

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/23/2015
Job End Date:	1/24/2015
State:	Texas
County:	Martin
API Number:	42-317-39848-00-00
Operator Name:	QEP Energy Company
Well Name and Number:	UNIVERSITY 7-27 H6 WD
Longitude:	-102.17373500
Latitude:	32.39423100
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	10,745
Total Base Water Volume (gal):	5,209,184
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	78.13837	Density = 8.330
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00000	19.77508	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00000	0.23954	
HYDROCHLORIC ACID 5-10%	Halliburton	Solvent	Hydrochloric acid	7647-01-0	10.00000	0.15421	
DCA-32003	Halliburton	Surfactant	Methanol	67-56-1	100.00000	0.09650	Density = 7.440
			Alkylbenzene sulfonate, compd. with triethanolamine	Proprietary	10.00000	0.00965	
			Alkylbenzene Sulfonate, compd. with 2-propanamine	Proprietary	10.00000	0.00965	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.03321	
BC-140 X2	Halliburton	Initiator	Monoethanolamine borate	26038-87-9	100.00000	0.01361	

			Ethylene glycol	107-21-1	30.00000	0.00408	
OptiKleen-WF™	Halliburton	Concentrate					
			Sodium perborate tetrahydrate	10486-00-7	100.00000	0.00822	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00479	
			Acetic acid	64-19-7	60.00000	0.00288	
SandWedge® NT	Halliburton	Conductivity Enhancer					
			Dipropylene glycol monomethyl ether	34590-94-8	60.00000	0.00623	
			Heavy aromatic petroleum naphtha	64742-94-5	10.00000	0.00104	
CLA-STA XP ADDITIVE	Halliburton	Clay Stabilizer					
			Polyepichlorohydrin, trimethyl amine quaternized	51838-31-4	60.00000	0.00695	
BA-20 BUFFERING AGENT	Halliburton	Buffer					
			Ammonium acetate	631-61-8	100.00000	0.00511	
			Acetic acid	64-19-7	30.00000	0.00153	
OPTIFLO-III A DELAYED RELEASE BREAKER	Halliburton	Breaker					
			Ammonium persulfate	7727-54-0	100.00000	0.00465	
			Crystalline silica, quartz	14808-60-7	30.00000	0.00140	
Clayfix 3	Halliburton	Additive					
			Sodium chloride	7647-14-5	30.00000	0.00451	
MO-67	Halliburton	pH Control Additive					
			Sodium hydroxide	1310-73-2	30.00000	0.00352	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00238	
			Propargyl alcohol	107-19-7	10.00000	0.00040	
ISOPROPYL ALCOHOL	Halliburton	Solvent					
			Isopropanol	67-63-0	100.00000	0.00261	
MC B-8614	Multi-Chem	Biocide					
			Glutaraldehyde	111-30-8	30.00000	0.00075	Density = 8.680
			Alkyl (C12-16) dimethylbenzylammonium chloride	68424-85-1	5.00000	0.00013	
MC S-2510T	Multi-Chem	Scale Inhibitor					
			Ethylene glycol	107-21-1	60.00000	0.00084	Density = 9.720
			Sodium hydroxide	1310-73-2	1.59000	0.00002	
			Acrylic acid	79-10-7		0.00000	
LoSurf-360W	Halliburton	Surfactant					
			Poly(oxy-1,2-ethanediyl), alpha.-isodecyl-.omega.-hydroxy-	61827-42-7	30.00000	0.00046	
			Glycerine	56-81-5	10.00000	0.00015	

			Complex alkylamine	Proprietary	5.00000	0.00008	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
HpH BREAKER	Halliburton	Breaker					
			Sodium chloride	7647-14-5	30.00000	0.00015	
D-AIR 3000L	Halliburton	Defoamer					
			Alkenes	Proprietary	100.00000	0.00008	
			Silica, amorphous precipitated	67762-90-7	30.00000	0.00002	
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		1.65025	
		Other Ingredient(s)					
			Polyacrylamide copolymer	Confidential		0.03321	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.01198	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00565	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.00554	
		Other Ingredient(s)					
			Ammonium chloride	12125-02-9		0.00554	
		Other Ingredient(s)					
			Fatty acid tall oil amide	Confidential		0.00554	
		Other Ingredient(s)					
			Silica gel	112926-00-8		0.00240	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00240	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00240	
		Other Ingredient(s)					
			Cured acrylic resin	Confidential		0.00140	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00119	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00119	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00119	
		Other Ingredient(s)					
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6		0.00111	
		Other Ingredient(s)					

			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8		0.00111	
		Other Ingredient(s)					
			Quaternary ammonium compound	Confidential		0.00104	
		Other Ingredient(s)					
			Magnesium chloride hexahydrate	7791-18-6		0.00075	
		Other Ingredient(s)					
			Inorganic salt	Confidential		0.00075	
		Other Ingredient(s)					
			Trimethylamine, N-oxide	1184-78-7		0.00058	
		Other Ingredient(s)					
			Crystalline Silica, Quartz	14808-60-7		0.00024	
		Other Ingredient(s)					
			Olefins	Confidential		0.00020	
		Other Ingredient(s)					
			Olefins	Confidential		0.00020	
		Other Ingredient(s)					
			Calcium chloride	10043-52-4		0.00015	
		Other Ingredient(s)					
			Methanol	67-56-1		0.00010	
		Other Ingredient(s)					
			Olefins	Confidential		0.00004	
		Other Ingredient(s)					
			Olefins	Confidential		0.00004	
		Other Ingredient(s)					
			Polypropylene glycol	25322-69-4		0.00002	
		Other Ingredient(s)					
			Alkane	Confidential		0.00002	
		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)					
			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)					
			Sodium bicarbonate	144-55-8		0.00000	
		Other Ingredient(s)					
			Nitrotriacetic acid, trisodium salt monohydrate	5064-31-3		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 hydroxide	1310-73-2		0.00000	
		Other Ingredient(s)					
			Sodium glycollate	2836-32-0		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)