

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/22/2013
Job End Date:	11/22/2013
State:	Oklahoma
County:	Payne
API Number:	35-119-24138-00-00
Operator Name:	Calyx Energy, LLC
Well Name and Number:	Holderread 34-4MH
Longitude:	-96.86100000
Latitude:	36.00100000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	0
Total Base Water Volume (gal):	3,156,618
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	94.83651	Density = 8.340
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	4.00553	
HYDROCHLORIC ACID 10-30%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	30.00000	0.29940	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02142	
LoSurf-360W	Halliburton	Surfactant					
			Poly(oxy-1,2-ethanediyl), alpha.-isodecyl.-omega.-hydroxy-	61827-42-7	30.00000	0.01354	
			Glycerine	56-81-5	10.00000	0.00451	
			Complex alkylamine	Confidential	5.00000	0.00226	
OptiKleen-WFT™	Halliburton	Concentrate					
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.01070	
BE-7™	Halliburton	Biocide					
			Sodium hypochlorite	7681-52-9	30.00000	0.00789	
			Sodium hydroxide	1310-73-2	2.00000	0.00053	

HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00384	
			Propargyl alcohol	107-19-7	10.00000	0.00064	
BioBalls	Santrol Proppants	Diverter					
			Polyactide Resin	9051-89-2	100.00000	0.00001	
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		1.11228	
		Other Ingredient(s)					
			Polyacrylamide copolymer	Confidential		0.02142	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00357	
		Other Ingredient(s)					
			Ammonium chloride	12125-02-9		0.00357	
		Other Ingredient(s)					
			Fatty acid tall oil amide	Confidential		0.00357	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.00357	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00192	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00192	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00192	
		Other Ingredient(s)					
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8		0.00071	
		Other Ingredient(s)					
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6		0.00071	
		Other Ingredient(s)					
			Alkane	Confidential		0.00045	
		Other Ingredient(s)					
			Olefins	Confidential		0.00032	
		Other Ingredient(s)					
			Olefins	Confidential		0.00032	
		Other Ingredient(s)					
			Olefins	Confidential		0.00006	
		Other Ingredient(s)					
			Olefins	Confidential		0.00006	
		Other Ingredient(s)					
			Sodium hydroxide	1310-73-2		0.00000	
		Other Ingredient(s)					

			Sodium bicarbonate	144-55-8		0.00000	
		Other Ingredient(s)					
			Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8		0.00000	
		Other Ingredient(s)					
			Hydrogen peroxide	7722-84-1		0.00000	
		Other Ingredient(s)					
			Sodium glycollate	2836-32-0		0.00000	
		Other Ingredient(s)					
			Nitrotriactic acid, trisodium salt monohydrate	5064-31-3		0.00000	

* 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)