

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	5/24/2012
State:	California
County:	Kern
API Number:	0403047644
Operator Name:	Occidental of Elk Hills, Inc.
Well Name and Number:	22-31R
Longitude:	-119.550855
Latitude:	35.27945
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	3,229
Total Water Volume (gal)*:	33,852

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
7% KCL Water	Operator				100.00%	4.94328%	Density = 8.700
SAND - PREMIUM BROWN	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	46.52714%	
CRC SAND	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	46.68999%	
			Hexamethylenetetramine	100-97-0	2.00%	0.93380%	
			Phenol / formaldehyde resin	9003-35-4	5.00%	2.33450%	
CAT-3 ACTIVATOR	Halliburton	Activator	EDTA/Copper chelate	Confidential Business Information	30.00%	0.04669%	
GBW-30 BREAKER	Halliburton	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.06606%	
			Carbohydrates	Confidential Business Information	95.00%	0.41840%	
LoSurf-300M	Halliburton				100.00%	0.00000%	Not Found in DB
SUPERSET W	Halliburton	Activator	Methanol	67-56-1	60.00%	0.07931%	

BC-140	Halliburton	Crosslinker	Ethoxylated nonylphenol	Confidential Business Information	60.00%	0.07931%
			Ethylene glycol	107-21-1	30.00%	0.05287%
			Monoethanolamine borate	26038-87-9	60.00%	0.10574%
MO-67	Halliburton	pH Control Additive	Sodium hydroxide	1310-73-2	30.00%	0.02471%
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.02653%
			Acetic anhydride	108-24-7	100.00%	0.04422%
			Guar gum	9000-30-0	60.00%	0.45552%
LGC-36 UC	Halliburton	Liquid Gel Concentrate	Naphtha, hydrotreated heavy	64742-48-9	60.00%	0.45552%
BE-3S BACTERICIDE	Halliburton	Biocide	2,2 Dibromo-3-nitrilopropionamide	10222-01-2	100.00%	0.00352%
			2-Monobromo-3-nitrilopropionamide	1113-55-9	5.00%	0.00018%
			Sodium persulfate	7775-27-1	100.00%	0.01057%
SP BREAKER	Halliburton	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.00529%
GBW-30 BREAKER	Halliburton	Breaker	Carbohydrates	Confidential Business Information	95.00%	0.03349%
			Crystalline silica, quartz	14808-60-7		
			Fatty alcohol polyglycol ether surfactant	9043-30-5		
			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)

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

