

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/11/2019
Job End Date:	4/28/2019
State:	Texas
County:	Ward
API Number:	42-475-37683-00-00
Operator Name:	FELIX ENERGY HOLDINGS II, LLC
Well Name and Number:	UL Lead King 344035-16 F 6H
Latitude:	31.51235635
Longitude:	-103.16516520
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,638
Total Base Water Volume (gal):	30,975,876
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	86.71901	None
Crystalline Silica Quartz / US Silica	Liberty Oilfield Services	Sand					
			Crystalline Silica (quartz)	14808-60-7	99.90000	12.72266	None
			Aluminum Oxide	1344-28-1	1.00000	0.12735	None
			Iron Oxide	1309-37-1	0.10000	0.01274	None
			Titanium Oxide	13463-67-7	0.10000	0.01274	None
HCL-15	Liberty Oilfield Services	Solvent					
			Water	7732-18-5	85.00000	0.36551	None
			Hydrochloric Acid	7647-01-0	15.00000	0.06450	None
Stimlube VB	Flotek Chemistry	Friction reduction					
			Distillates (petroleum), hydrotreated light	64742-47-8	18.00000	0.02022	None
			Ammonium Chloride	12125-02-9	1.50000	0.00168	None
BLR-18	Liberty Oilfield Services	Powder Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00099	None

ACI-97	Liberty Oilfield Services	Corrosion Inhibitor					
			Ethylene glycol	107-21-1	40.00000	0.00036	None
			Dipropylene glycol, monomethyl ether	34590-94-8	20.00000	0.00018	None
			Tar bases, quinoline derivs., benzyl chloride-quaternized	72480-70-7	10.00000	0.00009	None
			Ethoxylated alcohol	Proprietary	10.00000	0.00009	None
			Formic acid	64-18-6	10.00000	0.00009	None
			Cinnamaldehyde	104-55-2	10.00000	0.00009	None
			Isopropyl alcohol	67-63-0	5.00000	0.00005	None
ICI-5L	Liberty Oilfield Services	Iron Sequestering Agent					
			Citric acid	77-92-9	60.00000	0.00059	None
ASF-67	Liberty Oilfield Services	Nonionic Non-Emulsifier					
			Methanol	67-56-1	50.00000	0.00019	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					
			Tar bases, quinoline derivs.	68513-87-1			
			Diethylene glycol	111-46-6			
			Acetaldehyde	75-07-0			
			n-Propyl alcohol	71-23-8			
			Polglycol	9082-00-2			
			Water	7732-18-5			
			Isopropyl ether	108-20-3			
			Polyalkylene glycol	52624-57-4			

\* 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)