

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/11/2018
Job End Date:	9/23/2018
State:	Texas
County:	Ward
API Number:	42-475-37466-00-00
Operator Name:	Abraxas Petroleum Corporation
Well Name and Number:	Mesquite 37 U103H
Latitude:	31.49182820
Longitude:	-103.13063240
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	10,666
Total Base Water Volume (gal):	15,679,243
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	91.11941	None
Crystalline Silica Quartz / US Silica	Liberty Oilfield Services	Sand					
			Crystalline Silica (quartz)	14808-60-7	99.90000	8.42202	None
			Aluminum Oxide	1344-28-1	1.00000	0.08430	None
			Iron Oxide	1309-37-1	0.10000	0.00843	None
			Titanium Oxide	13463-67-7	0.10000	0.00843	None
HCL-15	Liberty Oilfield Services	Solvent					
			Water	7732-18-5	85.00000	0.09636	None
			Hydrochloric Acid	7647-01-0	15.00000	0.01700	None
SFT-92	Liberty Oilfield Services	Flowback Additive					
			Alkyl Sulfonic Acid Amine Salt	Proprietary	100.00000	0.08865	None
FRP-2S	Liberty Oilfield Services	Friction reduction					
			Distillates (petroleum), hydrotreated light	64742-47-8	45.00000	0.07733	None
			Alcohols, iso-C11-14 (iso-C13-rich), ethoxylated, liquids	78330-21-9	5.00000	0.00859	None

CSA-23	Liberty Oilfield Services	Permanent clay stabilizer					
			Non-Hazardous proprietary salts	Proprietary	30.00000	0.01708	None
			Calcium Chloride	10043-52-4	10.00000	0.00569	None
BLR-18	Liberty Oilfield Services	Powder Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00391	None
SCI-67	Liberty Oilfield Services	Scale Inhibitor					
			Alkyl phosphonic acid	Proprietary	5.00000	0.00074	None
			Ammonia	7664-41-7	0.50000	0.00007	None
ACI-97	Liberty Oilfield Services	Corrosion Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00010	None
			Dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00005	None
			Cinnamaldehyde	104-55-2	10.00000	0.00002	None
			Formic acid	64-18-6	10.00000	0.00002	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00002	None
			Ethoxylated alcohol	Proprietary	10.00000	0.00002	None
			Isopropyl alcohol	67-63-0	5.00000	0.00001	None
ICI-5L	Liberty Oilfield Services	Iron Sequestering Agent					
			Citric acid	77-92-9	60.00000	0.00016	None
ASF-67	Liberty Oilfield Services	Nonionic Non-Emulsifier					
			Methanol	67-56-1	50.00000	0.00005	None
DVA-75	Liberty Oilfield Services	Diverting Agent					
			Poly lactide Resin	9051-89-2	98.00000	0.00005	None
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.							
		Other Chemicals					
			Magnesium Chloride	7786-30-3			
			Ammonium chloride	12125-02-9			
			Sodium Chloride	7647-14-5			
			n-Propyl alcohol	71-23-8			
			Alcohol Ethoxylate	Proprietary			
			Surfactants	Proprietary			
			Calcium Chloride	10043-52-4			
			Acrylamide (residual)	79-06-1			
			Isopropyl ether	108-20-3			
			Acetaldehyde	75-07-0			
			Water	7732-18-5			
			Tar bases, quinoline derivs.	68513-87-1			
			Buffering agents	Proprietary			
			Sulfuric acid	7664-93-9			
			2-Propenoic acid polymer with acrylamide, sodium salt	25987-30-8			

		Methyl alcohol	67-56-1			
		Potassium Chloride	7447-40-7			
		Diethylene glycol	111-46-6			

\* 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)