

# Densmax

## high performance weighting agent for drilling and cementing fluids

Densmax is a high performance weighting agent for drilling and cementing fluids. It is a Manganese tetraoxide (Mn<sub>3</sub>O<sub>4</sub>) based material. Densmax is not milled. Densmax maintains a consistency in both PSD & almost perfect sphericity. It is both the size and shape which contributes to its unique properties. Unlike other weighting agents like Barite which are milled and thus have angular morphology and wide PSD, Densmax has spherical morphology and is produced in its finished form. Densmax is 15% denser and over 60% harder than Barite. However due to its sphericity and particle size, the abrasiveness and friction are significantly lower than Barite. Densmax can be used in a wide range of applications, including aqueous and non-aqueous drilling and completion fluids.

### Typical Physical Properties

Specific Gravity .....	4.7 - 4.9
D50 particle size .....	1µ
Mn Content .....	65 - 70%
Fe Content .....	4.5% max
Specific surface area .....	1 - 2 m <sup>2</sup> /g
Bulk density .....	950 - 1050 kg/m <sup>3</sup>

### Applications

Challenges associated with drilling and cementing narrow margin wells include ECD management and resulting losses to the formation, reduced tripping speeds, barite sag, high torque & drag factors to name a few. Densmax has been extensively used globally to deal with these challenges. The versatile applications of Densmax include deep water, HPHT, coil-tubing operations, casing drilling or as completion and packer fluids. It can be used to extend the density of brines and cement slurries, or drilling fluids. Densmax is much less damaging to formations due to its particle size and acid solubility. As such, it can easily flow through sand completions such as wire-wrapped screens. Unlike Barite, it is soluble in a range of common acids and chelates. As for dispersing agent, the ESM D2 acrylic co-polymer deflocculant is recommended for water based drilling fluids. It offers excellent dispersion especially for high density applications.

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Comparison of physical properties	Barite	Micromax
Density (g/cm <sup>3</sup> )	4.2	4.8
Hardness Moh's scale	3.0 - 3.5	5.0 - 5.5
Abrasivity (relative)	1	0.3
Shape	Angular	Spherical

Micromax is PLONOR certified, and not classified as being dangerous to health. It is fully compatible with all common oilfield additives.

## Advantages

- Increases production rate and reduces formation damage due to its particle size and acid solubility
- Reduces operational time and volume by using the same fluid for drilling and completion operations
- Drilling narrow margin wells and reduces fluid losses to the formation through improved ECD management
- Improves tripping speed and reduce operational time due to optimized rheological properties and control of these
- 15% denser and over 60% harder than Barite. The sphericity and particle size reduces abrasiveness and friction, enabling faster tripping speeds and opportunity for longer reach wells.
- Effective sag control for reduced Non-Productive Time.
- Excellent dispersion can be obtained in combination with ESM D2 dispersing agent for water based applications.

## 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).

## Package and Storage

Densmax is packaged in 1 MT big bags

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