

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	2/19/2013
State:	California
County:	Kern
API Number:	04-030-49843
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	67-18R
Longitude:	-119.543591
Latitude:	35.313281
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,078
Total Water Volume (gal)*:	22,783

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)*	-		83.87307%	
			Crystalline silica	14808-60-7	93.98496%	15.15689%	
			Phenolic resin	9003-35-4	1.91806%	0.30932%	
			Guar gum	9000-30-0	0.83072%	0.13397%	
			Propan-2-ol	67-63-0	0.80157%	0.12927%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.59170%	0.09542%	
			Potassium borate	1332-77-0	0.51674%	0.08333%	
			Diammonium peroxidisulphate	7727-54-0	0.27080%	0.04367%	
			Glycerol	56-81-5	0.22138%	0.03570%	
			Potassium hydroxide	1310-58-3	0.16875%	0.02721%	
			Zirconium dichloride oxide	7699-43-6	0.15295%	0.02467%	
			Ethane-1,2-diol	107-21-1	0.13673%	0.02205%	
			2,2',2"-nitrilotriethanol	102-71-6	0.13240%	0.02135%	
			2-Propenoic acid, polymer with sodium phosphinate	129898-01-7	0.13120%	0.02116%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.12849%	0.02072%	
			Crosslinked PO/EO-block polymer	68123-18-2	0.04783%	0.00771%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.02858%	0.00461%	
			Sodium chloride	7647-14-5	0.02693%	0.00434%	
			Non-crystalline silica	7631-86-9	0.01868%	0.00301%	
			Tetrakis(hydroxymethyl)phosphonium	55566-30-8	0.01641%	0.00265%	

			sulfate				
			Alkyl (c10-c14) alcohols, ethoxylated	66455-15-0	0.01593%	0.00257%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.01589%	0.00256%	
			Methyl oxirane polymer with oxirane	9003-11-6	0.01575%	0.00254%	
			Calcium chloride	10043-52-4	0.01243%	0.00200%	
			Dioctyl sulfosuccinate sodium salt	577-11-7	0.00744%	0.00120%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00563%	0.00091%	
			Propylene glycol	57-55-6	0.00159%	0.00026%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00150%	0.00024%	
			2,2'-oxydiethanol	111-46-6	0.00138%	0.00022%	
			Sodium hydroxide	1310-73-2	0.00069%	0.00011%	
			2-ethylhexan-1-ol	104-76-7	0.00021%	0.00003%	
			Potassium oleate	143-18-0	0.00011%	0.00002%	
			Oleic acid	112-80-1	0.00008%	0.00001%	
			Acetic acid, potassium salt	127-08-2	0.00002%	< 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)