



Fracture past perf tunnel damage

- Create ideal flow paths for injection
- Extend useful life of SWD wells

Replace or enhance acid jobs

- Less time, cost and NPT than an acid job
- Allows acid to penetrate deeper into formation

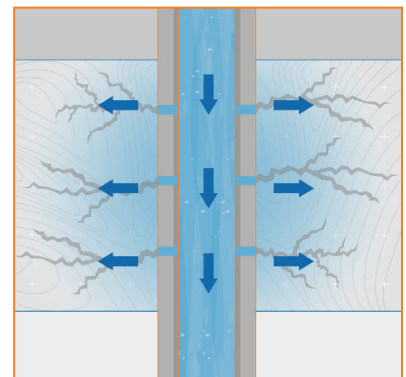
Lower pumping pressures

- Increase injection rates and volumes
- Reduce power consumption

Break down all perforations for injection

- Improve injectivity index and profile

Saltwater disposal and waterflood injection well efficiency is significantly improved with Kraken® propellant boosters. The efficiency gained by penetrating deeply beyond perforation tunnel damage lowers surface pressure, increases injection rates and achieves measurably lower injection cost per barrel. Kraken has allowed some operators to eliminate acid jobs or to decrease workover acid job frequency.



Hundreds of thousands of dollars can be saved by applying Kraken technology to new injection well completions and recompletions.

Kraken Enhanced Perforating Technology

Kraken technology is a progressively burning, solid propellant designed to increase penetration, eliminate clogged perforations and overcome near-wellbore damage from compaction caused by traditional perforators.

Progressively burning Kraken propellant boosters generate high-pressure gas in the perforation tunnels, which creates fractures that improve well connectivity. Engineers who analyze Kraken results by breakdown pressure, initial production or injection increase (IP/II), operating time and safety will observe that the return on incremental investment in enhanced perforating performance routinely exceeds their expectations.

Enhanced Energetics offers a proven propellant-enhanced perforating technology (U.S. Patent 10,024,145 B1) designed to lower total cost of operations and improve profitability of vertical and horizontal producing and injection wells. Kraken® enhanced perforating is significantly more effective than standard perforating at improving completion and recompletion performance in conventional, unconventional and saltwater disposal wells. Standard gun systems and shaped charges can easily be enhanced with Kraken technology to

- Perforate and stimulate in one trip
- Create fractures in every perforation tunnel prior to hydraulic fracturing
- Bypass skin to enhance productivity or injectivity index
- Break down the formation to lower treating pressures and improve rates.



Gun size	2.75, 3.125, 4.0 in. [70, 79, 102 mm]
Typical gun swell	0.22 in. [5.6 mm]
Maximum shot density	6 spf [19 spm]
Maximum pressure	20,000 psi [138 MPa]
1-hr temperature rating*	280°F [138°C]
10-hr temperature rating*	260°F [127°C]

*Exceeding maximum temperature ratings can result in unintentional detonation.