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	Schlumberge r	Bactericide (Myacide GA25), Friction Reducer, Breaker, Stabilizing Agent, Additive, Surfactant, Gelling Agent, Crosslinker, Scale Inhibitor, Activator, Demulsifier, Fluid Loss Additive, Propping Agent		-		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%	

	Quaternary ammonium compounds chlorides derivatives	68989-00-4	0.03284%	0.00436%	
	Acrylamide sodium acrylate copolymer	25085-02-3	0.02732%	0.00363%	
	Sodium tetraborate	1330-43-4	0.02705%	0.00359%	
	Zirconium dichloride oxide	7699-43-6	0.02375%	0.00316%	
	Distillates (petroleum), hydrotreated light	64742-47-8	0.02374%	0.00315%	
		65997-18-4	0.02013%	0.00267%	
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	Poly(oxy-1,2-ethanediyl)	25322-68-3	0.01474%	0.00196%	
	Fumaric acid	110-17-8	0.00969%	0.00129%	
	Naphtalene (impurity)	91-20-3	0.00670%	0.00089%	
	Vinylidene chloride/methylacrylate copolymer	25038-72-6	0.00500%	0.00066%	
	Non-crystalline silica	7631-86-9	0.00485%	0.00064%	
	Hydrogen peroxide (impurity)	7722-84-1	0.00151%	0.00020%	
	Decyldimethyl amine (impurity)	1120-24-7	0.00151%	0.00020%	
	 Polyethylene glycol sorbitan monolaurate	9005-64-5	0.00146%	0.00019%	
	Alkylalcohol, ethoxylate >C10	68002-97-1	0.00145%	0.00019%	
	Sorbitan monooleate	1338-43-8	0.00116%	0.00015%	
	Thiocyanic acid, ammonium salt	1762-95-4	0.00072%	0.00010%	
	Poly(oxyethylene) sorbitol monostearate	9005-67-8	0.00068%	0.00009%	
	Magnesium silicate hydrate (talc)	14807-96-6	0.00026%	0.00003%	
	Cetylethylmorpholinium ethyl sulfate	78-21-7	0.00009%	0.00001%	
	Tetrasodium	64-02-8	0.00001%	< 0.00001%	
	ethylenediaminetetraacetate				

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^{*} Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

^{**} Information is based on the maximum potential for concentration and thus the total may be over 100%