

OIL ANALYSIS REPORT

Sample Rating Trend





cummins 912085

Front Diesel Engine

PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

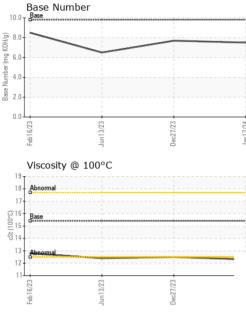
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

-			JunZ0Z3	Dec2023		
SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		GFL0109089	GFL0086257	GFL0086243
Sample Date		Client Info		17 Jan 2024	27 Dec 2023	13 Jun 2023
Machine Age	hrs	Client Info		3644	3544	0
Oil Age	hrs	Client Info		0	3544	2164
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	MARGINAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<1.0	<1.0	1.7
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METAL	S	method	limit/base	current	history1	history2
Iron		ASTM D5185m	>90	22	15	45
Chromium	ppm ppm		>20	22	1	45
Nickel		ASTM D5185m	>20	0	0	4 <1
Titanium	ppm	ASTM D5185m		0	<1	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm		>20	7	5	18
Lead	ppm	ASTM D5185m	>40	0	0	0
	ppm			0 <1	2	4
Copper Tin	ppm	ASTM D5185m ASTM D5185m	>330 >15	<1	<1	1
	ppm		>10	0 <1	0	0
Vanadium Cadmium	ppm	ASTM D5185m ASTM D5185m				0
	ppm	ASTIVI DOTODIII		0	0	0
ADDITIVES	ppin	method	limit/base	current	0 history1	history2
	ppm		limit/base			
ADDITIVES		method	0	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current 13	history1 18	history2 8
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	0 0 60	current 13 0	history1 18 0	history2 8 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current 13 0 55	history1 18 0 59	history2 8 0 60
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current 13 0 55 0	history1 18 0 59 <1	history2 8 0 60 2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	Current 13 0 555 0 715	history1 18 0 59 <1 740	history2 8 0 60 2 854
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070	Current 13 0 55 0 715 1054	history1 18 0 59 <1 740 1135	history2 8 0 60 2 854 1066
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150	Current 13 0 55 0 715 1054 904	history1 18 0 59 <1 740 1135 889	history2 8 0 60 2 854 1066 944
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270	Current 13 0 55 0 715 1054 904 1091	history1 18 0 59 <1 740 1135 889 1149	history2 8 0 60 2 854 1066 944 1212
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	Current 13 0 55 0 715 1054 904 1091 2846	history1 18 0 59 <1 740 1135 889 1149 2902	history2 8 0 60 2 854 1066 944 1212 3333
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060	Current 13 0 555 0 715 1054 904 1091 2846 Current	history1 18 0 59 <1 740 1135 889 1149 2902 history1	history2 8 0 60 2 854 1066 944 1212 3333 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	current 13 0 55 0 715 1054 904 1091 2846 current 2	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3	history2 8 0 60 2 854 1066 944 1212 3333 history2 5
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 1010 1070 1150 1270 2060 limit/base	current 13 0 555 0 715 1054 904 1091 2846 current 2 2 2 2 2 2 2 2	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Jimit/base >25	Current 13 0 55 0 715 1054 904 1091 2846 Current 2 2 18	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 Imit/base >25 >20	Current 13 0 55 0 715 1054 904 1091 2846 Current 2 2 18 Current	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14 history1	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 2060 225 >25 >20 limit/base >20	Current 13 0 55 0 715 1054 904 1091 2846 current 2 18 current 0.9	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14 history1 0.6	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44 history2 0.9
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 >20 imit/base >6 >20	Current 13 0 55 0 715 1054 904 1091 2846 current 2 18 current 0.9 7.2	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14 history1 0.6 6.1	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44 history2 0.9 9.0
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRA	ppm ppm ppm ppm ppm ppm ppm ppm ppm TS ppm ppm ppm ppm	method ASTM D5185m ASTM D7185M *ASTM D7624 *ASTM D7415 method	0 0 0 1010 1070 1150 2260 225 220 220 imit/base >20 20 30 20 30 20 30	Current 13 0 55 0 715 1054 904 1091 2846 Current 2 2 2 18 Current 0.9 7.2 18.3 Current	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14 history1 0.6 6.1 17.2 history1	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44 history2 0.9 9.0 21.1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m	0 0 0 1010 1070 1150 1270 2060 imit/base >25 imit/base >20 imit/base >20	Current 13 0 55 0 715 1054 904 1091 2846 Current 2 2 18 Current 0.9 7.2 18.3	history1 18 0 59 <1 740 1135 889 1149 2902 history1 3 2 14 history1 0.6 6.1 17.2	history2 8 0 60 2 854 1066 944 1212 3333 history2 5 4 44 history2 0.9 9.0 21.1



OIL ANALYSIS REPORT



		VISUAL White Metal	scalar	method *Visual	limit/base	current	history1 NONE	history2 NONE
		Yellow Metal		*Visual	NONE	NONE	NONE	NONE
		Precipitate	scalar scalar	*Visual	NONE	NONE	NONE	NONE
		Silt		*Visual	NONE	NONE	NONE	NONE
		Debris	scalar scalar	*Visual	NONE	NONE	NONE	NONE
		Sand/Dirt			NONE	NONE		
23	24		scalar	*Visual *Visual	NORML	NORML	NONE NORML	NONE NORML
Dec27/23	Jan 17/24	Appearance Odor	scalar	*Visual	NORML		NORML	NORML
	~	Emulsified Water	scalar	*Visual		NORML NEG	NEG	
		Free Water	scalar scalar	*Visual	>0.2	NEG	NEG	NEG NEG
		FLUID PROP	ERTIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	15.4	12.3	12.5	12.4
		GRAPHS						
		Ferrous Alloys						
- 23		45 40 iron						
Dec27/23		35 - nickel						
		30						
		E ²⁵ 20			_			
		15-						
		10						
		5-						
		33						
		Feb 16/23 Jun 13/23		Dec27/23	Jan 17/24			
		Non-ferrous Met	ale		7			
		¹⁰ T 2						
		copper						
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		and and address of the second s	Contraction of the Original States					
		53 53 53		23	24			
		Feb 16/23 lun 13/23		Jec27/23	Jan 17,			
			C		,			
		Viscosity @ 100°	C			Baso Number		
		¹⁹			10.0	Base Number	,	
						Base Number		
		19 18 - Abnormal 17 -				Base Number		
		19 18 - Abnormal 17 -				Base		
		19 18 Abnormal 17 5 16 Base 015 5 14				Base		
		19 18 Abnormal 17 5 16 8 8 8 15 14 13 Abnormal 15 14 13 Abnormal 15 14 13 Abnormal			0.8 D.a KOH/8)	Base		
		19 18 Abnormal 17 30 16 Base 31 4 4 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 15			(D)HO) Du) Jaquer 4.0 2.0	Base		
		19 Abnormal 17 Base 15 14 13 Abnormal 12 11		/23	(0,HOX) (0,HOX) (0,HOX) (0,HOX) (0,0 (0,0)	Base		23
		19 18 Abnormal 17 30 16 Base 31 4 4 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 17 Abnormal 15		Dec21/23	(D)HO) Du) Jaquer 4.0 2.0	Base	57/51 UNIO	Dec27/23
		19 Abnormal 17 Base 16 Base 15 Interview 14 Interview 12 Interview 11 EXP(9) EXP(9) Figure			Base Mundar Base M	E22011 and a		
	Laboratory Sample No.	19 Abnormal 17 Base 15 14 13 Abnormal 12 11		son Ave., Ca	Base Mundar Base M	E22011 and a	vironmental	- 009 - Fairbu
	Laboratory Sample No. Lab Number	Abnormal Abnormal Abnormal Base Base CER LUN CER LU	501 Madia Recieved Diagnose	son Ave., Ca 1 : 22 . ed : 22 .	(0,40) Bu (0,40)	E22011 and a	vironmental	- 009 - Fairbu 5 Roosevelt Hv Fairburn, G
icate L2367	Laboratory Sample No.	Abnormal Abnormal Base Base CERCING CERCINA	501 Madia Recieved	son Ave., Ca 1 : 22 . ed : 22 .	(0,40) (0,40)	E22011 and a	ivironmental 690	- 009 - Fairbu 5 Roosevelt Hv

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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