

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/24/2014
Job End Date:	1/24/2014
State:	Wyoming
County:	Park
API Number:	49-029-31240-00-00
Operator Name:	Marathon Oil
Well Name and Number:	Pitchfork 114H
Longitude:	-109.06014000
Latitude:	44.13228000
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,394
Total Base Water Volume (gal):	27,702
Total Base Non Water Volume:	0



## 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
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	82.18259	Density = 8.340
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	16.26336	
LGC-VI	Halliburton	Liquid Gel Concentrate					
			Guar gum derivative	Confidential	60.00000	0.31661	
			Diesel	68476-34-6	60.00000	0.31661	
SSA-2	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	0.53357	
GBW-30 BREAKER	Halliburton	Breaker					
			Carbohydrates	Confidential	100.00000	0.12890	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
			Hemicellulase enzyme	9012-54-8	30.00000	0.03867	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.08025	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.04012	

			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00669
			Naphthalene	91-20-3	5.00000	0.00669
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00134
BC-140	Halliburton	Crosslinker				
			Monoethanolamine borate	26038-87-9	60.00000	0.07043
			Ethylene glycol	107-21-1	30.00000	0.03522
WLC-6 FLUID LOSS ADDITIVE	Halliburton	Fluid Loss Additive				
			Tallow soap	Confidential	100.00000	0.08893
GBW-30 BREAKER	Halliburton	Breaker				
			Carbohydrates	Confidential	100.00000	0.01032
			Hemicellulase enzyme	9012-54-8	30.00000	0.00309
SP BREAKER	Halliburton	Breaker				
			Sodium persulfate	7775-27-1	100.00000	0.01032
BE-6 MICROBIOCIDES	Halliburton	Biocide				
			2-Bromo-2-nitro-1,3-propanediol	52-51-7	100.00000	0.00320
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.						
		Other Ingredient(s)				
			Water	7732-18-5		0.07096
		Other Ingredient(s)				
			Oxyalkylated phenolic resin	Confidential		0.04012
		Other Ingredient(s)				
			Ethoxylated branched C13 alcohol	78330-21-9		0.02638
		Other Ingredient(s)				
			Oxyalkylated phenolic resin	Confidential		0.01337
		Other Ingredient(s)				
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00528
		Other Ingredient(s)				
			Sodium sulfate	7757-82-6		0.00001

\* 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.

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