

D-SOLVER PLUS

D-SOLVER PLUS is a low-pH, brine-soluble chelating agent that can complex many metal ions present in reservoir drill-in fluid filtercakes and completion fluids, specifically calcium, iron and magnesium. D-SOLVER PLUS chelating agent is used in FAZEBREAK* and BREAKDOWN* systems to assist in the clean-up of FAZEPRO* and FLOPRO* NT filtercakes, respectively. D-SOLVER PLUS chelating agent is slow-reacting and effective at lower temperatures.*

Typical Physical Properties

Physical appearance.....	Liquid
Specific gravity	1.1 to 1.2
pH.....	3.5 to 4.0

Applications

D-SOLVER PLUS calcium carbonate dissolver can be a component of FAZEBREAK and BREAKDOWN clean-up systems. FAZEBREAK systems are used to disperse FAZEPRO filtercakes. The BREAKDOWN system is used to destroy FLOPRO NT filtercakes.

D-SOLVER PLUS chelating agent chelates di- and tri-valent metal ions. The carbonate dissolving capacity of D-SOLVER PLUS chelating agent is compared to several acids in the table on page two. D-SOLVER PLUS chelating agent reacts specifically with calcium carbonate and has a low order of corrosivity when compared to acid or oxidizer treatments. In addition, D-SOLVER PLUS agent has the capability to complex iron and magnesium, both common metal ions present in the wellbore during completion operations. Breaker systems built with D-SOLVER PLUS chelating agent should be stored in plastic-lined containers to avoid “spending” the product before it is used. D-SOLVER PLUS agent has a limited shelf life and should be prepared as close as possible to the time it will be applied. Depending on environmental conditions D-SOLVER PLUS chelating agent can be stored up to 30 days before being applied.

D-SOLVER PLUS chelating agent can be used in breaker systems up to a concentration of 85% by volume. However, the concentration will depend on the completion method, the completion fluid, the desired density, and the amount of calcium carbonate present in the filtercake, as well as the desired effect.

D-SOLVER PLUS chelating agent is not compatible with seawater, calcium chloride or other divalent brines. While D-SOLVER PLUS agent is compatible with sodium chloride and sodium bromide completion fluids, there is some limited compatibility with sodium chloride as it approaches saturation. D-SOLVER PLUS chelating agent is fully compatible with potassium chloride brine to saturation. Formulations should be provided by the Reservoir Drilling Fluids Technical Services Group.



Pounds (kg) of Calcium Carbonate Dissolved by 1 gallon (3.785 liters) of Reagent	
Reagent	Pounds (kg) CaCO ₃
D-SOLVER PLUS	1.36 (0.38)
15% Hydrochloric Acid	1.83 (0.83)
9% Formic Acid	0.726 (0.33)
10% Acetic Acid	0.422 (0.19)

Advantages

- The reaction rate of D-SOLVER PLUS chelating agent is significantly slower than conventional acid treatments reducing the risk of losses.
- Functional across a broad pH range
- Can be used at temperatures to 350°F
- Effective in relatively low-temperature (~75°F) reservoirs
- D-SOLVER PLUS chelating agent does not promote the development of emulsions with crude.
- Compatible with sodium and potassium chloride brines, and most additives

Limitations

- Storage tanks should be non-reactive tanks. Do not utilize valves or hardware composed of aluminum, copper, copper alloys, or galvanized steel.
- D-SOLVER PLUS agent has a limited shelf life (<30 days) and should be prepared as close as possible to the time it will be applied.
- Do not mix with strong oxidizers
- Soluble calcium or iron will limit the calcium carbonate dissolving capacity
- Encapsulating polymers, lubricants and non-aqueous shale inhibitors can limit the ability of D-SOLVER PLUS chelating agent to attack calcium carbonate.
- D-SOLVER PLUS chelating agent should not be blended with brines containing divalent ions.

Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions as described in the Material Safety Data Sheet (MSDS).

Packaging and Storage

D-SOLVER PLUS chelating agent is available in 55 gal (208-L) plastic drums.

Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.



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