

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	2/12/2013
State:	California
County:	Kern
API Number:	04-030-49798
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	88-18R
Longitude:	-119.538093
Latitude:	35.310959
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,159
Total Water Volume (gal)*:	16,093

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
Produced Water (Oxy Provided), YF122 Flex	Schlumberger	Activator , Surfactant , Breaker, Breaker Aid, Gelling Agent, Crosslinker, Clay Control Agent, Scale Inhibitor, Industrial Antimicrobial, Emulsion Preventer, Propping Agent	Water (Including Mix Water Supplied by Client)*	-		86.34800%	
			Crystalline silica	14808-60-7	93.78341%	12.80331%	
			Phenolic resin	9003-35-4	1.91395%	0.26129%	
			Propan-2-ol	67-63-0	0.74752%	0.10205%	
			Guar gum	9000-30-0	0.64815%	0.08849%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.50936%	0.06954%	
			Diammonium peroxidisulphate	7727-54-0	0.46624%	0.06365%	
			Potassium borate	1332-77-0	0.36067%	0.04924%	
			Zirconium dichloride oxide	7699-43-6	0.26333%	0.03595%	
			Ethane-1,2-diol	107-21-1	0.23540%	0.03214%	
			2,2',2"-nitrilotriethanol	102-71-6	0.22795%	0.03112%	
			2-Propenoic acid, polymer with sodium phosphinate	129898-01-7	0.22589%	0.03084%	
			Glycerol	56-81-5	0.18210%	0.02486%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.14591%	0.01992%	
			Potassium hydroxide	1310-58-3	0.11790%	0.01610%	
			Crosslinked PO/EO-block polymer	68123-18-2	0.05833%	0.00796%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.04921%	0.00672%	
			Sodium chloride	7647-14-5	0.04637%	0.00633%	
			Non-crystalline silica	7631-86-9	0.03002%	0.00410%	
			Tetrakis(hydroxymethyl)phosphonium	55566-30-8	0.02826%	0.00386%	

			sulfate				
			Calcium chloride	10043-52-4	0.02140%	0.00292%	
			Alkyl (c10-c14) alcohols, ethoxylated	66455-15-0	0.01942%	0.00265%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.01938%	0.00265%	
			Methyl oxirane polymer with oxirane	9003-11-6	0.01921%	0.00262%	
			Dioctyl sulfosuccinate sodium salt	577-11-7	0.00907%	0.00124%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00640%	0.00087%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00259%	0.00035%	
			2,2'-oxydiethanol	111-46-6	0.00238%	0.00032%	
			Propylene glycol	57-55-6	0.00194%	0.00027%	
			Sodium hydroxide	1310-73-2	0.00119%	0.00016%	
			2-ethylhexan-1-ol	104-76-7	0.00026%	0.00004%	
			Potassium oleate	143-18-0	0.00013%	0.00002%	
			Oleic acid	112-80-1	0.00010%	0.00001%	
			Acetic acid, potassium salt	127-08-2	0.00003%	< 0.00001%	
			Acetic acid	64-19-7	0.00001%	< 0.00001%	

* 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%

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