

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	3/23/2013
Job End Date:	4/29/2013
State:	West Virginia
County:	Harrison
API Number:	47-033-05616-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Lewis Unit 3H
Longitude:	-80.46956390
Latitude:	39.22353890
Datum:	NAD27
Federal/Tribal Well:	NO
Total Base Water Volume (gal):	8,516,424
Total Base Non Water Volume:	



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	ANTERO RESOURCES	Water					
			Water	7732-18-5	100.00000	89.55439	
WV Specific 40/70 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	5.47682	
			Aluminum Oxide	1344-28-1	1.10000	0.06031	
			Iron Oxide	1309-37-1	0.10000	0.00548	
			Titanium Oxide	13463-67-7	0.10000	0.00548	
WV Specific 20/40 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	3.24332	
			Aluminum Oxide	1344-28-1	1.10000	0.03571	
			Titanium Oxide	13463-67-7	0.10000	0.00325	
			Iron Oxide	1309-37-1	0.10000	0.00325	
WV Specific 100 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica, quartz	14808-60-7	99.90000	1.45420	
			Aluminum Oxide	1344-28-1	1.10000	0.01601	
			Iron Oxide	1309-37-1	0.10000	0.00146	

			Titanium Oxide	13463-67-7	0.10000	0.00146	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated light distillates, non-aromatic, BTEX free	64742-47-8	50.00000	0.03297	
			Ethoxylated alcohols	68551-12-2	15.00000	0.00989	
			Ethoxylated oleylamine	26635-93-8	5.00000	0.00330	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	70.00000	0.03414	
HCl Acid (12.5%-18.0%)	Nabors Completion and Production Services	Bulk Acid					
			Hydrogen Chloride	7647-01-0	18.00000	0.01987	
OB-2	Nabors Completion and Production Services	Gel Breakers					
			Ammonium Persulfate	7727-54-0	100.00000	0.00768	
			Silica, crystalline quartz	7631-86-9	10.00000	0.00077	
KR-153SL	Nabors Completion and Production Services	Biocides					
			Polyethylene-Glycol	25322-68-3	50.00000	0.00425	
			2,2-dibromo-3-nitrilopropionamide	10222-01-2	20.00000	0.00170	
Super GREEN SOLV	Nabors Completion and Production Services	Paraffin & Scale Additives					
			BTEX Free Aliphatic Hydrocarbon	64742-96-7	100.00000	0.00489	
EB-4L	Nabors Completion and Production Services	Gel Breakers					
			Breaker Component	Proprietary	100.00000	0.00038	
			Demulsifier Base	Proprietary	100.00000	0.00038	
			Cellulase enzyme	Proprietary	100.00000	0.00038	
			Sugar	57-50-1	100.00000	0.00038	
			Water	7732-18-5	100.00000	0.00038	
			Ethylene Glycol	107-21-1	40.00000	0.00015	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Glycol Ethers	111-46-6	40.00000	0.00008	
			Propargyl Alcohol	107-19-7	40.00000	0.00008	
			Isopropyl Alcohol	67-63-0	40.00000	0.00008	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00003	
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00002	

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.

Other Ingredients	Nabors Completion and Production Services	Other Ingredients					
			Water	7732-18-5	87.50000	0.09661	
			Polyacrylamide	57-55-6	40.00000	0.02638	
			Water	7732-18-5	40.00000	0.02638	
			guar gum	9000-30-0	50.00000	0.02438	
			Propylene glycol	57-55-6	15.00000	0.00989	
			Water	7732-18-5	60.00000	0.00859	
			Proprietary	Proprietary	50.00000	0.00716	
			Water	7732-18-5	80.00000	0.00679	
			Proprietary	Proprietary	15.00000	0.00215	
			Proprietary	Proprietary	15.00000	0.00215	
			Proprietary	Proprietary	15.00000	0.00215	
			vinylidene chloride-methyl acrylate copolymer	25038-72-6	20.00000	0.00154	
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00098	
			Surfactant	68439-51-0	2.00000	0.00098	
			Microparticle	Proprietary	1.00000	0.00066	
			Water	7732-18-5	48.00000	0.00010	
			2-Butoxyethanol	111-76-2	13.00000	0.00003	
			Dioxane	123-91-1	1.00000	0.00000	
			Organophylic Clay	68953-58-2			

* 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)