

OIL-BASE WARP CONCENTRATE

OIL-BASE WARP* CONCENTRATE is a high-density colloidal suspension of specially treated barite in a low-toxicity mineral oil used to densify oil-base fluids for drilling and completion applications.

OIL-BASE WARP CONCENTRATE is a key component of WARP Fluids Technology.

Typical Physical Properties

Physical appearance	Viscous dark grey-brown-orange slurry
Specific gravity.....	2.0 to 2.2
Flash point	212°F (100°C)
Viscosity	100 cP at 50°C (122°F)
Particle Size	100% less than 10 microns

Applications

OIL-BASE WARP Drilling Fluids:

OIL-BASE WARP CONCENTRATE enables OIL-BASE WARP drilling fluids to be formulated with exceptionally low-shear-rate viscosities with no particle settlement and sag for critical well drilling. Drilling applications include:

- Horizontal and extended-reach drilling
- Through-tubing rotary drilling
- Coiled Tubing drilling
- Slim-hole drilling
- High-Temperature, High-Pressure drilling
- Underbalanced drilling

Invert OIL-BASE drilling fluids incorporating WARP Fluids Technology have been used in extended-reach drilling and through-tubing drilling (TTRD) applications in the North Sea region. Torque reductions up to 25% have been measured inside casing, and dilution factors have been reduced by as much as 50% compared to offset wells.

The colloidal nature of the WARP particles imparts zero sag and settlement allowing primary solids control equipment to be aggressively configured resulting in demonstrably lower discharge volumes compared to conventionally weighted fluids. The intrinsically low viscosities of invert OIL-BASE drilling fluids using OIL-BASE WARP CONCENTRATE enables higher pump rates, lower swab and surge pressures, and improved ECD management to be achieved.

OIL-BASE WARP Completion Fluids

OIL-BASE WARP CONCENTRATE is diluted with base oil to the required fluid density and formulated to the required fluid specifications with other additives and products for completion fluid applications up to densities of 2.3 kg/L (19.2 lb/gal). OIL-BASE WARP CONCENTRATE has been extensively used for completion fluid applications in the Caspian Sea region for long-term packer fluid applications and for reservoir drilling. Applications for OIL-BASE WARP Completions Fluids include:

- Reservoir drill-in fluids
- Casing-pressure kill fluids
- Packer fluids
- Kill pills and barrier fluids
- Testing and perforating fluids
- High-density spacers

Advantages

- Improved settlement and sag properties
- Improved torque and drag
- Improved ECD management
- Improved solids-removal efficiency
- Lower discharge volumes and reduced environmental impact
- Non-damaging to producing formations and sand screens
- Improved hole cleaning
- Improved cement jobs
- Temperature stable to 375°F (191°C)
- Excellent long-term suspension properties
- Non-corrosive
- Stable to most contaminants
- Flow through narrow apertures in completions

Toxicity and Handling

OIL-BASE WARP CONCENTRATE is supplied as a bulk liquid and is handled in the same way as conventional OIL-BASE drilling fluid. Handle as an industrial chemical, wearing protective equipment and observing the precautions as described on the Material Safety Data Sheet (MSDS).

Packaging and Storage

OIL-BASE WARP CONCENTRATE is supplied in ISO Tanks; IBCs or bulk by boat, tanker or rail car. The fluid is inherently stable and self-suspending because of the particle size. Monthly circulation of bulk tanks is recommended.



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