M-I Wate* 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**

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical appearance</td>
<td>Powder, various light colors; gray, pink, tan</td>
</tr>
<tr>
<td><strong>Specifications</strong></td>
<td></td>
</tr>
<tr>
<td>Density</td>
<td>4.1 g/cm³, min.</td>
</tr>
<tr>
<td>Soluble hardness (as calcium)</td>
<td>250 mg/kg, max.</td>
</tr>
<tr>
<td>Particles &gt;75 micron (wet screen)</td>
<td>3% wt, max.</td>
</tr>
<tr>
<td>Particles &lt;6 micron (sedimentation)</td>
<td>30% wt, max.</td>
</tr>
</tbody>
</table>

**Applications**

M-I Wate 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 Wate 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 Wate material required to increase the density can be calculated with the following formulas:

\[
M-I \text{ Wate, lb/bbl} = \frac{(1,435 (w_2-w_1))}{(34-w_2)}
\]

Where:
- \(w_1\) = Initial mud weight in lb/gal
- \(w_2\) = Desired mud weight in lb/gal

\[
M-I \text{ Wate, kg/m}^3 = \frac{(4,100 (w_2-w_1))}{(4.1-w_2)}
\]

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 m³/tonne) can be expected from M-I Wate 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).
Packaging and Storage

M-I Water 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.