

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	2012-11-29
State:	North Dakota
County:	Mountrail
API Number:	3306102189
Operator Name:	WHITING OIL & GAS CORP - EBUS
Well Name and Number:	Bartleson 13-18-2TFX
Longitude:	-102.57
Latitude:	48.07
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	10,369
Total Water Volume (gal)*:	1,094,737

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentratio n in Additive (% by mass)**	Maximum Ingredient Concentratio n in HF Fluid (% by mass)**	Comments
Fresh Water	Operator				100.00%	82.41057%	Density = 8.330
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	16.84969%	
MO-67	Halliburton	pH Control Additive	Sodium hydroxide	1310-73-2	30.00%	0.02128%	
CL-31 CROSSLINKER	Halliburton	Crosslinker	Potassium hydroxide	1310-58-3	5.00%	0.00460%	
			Potassium metaborate	13709-94-9	60.00%	0.05519%	
CL-37M Crosslinker	Halliburton	Crosslinker	Glycerine	56-81-5	10.00%	0.00190%	
			Methanol	67-56-1	60.00%	0.01142%	
			Propanol	71-23-8	10.00%	0.00190%	
			Triethanolamine zirconate	101033-44-7	60.00%	0.01142%	
VICON NF BREAKER	Halliburton	Breaker	Chlorous acid, sodium salt	7758-19-2	10.00%	0.02002%	

			Sodium chloride	7647-14-5	30.00%	0.06007%
CLA-WEB™	Halliburton	Additive	Ammonium salt	Confidential Business Information	50.00%	0.02628%
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.00405%
LoSurf-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00072%
			Ethanol	64-17-5	60.00%	0.04310%
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.02155%
			Naphthalene	91-20-3	5.00%	0.00359%
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydr oxy-, branched	127087-87-0	5.00%	0.00359%
CAT-3 ACTIVATOR	Halliburton	Activator	EDTA/Copper chelate	Confidential Business Information	30.00%	0.01281%
WG-18 GELLING AGENT	Halliburton	Gelling Agent	Guar gum derivative	Confidential Business Information	100.00%	0.17080%
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00443%
OptiKleen-WF™	Halliburton	Concentrate	Sodium perborate tetrahydrate	10486-00-7	100.00%	0.00146%
GBW-30 BREAKER	Halliburton	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.00004%
			Carbohydrates	Confidential Business Information	95.00%	0.00027%
Ingredients Listed Below This Line Are Part of the Fluid Composition Provided by Halliburton Which Do Not Appear On the Material Safety Data Sheets (MSDS)						
			Alcohols, C12-16, ethoxylated	68551-12-2		
			Amine Salts	Confidential Business Information		
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			Ammonium chloride	12125-02-9		
			Oxyalkylated Phenolic Resin	Confidential Business Information		
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			Polyacrylamide Copolymer	Confidential Business Information		
			Quaternary Amine	Confidential Business Information		
			Quaternary Amine	Confidential Business Information		
			Quaternary Amine	Confidential Business Information		
			Silica, amorphous - fumed	7631-86-9		
			Sodium bicarbonate	144-55-8		
			Sodium chloride	7647-14-5		

	Sodium sulfate	7757-82-6
	Sorbitan monooleate polyoxyethylene derivative	9005-65-6
	Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8
	Tall oil acid diethanolamide	68155-20-4
	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.

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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)