## Hydraulic Fracturing Fluid Product Component Information Disclosure

12/1/2012
California
Kern
04-030-47787
ExxonMobil Corporation
Hill 662FW
-119.747545
35.481416
WGS84
Oil
2,999
269,850

## Hydraulic Fracturing Fluid Composition:

Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
			7732-18-5	100.00%	78.09177%	Density = 8.330
BJ Services	Proppant	Crystalline Silica (quartz)	14808-60-7	99.90%	20.84817%	
BJ Services	Gellant - Water					
		Petroleum Distillate Blend	Proprietary	70.00%	0.31993%	
		Guar Gum	009000-30-0	40.00%	0.18282%	
BJ Services	Cross Linker					
		Methanol	67-56-1	90.00%	0.05578%	
		Boric Oxide	68951-67-7	20.00%	0.01240%	
Baker Hughes	Special Buffer Solution	Potassium Carbonate	584-08-7	60.00%	0.09240%	
BJ Services	Breaker - Water	Hemicellulase Enzyme	N.A.	100.00%	0.00243%	
BJ Services	Base Fluid/Salt	Potassium Chloride	7447-40-7	100.00%	0.00243%	
BJ Services	Breaker - Water	Ammonium Persulfate	7727-54-0	99.00%	0.01470%	
Baker Hughes	Bacteria Control					
		5-chloro-2methyl-4-isothiazolin-3-one	26172-55-4	10.00%	0.00000%	
		2-Methyl-4-isothiazoline-3-one	2682-20-4	5.00%	0.00000%	
		Magnesium nitrate	10377-60-3	10.00%	0.00000%	
		Magnesium chloride	7786-30-3	5.00%	0.00000%	
		Diatomaceous earth, calcined	91053-39-3	60.00%	0.00000%	
		Crystalline silica: cristobalite	14464-46-1	1.00%	0.00000%	
		Crystalline silica: Quartz (SiO2)	14808-60-7	1.00%	0.00000%	
Baker Hughes	Special Breaker	N.A.	N.A.	100.00%	0.06627%	
	BJ Services  BJ Services  Baker Hughes  BJ Services  BJ Services  BJ Services  BJ Services  BAKER Hughes	BJ Services Gellant - Water  BJ Services Cross Linker  Baker Hughes Special Buffer Solution  BJ Services Breaker - Water  BJ Services Base Fluid/Salt  BJ Services Breaker - Water  Baker Hughes Bacteria Control	BJ Services Gellant - Water Petroleum Distillate Blend Guar Gum  BJ Services Cross Linker  Methanol Boric Oxide  Baker Hughes Breaker - Water BJ Services Breaker - Water Ammonium Persulfate  Baker Hughes Bacteria Control  5-chloro-2methyl-4-isothiazolin-3-one Amgnesium nitrate Magnesium chloride Diatomaceous earth, calcined Crystalline silica: cristobalite Crystalline silica: Quartz (SiO2)	BJ Services Proppant Crystalline Silica (quartz) 14808-60-7 BJ Services Gellant - Water Petroleum Distillate Blend Proprietary  BJ Services Cross Linker Methanol 67-56-1 Boric Oxide Boric Oxide 68951-67-7 Baker Hughes Special Buffer Solution Potassium Carbonate 584-08-7 BJ Services Breaker - Water Hemicellulase Enzyme N.A. BJ Services Breaker - Water Ammonium Persulfate 7447-40-7 BJ Services Bace Fluid/Salt Potassium Chloride 7447-40-7 BAKER Hughes Bacteria Control 5-chloro-2methyl-4-isothiazolin-3-one 26172-55-4  2-Methyl-4-isothiazoline-3-one 2682-20-4 Magnesium nitrate 10377-60-3 Magnesium chloride 7786-30-3 Diatomaceous earth, calcined 91053-39-3 Crystalline silica: Cuartz (SiO2) 14808-60-7	Concentration in Additive (% by mass)**   BJ Services   Proppant   Crystalline Silica (quartz)   14808-60-7   99.90%     BJ Services   Gellant - Water   Petroleum Distillate Blend   Proprietary   70.00%     BJ Services   Cross Linker   Petroleum Distillate Blend   Proprietary   70.00%     BJ Services   Cross Linker   Potroleum Distillate Blend   G7-56-1   90.00%     Baker Hughes   Special Buffer Solution   Potassium Carbonate   584-08-7   20.00%     BJ Services   Breaker - Water   Hemicellulase Enzyme   N.A.   100.00%     BJ Services   Breaker - Water   Hemicellulase Enzyme   N.A.   100.00%     BJ Services   Breaker - Water   Ammonium Persulfate   7447-40-7   100.00%     BJ Services   Breaker - Water   Ammonium Persulfate   7727-54-0   99.00%     Baker Hughes   Bacteria Control   S-chloro-2methyl-4-isothiazolin-3-one   26172-55-4   10.00%     BJ Services   Magnesium nitrate   10377-60-3   10.00%     Magnesium chloride   7786-30-3   5.00%     Magnesium chloride   7786-30-3   5.00%     Diatomaceous earth, calcined   91053-39-3   60.00%     Crystalline silica: Cuartz (SiO2)   14808-60-7   1.00%	Concentration in Additive (% by mass)**   Concentration in Additive (% by mass)**   Concentration in Additive (% by mass)**   Concentration in HF Fluid (% by maspiration in HF Fluid (% by maspiration in HF Fluid (% by maspiration in HF Fl

<sup>\*</sup> Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

<sup>\*\*</sup> Information is based on the maximum potential for concentration and thus the total may be over 100%