

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/8/2019
Job End Date:	6/24/2019
State:	Texas
County:	Andrews
API Number:	42-003-47975-00-00
Operator Name:	Lime Rock Resources, LP
Well Name and Number:	University FI 7HD
Latitude:	32.14018000
Longitude:	-102.59372300
Datum:	NAD27
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	10,723
Total Base Water Volume (gal):	11,571,176
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
SlickWater	OneStim	Acid Corrosion Inhibitor A286, Gelling Agent B306, Water Friction Reducing Agent B315F, Non-Emulsifying Agent B526, Water Friction Reducing Agent B598, Surfactant F114, Acid, Low Temperature Fiber, Diverting Agent, Iron Control Agent L058, Standard F					
			Water (Including Mix Water Supplied by Client)*	7732-18-5		87.62561	
Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.							
			Quartz, Crystalline silica	14808-60-7	98.48777	12.18726	
			Hydrochloric acid	7647-01-0	1.06333	0.13158	
			Acrylic polymer	Proprietary	0.22884	0.02832	TEST - Trade Secret Texas Comment
			Propan-2-ol	67-63-0	0.05828	0.00721	
			Polyethylene glycol monohexyl ether	31726-34-8	0.03950	0.00489	
			Polymer of fatty acid	Proprietary	0.02990	0.00370	TEST - Trade Secret Texas Comment
			Distillates, petroleum, hydrotreated light	64742-47-8	0.01664	0.00206	
			Alcohols, C11-14-iso-, C13-rich, ethoxylated*	78330-21-9	0.01625	0.00201	

			1,4-Dioxane-2,5-dione, 3,6- dimethyl-, (3Rcis)-, polymer with (3S-cis)-3,6 -dimethyl-	9051-89-2	0.01067	0.00132	
			Guar gum	9000-30-0	0.00935	0.00116	
			Fatty acid, tall-oil reaction products with acetophenone	68188-40-9	0.00865	0.00107	
			Sodium erythorbate	6381-77-7	0.00858	0.00106	
			Ammonium Sulphate	7783-20-2	0.00787	0.00097	
			Alcohols, C12-C16, ethoxylated	68551-12-2	0.00722	0.00089	
			Isodecanol w/6-7 Moles Ethylene Oxide	26183-52-8	0.00485	0.00060	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00329	0.00041	
			Cinnamaldehyde	104-55-2	0.00317	0.00039	
			Alcohols, C12-15- branched and linear, ethoxylated propoxylated	120313-48-6	0.00143	0.00018	
			Poly(oxy-1,2- ethanediyl),.alpha.-(4- nonylphenyl)-.omega.- hydroxy, branched	127087-87-0	0.00107	0.00013	
			Alcohols, C12-15, ethoxylated propoxylated	68551-13-3	0.00107	0.00013	
			Sodium hydroxide	1310-73-2	0.00100	0.00012	
			Amines, tallow alkyl, ethoxylated	61791-26-2	0.00093	0.00011	
			Dodecan-1-ol, ethoxylated	9002-92-0	0.00039	0.00005	
			Sorbitan monooleate, ethoxylated	9005-65-6	0.00043	0.00005	
			Bis(hydrogenated tallow alkyl)dimethylammonium bentonite	68953-58-2	0.00039	0.00005	
			Amines, dicoco alkylmethyl	61788-62-3	0.00033	0.00004	

			impurity	Proprietary	0.00028	0.00003	TEST - Trade Secret Texas Comment
			Urea	57-13-6	0.00025	0.00003	
			Glycols, polyethylene, monotetradecyl ether	27306-79-2	0.00028	0.00003	
			Alcohols, C12-13, ethoxylated	66455-14-9	0.00010	0.00001	
			N,N'-ethylenedi (stearamide)	110-30-5	0.00001		
			2-bromo-2-nitropropane-1,3-diol	52-51-7			
			C12 fatty alcohol	112-53-8			
			1,4-Benzenedicarboxylic acid, polymer with 1,2-ethanediol and a-hydro-w-hydroxypoly(oxy-1,2-ethanediyl)	9016-88-0			
			Phosphoric acid, dodecyl ester, potassium salt	39322-78-6			
			C13 alcohol ethoxylate	9043-30-5			
			Magnesium stearate	557-04-0	0.00002		
			Oxirane, 2-methyl-, polymer with oxirane, mono-(9Z)-9-octadecenoate, methyl ether	72283-36-4			

* 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)