

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	7/10/2012
State:	California
County/Parish:	Kern County
API Number:	0403047777
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	38-20R
Longitude:	-119.527846
Latitude:	35.301288
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	2,760
Total Water Volume (gal)*:	18,852

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
YF120-Flex	Schlumberger	Activator , Surfactant , Breaker, Breaker Aid, Gelling Agent, Crosslinker, Clay Control Agent, Bactericide, Demulsifier, Propping Agent	Water (Including Mix Water Supplied by Client)*	-		79.75873%	
			Crystalline silica	14808-60-7	95.60802%	19.35228%	
			Phenolic resin	9003-35-4	4.78040%	0.96761%	
			2,2',2"-nitrilotriethanol	102-71-6	1.17201%	0.23723%	
			Oxyalkylated Alcohol (2)	Proprietary	0.88026%	0.17818%	
			Propan-2-ol	67-63-0	0.84460%	0.17096%	
			Carbohydrate polymer	Proprietary	0.68720%	0.13910%	
			Aliphatic polyol	Proprietary	0.54086%	0.10948%	

			Diammonium peroxidisulphate	7727-54-0	0.41232%	0.08346%	
			Methanol	67-56-1	0.27653%	0.05597%	
			Potassium hydroxide	1310-58-3	0.27043%	0.05474%	
			Amine derivative	Proprietary	0.25025%	0.05065%	
			Zirconium dichloride oxide	7699-43-6	0.24400%	0.04939%	
			Aliphatic co-polymer	Proprietary	0.05498%	0.01113%	
			Oxyalkylated Alkyl Alcohol (1)	Proprietary	0.03566%	0.00722%	
			Tetrakis(hydroxymethyl)p hosphonium sulfate	55566-30-8	0.02699%	0.00546%	
			Non-crystalline silica	7631-86-9	0.02699%	0.00546%	
			Quaternary ammonium compounds	Proprietary	0.01783%	0.00361%	
			Heavy aromatic naphtha	64742-94-5	0.01783%	0.00361%	
			Oxyalkylated Alcohol (1)	Proprietary	0.01783%	0.00361%	
			Naphtalene (impurity)	91-20-3	0.00357%	0.00072%	

* 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)