

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	12/06/2010
State:	Pennsylvania
County:	Tioga
API Number:	37-117-20372-00
Operator Name:	Talisman USA Inc.
Well Name and Number:	DCNR 587 (02-008-04)
Longitude:	76.9782333333333
Latitude:	41.6753111111111
Long/Lat Projection:	NAD83
Production Type:	Gas
True Vertical Depth (TVD):	8,221
Total Water Volume (gal)*:	3,619,434

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	-	-	100.0%	64.2808%	
Recycled Produced Water		Carrier/Base Fluid	-	-	100.0%	21.4982%	
Sand (Proppant)		Proppant	-	-	100.0%	13.2975%	
Acid, FEAC-20, LAI-20, FR-8, LSI-21, Bio-Clear 5000	TRICAN	Acid, Iron Control Agent, Corrosion Inhibitor, Friction Reducer, Scale Inhibitor, Biocide					
			Hydrochloric acid	7647-01-0	15.0%	0.1203%	
			Acetic acid	64-19-7	50.0%	0.0022%	
			Citric Acid	77-92-9	30.0%	0.0013%	
			Methanol	67-56-1	40.0%	0.0011%	
			Propargyl alcohol	107-19-7	8.0%	0.0002%	
			Petroleum distillate	Proprietary	40.0%	0.0198%	
			Ammonium chloride	12125-02-9	1.5%	0.0007%	
			Polyethylene glycol	25322-68-3	70.0%	0.0163%	
			2,2-dibromo-3-nitrilopropio namide	10222-01-2	10.0%	0.0023%	

* 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%

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.