

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/20/2012
State:	California
County/Parish	Kern County
API Number:	0403046477
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	3-4-3D
Longitude:	-119.388183481868
Latitude:	35.1744357153815
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,233
Total Water Volume (gal)*:	40,517

### 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
YF125ST	Schlumberger	Activator , Surfactant , Breaker, Crosslinker, Gelling Agent, Clay Control Agent, Bactericide, Demulsifier, Propping Agent	Water (Including Mix Water Supplied by Client)*	-		71.29415%	
			Crystalline silica	14808-60-7	95.44304%	27.39774%	
			Phenolic resin	9003-35-4	1.76194%	0.50578%	
			Guar gum	9000-30-0	0.56609%	0.16250%	
			Propan-2-ol	67-63-0	0.51915%	0.14903%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.50431%	0.14477%	
			Diammonium peroxidisulphate	7727-54-0	0.37974%	0.10901%	

			1, 2, 3 - Propanetriol	56-81-5	0.24029%	0.06898%	
			Sodium tetraborate decahydrate	1303-96-4	0.14417%	0.04139%	
			Methanol	67-56-1	0.14121%	0.04054%	
			Zirconium dichloride oxide	7699-43-6	0.10267%	0.02947%	
			Decyl-dimethyl amine oxide	2605-79-0	0.06743%	0.01936%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.02510%	0.00720%	
			Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.02303%	0.00661%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.01876%	0.00539%	
			Heavy aromatic naphtha	64742-94-5	0.01267%	0.00364%	
			Non-crystalline silica	7631-86-9	0.01256%	0.00361%	
			Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.01242%	0.00357%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.01242%	0.00357%	
			Tetrakis(hydroxymethyl)phosphonium sulfate	55566-30-8	0.01102%	0.00316%	
			Poly(oxy-1,2-ethanediyl)	25322-68-3	0.00558%	0.00160%	
			Naphtalene (impurity)	91-20-3	0.00253%	0.00073%	
			Magnesium silicate hydrate (talc)	14807-96-6	0.00121%	0.00035%	
			Decyldimethyl amine (impurity)	1120-24-7	0.00108%	0.00031%	

			Hydrogen peroxide (impurity)	7722-84-1	0.00065%	0.00019%	
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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)