

Hydraulic Fracturing Fluid Product Component Information Disclosure

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|--------------------------------|----------------------------|
| Job Start Date: | 9/17/2015 |
| Job End Date: | 9/25/2015 |
| State: | Ohio |
| County: | Tuscarawas |
| API Number: | 34-157-25517-00-00 |
| Operator Name: | Chesapeake Operating, Inc. |
| Well Name and Number: | CONKLIN 34-13-7 4H |
| Longitude: | -81.31636200 |
| Latitude: | 40.34938300 |
| Datum: | NAD27 |
| Federal/Tribal Well: | NO |
| True Vertical Depth: | 7,098 |
| Total Base Water Volume (gal): | 9,584,946 |
| Total Base Non Water Volume: | 951,803 |



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 | CHESAPEAKE ENERGY | Carrier/Base Fluid | | | | | |
| | | | Water | 007732-18-5 | 100.00000 | 66.24500 | |
| Northern White Sand | PERFORMANCE TECHNOLOGIES | Proppant - Natural | | | | | |
| | | | Crystalline Silica (Quartz Sand, Silicon Dioxide) | 014808-60-7 | 100.00000 | 17.54469 | |
| Recycled Produced Water | CHESAPEAKE ENERGY | Carrier/Base Fluid | | | | | |
| | | | Water | 007732-18-5 | 100.00000 | 14.41412 | |
| PTLMP136 | PERFORMANCE TECHNOLOGIES | Acid | | | | | |
| | | | Water | 007732-18-5 | 85.00000 | 0.77041 | |
| | | | Hydrochloric Acid | 007647-01-0 | 15.00000 | 0.13595 | |
| 100 Mesh Sand | PERFORMANCE TECHNOLOGIES | Proppant - Natural | | | | | |
| | | | Crystalline Silica (Quartz Sand, Silicon Dioxide) | 014808-60-7 | 100.00000 | 0.62618 | |
| PTLGL341 | PERFORMANCE TECHNOLOGIES | Gelling Agent | | | | | |
| | | | Solvent naptha, (petroleum) heavy aliphatic | 064742-96-7 | 65.00000 | 0.10452 | |
| PTLCA102 | PERFORMANCE TECHNOLOGIES | Cross Linker | | | | | |
| | | | Proprietary Alkyl Alcohol | TRADE SECRET | 60.00000 | 0.03318 | |

| | | | | | | | |
|--|--------------------------|---|--|--------------|-----------|---------|--|
| | | | Sodium Hydroxide | 001310-73-2 | 60.00000 | 0.03318 | |
| | | | Proprietary Inorganic Salt | TRADE SECRET | 30.00000 | 0.01659 | |
| TS-30 | TERRA SERVICES | Scale Inhibitor | | | | | |
| | | | Proprietary Sodium Polycarboxylate | TRADE SECRET | 100.00000 | 0.01636 | |
| Chlorine Dioxide | TERRA SERVICES | Anti-Bacterial Agent | | | | | |
| | | | Chlorine Dioxide | 010049-04-4 | 100.00000 | 0.00976 | |
| PTLFR200 | PERFORMANCE TECHNOLOGIES | Friction Reducer | | | | | |
| | | | Proprietary Aliphatic Hydrocarbon | TRADE SECRET | 30.00000 | 0.00517 | |
| | | | Proprietary Oxyalkylated Alcohol | TRADE SECRET | 5.00000 | 0.00086 | |
| PTLBW112 | PERFORMANCE TECHNOLOGIES | Breaker | | | | | |
| | | | Ammonium Persulfate | 007727-54-0 | 100.00000 | 0.00303 | |
| PTLAI161 | PERFORMANCE TECHNOLOGIES | Corrosion Inhibitor | | | | | |
| | | | Isopropanol (Isopropyl Alcohol, Propan-2-ol) | 000067-63-0 | 60.00000 | 0.00055 | |
| | | | Proprietary Fatty Alcohol Ethoxylate | TRADE SECRET | 30.00000 | 0.00027 | |
| | | | Proprietary Aromatic Aldehyde | TRADE SECRET | 10.00000 | 0.00009 | |
| | | | Proprietary Ethoxylated Alcohol Blend | TRADE SECRET | 10.00000 | 0.00009 | |
| | | | Proprietary Alkyl Amine Surfactant | TRADE SECRET | 5.00000 | 0.00005 | |
| PTLIS347 | PERFORMANCE TECHNOLOGIES | Iron Control Agent | | | | | |
| | | | No Hazardous Components | NONE | | | |
| 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. | | | | | | | |
| PTLAI161, PTLBW112, PTLFR200, PTLGL341, PTLIS347 | PERFORMANCE TECHNOLOGIES | Breaker, Corrosion Inhibitor, Friction Reducer, Gelling Agent, Iron Control Agent | | | | | |
| | | | Proprietary Vinyl Copolymer | TRADE SECRET | | 0.02023 | |
| | | | Water | 007732-18-5 | | 0.01908 | |
| | | | Proprietary Substituted Fatty Acid Ester | TRADE SECRET | | 0.01874 | |
| | | | Proprietary Aliphatic Alcohol | TRADE SECRET | | 0.01874 | |
| | | | Proprietary Oxyalkylated Fatty Acid Derivative | TRADE SECRET | | 0.01874 | |
| | | | Sodium Chloride | 007647-14-5 | | 0.01874 | |
| | | | Tetrasodium Ethylenediaminetetraacetate | 000064-02-8 | | 0.01874 | |
| | | | Proprietary Fatty Amino Adduct | TRADE SECRET | | 0.00034 | |
| | | | Sodium Erythorbate | 006381-77-7 | | 0.00031 | |
| | | | Copper Sulfate | 007758-98-7 | | 0.00021 | |
| | | | Proprietary Oxyalkylated Alcohol | TRADE SECRET | | 0.00001 | |
| | | | Proprietary Polyether | TRADE SECRET | | 0.00001 | |
| | | | Non-MSDS Components Not Provided by Supplier | NOT PROVIDED | | | |
| | | | Methanol (Methyl Alcohol) | 000067-56-1 | | | |

| | | | | | | | |
|-------|----------------|-----------------|-------|-------------|--|---------|--|
| TS-30 | TERRA SERVICES | Scale Inhibitor | | | | | |
| | | | Water | 007732-18-5 | | 0.01999 | |

* 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)