

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/10/2012
Job End Date:	12/16/2012
State:	Michigan
County:	Kalkaska
API Number:	21-079-60579-00-00
Operator Name:	Encana Oil & Gas (USA) Inc.
Well Name and Number:	State Garfield 1-25 HD-1
Longitude:	-84.97572500
Latitude:	44.51433840
Datum:	NAD27
Federal Well:	NO
Total Base Water Volume (gal):	12,539,639
Total Base Non Water Volume:	



## 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	Onsite Groundwater Well - Encana	Base Fluid					
			Water	7732-18-5	100.00	90.68747	Density = 8.330
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00	8.41200	
FE ACID - >10% HCL	Halliburton	Acid					
			Hydrochloric acid	7647-01-0	30.00	0.54668	Density = 8.900
FE ACID - <10% HCL	Halliburton	Solvent					

			Hydrochloric acid	7647-01-0	10.00	0.09064	Density = 8.700
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00	0.04836	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00	0.02418	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00	0.00403	
			Naphthalene	91-20-3	5.00	0.00403	
			1,2,4 Trimethylbenzene	95-63-6	1.00	0.00081	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00	0.03840	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00	0.00693	
LP-65	Halliburton	Scale Inhibitor					
			Ammonium chloride	12125-02-9	10.00	0.00255	
BE-9	Halliburton	Biocide					
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00	0.00211	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00	0.00030	
			Propargyl alcohol	107-19-7	10.00	0.00005	
SP BREAKER	Halliburton	Breaker					
			Sodium persulfate	7775-27-1	100.00	0.00035	
Chemical Frac Tracers (CFT)	ProTechnics	Diagnostic					
			Water	7732-18-5	90.00	0.00022	Hazardous: No
			Proprietary Ingredient supplied as 10% w/v Aqueous Solution	Proprietary	10.00	0.00002	Hazardous: No

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.

\* 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)