

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	3/17/2012
State:	California
County:	Kern
API Number:	0403046440
Operator Name:	Oxy USA Elk Hills
Well Name and Number:	3-9BH-5D
Longitude:	-119.4244607
Latitude:	35.16639913
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,407
Total Water Volume (gal)*:	153,090

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
4% KCL Water	Operator				100.00%	76.28407%	Density = 8.540
SAND - COMMON WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	0.23338%	
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	22.97248%	
LoSurf-300M	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00048%	
			Ethanol	64-17-5	60.00%	0.02896%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.01448%	
			Naphthalene	91-20-3	5.00%	0.00241%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydr oxy-, branched	127087-87-0	5.00%	0.00241%	
BC-140	Halliburton	Crosslinker	Ethylene glycol	107-21-1	30.00%	0.02013%	

			Monoethanolamine borate	26038-87-9	60.00%	0.04026%
MO-67	Halliburton	pH Control Additive	Sodium hydroxide	1310-73-2	30.00%	0.00892%
FE-1A	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.00408%
ACIDIZING COMPOSITION						
			Acetic anhydride	108-24-7	100.00%	0.00680%
LGC-36 UC	Halliburton	Liquid Gel Concentrate	Guar gum	9000-30-0	60.00%	0.20751%
			Naphtha, hydrotreated heavy	64742-48-9	60.00%	0.20751%
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00321%
GBW-30 BREAKER	Halliburton	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.00131%
			Carbohydrates	Confidential Business Information	95.00%	0.00831%
BE-3S BACTERICIDE	Halliburton	Biocide	2,2 Dibromo-3-nitrilopropionamide	10222-01-2	100.00%	0.00035%
			2-Monobromo-3-nitrilopropionamide	1113-55-9	5.00%	0.00002%
			Crystalline silica, quartz	14808-60-7		
			Fatty alcohol polyglycol ether surfactant	9043-30-5		
			Oxyalkylated Phenolic Resin	Confidential Business Information		
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			Quaternary ammonium compounds, bis(hydrogenated tallow alkyl) dimethyl, salts with bentonite	68953-58-2		
			Sodium chloride	7647-14-5		
			Sodium sulfate	7757-82-6		
			Water	7732-18-5		

* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredients Listed Below (white line). This Line Are Part of the Fluid Composition Provided by Halliburton Which Do Not Appear On the Material Safety Data Sheets (MSDS)

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

