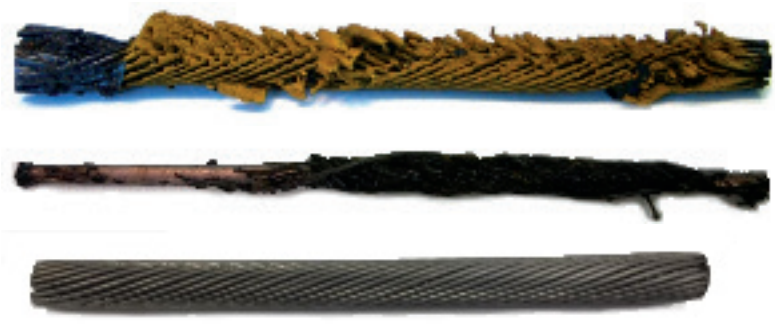
ZipSafe Modified Acid Saves Time, Reduces HSE Risk

Oil and gas operators are focused on optimizing footage completed per day by implementing time-saving and cost-saving technologies. The GR Energy Services ZipSafe modified acid can be flushed during pumpdown and "spotted" on perfs immediately after shots are fired—meeting operators' objectives while eliminating the liabilities associated with trucking, storing and pumping HCl acid. Time saved reduces risk and saves multiple days on the pad, resulting in earlier well production and significantly decreased operations costs.

ZipSafe acid's technical performance compares favorably to conventional HCl but completely eliminates acid risk exposure with low vapor pressure, low toxicity and low bioaccumulation. Unlike standard HCl acid, ZipSafe modified acid bonds with the hydrogen protons within the raw HCl acid to form a solution that mitigates reactions with materials such as calcite, iron and skin, yet reacts immediately with the reservoir facies. ZipSafe acid works throughout the perf interval for better cluster breakdown, reduced time to initiate the frac, and optimized frac volume placement. It can be flushed after placing a small spacer during pumpdown to save time, water volume and cost.

Typical dilution rates are 33% for pumpdown plug-n-perf operations and 50% for toe preps and reservoir diagnostics. For example, in a 40-stage well with 250-ft stages, ZipSafe acid saves 530,000 gal of water, saving $60,000 in water cost and 14 hr in water flush time per well. Delivered and offloaded as slurry or mixed on location, ZipSafe acid reduces the number of trucks on the road to minimize risk to the public, and requires less storage capacity on location.



GR ZipSafe modified acid significantly reduces corrosion to wireline as shown in these examples after exposure at 194°F, 400 psi for 120 hr. The top image shows wireline exposed to 50% urea HCl acid; the middle image shows wireline exposed to a 7.5% HCl acid blend; and the bottom image shows wireline exposed to 33% ZipSafe acid. Casing corrosion is also greatly reduced, all while reducing exposure to personnel to the extremely harmful effects of standard HCl acid.

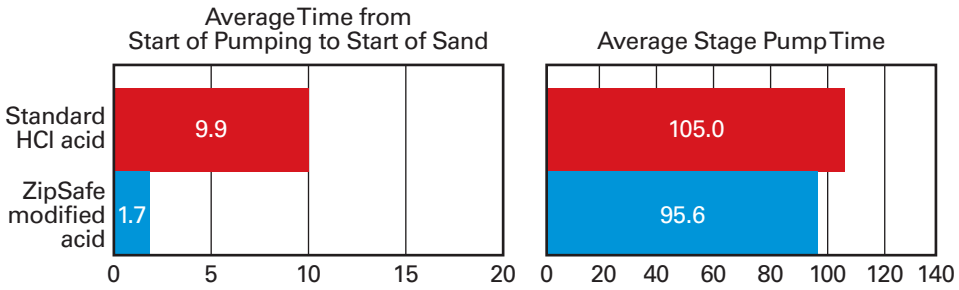
ZipSafe Acid Features

- Low vapor pressure that reduces fuming
- Nonvolatile for minimal exothermic reaction
- Noncorrosive to skin
- Low toxicity
- Low bioaccumulation
- Nonmutagenic

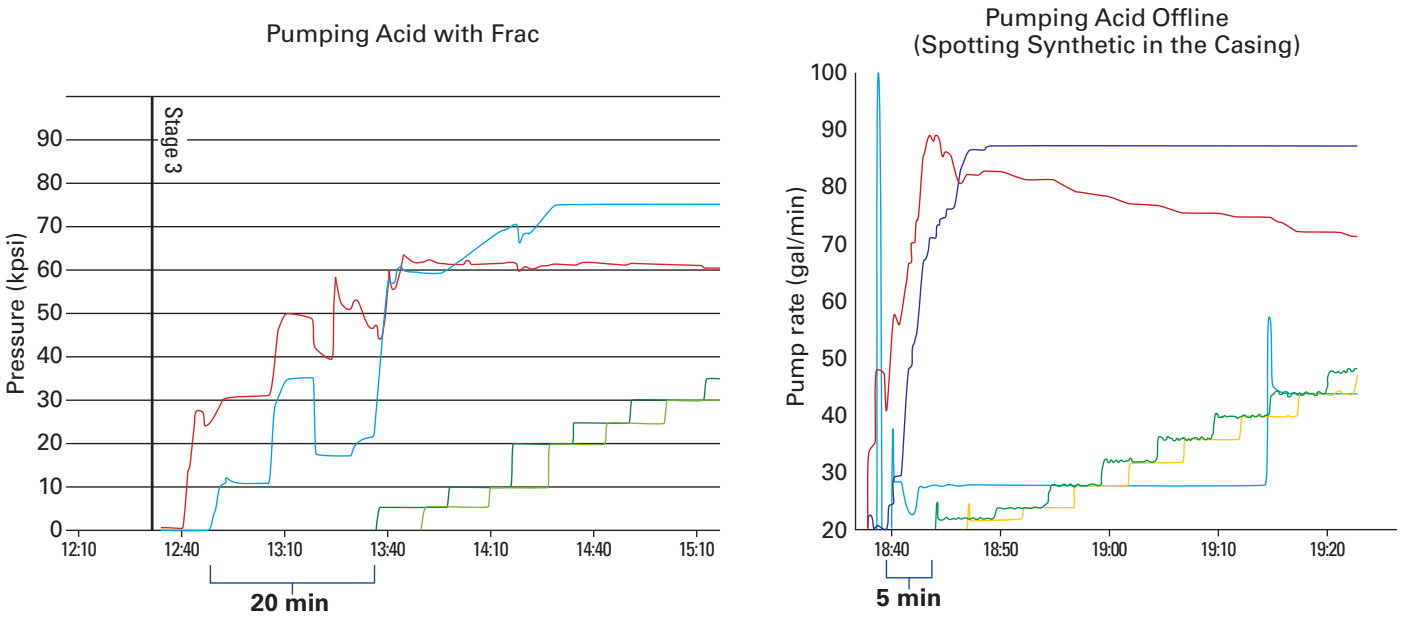
ZipSafe Acid Benefits

- Mitigates reactions with metals and skin
- Environmentally safe and much less hazardous to humans
- Readily biodegradable
- Performs favorably to standard HCl acid with better cluster efficiency, optimized frac volume placement and shorter time to initiate frac
- Reacts immediately with the reservoir facies
- Eliminates the need to displace acid, resulting in significant water savings
- Reduces liabilities associated with trucking, storing and pumping acid

ZIP Safe



In tests performed by a Permian operator using ZipSafe modified acid, the average time from the start of pumping to the start of sand was 8.2 min faster than standard HCl acid. The average stage pump time was 9.4 min less when using ZipSafe acid.



Another Permian operator reported saving 15 min per stage using ZipSafe acid while pumping offline.

Contact GR today to learn more about how ZipSafe acid, along with other unique ZIP Intervention Platform* technologies, delivers the highest level of safety, efficiency and reliability in today's rigorous perforating environment.

*Mark of GR Energy Services

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