

DA Penetrator High Foam

Technical
Data
Sheet

DA Penetrator delivers exceptional rheological properties providing inhibition to fresh and salt water.

FEATURES AND BENEFITS:

- Formation Friendly
- Compatible with most mud systems
- Immediately active foaming properties
- Safe, effective, contains no dyes or harmful fragrances
- Excellent degreasing properties
- Prevents "Bit Balling"
- Reduces surfaces tension and adds lubricity during treatments
- Helps in-hole cleaning
- Removes "mud-cake", silt and clays during treatments
- Helps emulsify oil in wells with oil lubricated turbine pumps
- Can be easily added to drilling mud to reduce solids build-up
- Reduces friction and helps to reduce solids suspension
- Non D.O.T regulated; Non Corrosive; Non Hazardous; Biodegradable

DIRECTIONS FOR USE:

Use approximately 1-2 gallons/200-400 gallons of water for mud problems, and slipping gravel.

Use approximately 1-2 gallons/400-600 gallons of water as a penetrant and emulsifier.

Use approximately 1-2 gallons/400-800 gallons of fluid as a drilling mud additive.

Add directly to water in system being treated. (See table for calculation)

Agitate occasionally with the pump. If a rig is over the hole agitate with a bailer, surge block or other tool. Dry ice can be used to agitate the chemical if rig or pump are not available. Pump or bail the hole clean, develop and test. Initial water after treatment contains spent chemicals and should be pumped to waste.

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CALCULATION TABLE:

Diameter of Casing/Hole (Inches)	Gallons of Water/ft of Depth
3	0.37
4	0.65
5	1.02
6	1.47
7	2
8	2.61
9	3.31
10	4.08
11	4.94
12	5.88
13	6.9
14	8
15	9.18
16	10
17	11.79
18	13.22
19	14.73
20	16.32

TYPICAL PHYSICAL PROPERTIES:

Appearance and Color	Clear to colorless liquid
Initial Freeze Point	32°F (0°C)
Odor	Mild detergent odor
Solubility in Water	100%
Percent Solids	14.75±.05
pH	10.3±.05
Specific Gravity	1.01±.05

STORAGE AND HANDLING:

Rinse empty container with water and discard as per federal, state and local guidelines.

Competitive Foam Test:

Competitive product properties: pH =6.98, Percent solids = 9.88, Specific Gravity =1.008

A 0.5g sample of each product was placed into a 500ml shaker cup. Then 100 mls of water was added to the shaker cup. Each sample was then shaken for 10 seconds and the respective foam heights were observed.

Product	Competitive Product	DA Penetrator
10 second measurement	200ml	400ml
5 minute interval reading	150ml	350ml
Results after 5 minutes	50ml	250ml

PACKAGING:

DA Penetrator is packaged in 5 gallon to 275 gallon containers. Bulk quantities are available upon request.

Recommendations given in this data sheet are based on tests believed to be reliable. However, the use of the information is beyond the control of Heartland Energy Group, Ltd. and no guarantee, expressed or implied is made to the results obtained if not used in accordance with directions or established safe practice. The buyer must assume all responsibility, including injury or damage from the misuse of the product as such, or in combination with other materials. This bulletin is not to be taken as a license to operate under or recommendation to infringe any patent.

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ENERGY GROUP LTD.

www.HeartlandEnergyGroup.net

Phone: 1.877.797.2811

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