

# M-I W<sub>ATE</sub>

M-I W<sub>ATE</sub>\* weight material is a high-quality, drilling-grade barite (barium sulfate) used to increase the density of drilling fluids.

This high-specific-gravity mineral is the most widely used weight material, has application in all drilling fluid systems and meets all API specifications for barite except density.

## Typical Physical Properties

Physical appearance ..... Powder, various light colors; gray, pink, tan

### Specifications

Density ..... 4.1 g/cm<sup>3</sup>, min.

Soluble hardness (as calcium) ..... 250 mg/kg, max.

Particles >75 micron (wet screen) ..... 3% wt, max.

Particles <6 micron (sedimentation) ..... 30% wt, max.

## Applications

M-I W<sub>ATE</sub> material can be used to increase the density of any mud system. Mud weights up to 19.6 lb/gal (2.35 SG) can be achieved in most drilling fluids while still maintaining good flow properties. M-I W<sub>ATE</sub> material is also excellent in formulating special kill fluids and barite plugs that often reach 21.5 lb/gal (2.58 SG) for well control procedures.

The amount of M-I W<sub>ATE</sub> material required to increase the density can be calculated with the following formulas:

$$\text{M-I W}_{\text{ATE}}, \text{ lb/bbl} = (1,435 (w_2 - w_1)) / (34 - w_2)$$

Where:

$w_1$  = Initial mud weight in lb/gal

$w_2$  = Desired mud weight in lb/gal

$$\text{M-I W}_{\text{ATE}}, \text{ kg/m}^3 = [4,100 (w_2 - w_1)] / (4.1 - w_2)$$

Where:

$w_1$  = Initial mud weight in specific gravity

$w_2$  = Desired mud weight in specific gravity

An increase in volume of approximately 1.4 bbl/ton (0.25 m<sup>3</sup>/tonne) can be expected from M-I W<sub>ATE</sub> material additions. Density increases can require water or base liquid dilution sufficient to adequately wet the surfaces of the added barite.

## Advantages

- Essentially chemically inert and insoluble, functions only in a physical manner
- Does not react with other drilling fluid additives or interfere with their function
- Minimally abrasive

## Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Material Safety Data Sheet (MSDS).

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### **Packaging and Storage**

M-I WATE material is packaged in 100-lb (45.4-kg), multi-wall, paper sacks; 40-kg sacks; big bags and is available in bulk.

Store in a dry, well-ventilated area. Keep container closed. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.



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