

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	5/31/2012
State:	California
County:	Kern
API Number:	04-030-47088
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	34-31R
Longitude:	-119.549178
Latitude:	35.276399
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,361
Total Water Volume (gal)*:	43,402

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
7% KCL Water	Operator				100.00%	62.66445%	Density = 8.700
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	14.59751%	
CRC SAND	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	22.19118%	
			Hexamethylenetetramine	100-97-0	2.00%	0.44382%	
			Phenol / formaldehyde resin	9003-35-4	5.00%	1.10956%	
CAT-3 ACTIVATOR	Halliburton	Activator	EDTA/Copper chelate	Confidential Business Information	30.00%	0.00659%	
SUPERSET W	Halliburton	Activator	Methanol	67-56-1	60.00%	0.04481%	
			Ethoxylated nonylphenol	Confidential Business Information	60.00%	0.04481%	
MO-67	Halliburton	pH Control Additive	Sodium hydroxide	1310-73-2	30.00%	0.00529%	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.00446%	

			Acetic anhydride	108-24-7	100.00%	0.00744%
LGC-36 UC	Halliburton	Liquid Gel Concentrate	Guar gum	9000-30-0	60.00%	0.16851%
			Naphtha, hydrotreated heavy	64742-48-9	60.00%	0.16851%
BC-140	Halliburton	Crosslinker	Ethylene glycol	107-21-1	30.00%	0.02738%
			Monoethanolamine borate	26038-87-9	60.00%	0.05477%
LOSURF-300 NONIONIC SURFACTANT	Halliburton	Surfactant	Isopropanol	67-63-0	60.00%	0.02872%
			Light aromatic solvent	64742-95-6	30.00%	0.01436%
			Ethoxylated nonylphenol	Confidential Business Information	10.00%	0.00479%
BE-3S BACTERICIDE	Halliburton	Biocide	2,2 Dibromo-3-nitrilopropionamide	10222-01-2	100.00%	0.00100%
			2-Monobromo-3-nitrilopropionamide	1113-55-9	5.00%	0.00005%
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00166%
GBW-30 BREAKER	Halliburton	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.00037%
			Carbohydrates	Confidential Business Information	95.00%	0.00236%
			Crystalline silica, quartz	14808-60-7		
			Fatty alcohol polyglycol ether surfactant	9043-30-5		
			Formaldehyde polymer with 4,1,1-dimethylethyl phenolmethyl oxirane	29316-47-0		
			Formaldehyde polymer with methyl oxirane, 4-nonylphenol and oxirane	63428-92-2		
			Naphthalene	91-20-3		
			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 The White Line Are Part of the Fluid Composition Provided by Halliburton Which Do Not Appear On the Material Safety Data Sheets (MSDS)

v2.0

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