

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/17/2014
Job End Date:	7/17/2014
State:	Alabama
County:	Pickens
API Number:	01-107-20382-00-00
Operator Name:	Land and Natural Resource Development, Inc
Well Name and Number:	Weyerhaeuser 28-9 #1
Longitude:	-88.10224000
Latitude:	33.46193000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	5,265
Total Base Water Volume (gal):	111,552
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
Water	Land and Natural Resource Development, Inc	Water					
			Water	7732-18-5	100.00000	83.14622	
AL Local 12/20 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - Alabama					
			Crystalline Silica, quartz	14808-60-7	99.90000	14.73155	
			Aluminum Oxide	1344-28-1	1.10000	0.16221	
			Iron Oxide	1309-37-1	0.10000	0.01475	
			Titanium Oxide	13463-67-7	0.10000	0.01475	
KCl (Potassium Chloride)	Nabors Completion and Production Services	Clay Control Additives					
			Potassium Chloride	7447-40-7	100.00000	1.00096	
LSG-100	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	60.00000	0.31588	
			guar gum	9000-30-0	50.00000	0.26323	
			Surfactant	68439-51-0	2.00000	0.01053	

HCl Acid (12.5-18.0%), 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.34240	
			Hydrochloric Acid	7647-01-0	18.00000	0.07044	
Super CS-2	Nabors Completion and Production Services	Surfactants & Foamers					
			Citrus Terpenes	94266-47-4	60.00000	0.05291	
			Isopropanol	67-63-0	50.00000	0.04409	
XL-10M	Nabors Completion and Production Services	Cross-linkers					
			Glycerin	56-81-5	40.00000	0.03125	
			Sodium Tetraborate Pentahydrate	12179-04-3	20.00000	0.01562	
			Potassium Hydroxide	1310-58-3	10.00000	0.00781	
OB Breaker	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00983	
BioClear 1000	Nabors Completion and Production Services	Biocides					
			2,2-Dibromo-3-nitrilo- propionamide (DBNPA)	10222-01-2	100.00000	0.00188	
Acid Inhibitor 3M (AI- 3M)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Ethylene Glycol	107-21-1	40.00000	0.00064	
			N,N-Dimethylformamide	68-12-2	20.00000	0.00032	
			2-Butoxyethanol	111-76-2	7.00000	0.00011	
			Cinnamaldehyde	104-55-2	6.00000	0.00010	
			1-DECANOL	112-30-1	5.00000	0.00008	
			Ethoxylated Nonyphenol	68412-54-4	5.00000	0.00008	
			Isopropyl Alcohol	67-63-0	2.50000	0.00004	
			1-OCTANOL	111-87-5	2.50000	0.00004	
			Triethyl Phosphate	78-40-0	2.50000	0.00004	
OB Activator	Nabors Completion and Production Services	Gel Breakers					
			Copper Sulfate pentahydrate	7758-99-8	30.00000	0.00138	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Ethylene Glycol	107-21-1	40.00000	0.00109	
Super OW 3	Nabors Completion and Production Services	Surfactants & Foamers					
			Isopropyl Alcohol	67-63-0	60.00000	0.00041	
			Dimethylcocoamine, bis (chloroethyl) ether, diquatary ammonium salt	68607-28-3	60.00000	0.00041	

			Methanol	67-56-1	30.00000	0.00020	
IC-100L	Nabors Completion and Production Services	Iron Control Additives					
			Citric Acid Anhydrous	77-92-9	50.00000	0.00057	
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 Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Surfactants	Proprietary	50.00000	0.04409	
			Water	7732-18-5	50.00000	0.03906	
			Water	7732-18-5	20.00000	0.01764	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.01053	
			Organophylic Clay	68953-58-2	2.00000	0.01053	
			Triethylene Glycol	112-27-6	10.00000	0.00882	
			Water	7732-18-5	100.00000	0.00458	
			Sugar	57-50-1	100.00000	0.00273	
			Proprietary	Proprietary	100.00000	0.00273	
			Water	7732-18-5	100.00000	0.00136	
			Water	7732-18-5	50.00000	0.00057	
			Water	7732-18-5	60.00000	0.00041	
			Water	7732-18-5	25.00000	0.00040	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	13.00000	0.00021	
			Dimethyldiallylammonium chloride	7398-69-8	5.00000	0.00003	
			Proprietary	Proprietary	1.00000	0.00003	
			Proprietary	Proprietary	1.00000	0.00003	
			Proprietary	Proprietary	1.00000	0.00003	
			Proprietary	Proprietary	1.00000	0.00003	
			Polyethylene-Glycol	25322-68-3	1.00000	0.00002	

\* 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)