

**NM OIL CONSERVATION
ARTESIA DISTRICT**

30.005-64298

MAR 04 2019

RECEIVED

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/5/2018
Job End Date:	11/6/2018
State:	New Mexico
County:	Chaves
API Number:	30-005-64298-00-00
Operator Name:	Hadaway Consulting and Engineering, LLC
Well Name and Number:	Muirfield #002H
Latitude:	33.43894000
Longitude:	-104.02089500
Datum:	NAD83
Federal Well:	YES
Indian Well:	NO
True Vertical Depth:	1,323,756
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	Carrier Fluid	Water	7732-18-5	100.00000	85.60854	None
Proppant (Sand)	Basic Energy Services	Propping Agent	Crystalline Silica, quartz	14808-80-7	100.00000	10.73851	None
15% HCl	Basic Energy Services	Acid	Water	7732-18-5	85.00000	2.37472	None
15% HCl	Basic Energy Services	Acid	Hydrochloric Acid	7647-01-0	15.00000	0.41907	None
LGW-1	ACE Completions	Gel	Distillates, Petroleum, Hydrotreated Light	6742-47-8	60.00000	0.24229	None
LGW-1	ACE Completions	Gel	Guar Gum	9000-30-0	50.00000	0.20191	None
MCS-376	ACE Completions	Surfactant	Water	7732-18-5	65.00000	0.08765	None
BXL-4	ACE Completions	Crosslinker	Sodium Metaborate	Proprietary	40.00000	0.04738	None
SI-329	Colossal Chemical	Scale Inhibitor					

			Amino Tris(methylene phosphonic acid)	8419-19-8	52.00000	0.04420	None
BXL-4	ACE Completions	Crosslinker					
			Glycerol	56-81-5	30.00000	0.03553	None
BXL-4	ACE Completions	Crosslinker					
			Water	7732-18-5	30.00000	0.03553	None
SI-329	Colossal Chemical	Scale Inhibitor					
			Polycarboxylic acid, sodium salt	52601-60-9	28.00000	0.02210	None
LGW-1	ACE Completions	Gel					
			Organophilic Clay	Proprietary	5.00000	0.02019	None
LGW-1	ACE Completions	Gel					
			Surfactants	Proprietary	5.00000	0.02019	None
MCS-376	ACE Completions	Surfactant					
			Proprietary	Proprietary	10.00000	0.01348	None
MCS-376	ACE Completions	Surfactant					
			Ethylene oxide/propylene oxide co-polymer	99003-11-6	8.00000	0.01079	None
Buffer 11	Chemplex	Buffer					
			Potassium Carbonate	584-08-7	40.00000	0.00938	None
MCS-376	ACE Completions	Surfactant					
			Coconut Diethanolamide	98803-42-9	8.00000	0.00809	None
Tolcide PS20A	ChemPlex	Biocide					
			Tetrakis (Hydroxymethyl) Phosphonium Sulfate	55568-30-8	22.00000	0.00579	None
Plexgel Breaker 10L	Chemplex	Breaker					
			Sodium Chloride	7647-14-5	15.00000	0.00567	None
ACI-100	ACE Completions	Acid Inhibitor					
			Monoethylene glycol	107-21-1	65.00000	0.00550	None
Total-4	ACE Completions	Total Acidizing System					
			Acetic Acid	64-19-7	25.00000	0.00427	None
Total-4	ACE Completions	Total Acidizing System					
			Dipropylene glycol monomethyl ether	34590-94-8	25.00000	0.00427	None
MCS-376	ACE Completions	Surfactant					
			Poly(oxy-1,2-ethanediyl), alpha hexyl-omega-hydroxy-	31728-34-8	3.00000	0.00405	None
MCS-376	ACE Completions	Surfactant					
			Alcohol	38809-68-7	3.00000	0.00405	None
MCS-376	ACE Completions	Surfactant					
			Isotridecanol, ethoxylated	9043-30-5	3.00000	0.00405	None
Total-4	ACE Completions	Total Acidizing System					
			Monoethylene glycol	107-21-1	22.00000	0.00376	None
Buffer 11	Chemplex	Buffer					
			Potassium Hydroxide	1310-58-3	15.00000	0.00352	None
Plexgel Breaker LT	Chemplex	Breaker					
			Ammonium Persulfate	7727-54-0	90.00000	0.00265	None

Total-4	ACE Completions	Total Acidizing System					
			Citric Acid	77-92-9	12.00000	0.00205	None
ACI-100	ACE Completions	Acid Inhibitor					
			Dipropylene glycol monomethyl ether	34590-94-8	20.00000	0.00169	None
MCS-376	ACE Completions	Surfactant					
			Diethanolamine	111-42-2	1.00000	0.00135	None
MCS-376	ACE Completions	Surfactant					
			Solvent Naphtha (Petroleum), Heavy Aromatic	84742-94-5	1.00000	0.00135	None
Ammonium Persulfate	Chemplex	Breaker					
			Ammonium Persulfate	7727-54-0	98.00000	0.00099	None
Plexgel Breaker 10L	Chemplex	Breaker					
			Mannanase Enzymes	Proprietary	2.00000	0.00076	None
Total-4	ACE Completions	Total Acidizing System					
			Pyridine, alkyl deriva	88391-11-7	4.00000	0.00068	None
Total-4	ACE Completions	Total Acidizing System					
			Copolymer	9003-11-6	4.00000	0.00068	None
Total-4	ACE Completions	Total Acidizing System					
			Amine Sulfonate	26836-07-7	4.00000	0.00068	None
Total-4	ACE Completions	Total Acidizing System					
			3-Phenylpropenal	104-55-2	4.00000	0.00068	None
Total-4	ACE Completions	Total Acidizing System					
			Alkyl (C12-C14-secondary) alcohol, ethoxylated	84133-50-6	3.00000	0.00051	None
ACI-100	ACE Completions	Acid Inhibitor					
			3-Phenylpropenal	104-55-2	6.00000	0.00051	None
ACI-100	ACE Completions	Acid Inhibitor					
			Pyridine, alkyl deriva	88391-11-7	6.00000	0.00051	None
ACI-100	ACE Completions	Acid Inhibitor					
			Alkyl (C12-C14-secondary) alcohol, ethoxylated	84133-50-6	5.00000	0.00042	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.

* 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)