SureSlick™ 6A and 6C Hydraulic Fracturing Fluid Additives

Reduce friction and risk of formation plugging

Applications

- Fracturing fluids containing a range of water types from fresh water to up to 100% untreated produced or flowback water
- Locations where freshwater sources are limited, where obtaining consistent water quality can be problematic, and where water conditioning is not always an available or cost-efficient option
- Bottomhole temperatures ranging from 90°F to 350°F (32°C to 177°C)
- Water with up to 30,000 ppm of divalent ions and 130 ppm of iron
- Water with unlimited levels of salt

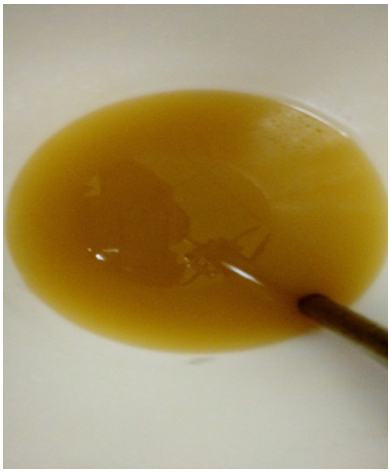
Features and Benefits

- SureSlick 6A (anionic) hydraulic fracturing fluid additive:
  - Compatible with both fresh water and produced water
  - Compatible with environments containing divalent ions
  - Requires a low concentration in environments with mid-range levels—about 10,000 to 50,000 ppm—of total dissolved solids (TDS)
  - Has an enhanced polymer composition that is beneficial for environments with less than 25 ppm of iron
- SureSlick 6C (cationic) hydraulic fracturing fluid additive:
  - Compatible with both fresh water and produced water
  - Compatible with environments containing high levels—more than 5,000 ppm—of divalent ions
  - Requires a low concentration in environments with high levels—more than 50,000 ppm—of TDS
  - Has an advanced polymer composition that is beneficial for environments with more than 25 ppm of iron
  - Mitigates the risk of formation plugging by reducing precipitation of suspended iron content

Description

Weatherford SureSlick fracturing fluid additives reduce the risk of formation damage—specifically, formation friction and plugging—when hydraulically fracturing with fluids that incorporate produced or flowback water. Untreated produced or flowback water often contains high concentrations of multivalent ions, such as calcium, iron, and sulfide, which can precipitate when exposed to standard slickwater polymers. SureSlick additives prevent precipitation of ions and the creation of insoluble flocculents—commonly known as goo or sludge—that lead to formation damage.

SureSlick additives are available in two versions: 6A (anionic) and 6C (cationic). For more complex, higher-risk formations, the advanced 6C version optimizes friction reduction and precipitation prevention.



SureSlick hydraulic fracturing fluid additives are compatible with waters high in TDS, which prevents the creation of insoluble precipitants that damage and plug formations. Shown above is the SureSlick 6C additive.

Weatherford®

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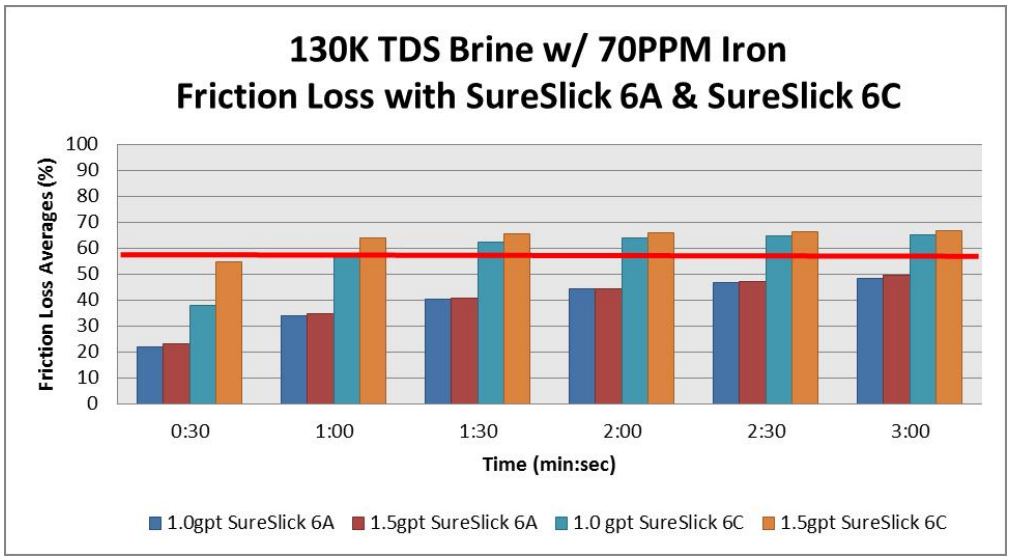

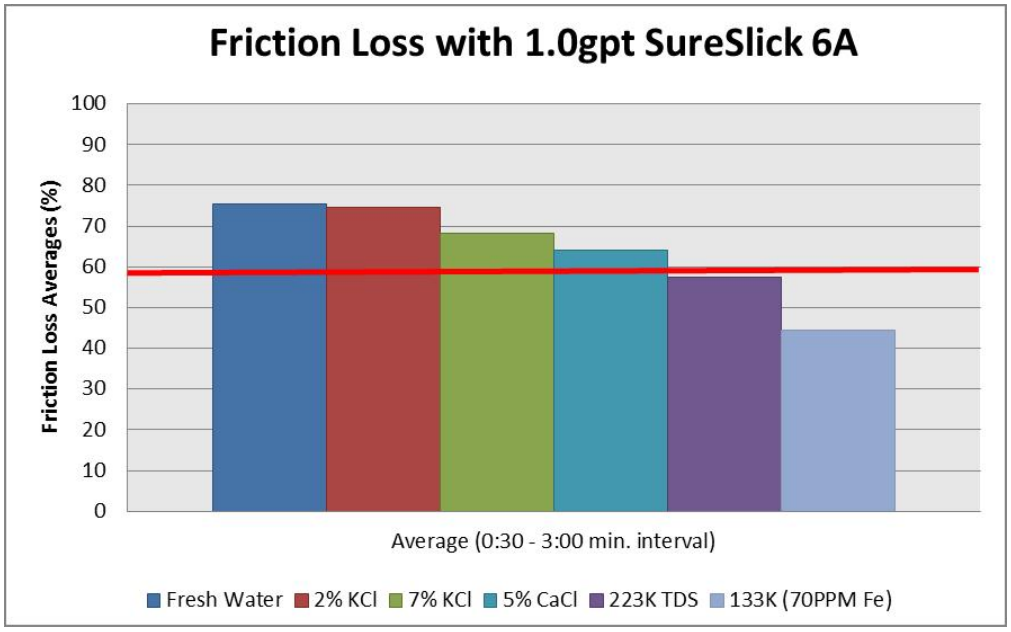

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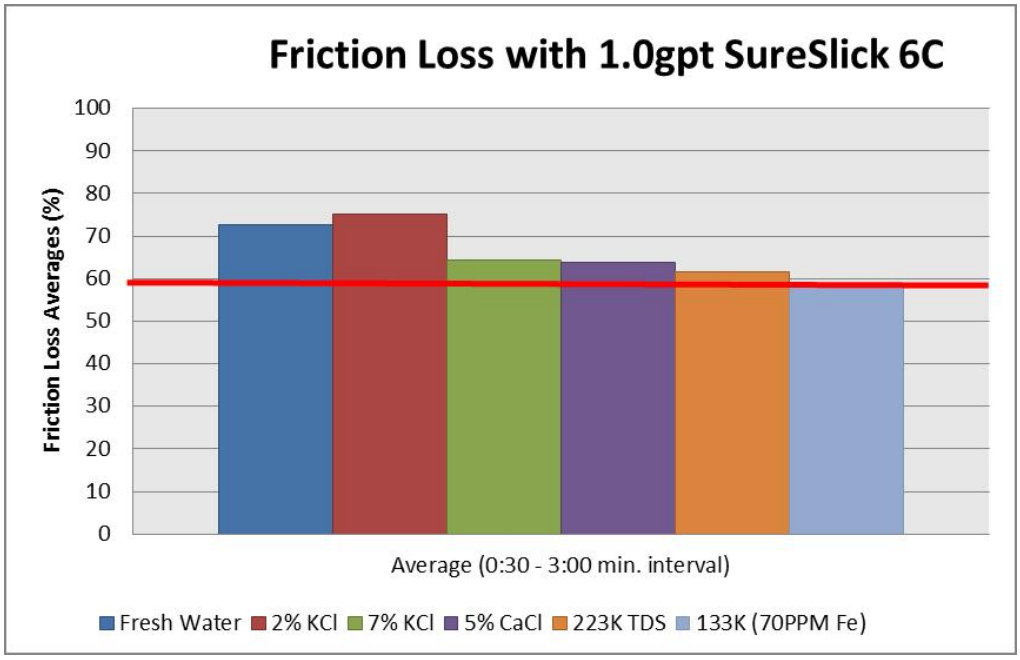

The charts show the effectiveness of the SureSlick 6A and 6C additives as friction reducers when run through a flow loop for each water source. The first chart shows a 30-second interval, and the final two charts show average performance for the SureSlick 6A and 6C additives.