

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/4/2014
Job End Date:	9/4/2014
State:	Colorado
County:	La Plata
API Number:	05-067-07632-00-00
Operator Name:	BP America Production Company
Well Name and Number:	Tubbs Gas Unit 32-6-9 B 1
Longitude:	-107.50027200
Latitude:	37.03523200
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	3,250
Total Base Water Volume (gal):	121,728
Total Base Non Water Volume:	3,186



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
Hydrochloric Acid 10-30%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	30.00000	0.43820	
LGC-36 UC	Halliburton	Liquid Gel Concentrate					
			Hydrotreated light petroleum distillate	64742-47-8	60.00000	0.22421	
LGC-36 UC	Halliburton	Liquid Gel Concentrate					
			Guar gum	9000-30-0	60.00000	0.22421	
Expedite 225 Component A	Halliburton	Resin					
			Epoxy resin	Proprietary	100.00000	0.14741	
BC-140	Halliburton	Crosslinker					
			Monoethanolamine borate	26038-87-9	60.00000	0.09400	
Expedite 225 Component B	Halliburton	Hardener					
			Modified cycloaliphatic amine adduct	Mixture	60.00000	0.06701	
Expedite 225 Component B	Halliburton	Hardener					
			Methanol	67-56-1	60.00000	0.06701	
BC-140	Halliburton	Crosslinker					
			Ethylene glycol	107-21-1	30.00000	0.04700	

Expedite 225 Component A	Halliburton	Resin					
			Butyl glycidyl ether	2426-08-6	30.00000	0.04422	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.04381	
Expedite 225 Clean-Up Solution	Halliburton	Solvent					
			Ethylene glycol monobutyl ether	111-76-2	60.00000	0.03133	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.02191	
Expedite 225 Component A	Halliburton	Resin					
			Butyl lactate	138-22-7	10.00000	0.01474	
Expedite 225 Component B	Halliburton	Hardener					
			Phosphate ester	Proprietary	10.00000	0.01117	
Optiflo-THE	Halliburton	Breaker					
			Walnut hulls	Mixture	100.00000	0.00751	
LCA-1	Halliburton	Solvent					
			Paraffinic solvent	Proprietary	100.00000	0.00545	
Expedite 225 Clean-Up Solution	Halliburton	Solvent					
			Acetic acid	64-19-7	10.00000	0.00522	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00365	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Naphthalene	91-20-3	5.00000	0.00365	
Optiflo-HTE	Halliburton	Breaker					
			Crystalline silica, quartz	14808-60-7	30.00000	0.00225	
GBW-30 BREAKER	Halliburton	Breaker					
			Hemicellulase enzyme	9012-54-8	30.00000	0.00091	
HAI-OS Acid Inhibitor	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00073	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00073	
HAI-OS Acid Inhibitor	Halliburton	Corrosion Inhibitor					
			Propargyl alcohol	107-19-7	10.00000	0.00012	
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.							
Fresh Water	BP	Base Fluid					
			Fresh water	7732-18-5	100.00000	82.74297	Density = 8.330
Sand - Premium Brown	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	14.86449	
None Indicated	Halliburton	None Indicated					

			Water	7732-18-5		1.58600	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Oxyalkylated phenolic resin	Proprietary		0.02191	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Quaternary ammonium compounds, bis(hydrogenated tallow alkyl) dimethyl, salts with bentonite	68953-58-2		0.01868	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Oxyalkylated phenolic resin	Proprietary		0.00730	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Quaternary amine	Proprietary		0.00558	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Organo amino silane	Proprietary		0.00558	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Fatty alcohol polyglycol ether surfactant	9043-30-5		0.00374	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Cured acrylic resin	Proprietary		0.00225	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Siloxanes and silicones, dimethyl	63148-52-7		0.00112	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					

			Phosphoric acid	7664-38-2		0.00112	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Enzyme	Proprietary		0.00038	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Crystalline silica, quartz	14808-60-7		0.00037	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Fatty acids, tall oil	Proprietary		0.00036	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00036	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00036	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Ethylenediamine	107-15-3		0.00011	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			C.I. Pigment Red 5	6410-41-9		0.00008	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Cured acrylic resin	Proprietary		0.00008	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					

			Olefins	Proprietary		0.00006	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Olefins	Proprietary		0.00006	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			FD&C Blue 1	3844-45-9		0.00001	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			2-Naphthalenesulfonic acid, 6-hydroxy-5-[(4-sulfohenyl)azo]-, disodium salt	2783-94-0		0.00001	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Olefins	Proprietary		0.00001	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			Olefins	Proprietary		0.00001	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)
None Indicated	Halliburton	None Indicated					
			1H-Pyrazole-3-carboxylic acid, 4,5-dihydro-5-oxo-1-(4-sulfohenyl)-4-[(4-sulfohenyl)azo]-, trisodium salt	1934-21-0		0.00001	This Line is Part of the Fluid Composition Provided by Halliburton Which Does Not Appear On the Material Safety Data Sheets (MSDS)

* 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)