

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/19/2017
Job End Date:	9/1/2017
State:	Texas
County:	Ward
API Number:	42-475-37120-00-00
Operator Name:	Forge Energy, LLC
Well Name and Number:	UL 20 Tensleep 1H
Latitude:	31.60810900
Longitude:	-103.28622000
Datum:	WGS84
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,931
Total Base Water Volume (gal):	9,378,098
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	Forge Energy, LLC	Carrier Fluid					
			Water	7732-18-5	100.00000	91.39614	
TX Specific 100 mesh Sand	C&J Energy Services	Sand - Bulk - Texas					
				Listed Below			

BR-6	C&J Energy Services	Gel Breakers					
				Listed Below			
GA-7F	C&J Energy Services	Gelling Agents					
				Listed Below			
ICA-1	C&J Energy Services	Iron Control Additives					
				Listed Below			
CS-5	C&J Energy Services	Clay Control Additives					
				Listed Below			
HC-15	C&J Energy Services	Bulk Acid					
				Listed Below			
Stimlube W	C&J Energy Services	Friction Reducer					
				Listed Below			
CI-3	C&J Energy Services	Acid Corrosion Inhibitors					
				Listed Below			
SU-3	C&J Energy Services	Surfactants & Foamers					
				Listed Below			
TX Specific 40/70 mesh Sand	C&J Energy Services	Sand - Bulk - Texas					

				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	5.16414	
			Crystalline Silica, quartz	14808-60-7	99.90000	2.03361	
			Water	7732-18-5	85.00000	0.91263	
			Hydrochloric Acid	7647-01-0	15.00000	0.16105	
			Water	7732-18-5	70.00000	0.09963	
			Anionic Polyacrylamide	Proprietary	100.00000	0.09291	
			Proprietary	7732-18-5	80.00000	0.06124	
			Aluminum Oxide	1344-28-1	1.10000	0.05686	
			Isopropanol	67-63-0	30.00000	0.04270	
			Polyamine Polyethers	Proprietary	30.00000	0.04270	
			Water	Proprietary	40.00000	0.03717	
			Distillates (Petroleum), Hydrotreated Light	64742-47-8	30.00000	0.02787	
			Aluminum Oxide	1344-28-1	1.10000	0.02239	
			Organic Polyol	Proprietary	13.00000	0.01850	
			Calcium Chloride	10043-52-4	20.00000	0.01531	
			Nonionic Alkoxylate	Proprietary	10.00000	0.01423	
			Ammonium acetate	631-61-8	10.00000	0.00929	
			Surfactant 2	Proprietary	5.00000	0.00712	
			Citrus Terpenes	68647-72-3	5.00000	0.00712	
			Water	7732-18-5	60.00000	0.00555	
			Iron Oxide	1309-37-1	0.10000	0.00517	
			Titanium Oxide	13463-67-7	0.10000	0.00517	
			Trisodium Nitrilotriacetate	5064-31-3	50.00000	0.00463	
			Nonionic Surfactant	Proprietary	3.00000	0.00279	
			Ethoxylated Alcohols	68002-97-1	3.00000	0.00279	
			Alkoxylated Linear Alcohols	68439-50-9	3.00000	0.00279	
			Proprietary Surfactant	Proprietary	3.00000	0.00279	

			ALCOHOLS, C12-16, ETHOXYLATED	68551-12-2	3.00000	0.00279	
			Amine	Proprietary	3.00000	0.00279	
			Iron Oxide	1309-37-1	0.10000	0.00204	
			Titanium Oxide	13463-67-7	0.10000	0.00204	
			Ethylene Glycol	107-21-1	40.00000	0.00125	
			Proprietary	Proprietary	1.50000	0.00115	
			Water	7732-18-5	30.00000	0.00094	
			Dimethylformamide	68-12-2	20.00000	0.00063	
			CJENERGY- Hydrocarbon-00013	64742-47-8	60.00000	0.00056	
			Guar Gum	9000-30-0	60.00000	0.00056	
			Tar bases, quinoline derivs, benzyl chloride- quaternized	72480-70-7	15.00000	0.00047	
			2-Butoxyethanol	111-76-2	15.00000	0.00047	
			Cinnamaldehyde	104-55-2	15.00000	0.00047	
			1-DECANOL	112-30-1	5.00000	0.00016	
			Poly(oxy-1,2- ethanediyl),alpha-(4- nonylphenyl)-omega hydroxy-, branched	127087-87-0	5.00000	0.00016	
			Surfactant 1	Proprietary	0.10000	0.00014	
			Sodium Perborate, Tetrahydrate	10486-00-7	100.00000	0.00012	
			Triethyl Phosphate	78-40-0	2.50000	0.00008	
			1-OCTANOL	111-87-5	2.50000	0.00008	
			Isopropanol	67-63-0	2.50000	0.00008	
			Isopropanol	67-63-0	0.10000	0.00008	
			Bentonite Clay	68953-58-2	5.00000	0.00005	
			Ethoxylated Alcohols	68002-97-1	100.00000	0.00005	
			Tar Bases, Quinoline Derivs.	68513-87-1	1.00000	0.00003	
			Proprietary	Proprietary	100.00000		

* 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)