

OIL ANALYSIS REPORT



Diesel Engine

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





DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. (Customer Sample Comment: Due to fuel dilution)

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

Fluid Condition

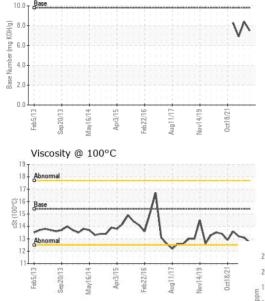
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORI	MATION	method	limit/base	current	history1	history2
Sample Number		Client Info		PCA0086091	PCA0086440	PCA0086167
Sample Date		Client Info		19 Oct 2023	05 Jul 2023	04 Mar 2023
Machine Age	hrs	Client Info		23854	23571	0
Oil Age	hrs	Client Info		23854	23571	0
Oil Changed		Client Info		Not Changd	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINAT	ION	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	0.0
WEAR METAL	S	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	25	41	71
Chromium	ppm	ASTM D5185m	>20	1	1	1
Nickel	ppm	ASTM D5185m	>2	0	<1	<1
Titanium	ppm	ASTM D5185m	>2	<1	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	2	4	3
Lead	ppm	ASTM D5185m	>40	4	12	13
Copper	ppm	ASTM D5185m	>330	7	29	24
Tin	ppm	ASTM D5185m	>15	<1	1	2
Vanadium	ppm	ASTM D5185m		<1	0	0
Cadmium	nnm	ASTM D5185m		0	0	0
Caumum	ppm	ASTIVI DSTOSIII		U	U	U
ADDITIVES	ррпі	method	limit/base	current	history1	history2
	ррт		limit/base			
ADDITIVES		method		current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	0	current	history1	history2
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0	current <1	history1 2 0	history2 4 0
ADDITIVES Boron Barium Molybdenum	ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60	current <1 0 57	history1 2 0 62	history2 4 0 74
ADDITIVES Boron Barium Molybdenum Manganese	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0	current <1 0 57 <1	history1 2 0 62 <1	history2 4 0 74 1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010	current <1 0 57 <1 904	history1 2 0 62 <1 964	history2 4 0 74 1 919
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070	current <1 0 57 <1 904 1063	history1 2 0 62 <1 964 1079	history2 4 0 74 1 919 1038
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150	current <1 0 57 <1 904 1063 989	history1 2 0 62 <1 964 1079 1046	history2 4 0 74 1 919 1038 971
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	current <1 0 57 <1 904 1063 989 1222	history1 2 0 62 <1 964 1079 1046 1304	history2 4 0 74 1 919 1038 971 1252
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current <1 0 57 <1 904 1063 989 1222 2864	history1 2 0 62 <1 964 1079 1046 1304 3500	history2 4 0 74 1 919 1038 971 1252 3047
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060	current <1 0 57 <1 904 1063 989 1222 2864 current	history1 2 0 62 <1 964 1079 1046 1304 3500 history1	history2 4 0 74 1 919 1038 971 1252 3047 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current <1 0 57 <1 904 1063 989 1222 2864 current 6	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6	history2 4 0 74 1 919 1038 971 1252 3047 history2 7
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8 3	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8 2	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151 10
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8 3	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8 2 history1	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151 10 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINAN Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8 3 current	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8 2 history1 1.4	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151 10 history2 1.7
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 method ASTM D5185m	0 0 60 0 1010 1150 1270 2060 limit/base >25 >20 limit/base	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8 3 current 0.9 6.5	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8 2 history1 1.4 9.3	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151 10 history2 1.7 11.2
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 method *ASTM D5185m ASTM D7844 *ASTM D7624 *ASTM D7415	0 0 60 0 1010 1070 1150 1270 2060 limit/base >25 >20 limit/base >3 >20 >30	current <1 0 57 <1 904 1063 989 1222 2864 current 6 8 3 current 0.9 6.5 18.3	history1 2 0 62 <1 964 1079 1046 1304 3500 history1 6 8 2 history1 1.4 9.3 22.3	history2 4 0 74 1 919 1038 971 1252 3047 history2 7 151 10 history2 1.7 11.2 20.9



Base Number

OIL ANALYSIS REPORT

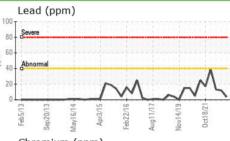


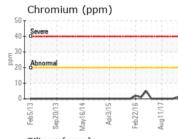
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
	DTIEC	mathad	limit/bass	our react	historyt	hiotory (O

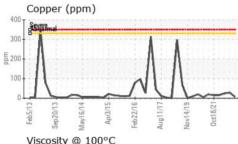
I LOID I HOI LITTILO					
Visc @ 100°C cSt	ASTM D445	15.4	12.7	13.1	13.2

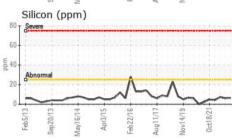
Abnormal	Λ			
	~/\	-/	10	
2 4 2	9	<u>~~</u>	V 6	-17
Feb5/13 Sep20/13 May16/14 Apr3/15	Feb22/16	Aug11/1	Nov14/19	Oct18/21
∞ ≥	æ	Ar	N	0
Aluminum (ppm)				

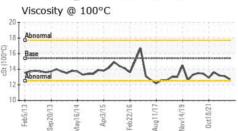
GRAPHS

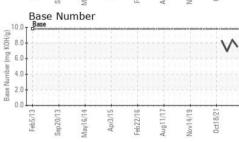














Certificate L2367

Laboratory Sample No. Lab Number **Unique Number**

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : PCA0086091 : 05985309

: 10702604

Received : 20 Oct 2023 Diagnosed Diagnostician : Don Baldridge

: 24 Oct 2023

Test Package : MOB 1 (Additional Tests: TBN) To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Kemp Quarries - Kemp Stone - Hulbert

17801 Hwy 80 Hulbert, OK US 74441

Contact:

hulbert@kempstone.com T:

F: