

Hydraulic Fracturing Fluid Product Component Information Disclosure

RCVD JUL 31 '12
OIL CONS. DIV.
DIST. 3

Fracture Date:	2012-06-20
State:	New Mexico
County:	Rio Arriba
API Number:	3003930799
Operator Name:	JICARILLA APACHE ENERGY CORPORATION
Well Name and Number:	Apache JVA 4B
Longitude:	0
Latitude:	0
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal):	718,065

446' FNL & 2245' FEL, Sec 20, T27N, R2W, NMPM Rio Arriba County, NM

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
2% KCL Water	Operator				100.00%	26.64356%	Density = 8 480
3% KCL Water	Operator				100.00%	65.37413%	Density = 8 430
HYDROCHLORIC ACID 10-30%	Halliburton	Solvent	Hydrochloric acid	7647-01-0	30.00%	0.40973%	Density = 9.000
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica; quartz	14808-60-7	100.00%	5.69077%	
CRC SAND	Halliburton	Proppant	Crystalline silica; quartz	14808-60-7	100.00%	1.74517%	
			Hexamethylenetetramine	100-97-0	2.00%	0.03490%	
			Phenol / formaldehyde resin	9003-35-4	5.00%	0.08726%	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.01684%	
LoSurt-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00080%	
			Ethanol	64-17-5	60.00%	0.04809%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.02405%	
			Naphthalene	91-20-3	5.00%	0.00401%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00401%	
HAI-82 ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Quaternary Amine Salt	Confidential Business Information	10.00%	0.00004%	
			Isopropanol	67-63-0	10.00%	0.00004%	
			Methanol	67-56-1	30.00%	0.00011%	
			Propargyl alcohol	107-19-7	5.00%	0.00002%	
* 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.							
			Alcohols, C12-16, ethoxylated	68551-12-2			
			Alcohols, Ethoxylated	Confidential Business Information			
			Ammonium chloride	12125-02-9			
			Ethoxylated hydrogenated tallow alkylamines	61790-82-7			
			Ethoxylated nonylphenol	Confidential Business Information			
			Fatty Acid Tall Oil Blend	Confidential Business Information			
			Hydrotreated light petroleum distillate	64742-47-8			
			Kerosene	8008-20-6			
			Oxyalkylated Phenolic Resin	Confidential Business Information			
			Oxyalkylated Phenolic Resin	Confidential Business Information			
			Polyacrylamide Copolymer	Confidential Business Information			
			Polyethylene glycol monododecyl ether	9002-92-0			
			Quaternary Amine Salt	Confidential Business Information			
			Quaternary Amine Salt	Confidential Business Information			
			Sodium chloride	7647-14-5			
			Sorbitan monooleate	9005-65-6			
			polyoxyethylene derivative				
			Sorbitan mono-9-octadecenoate, (Z)	1338-43-8			
			Tall oil acid diethanolamide	68155-20-4			
			Water	7732-18-5			

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All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.