

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/19/2014
Job End Date:	12/29/2014
State:	Texas
County:	Andrews
API Number:	42-003-46553-00-00
Operator Name:	Elk River Resouces, LLC.
Well Name and Number:	WAPITI 12-17 1H
Longitude:	-102.90073000
Latitude:	32.25967000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	11,553
Total Base Water Volume (gal):	7,599,257
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	Operator	Carrier					
			Water	7732-18-5	100.00000	91.97058	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		3.34417	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		1.99029	SmartCare Product
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		1.17183	
Preferred Garnet RC 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.97367	
GW-4LDF	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.09720	
S-200	Baker Hughes	Surfactant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.08413	
FRW-18	Baker Hughes	Friction Reducer					

			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.07652	SmartCare Product
XLW-10A	Baker Hughes	Crosslinker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06300	
GW-4	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.04581	SmartCare Product
Alpha 125	Baker Hughes	Biocide					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01958	SmartCare Product
GBW-5	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00502	SmartCare Product
Ferrotrol 280L , 330 gl tote	Baker Hughes	Clay Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00440	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00353	
AG-12, 330 gl tote	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00085	
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.							
Ingredients in Additive (s) (MSDS and non- MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	4.50869	
			Water	7732-18-5	85.00000	1.84438	
			Crystalline Silica, Quartz (SiO2)	14808-60-7	98.00000	0.95265	
			Hydrochloric Acid	7647-01-0	15.00000	0.29806	
			Guar Gum	9000-30-0	100.00000	0.10397	
			Mineral Oil	8042-47-5	70.00000	0.06793	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.05229	
			Polyurethane Resin (Castor Oil)	8001-79-4	5.00000	0.04860	
			Paraffinic Petroleum Distillate	64742-55-8	30.00000	0.02911	
			Poly (acrylamide-co-acrylic acid) partial sodium salt	62649-23-4	30.00000	0.02292	
			Ethylene Glycol	107-21-1	30.00000	0.01887	
			Sodium Tetraborate	1330-43-4	20.00000	0.01258	
			Iron Oxide (colorant)	1309-37-1	1.00000	0.00972	
			Ethanol	64-17-5	10.00000	0.00840	
			Sodium Hydroxide	1310-73-2	10.00000	0.00629	
			Glutaraldehyde	111-30-8	30.00000	0.00587	
			Ammonium Persulphate	7727-54-0	100.00000	0.00501	
			2-Mercaptoethanol	60-24-2	100.00000	0.00440	
			Alcohols, C10-16, ethoxylated propoxylated	69227-22-1	5.00000	0.00420	
			Alcohols, C6-12 ethoxylated propoxylated	68937-66-6	5.00000	0.00420	

		Sodium Chloride	7647-14-5	5.00000	0.00382
		Alcohols, ethoxylated	68551-12-2	4.00000	0.00336
		Ammonium Chloride	12125-02-9	3.00000	0.00229
		Amines, unsatd. alkyl, ethoxylated	68155-39-5	2.00000	0.00168
		Oleamide DEA	93-83-4	2.00000	0.00153
		Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00153
		Oxyalkylated Fatty Acid	61791-002	40.00000	0.00141
		Formic Acid	64-18-6	30.00000	0.00106
		Aldehyde	104-55-2	30.00000	0.00106
		Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00106
		Acrylic Polymers	26006-22-4	60.00000	0.00051
		Polyoxyethylene Sorbitan Monooleate	9005-65-6	0.50000	0.00038
		Sorbitan Monooleate	1338-43-8	0.50000	0.00038
		Cupric Chloride	7447-39-4	5.00000	0.00022
		Ammonium Hydroxide	1336-21-6	5.00000	0.00022
		Quaternary Ammonium Compound	100765-57-9	5.00000	0.00018
		Sulfurized polyolefin	68037-13-8	5.00000	0.00018
		Isopropanol	67-63-0	5.00000	0.00018
		Potassium Iodide	7681-11-0	2.00000	0.00007
		Methanol	67-56-1	0.25000	0.00005
		Oxyalkylated alkylphenol	9016-45-9	5.00000	0.00004
		Polyaklylene	7756-94-7	1.00000	0.00004
		Potassium Acetate	127-08-2	0.50000	0.00002
		Fatty Acid Esters	67701-32-0	2.00000	0.00002
		Fatty Acid Oxyalkylate	70142-34-6	1.00000	0.00001
		Xylene	1330-20-7	1.00000	0.00001
		Diester of Sulfosuccinic Acid Sodium Salt	2673-22-5	1.00000	0.00001

* 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)