURATHANE GROUT Resin in the 5-gallon capacity mechanical mixer.
- Slowly add a 1/3 bag of FURATHANE GROUT Powder, 10 lb. 7 oz. (4.7 kg.), as prepared in Step (a.).
- 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 grout. **THE POWDER MUST BE WITHIN 5%. BY WEIGHT, OF THE SUGGESTED AMOUNT.**

### APPLICATION OF THE FURATHANE GROUT

Use FURATHANE GROUT with RED FURNANE SETTING BED. Prior to application, isolate metal

### MIX RATIO CHART - FURATHANE GROUT

FURATHANE GROUT	Parts by Weight	Weight	Volume
FURATHANE GROUT Resin	100	8 lb. (3.6 kg.)	104 fl. oz. (3.1 liters)
FURATHANE GROUT Powder	130	10 lb. 7 oz. (4.7 kg.)	6 fl. qt. (5.6 liters)
<b>Batch Size</b>		18 lb. 7 oz. (8.4 kg.)	0.192 cu. ft. (5.4 liters)

### TYPICAL WORKING & SETTING TIMES OF THE FURATHANE GROUT

Temperature	Working Time	Support Foot Traffic	Cure Before Steam Cleaning
60°F (16°C)	25-35 min.	20-24 hours	48 hours
75°F (24°C)	15-25 min.	8-10 hours	24 hours
85°F (29°C)	10-15 min.	6-7 hours	18 hours

drains, pipes and exposed concrete to receive an expansion joint. Setting tile in a conventional or latex modified sand cement setting bed requires acid washing of the joints prior to application of the grout. Protect the work area from direct sunlight and moisture during installation and until the FURATHANE GROUT can support foot traffic.

- Place freshly mixed FURATHANE GROUT on the waxed tile or pavers.
- With a rubber faced or steel trowel, work the grout into the open joints.
- Use a rubber faced trowel or rubber squeegee to remove excess grout. Hold the trowel with the flat edge nearly perpendicular to the surface and pull diagonally across the grouted joints. Remove as much residue as possible from the tile surface.

A second grout pass may be required on pavers 1-3/16" thick or greater to compensate for any settling or low joints. The second pass of grout must be applied within 2 to 4 hours following the initial grout application. Occasional voids may form by entrapped air rising to the surface. Fill the voids upon discovery preferably while joints are still soft.

#### CLEANING OF THE FURATHANE GROUT

The wax coating and excess grout 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.

#### FURAN CATALYST LT

FURAN CATALYST LT Powder blended with FURATHANE GROUT 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 FURATHANE GROUT 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 FURATHANE GROUT RESIN.**

#### MIXING OF THE FURATHANE GROUT WITH FURAN CATALYST LT

The following mixing instructions are for a batch size of 18 lb. 7 oz. (8.4 kg.):

- Determine the ambient temperature and corresponding amounts of FURATHANE GROUT Powder and FURAN CATALYST LT Powder from the "Typical Mix Ratios" chart.
- In a clean, dry 5-gallon plastic pail combine FURAN CATALYST LT Powder and FURATHANE GROUT Powder. Mix thoroughly for approximately two minutes.
- Place the contents of the 1-gallon, 8 lb. (3.6 kg.), can or 104 fluid ounces (3.1 liters) of FURATHANE GROUT Resin in a second 5-gallon plastic pail in the 5-gallon capacity mechanical mixer.

#### TYPICAL MIX RATIOS - FURAN CATALYST LT

Temperature	FURATHANE GROUT Resin	FURATHANE GROUT Powder	FURAN CATALYST LT Powder
34°F (1°C)	8 lb. (3.6 kg.) 104 fl. oz. (3.1 liters) 100 parts by weight	7 lb. 13 oz. (3.5 kg.) 132 fl. oz. (3.9 liters) 97.5 parts by weight	2 lb. 10 oz. (1.2 kg.) 44 fl. oz. (1.3 liters) 32.5 parts by weight
40°F (4°C)	8 lb. (3.6 kg.) 104 fl. oz. (3.1 liters) 100 parts by weight	8 lb. 6 oz. (3.8 kg.) 141 fl. oz. (4.2 liters) 104 parts by weight	2 lb. 1 oz. (936 g.) 35 fl. oz. (1.1 liters) 26 parts by weight
50°F (10°C)	8 lb. (3.6 kg.) 104 fl. oz. (3.1 liters) 100 parts by weight	8 lb. 14 oz. (4.0 kg.) 150 fl. oz. (4.5 liters) 110.5 parts by weight	1 lb. 9 oz. (709 g.) 26 fl. oz. (0.8 liters) 19.5 parts by weight
60°F (16°C)	8 lb. (3.6 kg.) 104 fl. oz. (3.1 liters) 100 parts by weight	9 lb. 6 oz. (4.3 kg.) 159 fl. oz. (4.7 liters) 117 parts by weight	1 lb. 1 oz. (482 g.) 17 fl. oz. (0.5 liters) 13 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)	15-25 min.	24-36 hours	72 hours
40°F (4°C)	15-25 min.	16-24 hours	72 hours
50°F (10°C)	15-25 min.	10-12 hours	48 hours
60°F (16°C)	15-25 min.	8-10 hours	24 hours

- 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 Material 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 grout shall be FURATHANE GROUT as manufactured by Atlas Minerals & Chemicals, Inc. The grout shall be certifiable for use in USDA inspected facilities and comply with the requirements of ASTM C658 and ANSI A118.5. The grout shall consist of a furfuryl alcohol (furan) resin binder with 100% carbon powder and be resistant to organic acids, organic solvents, sodium hydroxide and hydrofluoric acid.

#### **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.**

## CHEMICAL RESISTANCE OF FURATHANE GROUT (3-17PI)

	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	R	R

	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	R	R
Hydrofluosilicic Acid	R	R
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	R	R

	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 50%	R	R
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 (1-99 <sup>2</sup> )	R	R

**KEY**

- R - Recommended
- N - Not Recommended
- C - Conditional; May be serviceable if the contaminant is immediately removed or washed off the surface.

**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.