MEGADRIVE
Emulsifier package
The M-I SWACO MEGADRIVE® emulsifier package delivers the durable, temperature-stable invert-emulsion fluid operators want.

Applications
- Wells using diesel or mineral oil as the base fluid in invert-emulsion drilling fluid systems

Benefits
- Nonprogressive gel strength with a very low HPHT filtrate without filtrate control additive
- Thermally stable system to 350 degF [177 degC]
- Optimized drilling efficiency
- Reduced disposal costs by eliminating excessive dilution
- Decreased equivalent circulating density (ECD) for better hole cleaning
- Lower pump pressures
- Reduced torque and drag

Features
- Flexible primary and secondary emulsifiers for easy system maintenance
- Reduced rheological properties for lower pump pressure and ECD values
- Excellent drill solids, temperature, and contamination tolerance
- Inherent low coefficient of friction

MEGADRIVE emulsifiers create stable invert emulsion properties.
MEGADRIVE emulsifier package eliminates the costly drawbacks of elevated gels in invert-emulsion drilling

When standard invert-emulsion systems are reused multiple times, low-gravity-solids buildup can cause progressive gel strengths. As the cost of base oil continues to increase, the required dilution results in higher overall cost per barrel of nonaqueous fluids.

Most oil-based systems are reliably and thermally stable, but many typically exhibit elevated, and sometimes severe, progressive gel strengths as drilling progresses. In recognition of this problematic trend in elevated gel-strength oil-based-fluid applications, M-I SWACO has developed the MEGADRIVE emulsifier package. This new drilling fluid system delivers the durable and temperature-stable invert-emulsion fluid operators want, without the associated elevated gel strengths. In addition, this fluid withstands high solids loading, enables lower HPHT filtrate values, and delivers a high tolerance to saltwater and cement contamination.

The MEGADRIVE package uses the MEGADRIVE P* primary high-performance emulsifier, the MEGADRIVE S* secondary high-performance emulsifier, and a coating agent to synergistically provide a good emulsion stability with low filtrate.

How it works

Through its unique combination of chemistries and synergy between the primary and secondary emulsifiers, the MEGADRIVE package improves the relationship of the 6-rpm reading, gel strength, and yield point. The result is a system that controls filtration without increasing overall viscosity and has a higher tolerance for drill solids which can cause progressive gel strengths. This performance reduces pump pressures and increases hole-cleaning capabilities while retaining manageable ECD values.

Engineered for effectiveness at reduced overall fluid costs

The MEGADRIVE package is an invert emulsion formulated with MEGADRIVE P and MEGADRIVE S emulsifiers as the primary components and engineered to meet and maintain the desired fluid properties.

MEGADRIVE S emulsifier is effective over a wide range of temperatures, contaminants, and oil/water ratios (OWRs). Initial system formulation requires 4 to 12 lbm/bbl (11.4 to 34.2 kg/m³), depending on density, OWR, and required temperature stability.

MEGADRIVE P and MEGADRIVE S are used in 3:1 ratio for the best results, i.e., if 8 lbm/bbl of emulsifier is needed, use 6 lbm/bbl MEGADRIVE P emulsifier and 2 lbm/bbl MEGADRIVE S emulsifier.

For high operating temperatures, supplemental fluid-loss control is obtained through additions of VERSATROL* asphaltic resin.

The remaining components of the MEGADRIVE package are similar to those in conventional invert emulsions: VG-69* organophilic clay or VG-PLUS* advanced organophilic clay, VERSAMOD* rheology oil-based mud viscosifier, lime for alkalinity, calcium chloride for water-phase activity, and M-I WATE* high-quality barite as the weighting agent.

Field results that deliver the promise

In a 10-well field trial, an operator met all drilling objectives while increasing average ROP from 230 ft/h to 260 ft/h [70 m/h to 79 m/h]. The optimized drilling fluid system helped the operator reduce section drilling days from 7.3 to 5.7—a 22% improvement in drilling time compared with offset wells from the same drilling pad.
Learn more about the MEGADRIVE emulsifier package

Your M-I SWACO representative can provide you with the whole story about how MEGADRIVE enhances the economics of drilling with an invert-emulsion system.