

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	6/12/2012
State:	LOUISIANA
County:	CADDO
API Number:	1701735129
Operator Name:	CHESAPEAKE
Well Name and Number:	PACE 8-14-16 1H
Longitude:	-94.03184
Latitude:	32.223807
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	11,393
Total Water Volume (gal)*:	4,798,500

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		Carrier/Base Fluid				85.72434%	
White Sand		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	10.30877%	
PRC		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	98.00%	3.37868%	
			Phenol/Formaldehyde Resin	009003-35-4	5.00%	0.17238%	
			Hexamethylenetetramine (Hexamine)	000100-97-0	1.00%	0.03448%	
15 hcl	TRICAN	Acid	Water	007732-18-5	85.00%	0.03280%	
			Hydrochloric Acid	007647-01-0	15.00%	0.00579%	
FORMIC ACID	TRICAN	Acid	Formic Acid	000064-18-6	85.00%	0.00056%	
			Water	007732-18-5	15.00%	0.00010%	
AI-9	TRICAN	Corrosion Inhibitor	Methanol (Methyl Alcohol)	000067-56-1	60.00%	0.00048%	
			Ethoxylated Alcohols^ C14-15	068951-67-7	30.00%	0.00024%	
			Modified Thiourea Polymer	068527-49-1	30.00%	0.00024%	
			Propargyl Alcohol (2-Propynol)	000107-19-7	10.00%	0.00008%	
			Alkenes^ C>10 alpha-	064743-02-8	5.00%	0.00004%	
FEAC-30	TRICAN	Iron Control Agent	Acetic Acid	000064-19-7	60.00%	0.00012%	
			Water	007732-18-5	60.00%	0.00012%	
			Citric Acid	000077-92-9	30.00%	0.00006%	
Bactron K-139	CHAMPION	Anti-Bacterial Agent	Quaternary Ammonium Compound	068424-85-1	10.00%	0.00173%	
			Ethanol	000064-17-5	5.00%	0.00087%	
			Glutaraldehyde (Pentanediol)	000111-30-8	5.00%	0.00087%	

Gypton T-390	CHAMPION	Scale Inhibitor	Ethoxylated Nonylphenol	N/A	10.00%	0.00092%	
			Methanol (Methyl Alcohol)	000067-56-1	10.00%	0.00092%	
WG-111L	TRICAN	Gelling Agent	Petroleum Distillate Hydrotreated Light	064742-47-8	60.00%	0.13298%	
			Polysaccharide blend	N/A	60.00%	0.13298%	
FR-12 (Anionic Acrylamide)	TRICAN	Friction Reducer	Petroleum Distillate Hydrotreated Light	064742-47-8	60.00%	0.07534%	
			Copolymer of Acrylamide and Sodium Acrylate	025987-30-8	40.00%	0.05022%	
			Quaternary Ammonium Chloride (Ammonium Chloride)	012125-02-9	2.00%	0.00251%	
WXB-15	TRICAN	Cross Linker	Solvent naptha, (petroleum) heavy aliphatic	064742-96-7	65.00%	0.05983%	
WBO-8	TRICAN	Breaker	Sodium Bromate	007789-38-0	100.00%	0.01318%	
S-15 (Surfactant)	TRICAN	Surfactant	Alcohol Alkoxylate	TRADE SECRET	20.00%	0.00001%	
			Methanol (Methyl Alcohol)	000067-56-1	20.00%	0.00001%	

Additional Ingredients Not Listed on MSDS							
PRC		Proppant	Non-MSDS Components Not Provided by Supplier	NOT PROVIDED			
Bactron K-139, Gypton T-390	CHAMPION	Anti-Bacterial Agent, Scale Inhibitor	Sodium Chloride	007647-14-5			
			Sodium Glycolate	002836-32-0			
			Tetrasodium Ethylenediaminetetraacetate	000064-02-8			
			Water	007732-18-5			
S-15 (Surfactant), WG-111L, WXB-15	TRICAN	Cross Linker, Gelling Agent, Surfactant	2-Butoxyethanol (Ethylene Glycol Monobutyl Ether)	000111-76-2			
			Ethoxylated Alcohol C11-C14 iso	78330-21-9			
			Guar Gum	009000-30-0			
			Modified Amidoamine	68990-47-6			
			Modified Bentonite (Organophillic Clay)	068953-58-2			
			Propylene Carbonate	000108-32-7			
			Sorbitan Trioleate	026266-58-0			
			Tall Oil Fatty Acids	061790-12-3			
			Tallow alkylidimethyl-ammonium chloride / bentonite complex	071011-25-1			
			Ulexite (Borate Salt)	001319-33-1			
			Water	007732-18-5			

* 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%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)