

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/25/2012
State:	California
County/Parish	Kern County
API Number:	0403046891
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	21-19R
Longitude:	-119.54969
Latitude:	35.308132
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	2,333
Total Water Volume (gal)*:	20,006

### 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
YF120ST	Schlumberger	Activator , Surfactant , Breaker, Crosslinker, Gelling Agent, Clay Control Agent, Bactericide, Demulsifier, Propping Agent	Water (Including Mix Water Supplied by Client)*	-		81.02438%	
			Crystalline silica	14808-60-7	93.48783%	17.73989%	
			Phenolic resin	9003-35-4	1.90791%	0.36204%	
			Propan-2-ol	67-63-0	1.15570%	0.21930%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	1.11515%	0.21161%	
			Guar gum	9000-30-0	0.82363%	0.15629%	
			1, 2, 3 - Propanetriol	56-81-5	0.35857%	0.06804%	
			Methanol	67-56-1	0.27201%	0.05161%	

			Diammonium peroxidisulphate	7727-54-0	0.25320%	0.04805%	
			Sodium tetraborate decahydrate	1303-96-4	0.21514%	0.04082%	
			Decyl-dimethyl amine oxide	2605-79-0	0.12006%	0.02278%	
			Zirconium dichloride oxide	7699-43-6	0.07150%	0.01357%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.04835%	0.00917%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.03614%	0.00686%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.02673%	0.00507%	
			Heavy aromatic naphtha	64742-94-5	0.02441%	0.00463%	
			Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.02393%	0.00454%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.02393%	0.00454%	
			Non-crystalline silica	7631-86-9	0.01759%	0.00334%	
			Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	0.01535%	0.00291%	
			Poly(oxy-1,2-ethanediyl)	25322-68-3	0.01074%	0.00204%	
			Naphtalene (impurity)	91-20-3	0.00488%	0.00093%	
			Decyldimethyl amine (impurity)	1120-24-7	0.00192%	0.00036%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00141%	0.00027%	

			Hydrogen peroxide (impurity)	7722-84-1	0.00115%	0.00022%	
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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)