FOAMGLAS®

DENSCAL® GYPSUM CEMENT

FOR USE WITH FOAMGLAS® INSULATION

Description and Area of Application

Denscal® cement is a reactive gypsum product that is mixed with water to form an inorganic, noncombustible adhesive or coating for fabricating, bore coating, or forming high temperature (HT) reinforced FOAMGLAS® insulation shapes.

Denscal® cement is normally used at operating temperatures above 93°C (200°F) or in other special situations.

Denscal® is a registered trademark of Georgia Pacific.

Type of Delivery and Storage

- 22.7 kg (50 lb) CVP bags
- Store gypsum cement in a dry area to prevent exposure to moisture.
- Consult Safety Data Sheet for additional storage and handling information.

Field Application

Always read and understand the information contained within product datasheets and safety datasheets before attempting to use this product. If you have questions regarding fitness of use of this product for an application, consult Owens Corning.

Tools and Equipment

Hand mixing is usually sufficient. A plastic-coated, straight mixing paddle is recommended. Containers and tools should be plastic. Brushes should be the disposable, bristle type. Have sufficient tools and containers available. Clean tools and containers with water before the adhesive sets.

Substrate Preparation

Check insulation surface for flatness. Adhesive cannot make up for poor surface uniformity. FOAMGLAS® insulation should be free of dust. For best results, the cellular glass substrate should be accessible and prepared to receive adhesive prior to mixing.

Mixing Guidelines

Do not use material that is lumpy, which may be an indication that it has been exposed to excessive moisture and may be set.

The mix ratio for use as a fabricating adhesive is approximately 2 (powder): 1 (water) by volume. The powder and water may be mixed in a container and applied as slurry. Alternately, powder and water may be mixed on the block surfaces. “On block” mixing is generally limited to billet or flat shape fabricating.

The mix ratio for use as a bore coating is approximately 1.5 (powder):1 (water) by volume.

The mix ratio for use as a high temperature (HT) reinforced coating is approximately 2.5 (powder) :1 (water) by volume.

For slurry application, add powder to water and mix until desired consistency. Use the slurry immediately. Cold water will delay set; hot water will accelerate set.

For “on block” mixing, apply water to both substrate surfaces. Sprinkle powder on one block, 0.7 to 1.0 kg per 457 x 610 mm (1 to 1¼ cup per 18 x 24 inches) of block, and mate wet surfaces. Rub blocks back and forth with a rotary motion until powder is wetted and spread uniformly. (Occasionally remove a block to check to make sure the adhesive is thoroughly mixed and the surfaces are fully covered.) Once the adhesive sets, it cannot be recovered.

Cellular Glass Fabrication Joint Adhesive Application Guidelines

Apply by brush or other suitable applicator. For best results, ensure 100% coverage on both bonding surfaces. Always remove any excess adhesive before it sets. Do not move assembled pieces until adhesive sets. Supports may be required. Assembled pieces can be fabricated within 1 hour, but may be wet. Adhesive sets by chemical reaction, not by drying.

Cellular Glass Bore Coating Application Guidelines

Check insulation fit and clearance to allow application of bore coating and anticipated pipe expansion. Hot process insulation should be loose fitting. Apply to bore with brush or other suitable applicator. Cells should not be completely filled, and a continuous coating is not needed. A salt-and-pepper appearance is sufficient. Remove any lumps or excess adhesive from all surfaces before the adhesive sets. See photos on page 2 for proper application appearance.

Cellular Glass Cell Filler Application Guidelines

Apply roughly 50 g (2 ounces) of Denscal® cement powder to the surface of one side of the FOAMGLAS® HLB insulation block. Use a flat trowel to screed the powder into the surface cells of the insulation. Allow excess powder to fall off the edge of the block. (Excess powder can be collected and used on the next surface.) Turn block over and repeat application on second side. Install block in tank base insulation system following the tank base specification guidelines. Note: woven glass mat or ceramic felt is used as additional interleaving in combination with Denscal® cement powder cell filler.
Refer to application photos on page 3 for additional details.

Clean Up and Disposal

- Adhesive will set under water. Do not wash or discard into sewer.
- Clean up with water before adhesive hardens. Set adhesive must be mechanically removed.
- Set adhesive can be landfilled. Powder should be mixed with water before discarding to landfill.

Coverage

The working time and quantity of product used may vary 30 to 50% depending on cell size, application method, and temperature.

The figures listed below are estimated Denscal® cement powder quantities based on an assumed loss of 30%. The suggested quantities are offered as a guide to the user and should not be relied upon as absolutes.

- Cellular Glass Fabrication Joint Adhesive: 1.7 kg/m^2 (35 lb/100ft^2) +/-15%
- Cellular Glass Bore Coating: 0.9 kg/m^2 (18 lb/100 ft^2)
- Cellular Glass HT Reinforced Coating: 1.9 kg/m^2 (38 lb/100 ft^2)
- Cellular Glass Cell Filler (as powder): 0.1 to 0.2 kg/m^2 (2 to 4 lb/100 ft^2)

Typical Properties

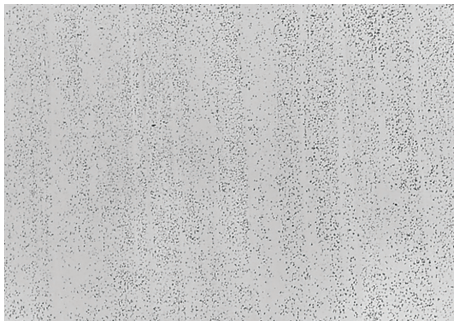
PROPERTY [1]	TEST METHOD	SI	ENGLISH
Color		Fine Dry White Powder	
Bulk Density		1.44 g/cm^3 ± 15%	90 lb/ft^3 ± 15%
Melting Point		1450°C	2642°F
Application Temperature		21 ± 17°C	70 ± 30°F
Service Temperature[2] Maximum Minimum		 482°C -268°C	 900°F -450°F
Set Time		40–60 minutes at 25°C May vary with batch size, temperature, and mixing ratio	40–60 minutes at 77°F
Working Time		20–35 minutes at 25°C May vary with batch size, temperature, and mixing ratio	20–35 minutes at 77°F
Electrochemical Properties in Solution (pH)		Alkaline	
Combustibility		Incombustible wet or dry	

1 Properties are subject to change. Consult Owens Corning.

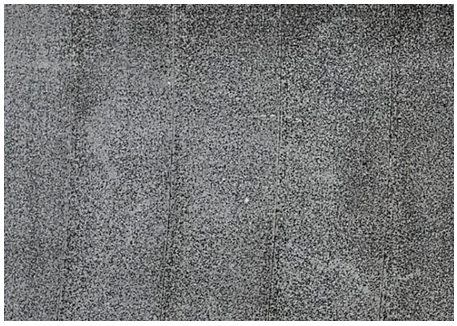
2 Service temperature limits are derived from laboratory evaluation of the product. Variations in substrates, loading conditions, or other external factors may further limit service temperature. Always consult FOAMGLAS® Insulation System Specification for suitability for use recommendations for a specific application.

Limitations

- Do not use for permanent bonding of FOAMGLAS® insulation to other materials without first contacting Technical Services for more information.
- Adhesive is not a vapor barrier. Some coatings may blister over cured adhesives, or HT reinforced coatings.



Proper Bore Coat Application

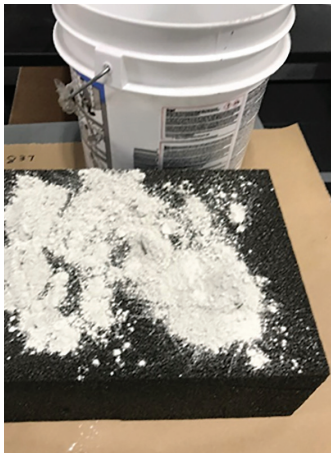


Insufficient Bore Coat Application

Denscal® Cement Powder Cell Filler Application



Step 1
Use a flat-edged trowel for spreading.



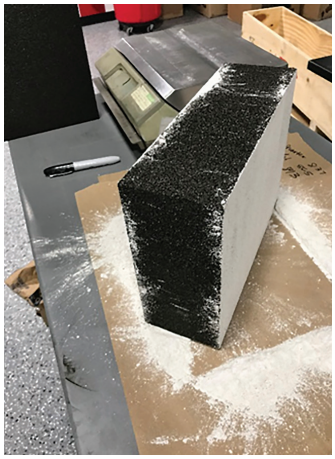
Step 2
Add 2 oz (~ 50 g) of Denscal® cement powder to one face of a FOAMGLAS® insulation block.



Step 3
Spread the powder with the flat edge of the trowel.



Step 4
Allow excess powder to fall of the edge of the block. (Save excess for next side.)



Step 5
Turn block over and repeat application, saving excess powder for the next block.

For additional information on FOAMGLAS® Insulation Systems, please contact Owens Corning or visit us at www.owenscorning.com.

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