COMMONWEALTH of VIRGINIA

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Date: February 5, 2009

To: Environmental Health Managers **GMP #137.A**
District Health Directors
Office of Environmental Health Services Staff
VPI/SU Soil Consultants

From: Daniel "Duke" Price, Program Manager
Division of Onsite Sewage and Water Services

Subject: Grouting material name change: IDP-357 to BAROTHERM®MAX

Baroid Industrial Drilling Products have changed the name of IDP-357 to BAROTHERM®MAX. They indicate that only the product name has changed. GMP 137.A replaces GMP 137 only in that regard.

IDP-357

One Sack Thermally Conductive Grout

Description

IDP-357 thermally conductive grout is designed for use in grouting of boreholes containing ground source heat loops. IDP-357 pumpable grout yields a material with thermal conductivity (TC) values ranging between 1.1 and 1.6 BTU/hr·ft·°F (1.9 – 2.77 Watts/meter·°C). IDP-357 grout does not require the addition of silica sand to attain the desired thermal conductivity values and does not contain any polymeric additives.

Applications/Functions

- Provides an effective grouting material for ground source heat loops
- Promotes increased efficiency and performance of ground source heat loop systems

Advantages

- Provides efficient heat transfer
- Creates a low permeability seal
- Develops a flexible seal to prevent commingling between aquifers
- Easily pumpable
- Eliminates the need for silica sand to increase thermal conductivity
- No heat of hydration

Typical Properties

Appearance	Dark gray powder
Specific gravity	2.5
TC range (Standard Units)	1.1 – 1.6 BTU/hr·ft·°F
TC range (SI Units)	1.9 – 2.77 Watts/meter·°C
Yield volume range	9.0 –13.0 gal/bag or 49.2 – 34.1liters/bag
Grout weight range	10.7 – 11.6 lb/gal or 1.28 – 1.39 SG
Permeability	$< 1.0 \times 10^{-7}$ cm/sec

Recommended Treatment

The recommended treatment is based on the desired thermal conductivity value or k factor. Please refer to the treatment table below.

IDP-357 Grout Recommended Treatment Table (U.S. Standard Units)				
k Btu/hr· ft· °F	Water (gal/bag)	Yield (gal/bag)	Density (lb/gal)	% Solids (by weight)
1.1	11	13	10.7	35.0%
1.3	9	11	11.1	40.0%
1.6	7	9	11.6	45.0%
IDP-357 Grout Recommended Treatment Table (SI-Metric Units)				
k watts/m · °C	Water (liters/bag)	Yield (liters/bag)	Density (SG)	% Solids (by weight)
1.9	41.6	49.2	1.28	35.0%
2.25	34.1	41.6	1.33	40.0%
2.77	26.5	34.1	1.39	45.0%

Recommended Mixing Procedure

- Using a mixing device, blend one sack of IDP-357 thermally conductive grout into the recommended pre-measured volume of water. Rate of addition should be about 20 to 30 seconds per 50-lb (22.7 kg) bag. Mix for approximately 30 to 60 seconds, depending on the mixer, and pump grout.
- Blend, do not over mix. Pump grout material through 1.25-inch (~32mm) ID tremie pipe into hole without delay.

Packaging

IDP-357 thermally conductive grout is packaged in 50-lb (22.7 kg) multiwall paper bags, containing 0.7 ft^3 (0.02 m^3).

Availability

IDP-357 thermally conductive grout can be purchased through any Baroid Industrial Drilling Products Distributor. To locate the Baroid IDP distributor nearest you contact the Customer Service Department in Houston or your area IDP Sales Representative.

Baroid Industrial Drilling Products
Product Service Line, Halliburton
3000 N. Sam Houston Pkwy E.
Houston, TX 77032

Customer Service	(800) 735-6075 Toll Free	(281) 871-4612
Technical Service	(877) 379-7412 Toll Free	(281) 871-4613