

Amplifrac™ Advanced Proppant-Suspension Fluid

Optimizes proppant placement, enhances reservoir contact, and maximizes production

Applications

- Low-permeability reservoirs
- Alternative to crosslinked systems and slickwater fracturing fluids

Features and Benefits

- Advanced fluid technology transports greater volumes of proppant in a low-viscosity fluid, which generates longer fractures that reach farther into payzones to promote superior production.
- Enhanced carrying capacity transports proppant more effectively than conventional crosslinked systems.
- Unique proppant-transport properties require no additional additives such as crosslinkers and buffers to generate viscosity for sand-suspension.
- Low viscosity requires less horsepower than conventional crosslinked systems.
- Customizable fluid properties adjust to meet specific operator needs and reservoir conditions.

Tool Description

Weatherford Amplifrac advanced proppant-suspension fluid is a low-viscosity, elastic fracturing system that maximizes proppant-carrying capacity while reducing injection-horsepower requirements. Unlike conventional hydraulic fracturing fluids that rely on crosslinker or slickwater treatments that can become highly viscous or unsupportive, Amplifrac fluid technology generates fractures that reach farther into the reservoir payzone to enhance reservoir conductive volume. The result is a more-effective propped-reservoir volume that maximized production.

Amplifrac is a single-component, highly effective proppant-placement technology with exceptional friction-reduction performance. This innovative fracturing fluid can suspend proppant (up to SG: 3.25) in temperatures up to 240°F (115°C) without apparent settling for hours.

Independent laboratory tests indicate that Amplifrac delivers outstanding regained conductivity performance of up to 96% within 48 hours and a tendency to reach 100% regained efficiency after 72 hours. This demonstrates negligible or no apparent damage to the proppant pack.



Amplifrac™ Advanced Proppant-Suspension Fluid

Specifications

Appearance	Liquid slurry
pH	6.4
Density	0.94 g/cm ³ at 77°F (25°C)
Solubility in water	With agitation*
Chemical description	Polymer with oil in slurry form*
Limitations	Not for use in high brines (TDS <2000)
Packaging	Totes and bulk truckload

*The slurry in static conditions may show some degree of oil separation. Agitation is necessary before use.

Treatment Time and Temperatures

Amplifrac has a 3-gallon per thousand (gpt) active-polymer concentration and is typically used at gel-loading concentrations from 20 to 35 pounds per thousand (ppt). The preferred method for field application is adding Amplifrac through a hydration unit with high agitation. Depending on the surface ambient-temperature, hydration time may vary as recommended below.

Duration at 2,000 rpm	Temperature Range
3 minutes	70 to 95°F (21 to 35°C)
5 minutes	60 to 69°F (15 to 21°C)
6 minutes	35 to 59°F (15 to 21°C)

Recommended Use

Amplifrac is effective within reservoir permeabilities up to 0.3 mD and static temperatures up to 240°F (116°C). It is compatible with most common clay-control additives, biocides, and breakers. It can be used with most common clay control additives, biocides, and breakers. No additional additives, such as crosslinkers and buffers, are required to generate proppant suspension. When used in fresh water or light brine, Amplifrac will reduce friction-pressure by as much as 60 to 70% at low dosages. Applications may include slick-fracturing or serving as an alternative to crosslinked-fluid fracturing. Breakers listed in the table below can adjust flowback-times and increase clean-up performance of the proppant-pack, thus increasing regained permeability.

Breaker	Chemistry	Concentration Range	Temperature Range
HP	Hydrogen peroxide	0.25 to 2.0 ppt	120 to 175°F (48 to 80°C)
APS	Ammonium persulfate	0.25 to 2.0 ppt	120 to 175°F (48 to 80°C)
HT APS	Encapsulated APS	0.25 to 2.0 ppt	150 to 200°F (66 to 93°C)
CS	Sodium chlorite	0.25 to 5.0 ppt	175 to 275°F (79 to 135°C)



Amplifrac™ Advanced Proppant-Suspension Fluid

Lower and Upper Ion Limits

Amplifrac hydrates in water with low total-dissolved solids (TDS). Below are the required lower and upper ion limits for optimum hydration.

CaCl ₂	60 to 200 ppm
MgCl ₂	40 to 120 ppm
NaCl	200 to 800 ppm
FeCl ₂	NA to 100 ppm*
Total TDS	300 to 2,000 ppm**

*100 ppm is considered very high in field conditions

**Adding choline chloride and stabilizer will increase TDS

Water-quality testing is recommended via titration or water-quality strips before hydration. Operating near the lower ion-limits is recommended for low-polymer loadings (up to 20 ppt). For higher loadings (25 to 35 ppt), the upper-ion limits offer enhanced performance.

Do not use distilled water for hydrating the Amplifrac system. The clay-control (choline chloride) additive-application range may be from 0.25 to 1 gallon per thousand (gpt), depending on the initial water TDS. The addition of the choline chloride may add up to an additional 1,000 TDS to the mixing water.

Independent Laboratory Testing

Amplifrac Regained Conductivity at 240°F (116°C)

