

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	2/10/2012
State:	California
County/Parish	Kern County
API Number:	0403046250
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	41-31R
Longitude:	-119.546928397947
Latitude:	35.2813618413852
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,002
Total Water Volume (gal)*:	43,271

### Hydraulic Fracturing Fluid Composition

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
YF118ST	Schlumberger	Activator , Surfactant , Breaker, Crosslinker, Gelling Agent, Clay Control Agent, Bactericide, Demulsifier, Propping Agent	Water (Including Mix Water Supplied by Client)*	-		70.25122%	
			Crystalline silica	14808-60-7	98.15494%	29.19990%	
			Phenolic resin	9003-35-4	0.60451%	0.17983%	
			Guar gum	9000-30-0	0.31080%	0.09246%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.18460%	0.05491%	
			Propan-2-ol	67-63-0	0.17680%	0.05260%	
			1, 2, 3 - Propanetriol	56-81-5	0.13142%	0.03909%	
			Methanol	67-56-1	0.13085%	0.03893%	

			Sodium tetraborate decahydrate	1303-96-4	0.07885%	0.02346%	
			Diammonium peroxodisulphate	7727-54-0	0.06474%	0.01926%	
			Decyl-dimethyl amine oxide	2605-79-0	0.05935%	0.01766%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.02140%	0.00636%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.01599%	0.00476%	
			Heavy aromatic naphtha	64742-94-5	0.01080%	0.00321%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.01059%	0.00315%	
			Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.01059%	0.00315%	
			Cationic polymer	Proprietary	0.00884%	0.00263%	
			Non-crystalline silica	7631-86-9	0.00869%	0.00259%	
			Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	0.00785%	0.00233%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.00683%	0.00203%	
			Poly(oxy-1,2-ethanediyl)	25322-68-3	0.00475%	0.00141%	
			Naphtalene (impurity)	91-20-3	0.00216%	0.00064%	
			Decyldimethyl amine (impurity)	1120-24-7	0.00095%	0.00028%	
			Hydrogen peroxide (impurity)	7722-84-1	0.00057%	0.00017%	

			Magnesium silicate hydrate (talc)	14807-96-6	0.00036%	0.00011%	
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\* Total Water Volume sources may include fresh water, produced water, and/or recycled water

\*\* Information is based on the maximum potential for concentration and thus the total may be over 100%

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Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)