

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/16/2012
State:	California
County/Parish	Kern County
API Number:	0403046251
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	33-31R
Longitude:	-119.548539434033
Latitude:	35.2776658753627
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,039
Total Water Volume (gal)*:	43,419

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)*	-		66.86961%	
			Crystalline silica	14808-60-7	98.00890%	32.47073%	
			Phenolic resin	9003-35-4	0.84178%	0.27889%	
			Guar gum	9000-30-0	0.28109%	0.09313%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.13819%	0.04578%	
			Propan-2-ol	67-63-0	0.12908%	0.04277%	
			1, 2, 3 - Propanetriol	56-81-5	0.12756%	0.04226%	
			Methanol	67-56-1	0.12494%	0.04139%	

			Diammonium peroxidisulphate	7727-54-0	0.11029%	0.03654%	
			Sodium tetraborate decahydrate	1303-96-4	0.07654%	0.02536%	
			Decyl-dimethyl amine oxide	2605-79-0	0.05695%	0.01887%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.01903%	0.00631%	
			Cationic polymer	Proprietary	0.01506%	0.00499%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.01423%	0.00471%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.01164%	0.00386%	
			Heavy aromatic naphtha	64742-94-5	0.00961%	0.00318%	
			Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.00942%	0.00312%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.00942%	0.00312%	
			Non-crystalline silica	7631-86-9	0.00745%	0.00247%	
			Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	0.00668%	0.00221%	
			Poly(oxy-1,2-ethanediyl)	25322-68-3	0.00423%	0.00140%	
			Naphtalene (impurity)	91-20-3	0.00192%	0.00064%	
			Decyldimethyl amine (impurity)	1120-24-7	0.00091%	0.00030%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00061%	0.00020%	

			Hydrogen peroxide (impurity)	7722-84-1	0.00055%	0.00018%	
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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)