

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	11/6/2012
State:	North Dakota
County:	Stark
API Number:	33-089-00716
Operator Name:	Whiting Oil and Gas
Well Name and Number:	Hecker 11-18PH
Longitude:	-103.22
Latitude:	46.94
Long/Lat Projection:	NAD27
Production Type:	Oil
True Vertical Depth (TVD):	
Total Water Volume (gal)*:	1515040

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
Slickwater, ThermaFRAC25, HiWAY	Schlumberger	Bactericide (Myacide GA25), Friction Reducer, Breaker, Stabilizing Agent, Additive, Surfactant , Gelling Agent, Crosslinker, Scale Inhibitor, Activator, Demulsifier, Fluid Loss Additive , Propping Agent	Water (Including Mix Water Supplied by Client)*	-		86.71362%	
			Crystalline silica	14808-60-7	95.84091%	12.73379%	
			Guar gum, carboxymethyl 2-hydroxypropyl ether, sodium salt	68130-15-4	1.76879%	0.23501%	
			Tetramethylammonium chloride	75-57-0	0.53943%	0.07167%	
			Methanol	67-56-1	0.37332%	0.04960%	
			Polylactide resin	9051-89-2	0.30713%	0.04081%	
			Sodium hydroxide	1310-73-2	0.17792%	0.02364%	
			2,2',2"-nitrilotriethanol	102-71-6	0.14097%	0.01873%	
			Decyl-dimethyl amine oxide	2605-79-0	0.12995%	0.01727%	
			Sodium thiosulphate	7772-98-7	0.12113%	0.01609%	
			Alcohol, C9-11-iso, C10, ethoxylated	78330-20-8	0.06635%	0.00882%	
			Alcohol, C7-9-iso, C8, ethoxylated	78330-19-5	0.06635%	0.00882%	
			Sodium bromate	7789-38-0	0.05286%	0.00702%	
			Ethoxylated propoxylated 4-nonylphenol-formaldehyde resin	30846-35-6	0.04960%	0.00659%	
			Diammonium peroxidisulphate	7727-54-0	0.04093%	0.00544%	
			L-Glutamic acid	56-86-0	0.03956%	0.00526%	
			Heavy aromatic naphtha	64742-94-5	0.03350%	0.00445%	
			Glutaraldehyde	111-30-8	0.03319%	0.00441%	
			Alcohol, C11-14, ethoxylated	78330-21-9	0.03284%	0.00436%	

[illegible]


\* 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)