

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/14/2023
Job End Date:	3/15/2023
State:	Texas
County:	Ward
API Number:	42-475-38410-00-00
Operator Name:	Forge Energy, LLC
Well Name and Number:	UL Empire 18-15-16 WA1 #1H
Latitude:	31.54338000
Longitude:	-103.22350000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	11,320
Total Base Water Volume (gal):	20,196,431
Total Base Non Water Volume:	1,089,715



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	Base Carrier Fluid	Water	7732-18-5	100.00000	88.40003	
Sand	Multiple Suppliers	Proppants	Silicon Dioxide	14808-60-7	100.00000	10.88945	
15% Hydrochloric Acid	Multiple Suppliers	Scale Dissolver	Water	7732-18-5	85.00000	0.39863	
			36% Hydrochloric Acid	7647-01-0	15.00000	0.07035	
FR-630	SNF Inc.	Friction Reducers	Water	7732-18-5	48.00000	0.05395	
			2-Propenoic acid polymer with acrylamide, sodium salt	25987-30-8	30.00000	0.03372	
			Distillates(petroleum), hydrotreated light	64742-47-8	30.00000	0.03372	
			Buffering agents	Proprietary	22.00000	0.02473	
			Proprietary surfactant package	Proprietary	5.00000	0.00562	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00562	
			Acrylamide(as residual)	79-06-1	0.10000	0.00011	
FR-533	SNF	Friction Reducers					

			Distillates(petroleum), hydrotreated light	64742-47-8	45.00000	0.00940	
			Water	7732-18-5	39.00000	0.00815	
			2-Propenoic acid, polymer with 2-propenamide, sodium salt	225987-30-8	29.00000	0.00606	
			Poly(oxy-1,2-ethanediyl), a-tridecyl-w-hydroxy-, branched	69011-36-5	3.00000	0.00063	
			Sorbitan Monooleate	1338-43-8	2.00000	0.00042	
			Acrylamide(as residual)	79-06-1	0.10000	0.00002	
SI-625(D-100)	ACE Completions	Scale Inhibitors					
			Water	7732-18-5	90.00000	0.01823	
			Diethylenetriamine penta methyphosphoric acid sodium salts	22042-96-2	20.00000	0.00405	
			Potassium hydroxide solution	1310-58-3	2.00000	0.00041	
Axi Surf 35	Guide Energy Solutions	Surfactants					
			Surfactant Blend	Proprietary	20.00000	0.00929	
			Glycol Ether	Proprietary	10.00000	0.00465	
			2-Butoxyethanol	111-76-2	5.00000	0.00232	
			Alkyl Sulfonic Acid	Proprietary	5.00000	0.00232	
Fino Tap Frac 120	Finoric LLC	Acid Corrosion Inhibitors					
			Methanol	67-56-1	50.00000	0.00171	
			Butyl Cellosolve/Butoxy Ethanol	111-76-2	45.00000	0.00154	
			Proprietary	Proprietary	25.00000	0.00085	
			Alcohol Ethoxylate	71060-57-6	20.00000	0.00068	
			Isopropyl Alcohol	67-63-0	15.00000	0.00051	
			Propargyl Alcohol	107-19-7	15.00000	0.00051	
Axi Clay CC4	Guide Energy Solutions	Clay Control / Stabilizers					
			Ethylene glycol	107-21-1	10.00000	0.00197	
			Ethanol	64-17-5	5.00000	0.00098	
			Cationic Surfactant	Proprietary	5.00000	0.00098	
Bio GQ 123	Ace Completions, LLC	Biocides					
			Glutaraldehyde	111-30-8	12.40000	0.00220	
			Didecyl dimethyl ammonium chloride	7173-51-5	2.00000	0.00036	
			Alkyl dimethyl benzyl ammonium chloride (C 12-16)	68424-85-1	1.30000	0.00023	
			Ethanol	64-17-5	1.00000	0.00018	
GB-2	Multiple Suppliers	Gel Breakers/Delayed Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00066	

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.

* 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)

