

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	4/28/2012
State:	California
County/Parish	Kern County
API Number:	0403047087
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	31-31R
Longitude:	-119.548904
Latitude:	35.280751
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	2,962
Total Water Volume (gal)*:	39,541

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)*	-		65.88443%	
			Crystalline silica	14808-60-7	97.63032%	33.30714%	
			Phenolic resin	9003-35-4	1.92855%	0.65794%	
			Guar gum	9000-30-0	0.38929%	0.13281%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.14472%	0.04937%	
			Propan-2-ol	67-63-0	0.13788%	0.04704%	
			1, 2, 3 - Propanetriol	56-81-5	0.12855%	0.04385%	
			Methanol	67-56-1	0.10753%	0.03668%	

			Diammonium peroxidisulphate	7727-54-0	0.08369%	0.02855%	
			Sodium tetraborate decahydrate	1303-96-4	0.07713%	0.02631%	
			Decyl-dimethyl amine oxide	2605-79-0	0.05006%	0.01708%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.01745%	0.00595%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.01304%	0.00445%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.01223%	0.00417%	
			Heavy aromatic naphtha	64742-94-5	0.00881%	0.00301%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.00863%	0.00295%	
			Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.00863%	0.00295%	
			Non-crystalline silica	7631-86-9	0.00808%	0.00276%	
			Cationic polymer	Proprietary	0.00791%	0.00270%	
			Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	0.00702%	0.00240%	
			Poly(oxy-1,2-ethanediyl)	25322-68-3	0.00388%	0.00132%	
			Naphtalene (impurity)	91-20-3	0.00176%	0.00060%	
			Decyldimethyl amine (impurity)	1120-24-7	0.00080%	0.00027%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00064%	0.00022%	

			Hydrogen peroxide (impurity)	7722-84-1	0.00048%	0.00016%	
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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)