



Drilling Fluids, Inc.

Lost Circulation Material

Description

WALNUT HULLS are dried and ground available in three grades (fine, medium, and coarse).

Uses

WALNUT HULLS, because of their high compressive strength, are the most resistant to breakdown and degradation of all lost circulation materials. As a lost circulation material WALNUT HULLS are especially adapted for plugging induced fractures. WALNUT HULLS are also used to reduce torque and drag of drill pipe and drill collars, especially in high angle holes.

WALNUT HULLS are used as a sweep to scour the well bore and tools when sticking clay is a problem. Bit balling is often treated with this product.

Benefits

WALNUT HULLS provide a lost circulation material for plugging of fractures and high porosity formations. It is an important part of an LCM package.

More than 75% of the particles fall within the following size ranges for the three different grinds available:

- ? Fine 300 - 600 microns
- ? Medium 600 - 850 microns
- ? Coarse 850 - 1400 microns

In directional and horizontal drilling WALNUT HULLS can provide a means of reducing torque and drag.

As a sweep, WALNUT HULLS help clean the bit, tools, and well bore of sticky clays.

Treatment

WALNUT HULLS should be added to any mud type, in amounts indicated by the type of loss. 2-10 ppb is a recommended treatment level.

A slug of 5 to 10 sacks is used for reducing torque and drag. Larger sweeps may be required to effectively scour the tools and bit. A slug of 5 to 10 sacks can also be effective in reducing drag while tripping pipe and running casing.

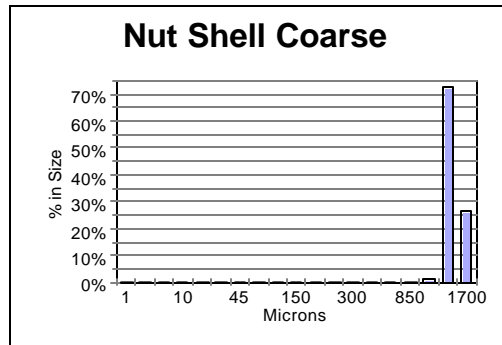
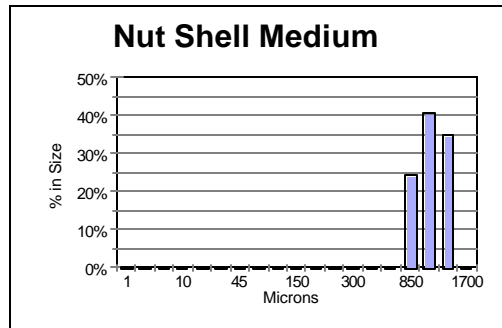


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Particle Size Analysis

WALNUT HULLS (Continued)



Mesh	Micron
400	35.56
75	190.80
60	250.00
50	300.00
40	425.00
30	600.00
20	850.00
14	1400.00
10	1700.00

The data indicates a percent by weight and minimum particle size in microns for each sub-division.

Function

WALNUT HULLS provide a lost circulation material that is hard and somewhat spherical to provide throat plugging of fractures and high porosity formations. Used in conjunction with finer and more flexible fiber and plate type materials, it is an important part of a lost circulation material package.

In directional and horizontal drilling, WALNUT HULLS can provide a ball bearing effect because of their size, shape and hardness, reducing torque and drag.

As a sweep, WALNUT HULLS have a similar action to coarse sand, scouring the bit, tools, and well bore of sticky clays.



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Typical Physical
Properties

Safe Handling
Recommendations

Packaging

WALNUT HULLS (continued)

Appearance.....sized ground walnut hulls
Hygroscopicno
Specific Gravity1.3

Utilize normal precautions for employee protection when handling chemical products. Use of appropriate equipment is recommended for employee comfort and protection. See Material Safety Data Sheet (MSDS) for this product prior to use.

WALNUT HULLS are packaged in 50 pound multiwall bags.