

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/2/2015
Job End Date:	11/22/2015
State:	Texas
County:	Martin
API Number:	42-317-40197-00-00
Operator Name:	QEP Energy Company
Well Name and Number:	UNIVERSITY 7-1302 H2 SS
Longitude:	-102.18660000
Latitude:	32.41442300
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	9,425
Total Base Water Volume (gal):	12,835,339
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	87.56869	Density = 8.340
SAND - PREMIUM - 30/50	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	7.09434	
SAND - PREMIUM - 40/70	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	3.57101	
CRC Premium 30/50	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	0.85656	
			Phenol / formaldehyde resin	9003-35-4	5.00000	0.04283	
			Hexamethylenetetramine	100-97-0	2.00000	0.01713	
HCl > 10%	Halliburton	Solvent					
			Hydrochloric Acid	7647-01-0	100.00000	0.63035	
DCA-22001	Halliburton	Cleaner					
			Ethylene glycol monobutyl ether	111-76-2	60.00000	0.04978	
			Isopropanol	67-63-0	30.00000	0.02524	
			Poly(oxy-1,2-ethandiyl), a-(nonylphenyl)-w-hydroxy-	9016-45-9	10.00000	0.00830	
			Ethylene glycol	107-21-1	5.00000	0.00415	

WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00000	0.05275	
FR-76	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02645	
BC-140 X2	Halliburton	Initiator					
			Monoethanolamine borate	26038-87-9	100.00000	0.00827	
			Ethylene glycol	107-21-1	30.00000	0.00248	
OptiKleen-WF(TM)	Halliburton	Concentrate					
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.00783	
BA-20 BUFFERING AGENT	Halliburton	Buffer					
			Ammonium acetate	631-61-8	100.00000	0.00406	
			Acetic acid	64-19-7	30.00000	0.00122	
SandWedge(R) NT	Halliburton	Conductivity Enhancer					
			Dipropylene glycol monomethyl ether	34590-94-8	60.00000	0.00356	
			Heavy aromatic petroleum naphtha	64742-94-5	10.00000	0.00059	
CLA-STA XP ADDITIVE	Halliburton	Clay Stabilizer					
			Polyepichlorohydrin, trimethyl amine quaternized	51838-31-4	60.00000	0.00410	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00189	
			Acetic acid	64-19-7	60.00000	0.00113	
OPTIFLO-III A DELAYED RELEASE BREAKER	Halliburton	Breaker					
			Ammonium persulfate	7727-54-0	100.00000	0.00281	
MO-67	Halliburton	pH Control Additive					
			Sodium hydroxide	1310-73-2	30.00000	0.00212	
CLAYFIX 3	Halliburton	Additive					
			Sodium chloride	7647-14-5	30.00000	0.00207	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00094	
			Propargyl alcohol	107-19-7	10.00000	0.00016	
LOSURF-360	Halliburton	Surfactant					
			Poly(oxy-1,2-ethanediyl), alpha.-isodecyl-.omega.-hydroxy-	61827-42-7	30.00000	0.00018	
			Complex Alkylamine	100545-50-4	5.00000	0.00003	
HpH BREAKER	Halliburton	Breaker					
			Sodium chloride	7647-14-5	30.00000	0.00007	
Windshield Washer Fluid	Spectrum Tracer Services, LLC	Diagnostics					
			Inert ingredients	Mixture	60.00000	0.00001	

			Methanol	67-56-1	40.00000	0.00001	
Frac Fluid Identifier (FFI)	Spectrum Tracer Services, LLC	Diagnostics					
			Water	7732-18-5	94.00000	0.00001	
			Sodium Salts	Trade Secret	6.00000	0.00000	
Oil/Water Soluble Tracer (OST)/(WST)	Spectrum Tracer Services, LLC	Diagnostics					
			Charcoal	7440-44-0	90.00000	0.00000	
			Inert Ingredients	Trade Secret	10.00000	0.00000	
Kelzan L	Spectrum Tracer Services, LLC	Diagnostics					
			Dipropylene glycol monomethyl ether	34590-94-8	50.00000	0.00000	
			Xanthan Gum	11138-66-2	50.00000	0.00000	
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		0.08227	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.07935	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.05048	
		Other Ingredient(s)					
			Poly(oxy-1,2-ethanediyl), alpha-hexyl-omega-hydroxy(C2H4O)N(C6H14O)	31726-34-8		0.04978	
		Other Ingredient(s)					
			Acrylamide acrylate polymer	Confidential		0.02645	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
		Other Ingredient(s)					
			2-Ethyl hexanol	104-76-7		0.02489	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00264	
		Other Ingredient(s)					
			Methanol	67-56-1		0.00089	
		Other Ingredient(s)					
			Polymer	Confidential		0.00084	
		Other Ingredient(s)					
			Quaternary ammonium compound	Confidential		0.00059	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00053	
		Other Ingredient(s)					
			Silica gel	112926-00-8		0.00053	
		Other Ingredient(s)					

			Surfactant mixture	Confidential		0.00053	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00047	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00047	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00047	
		Other Ingredient(s)					
			Magnesium chloride hexahydrate	7791-18-6		0.00034	
		Other Ingredient(s)					
			Inorganic salt	Confidential		0.00034	
		Other Ingredient(s)					
			Trimethylamine, N-oxide	1184-78-7		0.00034	
		Other Ingredient(s)					
			Olefins	Confidential		0.00008	
		Other Ingredient(s)					
			Olefins	Confidential		0.00008	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00007	
		Other Ingredient(s)					
			Calcium chloride	10043-52-4		0.00007	
		Other Ingredient(s)					
			Crystalline Silica, Quartz	14808-60-7		0.00005	
		Other Ingredient(s)					
			Inorganic salt	Confidential		0.00003	
		Other Ingredient(s)					
			Talc	14807-96-6		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00002	
		Other Ingredient(s)					
			Olefins	Confidential		0.00002	
		Other Ingredient(s)					
			Ethylene oxide	75-21-8		0.00001	
		Other Ingredient(s)					
			2,7-Naphthalenedisulfonic acid, 3-hydroxy-4-[(4-sulfor-1-naphthalenyl) azo] -, trisodium salt	915-67-3		0.00001	
		Other Ingredient(s)					
			Alkane	Confidential		0.00001	
		Other Ingredient(s)					
			Enzyme	Confidential		0.00000	
		Other Ingredient(s)					
			Naphthalene	91-20-3		0.00000	

	Other Ingredient(s)					
		1,2-Benzisothiazolin-3-one	2634-33-5		0.00000	
	Other Ingredient(s)					
		Ethylenediaminetetraacetic acid, tetrasodium salt	64-02-8		0.00000	
	Other Ingredient(s)					
		Sodium bicarbonate	144-55-8		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)