

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/25/2014
Job End Date:	7/29/2014
State:	Texas
County:	Andrews
API Number:	42-003-45935-00-00
Operator Name:	Greystone Oil & Gas LLP
Well Name and Number:	UNIVERSITY FV 1H
Longitude:	-102.60782000
Latitude:	32.14543000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	10,690
Total Base Water Volume (gal):	2,146,116
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	82.17100	
Atlas CRC-C, 20/40	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		8.42212	
TerraProp Plus, 20/40 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		3.38288	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		2.73945	SmartCare Product
GW-4LDF	Baker Hughes	Gelling Agent					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.82349	SmartCare Product
BF-9L, 300 gal tote	Baker Hughes	Buffer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.11004	SmartCare Product
Flo-Back 40	Baker Hughes	Surfactant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.10709	SmartCare Product
Scaletrol 720	Baker Hughes	Scale Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.10120	SmartCare Product

Enzyme G-I	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.08257	SmartCare Product
XLW-4	Baker Hughes	Crosslinker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.06177	
ClayCare, tote	Baker Hughes	Clay Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.04916	SmartCare Product
XLW-30AG, tote	Baker Hughes	Crosslinker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.03209	
Alpha 114, 260 gl tote	Baker Hughes	Biocide					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.02240	
XLW-30G, tote	Baker Hughes	Crosslinker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.01487	
Ferrotrol 280L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00966	
High Perm CRB	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00798	SmartCare Product
CI-14	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00473	SmartCare Product
NE-945, tote	Baker Hughes	Non-emulsifier					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00284	SmartCare Product
GBW-5 (50 lb bag)	Baker Hughes	Breaker					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00117	SmartCare Product
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	98.00000	8.07177	
			Aluminum Oxide	1344-28-1	100.00000	3.30826	
			Water	7732-18-5	97.00000	2.63171	
			Amorphous Silica	7631-86-9	20.00000	0.66165	
			Mineral Oil	8042-47-5	70.00000	0.56373	
			Guar Gum	9000-30-0	60.00000	0.48319	
			Phenolic Resin	9003-35-4	5.00000	0.41182	
			Hydrochloric Acid	7647-01-0	15.00000	0.40190	
			Hydrotreated Light Distillate	64742-47-8	70.00000	0.26356	
			Paraffinic Petroleum Distillate	64742-55-8	30.00000	0.24160	
			Titanium Dioxide	13463-67-7	5.00000	0.16541	
			Iron Oxide	1309-37-1	5.00000	0.16541	
			Hexamethylenetetramine	100-97-0	1.00000	0.08236	
			Potassium Carbonate	584-08-7	60.00000	0.06457	

		Ethylene Glycol	107-21-1	45.00000	0.04453
		Choline Chloride	67-48-1	75.00000	0.03606
		Sodium Chloride	7647-14-5	30.00000	0.03241
		Potassium Hydroxide	1310-58-3	30.00000	0.03228
		Cocamidopropylamide oxide	68155-09-9	20.00000	0.02095
		Cocamidopropyl betaine	61789-40-0	20.00000	0.02095
		2-Propenoic, Polymer with Sodium Phosphinate, Sodium Salt	71050-62-9	20.00000	0.01979
		Sodium Tetraborate	1303-96-4	30.00000	0.01812
		Glycerin	8043-29-6	25.00000	0.01510
		Borax Anhydrous	1303-86-2	40.00000	0.01255
		2-Mercaptoethanol	60-24-2	100.00000	0.00944
		Ammonium Persulphate	7727-54-0	100.00000	0.00895
		Glutaraldehyde	111-30-8	30.00000	0.00657
		Ulexite Mineral	1319-33-1	40.00000	0.00582
		Calcium Chloride	10043-52-4	5.00000	0.00495
		Methanol	67-56-1	100.00000	0.00466
		Potassium Formate	590-29-4	30.00000	0.00436
		Hemicellulase Enzyme Concentrate	9025-56-3	3.00000	0.00242
		Vinylidene Chloride-Methyl Acrylate Polymer	25038-72-6	25.00000	0.00195
		Polyoxyalkylenes	68951-67-7	30.00000	0.00139
		Quaternary Ammonium Compound	68424-85-1	5.00000	0.00110
		Glycerol	56-81-5	1.00000	0.00105
		Potassium Chloride	7447-40-7	1.00000	0.00099
		Styrene-Ethylene/Propylene Block Copolymer	68648-89-5	2.00000	0.00063
		Cupric Chloride	7447-39-4	5.00000	0.00047
		Ammonium Hydroxide	1336-21-6	5.00000	0.00047
		Fatty Acids	61790-12-3	10.00000	0.00046
		Clay	12174-11-7	3.00000	0.00044
		Modified Thiourea Polymer	68527-49-1	7.00000	0.00032
		Alkylene Oxide Block Polymer	Trade Secret , disc.	11.40000	0.00032
		Isotridecanol, Ethoxylated	9043-30-5	1.00000	0.00031
		Cellulose	9004-32-4	2.00000	0.00029
		Alkoxyated Amine	Trade Secret , disc.	10.00000	0.00028
		Propargyl Alcohol	107-19-7	5.00000	0.00023
		Olefin	64743-02-8	5.00000	0.00023
		Sodium bisulfate	7681-38-1	1.00000	0.00015
		Sodium chloride	7647-14-5	1.00000	0.00015
		Sodium glycolate	2836-32-0	1.00000	0.00015
		Acrylamide-acrylic acid copolymer, sulfomethylated,	EPA Acct 108431	1.00000	0.00015
		Sodium formaldehyde bisulfate	870-72-4	1.00000	0.00015
		Oxyalkylated alcohol	Trade Secret , disc.	5.00000	0.00014

		Hydrated Magnesium Silicate	14807-96-6	1.00000	0.00008	
		Ethanol	64-17-5	0.30000	0.00007	
		Polyglycol	25322-68-3	1.90000	0.00005	
		Formaldehyde	50-00-0	1.00000	0.00005	
		Poly (Tetrafluoroethylene)	9002-84-0	0.50000	0.00004	
		Polyquaternary Amine	Trade Secret , disc.	1.20000	0.00003	
		Crystalline silica: Quartz (SiO2)	14808-60-7	0.05000	0.00002	
		Organic Sulfonic Acid	27176-87-0	0.20000	0.00001	
		Antifoam	Trade Secret , disc.	0.02000	0.00000	
		Magnesium nitrate	10377-60-3	0.00100	0.00000	
		Magnesium chloride	7786-30-3	0.00100	0.00000	
		2-methyl-4-isothiazolin-3-one	2682-20-4	0.00100	0.00000	
		5-Chloro-2-methyl-3(2H)- Isothiazolone	26172-55-4	0.00100	0.00000	

* 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)