



HOLEPLUG[®]

Graded Sodium Bentonite

Description

HOLEPLUG[®] naturally occurring Wyoming sodium bentonite clay is a sized and graded chip material used to seal and plug earthen boreholes.

HOLEPLUG bentonite is available in two particle size grades:

- HOLEPLUG bentonite 3/4" (100% of particles pass through 3/4" screen; all particles retained on 3/8" screen)
- HOLEPLUG bentonite 3/8" (100% of particles pass through 3/8" screen; all particles retained on 1/4" screen)

Applications/Functions

- Highly recommended for use in grouting annulus in all types of wells, particularly environmental monitoring well applications
- Can seal above gravel packs
- Can plug decommissioned boreholes
- Stemming shotholes
- Can seal around conductor pipe
- Can seal lost circulation zones
- Can shut off artesian flow

Advantages

- Helps prevent entry of surface water into boreholes
- High swelling potential
- In situ swelling to provide a superior seal with excellent casing stabilization
- Easier to apply than pellets
- Cost effective
- Simple to apply, mixing not required
- Helps prevent vertical movement of fluids in the hole between porous zones
- Helps form a permanent, flexible downhole seal
- Helps allow hole re-entry
- Rehydratable
- NSF/ANSI Standard 60 certified

Typical Properties

| | |
|--------------------------------|---|
| Volume of 50-lb (22.7 kg) sack | |
| HOLEPLUG bentonite 3/4" | 0.73 ft ³ or 0.027 yd ³ or 0.021 m ³ |
| HOLEPLUG bentonite 3/8" | 0.70 ft ³ or 0.026 yd ³ or 0.020 m ³ |
| Permeability | 1.5 x 10 ⁻⁹ cm/sec (in fresh water) |
| Appearance | Beige to tan chips |

**Recommended
Treatment**

Plugging and Stemming Drill Holes

Due to shipping and handling, a small amount of fine bentonite particles may be present. For optimum results, HOLEPLUG® bentonite should be poured over a mesh or screen with ¼" (6.4 mm) openings to "sift out" the smaller particles. The screen should be large enough (approx. 1 yd² or 1m²) to be folded into a "V" shape to allow sifting while the product is being poured into the hole. Also, HOLEPLUG bentonite should be poured slowly. Allow approximately two minutes to pour a 50-lb (22.7 kg) bag.

1. Position the screen with the lower end placed over the borehole.
2. Slowly pour HOLEPLUG bentonite down the "V" so that fine particles fall through the screen before the larger particles fall into the borehole.
3. Fill hole as required (above static water level or to ground level).
4. Observe all regulatory specifications.

Stopping loss of circulation and stabilizing unconsolidated formations

1. Pull drill pipe out of hole.
2. Pour HOLEPLUG bentonite into hole to fill above problem zone.
3. Drill ahead slowly with reduced pump pressure.

Plugging flowing wells

Pour HOLEPLUG bentonite into hole until water flow subsides or hole is filled to surface.

**Treatment
Considerations**

- Adequate annular space should be present to allow for the placement of HOLEPLUG bentonite into the area of concern without bridging. It is recommended that a minimum annular space of two inches on either side of the outside dimension of the casing be present. This will facilitate the placement of tremie lines and reduce the potential of the HOLEPLUG bentonite bridging during pouring operations. The use of this product should always correspond with applicable federal, state and local well construction guidelines.
- The subsurface environment that the respective bentonite sealing material or grout is to be placed into should always be taken into consideration when selecting the appropriate material to compose the well seal. If the formation water chemistry has a total hardness of greater than or equal to 500 parts per million and/or a chloride content of greater than or equal to 1500 parts per million the use of a bentonite material may not be appropriate for this environment.

In the event that questions regarding subsurface environments arise it is always best to consult your local Baroid IDP representative to determine if the Baroid product of choice is appropriate for the given conditions.

**Application
Amounts**

| Amounts of HOLEPLUG Bentonite Required for Plugging Applications | | | | |
|---|---|--------------------------------------|---------------------------|----------------------------------|
| Hole Diameter (inches) | Hole Volume (ft ³ /ft) | Pounds Needed to Fill One Foot | Feet Filled by One Bag | Bags Needed to Fill 100 ft |
| 2 | 0.022 | 1.6 | 32.6 | 3.2 |
| 2.5 | 0.034 | 2.4 | 20.5 | 5.0 |
| 3 | 0.049 | 3.5 | 14.3 | 7.0 |
| 3.5 | 0.067 | 4.8 | 10.4 | 9.6 |
| 4 | 0.087 | 6.3 | 7.9 | 12.6 |
| 4.5 | 0.110 | 7.9 | 6.3 | 15.8 |
| 5 | 0.136 | 9.8 | 5.1 | 19.6 |
| 5.5 | 0.165 | 11.9 | 4.2 | 23.8 |
| 6 | 0.196 | 14.1 | 3.5 | 28.2 |
| 6.5 | 0.230 | 16.6 | 3.0 | 33.2 |
| 7 | 0.267 | 19.2 | 2.6 | 38.4 |
| 7.5 | 0.307 | 22.1 | 2.3 | 44.2 |
| 8 | 0.349 | 25.1 | 2.0 | 50.2 |
| 8.5 | 0.394 | 28.4 | 1.8 | 56.8 |
| 9 | 0.442 | 31.8 | 1.6 | 63.6 |
| 9.5 | 0.492 | 35.4 | 1.4 | 70.8 |
| 10 | 0.545 | 39.2 | 1.3 | 78.4 |
| 11 | 0.660 | 47.5 | 1.1 | 95.0 |
| 12 | 0.785 | 56.5 | 0.89 | 113.0 |
| 15 | 1.227 | 88.3 | 0.57 | 176.6 |
| 18 | 1.767 | 127.2 | 0.39 | 254.4 |
| 20 | 2.182 | 157.1 | 0.32 | 314.2 |
| 25 | 3.409 | 245.4 | 0.20 | 490.8 |
| 30 | 4.909 | 353.4 | 0.14 | 706.8 |

**Application
Amounts
(metric equivalents)**

| Amounts of HOLEPLUG Bentonite Required for Plugging | | | | |
|--|---------------------------------|------------------------------------|--------------------------|-------------------------------|
| Hole Diameter (mm) | Hole Volume (m ³ /m) | Kilograms Needed to Fill One Meter | Meters Filled by One Bag | Bags Needed to Fill 10 meters |
| 51 | 0.002 | 2.3 | 9.87 | 1.0 |
| 64 | 0.003 | 3.6 | 6.31 | 1.6 |
| 76 | 0.005 | 5.2 | 4.38 | 2.3 |
| 89 | 0.006 | 7.0 | 3.22 | 3.1 |
| 102 | 0.008 | 9.2 | 2.47 | 4.1 |
| 114 | 0.010 | 11.6 | 1.95 | 5.1 |
| 127 | 0.013 | 14.4 | 1.58 | 6.3 |
| 140 | 0.015 | 17.4 | 1.30 | 7.7 |
| 152 | 0.018 | 20.7 | 1.10 | 9.1 |
| 165 | 0.021 | 24.3 | 0.93 | 10.7 |
| 178 | 0.025 | 28.2 | 0.81 | 12.4 |
| 191 | 0.029 | 32.4 | 0.70 | 14.3 |
| 203 | 0.032 | 36.8 | 0.62 | 16.2 |
| 216 | 0.037 | 41.6 | 0.55 | 18.2 |
| 229 | 0.041 | 46.6 | 0.49 | 20.5 |
| 241 | 0.046 | 51.9 | 0.44 | 22.9 |
| 254 | 0.051 | 57.5 | 0.39 | 25.3 |
| 279 | 0.061 | 69.6 | 0.33 | 30.7 |
| 305 | 0.073 | 82.8 | 0.27 | 36.5 |
| 381 | 0.114 | 129.4 | 0.18 | 57.0 |
| 457 | 0.164 | 186.4 | 0.12 | 82.1 |
| 508 | 0.203 | 230.1 | 0.10 | 101.4 |
| 635 | 0.317 | 359.5 | 0.06 | 158.4 |
| 762 | 0.456 | 517.7 | 0.04 | 228.1 |

Packaging HOLEPLUG graded bentonite is packaged in 50-lb (22.7 kg) multi-wall paper bags.

Availability HOLEPLUG bentonite can be purchased through any Baroid Industrial Drilling Products Retailer. To locate the Baroid IDP retailer 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

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