

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/9/2017
Job End Date:	11/29/2017
State:	Texas
County:	Reagan
API Number:	42-383-39908-00-00
Operator Name:	FDL Operating, LLC
Well Name and Number:	University 9-31 #10H
Latitude:	31.25121000
Longitude:	-101.57563500
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,859
Total Base Water Volume (gal):	12,068,974
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	Fdl Operating Llc	Carrier Fluid					
			Water	7732-18-5	100.00000	87.83057	
FR-23	C&J Energy Services	Friction Reducer					
				Listed Below			

TX Specific 100 mesh Sand	C&J Energy Services	Sand - Bulk - Texas					
				Listed Below			
SU-2	C&J Energy Services	Surfactants & Foamers					
				Listed Below			
ICA-1	C&J Energy Services	Iron Control Additives					
				Listed Below			
CS-5	C&J Energy Services	Clay Control Additives					
				Listed Below			
TX Specific 40/70 mesh Sand	C&J Energy Services	Sand - Bulk - Texas					
				Listed Below			
HC-15	C&J Energy Services	Bulk Acid					
				Listed Below			
CI-3	C&J Energy Services	Acid Corrosion Inhibitors					
				Listed Below			
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Crystalline Silica, quartz	14808-60-7	99.90000	8.31655	
			Crystalline Silica, quartz	14808-60-7	99.90000	3.48464	
			Water	7732-18-5	85.00000	0.21347	
			Aluminum Oxide	1344-28-1	1.10000	0.09157	
			Proprietary	7732-18-5	80.00000	0.06031	

			Aluminum Oxide	1344-28-1	1.10000	0.03837	
			Hydrochloric Acid	7647-01-0	15.00000	0.03767	
			Calcium Chloride	10043-52-4	20.00000	0.01508	
			Water	7732-18-5	47.00000	0.01137	
			Titanium Oxide	13463-67-7	0.10000	0.00833	
			Iron Oxide	1309-37-1	0.10000	0.00833	
			2-Propenoic acid, polymer with 2-propenamide, sodium salt	25987-30-8	30.00000	0.00726	
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	30.00000	0.00726	
			Buffering agents	Proprietary	22.00000	0.00532	
			Titanium Oxide	13463-67-7	0.10000	0.00349	
			Iron Oxide	1309-37-1	0.10000	0.00349	
			Water	7732-18-5	60.00000	0.00221	
			Trisodium Nitrilotriacetate	5064-31-3	50.00000	0.00185	
			Alcohols, C11-14-iso-, C13-rich, ethoxylated	78330-21-9	5.00000	0.00121	
			Proprietary	Proprietary	1.50000	0.00113	
			Proprietary	Proprietary	3.00000	0.00073	
			Ethylene Glycol	107-21-1	40.00000	0.00060	
			Water	7732-18-5	30.00000	0.00045	
			Dimethylformamide	68-12-2	20.00000	0.00030	
			2-Butoxyethanol	111-76-2	15.00000	0.00023	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	15.00000	0.00023	
			Cinnamaldehyde	104-55-2	15.00000	0.00023	
			Alcohols, C10-14, ethoxylated	66455-15-0	30.00000	0.00016	
			Hydroxyethylcellulose	9004-62-0	15.00000	0.00008	
			Polydimethyl siloxane	63148-62-9	15.00000	0.00008	
			Glycerides, C14-18 Mono- And Di-	67701-33-1	15.00000	0.00008	

			1-DECANOL	112-30-1	5.00000	0.00008	
			Poly(oxy-1,2-ethanediyl),alpha-(4-nonylphenyl)-omega hydroxy-, branched	127087-87-0	5.00000	0.00008	
			Isopropanol	67-63-0	0.10000	0.00008	
			Amorphous Silica	7631-86-9	10.00000	0.00005	
			Propylene Glycol	57-55-6	10.00000	0.00005	
			Triethyl Phosphate	78-40-0	2.50000	0.00004	
			Isopropanol	67-63-0	2.50000	0.00004	
			1-OCTANOL	111-87-5	2.50000	0.00004	
			Acrylamide as residual	79-06-1	0.10000	0.00002	
			Tar Bases, Quinoline Derivs.	68513-87-1	1.00000	0.00002	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)