

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/24/2014
Job End Date:	9/1/2014
State:	Texas
County:	Reagan
API Number:	42-383-38545-00-00
Operator Name:	Apache Corporation
Well Name and Number:	University 2505 02HU
Longitude:	-101.58970800
Latitude:	31.30940600
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	8,013
Total Base Water Volume (gal):	15,986,124
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	ProFlow	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	87.67789	None
Sand (Proppant)	Apache	Proppant					
			Silica Substrate	14808-60-7	100.00000	11.54607	None
Hydrochloric Acid (15%)	Trinity	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.07020	None
Claymax	Chemplex	Clay Stabilizer					
			Choline Chloride	67-48-1	65.00000	0.05972	None
AP-Surf-1A	Blentech	Surfactant					
			Methanol	67-56-1	25.00000	0.02148	None
			Alkyl alkoxylate	Proprietary	11.00000	0.00945	None
			Sulfonate	Proprietary	4.00000	0.00344	None
AP-FR-1	Ashland	Friction Reducer					
			Polyacrylate based copolymer	Proprietary	30.00000	0.02306	None
			Hydrocarbon-aliphatic	25450-40-01	5.00000	0.00384	None
			Fatty alcohol alkoxylate	Proprietary	1.50000	0.00115	None
AP-Scale-2	SNF	Scale Inhibitor					
			2-Propenoic acid, homopolymer, sodium salt	9003-04-7	95.00000	0.02610	None

AP-Bio-1	Dow Chemical Company	Biocide					
			Glutaraldehyde	111-30-8	42.50000	0.01010	None
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides	68424-85-1	7.50000	0.00178	None
			Ethanol	64-17-5	1.00000	0.00024	None
AC-307	Reef	Iron Control					
			Other Non-Hazardous Ingredients	Proprietary	30.00000	0.00038	None
			Isopropanol	67-63-0	1.50000	0.00002	None
			Glacial Acetic Acid	64-19-7	1.00000	0.00001	None
AI-265	Reef	Acid Inhibitor					
			Xylene	1330-20-7	25.00000	0.00009	None
			Isooctyl Alcohol Bottoms	68526-88-5	25.00000	0.00009	None
			Propargyl Alcohol	107-19-7	20.00000	0.00007	None
			Methanol	67-56-1	15.00000	0.00006	None
			Isopropanol	67-63-0	15.00000	0.00006	None
			Formaldehyde	50-00-0	0.10000	0.00000	None
ANG-2077	Reef	Non-Emulsifier					
			Other Non-Hazardous Ingredients	Proprietary	15.00000	0.00008	None
			Peptide Derivative	Proprietary	1.50000	0.00001	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)