

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/21/2017
Job End Date:	10/31/2017
State:	Texas
County:	Reagan
API Number:	42-383-39835-00-00
Operator Name:	Permian Resources
Well Name and Number:	UNIVERSITY 11 RE 936HS
Latitude:	31.21577300
Longitude:	-101.50275400
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	7,038
Total Base Water Volume (gal):	9,084,874
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
Fresh Water	Operator	Base Fluid					
			Water	7732-18-5	100.00000	80.77197	Density = 8.380
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.93500	

HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
				Listed Below			
HYDROCHLORIC ACID	Halliburton	Solvent					
				Listed Below			
3rd Party FR	Halliburton	Friction Reducer					
				Listed Below			
SAND-PREMIUM BROWN-40/70, BULK	Halliburton	Proppant					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
Cla-Web(TM) II	Halliburton	Clay Stabilizer					
				Listed Below			
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003676)	Halliburton	Proppant					
				Listed Below			
FDP-S1226-15	Halliburton	Surfactant					
				Listed Below			

3rd Party Additive	Halliburton	Breaker					
				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	100.00000	18.28385	
			Hydrochloric acid	7647-01-0	60.00000	0.45926	
			Alcohols, C12-13, ethoxylated	66455-14-9	30.00000	0.02461	
			Glutaraldehyde	111-30-8	30.00000	0.00965	
			Ammonium compound	Proprietary	30.00000	0.00628	
			Chlorine compound	Proprietary	30.00000	0.00628	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00410	
			Hydrogen peroxide	7722-84-1	7.90000	0.00335	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00161	
			Methanol	67-56-1	60.00000	0.00074	
			Trade Secret	Proprietary	1.00000	0.00042	
			Quaternary amine	Proprietary	1.00000	0.00042	
			Fatty acids, tall oil	Proprietary	30.00000	0.00035	
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00000	0.00035	
			Ethoxylated alcohols	Proprietary	30.00000	0.00035	
			Ethanol	64-17-5	1.00000	0.00032	
			Amine salts	Proprietary	1.00000	0.00023	
			Sodium chloride	7647-14-5	1.00000	0.00021	
			Olefins	Proprietary	5.00000	0.00014	
			Propargyl alcohol	107-19-7	10.00000	0.00012	
			Phosphoric acid	7664-38-2	0.10000	0.00003	

			Amine	Proprietary	0.10000	0.00002	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226
			Ethylene oxide	75-21-8	0.01000	0.00001	
			Petroleum Distillate Hydrotreated Light	64742-47-8	28.00000		

\* 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)