

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	10/30/2012
State:	Michigan
County:	Kalkaska
API Number:	21-079-60546
Operator Name:	Encana Oil & Gas (USA) Inc.
Well Name and Number:	State Excelsior 3-25 HD-1
Longitude:	-84.978536
Latitude:	44.6830619
Long/Lat Projection:	NAD27
Production Type:	Gas
True Vertical Depth (TVD):	8,942
Total Water Volume (gal)*:	21,112,194

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		100.00%	94.45588%	Density = 8.330
FE ACID - >10% HCL	Halliburton	Acid	Hydrochloric acid	7647-01-0	30.00%	0.55123%	Density = 8.940
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	4.73851%	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.03786%	
Scalechek® LP-65 Scale Inhibitor	Halliburton	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00257%	
BE-9	Halliburton	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00219%	
LoSurf-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00080%	
			Ethanol	64-17-5	60.00%	0.04795%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.02398%	
			Naphthalene	91-20-3	5.00%	0.00400%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00400%	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.00%	0.00045%	
			Propargyl alcohol	107-19-7	10.00%	0.00007%	

* 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%

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

