



Ogontz Fishing Club Unit #9H
Well API: 37-081-20385

Completion Date: 4-4-11
Township: Cummings

% Composition of Hydraulic Fracture Fluid (by volume)						
Product Name	Additive	Purpose	Use and Dilution	Volume	Overall %	Common Uses
Water	Carrier Fluid	Creates fracture network in shale and carry proppant to the formation	Primary constituent	3,379,860 gal	95.42%	Water is the most abundant molecule on the Earth's surface
Sand	Sand	Allows fractures to remain open so gas can escape	Second most common constituent, making up almost 6% of the fluid	158,416 gal	4.47%	Drinking water filtration, play sand
FRW-200 or FRW-300	Friction Reducer	Reduces friction between fluid and pipe	Diluted at one-half gallon per 1,000 gallons of water	2,304 gal	0.07%	Water treatment; soil conditioner; some children's toys
MC B-8650/Bioban	Antimicrobial Agent	Eliminates bacteria in the water that produce corrosive byproducts	Diluted at one-half gallon per 1,000 gallons of water	0,984 gal	0.03%	Water treatment, disinfectant; sterilize medical and dental equipment and surfaces
MX 588-2	Scale Inhibitor	Prevents scaling in pipe	Diluted at one-tenth gallon per 1,000 gallons of water	0,259 gal	0.01%	Water treatment, household cleaners, de-icing agent
HCL Acid (37%)	Perf Clean-Up	Dissolves cement and minerals to help initiate fractures	177 gallons per stage if required (non-diluted chemicals)	0,376 gal	0.01%	Swimming pool and household cleaner

Composition of Hydraulic Fracture Fluid (by volume)





RANGE RESOURCES

Composition of Components in Marcellus Shale Hydraulic Fracturing Fluid

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Common Name & Supplier	Supplier Chemical Name	Common Description	Hazardous Component listed on MSDS	Purpose	MSDS Component Weight % of Chemical	Gallons MSDS Component in Well	Maximum Concentration of MSDS Component of Total Stage Fluid		
							% Vol	% Weight	
7.5% HCl Mixture (FracTech)	37% HCL	concentrated HCl Acid	HCL	Cleans perforation	37.0%	376.45	0.0106%	0.0043%	
	CI-100	Corrosion Inhibitor	Methanol	Protects casing	95.0%	33.01	0.0009%	0.0007%	
			Propargyl Alcohol	Protects casing	5.0%	1.42	0.00004%	0.00004%	
	NE100	Non- Emulsifer	No hazardous ingredients	Prevents emulsions	0.0%	N/A	N/A	N/A	
FE100L	Iron Chelator	No hazardous ingredients	Prevents precipitation	0.0%	N/A	N/A	N/A	N/A	
TOTAL								0.0116%	0.0051%

Friction Reducer (FracTech)	RW-200 or FRW-3	Friction Reducer	No hazardous ingredients	Reduce friction down casing	0.0%	N/A	N/A	N/A
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Scale Inhibitor (Multichem)	MX 588-2	Scale Inhibitor	No hazardous ingredients	prevents scale deposits	0.0%	N/A	N/A	N/A
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Antibacterial Agent (Multichem)	Bioban	Antibacterial Agent	4,4-Dimethylloxazolidine	eliminates bacteria in water	78.0%	540.64	0.0153%	0.0143%	
			3,4,4-Trimethylloxazolidine		5.0%	35.39	0.0010%	0.0009%	
			2-Amino-2-methyl-1-propanol		1.0%	7.42	0.0002%	0.0002%	
			Formaldehyde Amine		0.5%	3.23	0.0001%	0.0001%	
	BMC B-8650	Antibacterial Agent	Glutaraldehyde	eliminates bacteria in water	50.0%	101.51	0.0029%	0.0040%	
			Methanol		0.5%	1.02	0.00003%	0.00004%	
TOTAL								0.0195%	0.0195%

SUMMARY	by vol %	by weight %
	0.031%	0.025%