# Hydraulic Fracturing Fluid Product Component Information Disclosure

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|---|---|
| Job Start Date: | 12/8/2016 |
| Job End Date: | 12/8/2016 |
| State: | Texas |
| County: | Winkler |
| API Number: | 42-495-33736-00-00 |
| Operator Name: | Jagged Peak Energy |
| Well Name and Number: | RK-UTL 3031A-17 1H |
| Latitude: | 31.66003500 |
| Longitude: | -103.21130200 |
| Datum: | NAD27 |
| Federal Well: | NO |
| Indian Well: | NO |
| True Vertical Depth: | 11,539 |
| Total Base Water Volume (gal): | 26,786,999 |
| Total Base Non Water Volume: | 0 |

## 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 | Operator | Base Fluid | | | | | |
| | | | Water | 7732-18-5 | 100.00000 | 92.42404 | Density = 8.330 |
| OptiKleen-WF (TM) | Halliburton | Concentrate | | | | | |
| | | | | Listed Below | | | |

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|---|---|---|---|---|---|---|---|
| 3rd Party Surfactant | Halliburton | Surfactant | | | | | |
| | | | | Listed Below | | | |
| HAI-OS ACID INHIBITOR | Halliburton | Corrosion Inhibitor | | | | | |
| | | | | Listed Below | | | |
| FDP-S1215-15 | Halliburton | Concentrate | | | | | |
| | | | | Listed Below | | | |
| SAND-COMMON WHITE - 100 MESH, 3307 LB BAG | Halliburton | Proppant | | | | | |
| | | | | Listed Below | | | |
| AccessFrac material | Halliburton | Viscosifier | | | | | |
| | | | | Listed Below | | | |
| SandWedge(R) ABC | Halliburton | Flow Enhancer | | | | | |
| | | | | Listed Below | | | |
| 15% HCL Acid | Halliburton | Solvent | | | | | |
| | | | | Listed Below | | | |
| SAND-PREMIUM WHITE-40/70, BULK | Halliburton | Proppant | | | | | |
| | | | | Listed Below | | | |

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|---|---|---|---|---|---|---|---|
| BE-9 | Halliburton | Biocide | | | | | |
| | | | | Listed Below | | | |
| FDP-S1204-15 | Halliburton | Friction Reducer | | | | | |
| | | | | Listed Below | | | |
| Ingredients | Listed Above | Listed Above | | | | | |
| | | | | Listed Below | | | |
| Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients. | | | | | | | |
| | | | Crystalline silica, quartz | 14808-60-7 | 100.00000 | 6.84268 | |
| | | | Hydrochloric Acid | 7647-01-0 | 30.00000 | 0.34459 | |
| | | | Water | 7732-18-5 | 100.00000 | 0.13868 | |
| | | | Inorganic particulate | Proprietary | 100.00000 | 0.11376 | |
| | | | Isopropanol | 67-63-0 | 60.00000 | 0.10161 | |
| | | | Copolymer of acrylamide and sodium acrylate | 25085-02-3 | 30.00000 | 0.02177 | |
| | | | Hydrotreated light petroleum distillate | 64742-47-8 | 30.00000 | 0.02177 | |
| | | | Heavy aromatic petroleum naphtha | 64742-94-5 | 30.00000 | 0.01810 | |
| | | | Ethoxylated alcohols | Proprietary | 30.00000 | 0.01715 | |
| | | | Fatty nitrogen derived amides | Proprietary | 10.00000 | 0.01694 | |
| | | | Ethoxylated fatty acids | Proprietary | 10.00000 | 0.01694 | |
| | | | Butyl alcohol | 71-36-3 | 5.00000 | 0.00847 | |
| | | | Sodium chloride | 7647-14-5 | 10.00000 | 0.00726 | |
| | | | Ethoxylated fatty acid | Proprietary | 5.00000 | 0.00363 | |
| | | | Sorbitan monooleate polyoxyethylene derivative | 9005-65-6 | 5.00000 | 0.00363 | |
| | | | Ethoxylated nonylphenol | Proprietary | 5.00000 | 0.00363 | |

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| | | | Sodium perborate tetrahydrate | 10486-00-7 | 100.00000 | 0.00276 | |
| | | | Tributyl tetradecyl phosphonium chloride | 81741-28-8 | 10.00000 | 0.00246 | |
| | | | Fatty acid amine salt mixture | 68139-75-3 | 60.00000 | 0.00232 | |
| | | | Polysaccharide | Proprietary | 1.00000 | 0.00228 | |
| | | | Naphthalene | 91-20-3 | 5.00000 | 0.00189 | |
| | | | Sodium salt of sulfonated naphthaleneformaldehyde condensate | 9084-06-4 | 1.00000 | 0.00114 | |
| | | | Polylactide resin | Proprietary | 100.00000 | 0.00110 | |
| | | | Ethoxylated fatty acid ester | Proprietary | 1.00000 | 0.00073 | |
| | | | Methanol | 67-56-1 | 60.00000 | 0.00043 | |
| | | | Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide | 68527-49-1 | 30.00000 | 0.00022 | |
| | | | Fatty acids, tall oil | Proprietary | 30.00000 | 0.00022 | |
| | | | Ethoxylated amine | Proprietary | 5.00000 | 0.00019 | |
| | | | Sodium sulfate | 7757-82-6 | 0.10000 | 0.00011 | |
| | | | Olefins | Proprietary | 5.00000 | 0.00009 | |
| | | | Propargyl alcohol | 107-19-7 | 10.00000 | 0.00007 | |
| | | | Acetic acid | 64-19-7 | 1.00000 | 0.00004 | |
| | | | Potassium acetate | 127-08-2 | 0.01000 | 0.00000 | |

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%
*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)