

Machine Id

WEAR **SEVERE** CONTAMINATION MARGINAL **FLUID CONDITION ABNORMAL**

1119 Component **Diesel Engine**

PETRO CANADA DURON SHP 15W40 (A I \

RECOMMENDATION The oil change at the time of sampling has been noted. We

recommend an early resample to monitor this condition. No other corrective action is recommended at this time.

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Aluminum ppm levels are severe. Piston wear is indicated.

CONTAMINATION

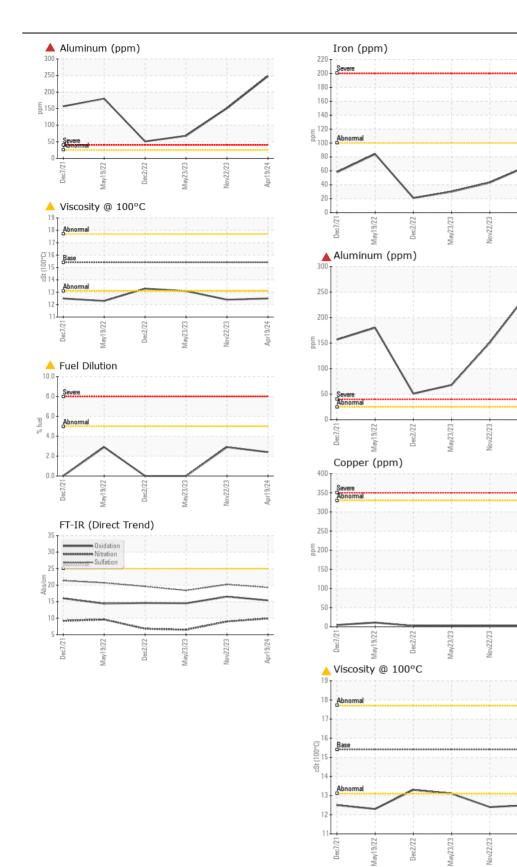
Light fuel dilution occurring.

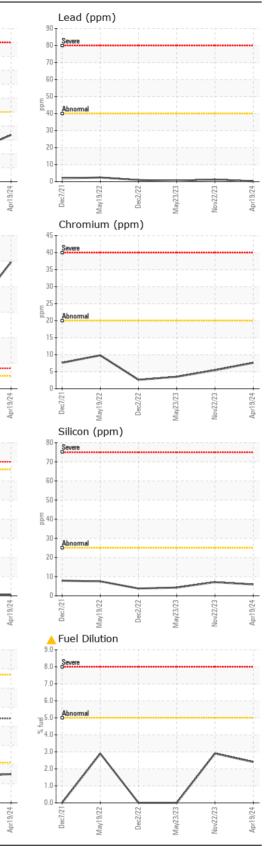
FLUID CONDITION

Viscosity of sample indicates oil is within SAE 30 range, advise investigate. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

Sample NumberClient InfoGFL0118507GFL0102692GFL00778Sample DateClient Info19 Apr 202422 Nov 202323 May 20Machine AgehrsClient Info543349074484Oil AgehrsClient Info000Filter AgehrsClient Info000Oil ChangedClient InfoN/AChangedChangedFilter ChangedClient InfoN/AN/AChanged	15W40 (C	AL)						
Sample DateClient InfoIn 9 Apr 202422 Nov 202323 May 20Machine AgehrsClient Info543349074484Oil AgehrsClient Info000Filter AgehrsClient InfoN/AChangedChangedFilter ChangedClient InfoN/AN/AChangedFilter ChangedClient InfoN/AN/AChangedSample StatusSEVERESEVERESEVERESEVEREIronppmASTMD5165(m)>20854NickelppmASTMD5165(m)>22<1<1<1TitaniumppmASTMD5165(m)>22<1<1<1SilverppmASTMD5165(m)>22<1<1<1<1GopperppmASTMD5165(m)>23<24<1<1<1<1VanadiumppmASTMD5165(m)>330223<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1 <th>Test</th> <th>UOM</th> <th>Method</th> <th>Limit/Abn</th> <th>Cı</th> <th>urrent</th> <th>History1</th> <th>History2</th>	Test	UOM	Method	Limit/Abn	Cı	urrent	History1	History2
Machine AgehrsClient Info543349074484Oil AgehrsClient Info000Filter AgehrsClient InfoN/AChangedChangedOil ChangedClient InfoN/AN/AChangedChangedFilter ChangedClient InfoN/AN/AChangedSample StatusSEVERESEVERESEVERESEVEREIronppmASTM05185(m) >10067743330ChromiumppmASTM05185(m) >2854NickelppmASTM05185(m) >22111AluminumppmASTM05185(m) >20111AluminumppmASTM05185(m) >20111CopperppmASTM05185(m) >15<1	Sample Number		Client Info		GF	L0118507	GFL0102692	GFL0077884
Oil AgehrsClient Info000Filter AgehrsClient InfoN/AChangedChangedOil ChangedClient InfoN/AN/AChangedChangedFilter ChangedQClient InfoN/AN/AChangedSample StatusClient InfoN/AN/AChangedIronppmASTM D5185(m)>100674330ChromiumppmASTM D5185(m)>20854NickelppmASTM D5185(m)>20854NickelppmASTM D5185(m)>2411AtminumppmASTM D5185(m)>2611AtminumppmASTM D5185(m)>2674AtminumppmASTM D5185(m)>3002674CopperppmASTM D5185(m)>25674VanadiumppmASTM D5185(m)>25674PotassiumppmASTM D5185(m)>25674PotassiumppmASTM D5185(m)>2562.42.9<1.0WateruvWc Methodo.2NEGNEGNEGSoliconppmASTM D5185(m)2.54.2.42.9<1.0WateruvMc Mathoffsol0.2NEGNEGSoliconppmASTM D5185(m)0.21.63.02.0	Sample Date		Client Info		19	Apr 2024	22 Nov 2023	23 May 2023
Filter AgehrsClient Info000Oil ChangedClient InfoN/AChangedChangedFilter ChangedClient InfoN/AN/AChangedSample StatusSEVERESEVERESEVERESEVEREIronppmASTMD5185(m)>10067743330ChromiumppmASTMD5185(m)>20854NickelppmASTMD5185(m)>2<1	Machine Age	hrs	Client Info		54	33	4907	4484
Oil ChangedClient InfoN/AChangedChangedFilter ChangedClient InfoN/AN/AChangedSample StatusSEVERESEVERESEVERESEVEREIronppmASTMD5185(m)>10067743330ChromiumppmASTMD5185(m)>20854NickelppmASTMD5185(m)>2<1	Oil Age	hrs	Client Info		0		0	0
Filter Changed Sample Status Client Info N/A N/A Changed SEVERE Iron ppm ASTM D5185(m) >100 67 433 30 Chromium ppm ASTM D5185(m) >20 8 5 4 Nickel ppm ASTM D5185(m) >2 <1	Filter Age	hrs	Client Info		0		0	0
Sample Status SEVERE SEVERE SEVERE SEVERE Iron ppm ASTM D5185(m) >100 67 433 30 Chromium ppm ASTM D5185(m) >20 8 5 4 Nickel ppm ASTM D5185(m) >2 <1	Oil Changed		Client Info		N/	A	Changed	Changed
Iron ppm ASTM D5185(m) >100 67 433 30 Chromium ppm ASTM D5185(m) >20 8 5 4 Nickel ppm ASTM D5185(m) >2 <1	Filter Changed		Client Info		N/	A	N/A	Changed
Chromium ppm ASTM D5185(m) >20 8 5 4 Nickel ppm ASTM D5185(m) >2 <1	Sample Status				S	EVERE	SEVERE	SEVERE
Nickel ppm ASTM D5185(m) >2 <1 <1 <1 Titanium ppm ASTM D5185(m) >2 <1	Iron	ppm	ASTM D5185(m)	>100		67	43	30
Titanium ppm ASTM D5185(m) >2 <1 0 <1 Silver ppm ASTM D5185(m) >2 0 <1	Chromium	ppm	ASTM D5185(m)	>20		8	5	4
Silver ppm ASTM D5185(m) >2 0 <1 <1 Aluminum ppm ASTM D5185(m) >25 248 151 68 Lead ppm ASTM D5185(m) >40 <1 1 <1 Copper ppm ASTM D5185(m) >330 2 2 3 Tin ppm ASTM D5185(m) >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185(m) >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185(m) >25 6 7 4 Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D793* >5 4 2.4 2.9 <1.0 Water WC Method >0.2 NEG NEG NEG Sold % % ASTM D784* >3 0.5 0.4 0.2 Soldium ppm ASTM D5185(m) <th>Nickel</th> <td>ppm</td> <td>ASTM D5185(m)</td> <td>>2</td> <th></th> <th><1</th> <td><1</td> <td><1</td>	Nickel	ppm	ASTM D5185(m)	>2		<1	<1	<1
Aluminum ppm ASTM D5185(m) >25 A 248 A 151 A 68 Lead ppm ASTM D5185(m) >40 <1	Titanium	ppm	ASTM D5185(m)	>2		<1	0	<1
Lead ppm ASTM D5185(m) >40 <1 1 <1 Copper ppm ASTM D5185(m) >330 2 2 3 Tin ppm ASTM D5185(m) >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185(m) >15 <1 <1 <1 <1 Vanadium ppm ASTM D5185(m) >25 6 7 4 Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D7593* >5 ▲ 2.4 ▲ 2.9 <1.0 Water Q WC Method >0.2 NEG NEG NEG Soot % % ASTM D7624* >30 0.5 0.4 0.2 Nitration Abs/cm ASTM D7185* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm	Silver	ppm	ASTM D5185(m)	>2		0	<1	<1
Copper ppm ASTM D5185(m) >330 2 2 3 Tin ppm ASTM D5185(m) >15 <1	Aluminum	ppm	ASTM D5185(m)	>25		248	🔺 151	6 8
Tin ppm ASTM D5185(m) >15 <1 <1 <1 Vanadium ppm ASTM D5185(m) >25 6 7 4 Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D5185(m) >20 1 0 2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG NEG Soot % % ASTM D7844* >3 0.5 0.4 0.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D7844* >3 0.5 0.4 0.2 Sodium ppm ASTM D5185(m) 4 5 5 Boron ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 3	Lead	ppm	ASTM D5185(m)	>40		<1	1	<1
Vanadium ppm ASTM D5185(m) O O O Silicon ppm ASTM D5185(m) >20 1 0 2 Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D5185(m) >20 1 0 2 Water WC Method >0.2 NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG Soot % % ASTM D7624* >3 0.5 0.4 0.2 Nitration Abs/m ASTM D7141* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 4 5 5 5 Baron ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 4 3 1	Copper	ppm	ASTM D5185(m)	>330		2	2	3
Silicon ppm ASTM D5185(m) >25 6 7 4 Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D5185(m) >5 ▲ 2.4 ▲ 2.9 <1.0	Tin	ppm	ASTM D5185(m)	>15		<1	<1	<1
Potassium ppm ASTM D5185(m) >20 1 0 2 Fuel % ASTM D7593*<>5 ▲ 2.4 ▲ 2.9 <1.0	Vanadium	ppm	ASTM D5185(m)			0	0	0
Fuel % ASTM D7593* >5 ▲ 2.4 ▲ 2.9 <1.0 Water WC Method >0.2 NEG NEG NEG NEG Glycol WC Method >0.2 NEG NEG NEG NEG Soot % % ASTM D7844* >3 0.5 0.4 0.2 Nitration Abs/cm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/cm ASTM D715* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m)	Silicon	ppm	ASTM D5185(m)	>25		6	7	4
Water WC Method >0.2 NEG NEG NEG Glycol WC Method NEG NEG NEG NEG Soot % % ASTM D7844* >3 0.5 0.4 0.2 Nitration Abs/cm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/.1mm ASTM D7624* >20 NEG NEG NEG Sodium Abs/.1mm ASTM D7151* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) <td< td=""><th>Potassium</th><td>ppm</td><td>ASTM D5185(m)</td><td>>20</td><th></th><th>1</th><td>0</td><td>2</td></td<>	Potassium	ppm	ASTM D5185(m)	>20		1	0	2
Glycol WC Method NEG NEG NEG Soot % % ASTM D7844* >3 0.5 0.4 0.2 Nitration Abs/cm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/1mm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/1mm ASTM D7624* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 0 19.3 20.2 18.4 Barium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1005	Fuel	%	ASTM D7593*	>5		2.4	2 .9	<1.0
Soot % % ASTM D7844* >3 0.5 0.4 0.2 Nitration Abs/cm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/.1mm ASTM D7624* >20 9.9 9.0 6.5 Sulfation Abs/.1mm ASTM D7415* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm <td< td=""><th>Water</th><td></td><td>WC Method</td><td>>0.2</td><th></th><th>NEG</th><td>NEG</td><td>NEG</td></td<>	Water		WC Method	>0.2		NEG	NEG	NEG
NitrationAbs/cmASTM D7624*>209.99.06.5SulfationAbs/.1mmASTM D7415*>3019.320.218.4Emulsified WaterscalarVisual*>0.2NEGNEGNEGSodiumppmASTM D5185(m)455BoronppmASTM D5185(m)0344BariumppmASTM D5185(m)0000MolybdenumppmASTM D5185(m)0431MagnesiumppmASTM D5185(m)0431MagnesiumppmASTM D5185(m)1010934928932CalciumppmASTM D5185(m)1070100510091068PhosphorusppmASTM D5185(m)1270114411481150SulfurppmASTM D5185(m)2060254525322732OxidationAbs/.1mmASTM D714*>2515.416.514.5	Glycol		WC Method			NEG	NEG	NEG
Sulfation Abs/.1mm ASTM D7415* >30 19.3 20.2 18.4 Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 4 5 5 Boron ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D5185(m)	Soot %	%	ASTM D7844*	>3		0.5	0.4	0.2
Emulsified Water scalar Visual* >0.2 NEG NEG NEG Sodium ppm ASTM D5185(m) 4 5 5 Boron ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1m ASTM D5185(m)	Nitration	Abs/cm	ASTM D7624*	>20		9.9	9.0	6.5
Sodium ppm ASTM D5185(m) 4 5 5 Boron ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1m ASTM D7414* 25	Sulfation	Abs/.1mm	ASTM D7415*	>30		19.3	20.2	18.4
Boron ppm ASTM D5185(m) 0 3 4 4 Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 0 0 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414*<>25 15.4 16.5 14.5	Emulsified Water	scalar	Visual*	>0.2		NEG	NEG	NEG
Barium ppm ASTM D5185(m) 0 0 0 0 Molybdenum ppm ASTM D5185(m) 60 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7141*<>25 15.4 16.5 14.5	Sodium	ppm	ASTM D5185(m)			4	5	5
Molybdenum ppm ASTM D5185(m) 60 58 58 57 Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414*<>25 15.4 16.5 14.5	Boron	ppm	ASTM D5185(m)	0		3	4	4
Manganese ppm ASTM D5185(m) 0 4 3 1 Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Barium	ppm	ASTM D5185(m)	0		0	0	0
Magnesium ppm ASTM D5185(m) 1010 934 928 932 Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Molybdenum	ppm	ASTM D5185(m)	60		58	58	57
Calcium ppm ASTM D5185(m) 1070 1005 1009 1068 Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Manganese	ppm	ASTM D5185(m)	0		4	3	1
Phosphorus ppm ASTM D5185(m) 1150 966 962 1076 Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Magnesium	ppm	ASTM D5185(m)	1010		934	928	932
Zinc ppm ASTM D5185(m) 1270 1144 1148 1150 Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Calcium	ppm	ASTM D5185(m)	1070		1005	1009	1068
Sulfur ppm ASTM D5185(m) 2060 2545 2532 2732 Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Phosphorus	ppm	ASTM D5185(m)	1150			962	1076
Oxidation Abs/.1mm ASTM D7414* >25 15.4 16.5 14.5	Zinc	ppm	ASTM D5185(m)	1270		1144	1148	1150
	Sulfur	ppm	ASTM D5185(m)	2060		2545	2532	2732
Visc @ 100°C cSt ASTM D7279(m) 15.4 ▲ 12.5 ▲ 12.4 13.1	Oxidation	Abs/.1mm	ASTM D7414*	>25		15.4	16.5	14.5
	Visc @ 100°C	cSt	ASTM D7279(m)	15.4	L	12.5	▲ 12.4	13.1

Submitted By: Shane Cater Page 1 of 2





Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 GFL Environmental - 207 - Pickering SW CALA Sample No. 1034 TOY AVENUE, PICKERING YARD : GFL0118507 Received : 23 Apr 2024 Lab Number PICKERING, ON : 02630907 Tested : 24 Apr 2024 ISO 17025:2017 Accredited CA L1W 3P1 Unique Number : 5772060 Diagnosed : 24 Apr 2024 - Kevin Marson Laboratory Test Package : MOB 1 (Additional Tests: FUELDILUTION, PercentFuel) Contact: Ian Patton To discuss this sample report, contact Customer Service at 1-800-268-2131. ipatton@gflenv.com Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (905)831-6297 F: (905)426-3577 Validity of results and interpretation are based on the sample and information as supplied.