

Hydraulic Fracturing Fluid Product Component Information Disclosure

Last Fracture Date:	November 16, 2016
Last Submission Date:	January 20, 2017
Province:	AB
AER Field Centre:	St. Albert
Surface location:	02-04-062-22W5
Well Licence Number:	0479484
Licensee Name:	Chevron Canada Limited
Unique Well Identifier:	02/14-09-062-22W5/0
Well Name:	CHEVRON HZ 102 GRIZZLY 14-9-62-22
Number of Stages:	125
Bottom Hole Latitude:	54.354827
Bottom Hole Longitude:	-117.241424
Lat/Long Projection:	NAD 83
Production Fluid Type:	SHALE GAS ONLY
True Vertical Depth (TVD):	3,456.26
Total Water Volume (m3):	53,675

Hydraulic Fracturing Fluid Composition:

Fracture Start/End Date:	Component Type	Trade Name	Supplier	Purpose	Ingredient/Family Name	CAS # / HMIRC #	Concentration in Component (% by mass)	Concentration in HFF (% by mass)
Oct 26 2016 - Nov 16 2016	CARRIER FLUID				Fresh Water	7732-18-5	100.000000%	89.820343%
	CARRIER FLUID				Fresh Water	Not Available	100.000000%	89.914090%
	CARRIER FLUID				water	7732-18-5	100.000000%	0.454782%
	CARRIER FLUID				Water	Not Available	100.000000%	0.575975%
	CARRIER FLUID				Hydrochloric acid	7647-01-0	60.000000%	0.272869%
	CARRIER FLUID				Hydrochloric acid	Not Available	60.000000%	0.345585%
	PROPPANT	100 MESH	Halliburton		Crystalline silica, quartz	14808-60-7	100.000000%	1.006020%
	PROPPANT	SAND-PREMIUM WHITE-40/70, BULK	Halliburton		Crystalline silica, quartz	14808-60-7	100.000000%	8.611875%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Inert ingredient(s)	Not Available	100.000000%	0.001850%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Glutaraldehyde	111-30-8	42.500000%	0.000786%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Quaternary ammonium compounds	68424-85-1	7.500000%	0.000138%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Ethanol	64-17-5	1.000000%	0.000018%
	ADDITIVE	Aqucar 742	Halliburton	Bactericide/Biocide	Methanol	67-56-1	0.420000%	0.000007%

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Oct 26 2016 - Nov 16 2016	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Ammonium persulfate	7727-54-0	100.000000%	0.005904%
	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Crystalline silica, quartz	14808-60-7	30.000000%	0.001771%
	ADDITIVE	OPTIFLO-III DELAYED RELEASE BREAKER	Halliburton	Breaker	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000001%
	ADDITIVE	MO-67	Halliburton	Buffer	Inert ingredient(s)	Not Available	100.000000%	0.046995%
	ADDITIVE	MO-67	Halliburton	Buffer	Sodium hydroxide	1310-73-2	30.000000%	0.013958%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.000000%	0.000851%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Fatty acids, tall oil	8943	30.000000%	0.000425%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Propargyl alcohol	107-19-7	10.000000%	0.000141%
	ADDITIVE	HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000001%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Inert ingredient(s)	Not Available	100.000000%	0.016354%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Proprietary ingredient(s)	Trade Secret	100.000000%	0.026574%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Potassium formate	590-29-4	60.000000%	0.015786%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Potassium metaborate	13709-94-9	60.000000%	0.009715%
	ADDITIVE	CL-31 CROSSLINKER	Halliburton	Crosslinker	Potassium Hydroxide	1310-58-3	5.000000%	0.000809%
	ADDITIVE	CL-22 UC	Halliburton	Crosslinker	Inert ingredient(s)	Not Available	0.010000%	0.000002%
	ADDITIVE	Barolube	Halliburton	Friction Reducer	Inert ingredient(s)	Not Available	100.000000%	0.056080%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Inert ingredient(s)	Not Available	100.000000%	0.048977%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.000000%	0.014547%
	ADDITIVE	Barolube	Halliburton	Friction Reducer	Polypropylene glycol	25322-69-4	6.000000%	0.003364%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Ammonium chloride	12125-02-9	5.000000%	0.002424%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Ethoxylated alcohols	9068	5.000000%	0.002424%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Fatty nitrogen derived amides	9068	5.000000%	0.002424%
	ADDITIVE	FR-66	Halliburton	Friction Reducer	Proprietary ingredient(s)	Trade Secret	0.010000%	0.000004%

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Oct 26 2016 - Nov 16 2016	ADDITIVE	WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.000000%	0.089576%
	ADDITIVE	FERCHEK FERRIC IRON INHIBITOR	Halliburton	Iron Control	Isoascorbic acid, sodium salt	6381-77-7	100.000000%	0.022652%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Inert ingredient(s)	Not Available	100.000000%	0.008365%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Methyl Alcohol	67-56-1	30.000000%	0.002509%
	ADDITIVE	MC S-2730	Halliburton	Scale Inhibitor	Phosphonic acid...	22042-96-2	20.000000%	0.001673%
	ADDITIVE	OilPerm A	Halliburton	Surfactant	Ethanol	64-17-5	60.000000%	0.000865%
	ADDITIVE	OilPerm A	Halliburton	Surfactant	Heavy aromatic petroleum naphtha	64742-94-5	30.000000%	0.000432%
	ADDITIVE	OilPerm A	Halliburton	Surfactant	Naphthalene	91-20-3	5.000000%	0.000072%
	ADDITIVE	OilPerm A	Halliburton	Surfactant	Poly (oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydro, Poly (oxy-1,2-ethanediyl),alpha-(4-nonylphenyl)Omega-hydroxy	127087-87-0	5.000000%	0.000072%
	ADDITIVE	OilPerm A	Halliburton	Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.000000%	0.000014%

Comments:

*Information provided in this form is submitted in accordance with the requirements of AER Directive 59 Well Drilling and Completion Data Filing Requirements.

*Total Water Volume sources may include fresh water, produced water, recycled water, and/or other water types as listed in The "DDS Well Drilling Completion Data Submission System: A User Guide - Appendix D".

*CAS # - Chemical Abstract Service Number. Individual chemical ingredients have a unique CAS #. Specific ingredient names are shown for each CAS #. "Not Available" indicates the ingredient CAS # is not available.

*HMIRC # - Hazardous Material Information Review Commission (registry) number. The HMIRC # indicates the (hazardous) additive ingredient is considered to be confidential business information and is subject to a Hazardous Material Information Review Act claim exemption. General chemical family names are shown for each HMIRC #. "Not Available" indicates the ingredient HMIRC # is not available.

**"Trade Secret" indicates the (non-hazardous) additive ingredient is considered to be confidential business information. General chemical family names are reported for ingredients considered "Trade Secret".

*Any public concerns related to this information should be directed to the AER Field Centre shown on the report.

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