



# STUCK-PIPE RELEASE



OBM filter cake pre-soak.



OBM filter cake after special application fluid is applied.

Differentially stuck pipe is expensive and time consuming, costing the oil and gas industry over \$250M USD annually. Not only are time and money lost in trying to free pipe, but openhole stability may also be compromised in the process.

Differential sticking can occur when hydrostatic pressure exceeds formation pressure in permeable formations. This results in the drill string embedding in the filter cake, which is exacerbated by thick oil-based mud (OBM) filter cake and application of excessive force when freeing the pipe. Rapid remedial action is required to increase successful pipe release.

## Quickly free stuck pipe

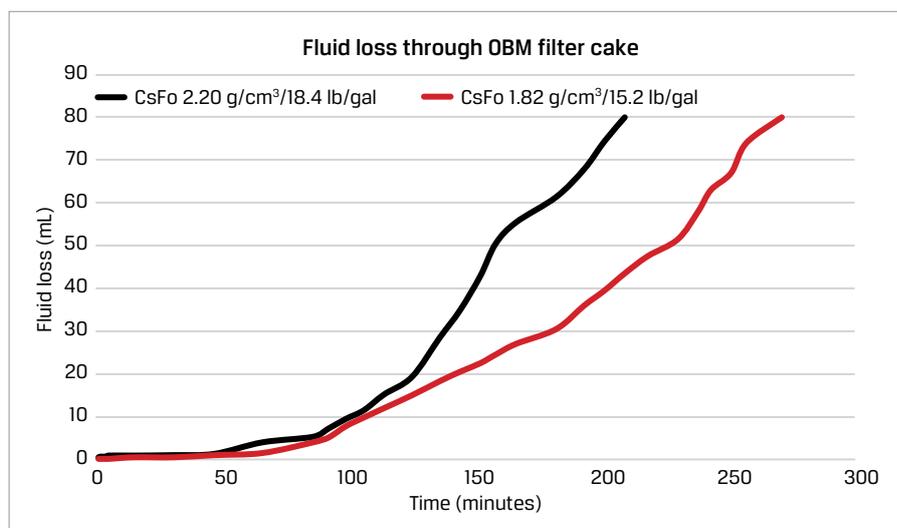
Our special application fluids are multi-application cesium formate-based fluids with excellent technical performance in disrupting OBM filter cake from various solids and enabling quick release of differentially stuck pipe. Many pipe-free pills are ineffective as they fail to contact the filter cake, which is especially true when high mud weights are used. As our special application fluids are available in solids-free densities from 1.80 g/cm<sup>3</sup>/15.0 lb/gal to 2.30 g/cm<sup>3</sup>/19.2 lb/gal, they can easily penetrate and maintain contact with the problem area to rapidly alleviate pressure differential and free the pipe.

## Laboratory proven

Test method:

- ◆ High-pressure, high-temperature fluid-loss cell with 20 µm aloxite disk
- ◆ OBM filter cake built over one hour at 100°C /212°F
- ◆ OBM replaced with our special application fluid
- ◆ Fluid loss monitored over time

**Our special application fluid achieved OBM filter cake disruption and breakthrough within one hour of soak time.**





Our special application fluids are made from high-density, solids-free cesium formate brine.

### Why use our special application fluids?

- ◆ Highly effective
- ◆ Fast acting
- ◆ Safe to handle
- ◆ Saves time
- ◆ Environmentally non-damaging
- ◆ Available in solids-free densities up to 2.30 g/cm<sup>3</sup>/19.2 lb/gal
- ◆ Stable at high temperatures
- ◆ Multiple applications
- ◆ Easily obtainable

### Physical and chemical properties

*Appearance:* Clear liquid, colorless

*Odor:* None

*Specific gravity at 15.6°C/60.1°F:* 1.80 g/cm<sup>3</sup>/15.0 lb/gal to 2.30 g/cm<sup>3</sup>/19.2 lb/gal

*pH:* 9 – 10.5

*Viscosity at 20°C/68°F:* 2 – 10 cP

### Readily available

Special application fluids are readily available to rent in all volumes from stock for specific project requirements or to retain offshore for standby use. The fluids are delivered ready to pump with no additives required.

### Why weight?

Special application fluids are fast-acting, effective and versatile high-density fluids for stuck-pipe release, debris-barrier formation, breaking filter cake, dissolving hydrates and suspension operations. With no weighting agents required, they are quickly spotted downhole to save time and reduce risk of costly alternative operations, such as sidetracking.



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**Cabot Specialty Fluids Ltd.**  
Cabot House, Hareness Circle  
Altens Industrial Estate  
Aberdeen AB12 3LY  
Scotland  
T (44) 1224 897 229  
F (44) 1224 870 089  
[cesium.formate@cabotcorp.com](mailto:cesium.formate@cabotcorp.com)

**Cabot Specialty Fluids Ltd.**  
Bygg K12, PO Box 4  
N0-5347 Kystbasen  
Ågotnes, Bergen  
Norway  
T (47) 55 70 70 52  
F (47) 55 70 70 53  
[CSF.NorthSea@cabotcorp.com](mailto:CSF.NorthSea@cabotcorp.com)

**Cabot Specialty Fluids (S) Pte Ltd.**  
Level 08-09  
The Metropolis Tower 2  
11 North Buona Vista Drive  
Singapore 138589  
T (65) 6808 7870  
F (65) 6808 7777  
[CSF.Asia.Pacific@cabotcorp.com](mailto:CSF.Asia.Pacific@cabotcorp.com)

**Cabot Specialty Fluids Inc.**  
4582 Kingwood Drive  
Suite E145  
Kingwood  
Texas 77345  
USA  
T (1) 281 361 2330  
[CSF.Americas@cabotcorp.com](mailto:CSF.Americas@cabotcorp.com)

