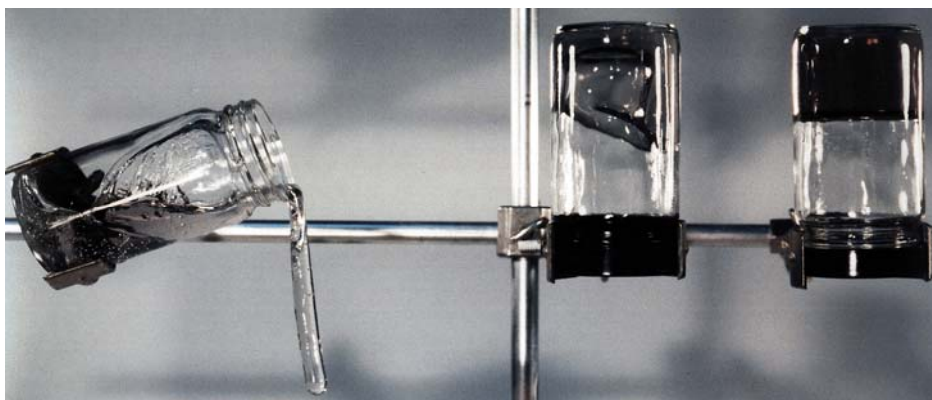


POLY PLUG® CLEAR GEL

PROFESSIONAL FLUID SERVICES, LLC



JANUARY 2005

PFS

PROFESSIONAL FLUID SERVICES, LLC

Case Histories

CASING LEAK 2

GRAVEL PACK SHUT OFF 2

WATER SHUT-OFF 2

PRODUCT DESCRIPTION

POLY PLUG® (CLEAR GEL) is formulated with high concentrations of low molecular weight anionic polymer. When combined with a carboxylate complex crosslinking agent, the product produces a rubber like ringing gel structure.

POLY PLUG® (CLEAR GEL) is also referred to as MARASEAL-EZSM. MARASEAL-EZSM is exclusively licensed technology from MARATHON OIL COMPANY.

PRODUCT BENEFITS

POLY PLUG® (CLEAR GEL) is NEVER a drill out problem. Simply wash through or dump bail any material left in the casing for easy clean out!!!

POLY PLUG® (CLEAR GEL) is designed with a low viscosity prior to crosslinking to aid in injectivity.

When placed in small openings such as pore throats or small channels behind casing, the result is total shut off.

POLY PLUG® (CLEAR GEL) is a solids free fluid which works by entering the reservoir and reducing permeability, not by plugging the perforations as in Portland Cement treatments.

POLY PLUG® (CLEAR GEL) is mixed into fresh or salt water at concentrations of up to 5%.

Each POLY PLUG® (CLEAR GEL) treatment is based on the bottom hole temperature, casing size, linear feet of perforations and other variables.

Special points of interest:

- Full shut off treatments into rock matrix less than 750 millidarcies
- Effective in shutting off water or gas
- Effective in sealing casing leak
- Effective in sealing gravel pack

Casing Leak—Ewing Banks Block 296 Gulf of Mexico

OBJECTIVE:

Seal leak in the 7" casing so the well could be plugged and abandoned as per MMS requirements.

Ten barrels of POLY PLUG® CLEAR GEL was mixed into saturated salt water. To gain access to the 7" casing required perforating the 2 7/8" tubing at 1,483'. The pill was squeezed into the 2 7/8" X 7" annulus via 1 1/4" coil tubing. The well was left shut in for one hour with an initial SIP of 750 psi. Pressure equalized at 600 psi.

The pressure was slowly bled off and the 1 1/4" tubing pulled. After two hours the well was pressured up to 1,500 psi and held pressure for twelve hours.

Pressure held and P&A operations commenced.



Water Shut Off (Gravel Pack) Ewing Banks, Gulf of Mexico

OBJECTIVE:

Shut-off gravel pack completion from 10,442'-10,466' and complete / perforate from 13,886'-13,897'

A fifty barrel treatment was bull headed down the tubing and displaced with sea water. Four barrels of POLY PLUG® CLEAR GEL was left above the gravel pack screen to help prevent over displacement. Gel invasion into the reservoir was

estimated to be in the order of several feet from the perforations. After waiting twenty four hours, the remaining gel was removed via e-line bailer and the well was tested to 2,500 psi or 1,000 psi over

“This was a proven success in gravel pack shut off where conventional cement would have required a side track. Furthermore, this application proved POLY PLUG® CLEAR GEL could be applied without the expense of a rig or coil tubing.”

well head.

The well was then put in re-completion mode and perforated below the existing perforations. The well is currently producing over 480 barrels of oil.

Well Specifics:

200-1,000 md permeability with 31% porosity.

Reservoir Temperature: 205°F

Water Shut Off (Gravel Pack) Ewing Banks, Gulf of Mexico

OBJECTIVE:

Achieve a complete shut-off treatment from channels behind 4 1/2" casing.

A 45 barrel treatment designed for maximum penetration into matrix pore spaces. Prior to the application, an injection rate was established with water to determine the potential for the interval to accept

the gel treatment. As expected, the well immediately went on vacuum.

The 45 barrel treatment was applied to the perforations. Approximately one barrel of gel per linear foot of perforations was pumped. The well was left shut-in for twelve hours. The remaining gel was washed through with via CT and high pressure nozzle. The well

was pressured up to 1,000 psi over well head and the perforation tested. A negative test to 400 psi was also applied to verify the shut-off.

This was a proven success in formation shut-off where conventional cement would have required drill out.