TETRA CS Neptune® Divalent Fluids

HIGH-DENSITY, SOLIDS-FREE COMPLETION FLUIDS

Overview

TETRA CS Neptune divalent completion fluids are innovative, high-density, solids-free, zinc-free, and formate-free fluids for offshore and complex wells, including high-temperature applications, that require heavy clear brines to control well pressure during the completion phase. TETRA CS Neptune fluids are an environmentally friendly, cost-effective alternative to traditional zinc bromides and cesium formate high-density completion fluids. They were designed for use in well completion and workover operations, but can also be formulated as a low-solids reservoir drill-in fluid (DIF).

TETRA CS Neptune family of fluids consist of divalent and monovalent completion fluids. See the table on the next page for complete portfolio details.

Application Information

TETRA CS Neptune divalent fluids are formulated predominantly using halide-based brines and a complex, proprietary blend of additives which achieves significant reductions in the true crystallization temperature (TCT) and pressure crystallization temperature (PCT) of the fluid. Each TETRA CS Neptune fluid is formulated specifically for the density and TCT/PCT requirements of the project. Advice on formulation and use of TETRA CS Neptune fluids should always be sought from the TETRA Innovation Group.

Safety and Handling

TETRA CS Neptune divalent fluids pose similar HSE risks to calcium halide brines. Avoid skin and eye contact, inhalation, or ingestion. Ensure good ventilation of the work station. Wear personal protective equipment. Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

For skin contact, wash with soap and large quantities of water. For eye contact, flush with large quantities of water for a minimum of 15 minutes and seek medical attention. Use a properly designed respirator if adequate ventilation is not available. Refer to the Safety Data Sheet for specific details.

Features

- TETRA CS Neptune divalent fluids can be formulated to densities >17 lb/gal, 2.04 sg (and work is underway to extend the limits). See the table on the next page for complete portfolio features
- Can exhibit significantly lower TCT and PCT than equivalent-density calcium bromide brines
- Stable at elevated temperatures and during storage
- Can be mixed with standard clear brine fluid mixing equipment
- Compatible with downhole elastomers and metallurgies
- Exhibits compatibility similar to that of calcium bromide with other working and reservoir fluids
- Formulated from renewable products, ensuring continuity of supply

Benefits

- Zinc-free and priority pollutants-free, and therefore, do not require a zero-discharge system of work
- Can be reclaimed for reuse, using standard technology
- Neutral in pH, thereby posing low health and safety risks to rig site and plant personnel
- Significantly lower in unit cost than alternative fluid chemistries
- Requires no special mixing, handling, or storage equipment at the rig site
- Environmentally acceptable globally

Recommended Treatment

TETRA CS Neptune fluids are delivered in bulk form.

TETRA CS Neptune® Fluids Portfolio Features	
TETRA CS Neptune Divalent Completion Fluids	Density range up to 15.4 lb/gal or 1.84 sg Temp stability to 350°F / 177°C Field proven
TETRA CS Neptune HDD Completion Fluids *(High Density Divalent)*	Provide density extension to 15.7 lb/gal or 1.88 sg Temp stability to 290°F / 143°C Drill-in and low solids invert emulsions
TETRA CS Neptune XHDD Completion Fluids *(Extra High Density Divalent)*	Densities > 17.0 lb/gal or 2.04 sg
TETRA CS Neptune HDM Completion Fluids *(High Density Monovalent)*	Density range up to 13.1 lb/gal or 1.57 sg Temp stability to > 350°F / 177°C Drill-in, low solids invert emulsions, and frac fluids
TETRA CS Neptune XHDM Completion Fluids *(Extra High Density Monovalent)*	Density range up to 15.3 lb/gal or 1.83 sg Temp stability to > 350°F / 177°C Drill-in, low solids invert emulsions, and frac fluids