

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	12/4/2014
Job End Date:	12/12/2014
State:	Texas
County:	Andrews
API Number:	42-003-46580-00-00
Operator Name:	Occidental Oil and Gas
Well Name and Number:	ST ANDREWS UNIT 320LH
Longitude:	-102.43102222
Latitude:	32.38062222
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	9,525
Total Base Water Volume (gal):	6,911,864
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	Oxy Permian	Carrier / Base Fluid	Carrier / Base Fluid - Water	7732-18-5	100.00000	86.70568	
Ottawa Sand 20/40 (2.63 sq)	WFT	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	100.00000	8.25477	
Ottawa Sand 40/70 (2.63 sq)	WFT	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	100.00000	3.34960	
Ottawa Sand 30/50 (2.63 sq)	WFT	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	100.00000	0.76941	
WGA-15L	WFT	Gelling Agents	Petroleum Distillates	64742-47-8	60.00000	0.20901	
15% HCL	WFT	Acid	Hydrochloric Acid	7647-01-0	15.00000	0.12541	
WPB-584L	WFT	ph Adjusting Agents	Potassium Carbonate	584-08-7	40.00000	0.03840	
			Potassium Hydroxide	1310-58-3	20.00000	0.01920	
WNE-363L	WFT	Surfactant					

			Ethylene/Propylene Oxide Polymer	9003-11-6	30.00000	0.02676	
			Dodecylbenzenesulfonic acid, monoethanolamine salt	26836-07-7	15.00000	0.01338	
			2-Ethylhexanol	104-76-7	7.00000	0.00624	
			Poly(oxy-1,2-ethanediyl), a-isotridecyl-w-hydroxy-	9043-30-5	5.00000	0.00446	
Bio-Clear® 5000	WFT	Bactericide					
			Polyethylene Glycol	25322-68-3	65.00000	0.01632	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	5.00000	0.00126	
			Sodium Bromide	7647-15-6	1.50000	0.00038	
			Dibromoacetonitrile	3252-43-5	0.50000	0.00013	
WSI-685L	WFT	Inhibitor					
			Monoethanolamine Hydrochloride	2002-24-6	15.00000	0.00809	
			Ammonium Chloride	12125-02-9	15.00000	0.00809	
			Methyl Alcohol	67-56-1	2.50000	0.00135	
WIC-644L	WFT	Iron Control					
			acetic acid glacial	64-19-7	90.00000	0.01035	
WIC-641L	WFT	Iron Control					
			Citric acid	77-92-9	60.00000	0.00579	
Ecopol Gelbreak-EL2X	Economy Poymers	Breaker					
			Cellulase Enzyme	Proprietary	100.00000	0.00426	
WAI-251LC	WFT	Inhibitor					
			Ethylene Glycol	111-76-2	40.00000	0.00133	
			N,N-Dimethylformamide	68-12-2	20.00000	0.00067	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00033	
			2-Butoxyethanol	111-76-2	10.00000	0.00033	
			1-Octanol	111-87-5	5.00000	0.00017	
			1-Decanol	112-30-1	5.00000	0.00017	
			Ethoxylated Nonylphenol	68412-54-4	5.00000	0.00017	
			Isopropyl Alcohol	67-63-0	5.00000	0.00017	
			Triethylphosphate	78-40-0	5.00000	0.00017	
WFR-55LA	WFT	Friction Reducers					
			Ethylene Glycol	107-21-1	5.00000	0.00283	
WBK-134	WFT	Breaker					
			Ammonium Persulfate	7727-54-0	75.00000	0.00201	
WBK-133	WFT	Breaker					
			Ammonium Persulfate	7727-54-0	100.00000	0.00169	
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.							
N/A	N/A	Other Chemicals					
			Guar gum	9000-30-0		0.17417	
			Proprietary Ingredient	Proprietary		0.07166	
			Choline Chloride	67-48-1		0.06507	
			2-Butoxyethanol	111-76-2		0.00348	

			Alcohols, C12-16, Ethoxylated	68551-12-2		0.00348	
			Alcohol Ethoxylate	68002-97-1		0.00348	
			Arlacel 83	8007-43-0		0.00348	
			Crystalline Silica in the form of Quartz	14808-60-7		0.00348	
			Phosphonic acid ammonium salt Mixture			0.00121	
			Cinnamaldehyde	104-55-2		0.00017	
			Ethylene Oxide	75-21-8		0.00003	
			Acetaldehyde	75-07-0		0.00003	
			Dioxane	123-91-1		0.00003	

\* 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)