

FER-Ox

FER-Ox* weight material is a high-quality, ground iron oxide (hematite) with a specific gravity (s.g.) of 5.0 or above.

Because of the product's high specific gravity, muds formulated with FER-Ox additive have lower solids content and frequently contribute to higher rates of penetration than barite muds. It can be substituted for or blended with barite in all mud systems. FER-Ox additive is ground and processed to remove impurities, then classified to achieve the desired particle size distribution.

Typical Physical Properties

Physical appearance	Dry: red-to-brown powder
.....	Wet: gray-to-black
.....	Muds: deep reddish brown
Specific gravity.....	5.0
Bulk density.....	2,178 kg/m ³ (136 lb/ft ³)
Particle hardness.....	5 – 6 MOHS scale (1-10)

Applications

FER-Ox additive is applicable in all types of drilling fluids, including freshwater, seawater and oil-base muds. It can be used to increase the density of all drilling and completion fluids to 25 lb/gal (3.0 s.g.). FER-Ox additive is most frequently used in high-density, oil-base muds.

Fluids weighted with FER-Ox additive contain fewer solids by volume than those weighted with barite, making higher mud weights possible. It is especially useful in high-density kill fluids.

The quantity of FER-Ox additive required can be calculated using the following formula:

$$\text{FER-Ox, kg/m}^3 = 4,850 (w_2 - w_1) / 4.85 - w_2$$

Where: w_1 = Initial mud weight in specific gravity w_2 = Desired mud weight in specific gravity

$$\text{FER-Ox, lb/bbl} = 1,697 (w_2 - w_1) / 40.4 - w_2$$

Where: w_1 = Initial mud weight in lb/gal w_2 = Desired mud weight in lb/gal

Advantages

- Muds contain fewer solids than similar-density barite muds because of the 15% higher specific gravity
- Rheological values in muds improve; generally plastic viscosities are 2 – 30% less than barite muds
- Use of FER-Ox muds can result in higher rates of penetration
- FER-Ox additive has a higher bulk density than barite; so more weight is held in the same volume bulk tanks, and a smaller volume is required at the wellsite
- Less FER-Ox additive than barite is required to achieve the same mud weight, which reduces mud costs
- It has a narrower particle-size distribution with a larger average particle size compared to barite
- It is a harder mineral than barite, so it is more resistant to particle-size degradation
- Approximately 97% acid soluble in 15% hydrochloric acid (HCl)
- Will partially scavenge hydrogen sulfide at neutral and low pH levels and can be regarded as a secondary sulfide scavenger. When FER-Ox additive is used in H₂S areas, a high pH should be maintained, and an appropriate primary scavenger should be used.
- Can be environmentally preferred to barite in certain locations

Limitations

- Abrasion tests indicate that FER-Ox additive is more abrasive than barite. Stringent classification procedures for FER-Ox additive yield a less abrasive weight material than competitive iron oxide products
- The suspension of FER-Ox weight material can require slightly higher gel strengths than those required for the suspension of barite

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

FER-Ox additive is packaged in 45.4 kg (100 lb), multi-wall, paper sacks 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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