

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	8/14/2011
State:	Pennsylvania
County:	Lawrence
API Number:	37-073-20344
Operator Name:	SWEPI LP
Well Name and Number:	Patterson 2013 1HM
Longitude:	-80.411422
Latitude:	40.892858
Long/Lat Projection:	NAD83
Production Type:	Gas
True Vertical Depth (TVD):	4,343
Total Water Volume (gal)*:	4,261,793

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
Fresh Water/Produced Water	Shell	Carrier Fluid	H2O	764701-0	100.00%	87.61639%	
Natural Sand	HES	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	11.96234%	
20 baume HCl	HES	Breakdown	Hydrochloric Acid	7647-01-0	100.00%	0.17929%	
FR-66	HES	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.01769%	
Gasperm 1000	HES	Surfactant	Terpenes and Terpenoids, sweet orange-oil	68647-72-3	30.00%	0.03455%	
Gasperm 1000	HES	Surfactant	Isopropanol	67-63-0	30.00%	0.03455%	
BE-9	HES	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00391%	
LP-65	HES	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00245%	
FE-1A	HES	Iron Control	Acetic anhydride	108-24-7	100.00%	0.00185%	
FE-1A	HES	Iron Control	Acetic acid	64-19-7	60.00%	0.00111%	
LGC-36UC	HES	Gelling Agent	Naphtha, hydrotreated heavy	64742-48-9	60.00%	0.00122%	
LGC-36UC	HES	Gelling Agent	Guar gum	9000-30-0	60.00%	0.00122%	
HAI-OS	HES	Corrosion Inhibitor	Methanol	67-56-1	60.00%	0.00018%	
SP Breaker	HES	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00005%	
HAI-OS	HES	Corrosion Inhibitor	Propargyl alcohol	107-19-7	10.00%	0.00003%	
GBW-30	HES	Breaker	Hemicellulase enzyme	9012-54-8	15.00%	0.00001%	

* 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)

