

# Controlled filter cake cleanup with ORCA

## Cleansorb's ORCA products uniformly remove WBM or OBM filter cake damage to optimize well productivity

### Cleansorb

OVER THE LAST three decades, horizontal or highly deviated wells have attained central importance for oil and gas production. It is clear that their use will continue as operators strive for fewer, more productive wells to increase production and improve recovery.

The keys to successful horizontal well productivity are twofold. Firstly, appropriately designed drill-in fluids are required to seal the wellbore effectively and minimize formation damage due to fluid or particle invasion. Secondly, having successfully sealed the wellbore, the drill-in fluid filter cake must then be effectively and uniformly removed from the whole of the producing interval, ideally before flowing the well. The optimum execution of these two steps will ensure wells produce at their maximum potential.

Traditionally, approaches to filter cake cleanup have targeted only one component of the filter cake, for example either the polymeric or the carbonate component of water-based drill-in fluid filter cakes. In practice, removal of both components is needed. SPE 65405 states "Optimal production performance can only be achieved when specific polymer breaker treatments are followed by acid stimulation." SPE 85504, a joint industry study, states that "Field experience has established and laboratory experiments have supported that rapid-reacting acids (more so for HCl), cannot provide uniform filter cake removal." It also states that "Too rapid a reaction (such as with HCl) results in a treatment that is not uniform. This can create thief zones and lead to premature gas/water breakthrough." Incomplete cleanup of horizontal sections is more likely to result in water or gas coning. SPE 85504 also states that incomplete cake cleanup may result in the failure of sand-control completions (i.e. sand production).

### ORCA – the engineered, dual attack, filter cake treatment

Cleansorb's patented ORCA treatment fluids provide the industry with a highly effective dual attack on filter cakes in a single treatment. Unique *in-situ* acid generation achieves a uniform treatment along the whole wellbore to optimize zonal coverage, regain and improve permeability, minimize the risk of water or gas coning and avoid the creation of thief zones. The fluid's benign chemistry is low hazard for users and the environment (i.e. safe and green)

and therefore compatible with complex and expensive completion hardware and "jewellery." Generally complex completions are incompatible with many harsher chemical treatment alternatives so a gentler alternative is required.

ORCA treatment fluids are used to treat new wells when first drilled or as remedial treatments for wells already on production.

ORCA for OBM treatment fluids are used to treat filter cakes arising from drilling with oil-based drill-in fluids. ORCA for OBM fluids include:

- A surfactant package to solubilize (microemulsify) hydrocarbons in the filter cake to disrupt the cake, water-wet and disperse filter cake particulates
- An *in-situ* organic acid generating package to dissolve acid soluble materials such as calcium carbonate

ORCA for OBM is particularly suitable for treatments of oil-based fluids containing carbonate weighting materials or in carbonate formations drilled with OBM. ORCA for OBM formulations are effective in a wide range of oilfield brine types and densities. Barite dissolution can also be achieved using other Cleansorb additives.

ORCA for WBM treatment fluids are used to treat filter cakes arising from drilling with water-based drill-in fluids. ORCA for WBM fluids include:

- An *in-situ* organic acid generating package to produce acid *in-situ* which dissolves acid soluble material such as carbonate rock fines or carbonate weighting solids in the drill-in fluid
- A package of polymer breakers (normally enzymes, but oxidizing breakers may alternatively be used) to attack filter cake polymer components such as starch, cellulose or xanthan

ORCA for WBM formulations are suitable for use in any formation drilled with carbonate weighted water-based drill-in fluids and may also be used to treat filter cakes in wells drilled into carbonate formations, even if the drill-in fluid does not contain carbonate.

### ORCA in action

ORCA treatment fluids are field proven, laboratory validated, effective in all common completion brines and simple to mix



and pump. They may be placed in new wells using the mud pumps and drill string (having mixed the fluid in cleaned mud pits). In some cases it is possible to use the treatment fluid as a gravel packing fluid. In this case the filter cake remains intact during gravel placement before being broken down. The fluid may also be placed post gravel packing using a wash pipe.

For treating wells that have already been on production, the fluid may be placed using bullheading or coiled tubing.

ORCA's uniform wellbore cleanup ensures clean wells and maximizes well production to deliver significant financial benefits.

ORCA for OBM remedial treatments of a series of wells in Asia drilled with an OBM and completed with standalone sand screens delivered increases in production of up to 1,400 bopd or 500%.

ORCA for WBM treatments on gravel packed gas production wells have contributed to some of the most productive gas wells in the world (SPE112292).

### ORCA cleanup fluids are brought to you by Cleansorb

Cleansorb provides operators with innovative reservoir chemistry for field development and production applications. Cleansorb products are engineered to increase hydrocarbon production efficiently and safely and improve recovery without risk to the environment.

Cleansorb has a team of ORCA specialists to advise you on the best strategy for your circumstances. Please e-mail [contact@cleansorb.com](mailto:contact@cleansorb.com) for more information. ■

### Contact information

**Cleansorb**  
THE UNIFORM EFFECT  
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Have your cake  
and eat it with

Cleansorb  
**ORCA**

Control your cleanup and efficiently remove filter cake damage in deviated and horizontal wells. ORCA achieves uniform longitudinal and radial coverage along the whole section when treating either oil-based or water-based muds.

#### Get in touch

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