

## Hydraulic Fracturing Fluid Product Component Information Disclosure

Last Fracture Date	04/04/2013
State:	California
County:	Kern
API Number:	04-030-49666
Operator Name:	Aera Energy Llc
Well Name and Number:	578E4-12
Longitude:	-119.7651258
Latitude:	35.5007634
Long/Lat Projection:	NAD83
Production Type:	Oil
True Vertical Depth (TVD):	2,271
Total Water Volume (gal)*:	51,744

### 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	Carrier	Water	7732-18-5	100.00%	73.20051%	
X-Cide 207	Baker Hughes	Biocide	2-Methyl-4-Isothiazolin-3-One	2682-20-4	5.00%	0.00005%	
			5-Chloro-2-Methyl-4-Isothiazolin-3-One	26172-55-4	10.00%	0.00010%	
			Crystalline Silica: Cristobalite	14464-46-1	1.00%	0.00001%	
			Crystalline Silica: Quartz (SiO2)	14808-60-7	1.00%	0.00001%	
			Diatomaceous Earth, Calcined	91053-39-3	60.00%	0.00061%	
			Magnesium Chloride	7786-30-3	5.00%	0.00005%	
			Magnesium Nitrate	10377-60-3	10.00%	0.00010%	
GBW-5	Baker Hughes	Breaker	Ammonium Phosphate	7727-54-0	100.00%	0.00509%	SmartCare Product
Enzyme G-I	Baker Hughes	Breaker	Hemicellulase Enzyme Concentrate	9025-56-3	3.00%	0.00136%	SmartCare Product
			Water	7732-18-5	97.00%	0.04391%	
Clay Master-5C (Tote)	Baker Hughes	Clay Control	Oxyakylated Amine Quat	138879-94-4	60.00%	0.05408%	
XLW-10A	Baker Hughes	Crosslinker	Ethylene Glycol	107-21-1	30.00%	0.02619%	SmartCare Product
			Sodium Hydroxide	1310-73-2	10.00%	0.00873%	
			Sodium Tetraborate	1330-43-4	30.00%	0.02619%	
GW-3LDF	Baker Hughes	Gelling Agent	1-Butoxy-2-Propanol	5131-66-8	5.00%	0.01291%	SmartCare Product
			Cyrstalline Silica, Quartz (SiO2)	14808-60-7	5.00%	0.01291%	

			Guar Gum	9000-30-0	60.00%	0.15490%	
			Isotridecanol, ethoxylated	9043-30-5	5.00%	0.01291%	
			Paraffinic Petroleum Distillate	64742-55-8	30.00%	0.07745%	
			Petroleum Distillates	64742-47-8	30.00%	0.07745%	
ScaleSorb 3, (25# pail)	Baker Hughes	Scale Inhibitor	Amino Alkyl Phosphonic Acid	Trade Secret	30.00%	0.00509%	SmartCare Product
			Crystalline Silica: Quartz (SiO <sub>2</sub> )	14808-60-7	1.00%	0.00017%	
			Diatomaceous Earth, Calcined	91053-39-3	100.00%	0.01697%	
			Phosphonic Acid	13598-36-2	1.00%	0.00017%	
<b>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.</b>							
			2-Butoxy-1-Propanol	15821-83-7		0.0002065388%	
			Crystalline Quartz (silica)	14808-60-7		26.2444100415%	
			Water	7732-18-5		0.0174589462%	

\* 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%

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)