

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	7/31/2012
State:	CA
County:	Los Angeles
API Number:	04-237-27334
Operator Name:	THUMS Long Beach Co.
Well Name and Number:	J-149
Longitude:	-118.194303506
Latitude:	33.752168831
Long/Lat Projection:	NAD27
Production Type:	Oil
True Vertical Depth (TVD):	4,051
Total Water Volume (gal)*:	30,492

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
Super LC	BHI	Proppant	Silicon Dioxide (Silica Sand)	14808-60-7	97.00%	88.75938%	
			Phenol Formaldehyde Resin	9003-35-4	5.00%	4.57523%	
			Hexamethylenetetramine	1009-7-0	0.01%	0.00915%	
GW-3LDF	BHI	Gellant	Petroleum Distillate Blend	CBI	70.00%	1.56916%	SmartCare Product
			Guar Gum	9000-30-0	40.00%	0.89666%	
XLW-56	BHI	Crosslinker	Glyoxal	107-22-2	30.00%	0.33643%	
			Sodium Tetraborate	1330-43-4	10.00%	0.11214%	
			Sodium Hydroxide	1310-73-2	5.00%	0.05607%	
			D-Glucitol	50-70-4	10.00%	0.11214%	
BF-7L	BHI	Buffer	Potassium Carbonate	584-08-7	50.00%	0.73381%	SmartCare Product
Enzyme G-I	BHI	Breaker	Hemicellulase Enzyme Concentrate	9025-56-3	3.00%	0.01952%	SmartCare Product
			Water	7732-18-5	97.00%	0.63130%	
GasFlo G	BHI	Surfactant	Methanol	67-56-1	30.00%	0.19665%	SmartCare Product
			Surfactants	CBI	60.00%	0.39331%	
			Water	7732-18-5	70.00%	0.45886%	
High Perm CRB	BHI	Breaker	Ammonium Persulphate	7727-54-0	100.00%	0.02645%	SmartCare Product
			Crystalline Silica Quartz	14808-60-7	15.00%	0.00397%	
GBW-5	BHI	Breaker	Ammonium Persulfate	7727-54-0	100.00%	0.02645%	SmartCare Product

Superset-W	BHI	Activator	Methanol	67-56-1	50.00%	0.52705%	
			Poly (Oxyethylene) Nonylphenol Ether	9016-45-9	50.00%	0.52705%	
X-Cide 207	BHI	Biocide	5-Chloro-2-Methyl-4-Isothiazolin-3-One	26172-55-4	10.00%	0.00317%	
			2-Methyl-4-Isothiazolin-3-One	2682-20-4	5.00%	0.00159%	
			Magnesium Nitrate	10377-60-3	10.00%	0.00317%	
			Magnesium Chloride	7786-30-3	5.00%	0.00159%	
			Diatomaceous Earth, Calcined	91053-39-3	60.00%	0.01905%	
			Crystalline Silica: Cristobalite	14464-46-1	1.00%	0.00032%	
			Crystalline Silica: Quartz (SiO2)	14808-60-7	1.00%	0.00032%	

\* 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)