

OIL ANALYSIS REPORT

Sample Rating Trend





Machine Id 221003 Component Diesel Engine Fluid

PETRO CANADA DURON SHP 15W40 (9 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

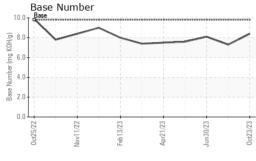
Fluid Condition

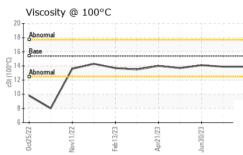
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM Sample Number Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium Molybdenum	hrs hrs	method Client Info Method WC Method WC Method MSTM D5185m ASTM D5185m	>2 >20 >40	current PCA0105994 23 Oct 2023 3614 322 Not Changd NORMAL current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1 0	history1 PCA0102972 25 Aug 2023 3292 418 Not Changd ABNORMAL history1 <1.0 NEG history1 10 <1 ▲ 6 0 <1 1 0 4 <1 <1 <1	history2 PCA009809 30 Jun 2023 2874 298 Not Changd NORMAL history2 <1.0 NEG history2 4 0 0 0 0 0 <1 <1 <1
Sample Date Machine Age Oil Age Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info Client Info Client Info MC Method WC Method WC Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	23 Oct 2023 3614 322 Not Changd NORMAL	25 Aug 2023 3292 418 Not Changd ABNORMAL history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	30 Jun 2023 2874 298 Not Changd NORMAL history2 <1.0 NEG history2 4 0 0 0 0 0 0 0 0
Machine Age Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info Client Info method WC Method WC Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	3614 322 Not Changd NORMAL current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	3292 418 Not Changd ABNORMAL history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	2874 298 Not Changd NORMAL history2 <1.0 NEG history2 4 0 0 0 0 <1 <1 <1
Oil Age Oil Age Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Client Info Client Info Client Info method WC Method WC Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	322 Not Changd NORMAL current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	418 Not Changd ABNORMAL history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	298 Not Changd NORMAL history2 <1.0 NEG history2 4 0 0 0 0 <1 <1 <1
Oil Changed Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	Method WC Method WC Method WC Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	Not Changd NORMAL current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	Not Changd ABNORMAL history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	Not Changd NORMAL history2 <1.0 NEG history2 4 0 0 0 0 <1 <1 <1
Sample Status CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method WC Method WC Method Method Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	ABNORMAL history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	NORMAL history2 <1.0 NEG history2 4 0 0 0 0 0 <1 <1 <1
CONTAMINATION Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	current <1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	history1 <1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	history2 <1.0 NEG history2 4 0 0 0 0 0 <1 <1 <1
Fuel Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	WC Method WC Method Method ASTM D5185m	>3.0 limit/base >120 >20 >5 >2 >2 >2 >20 >40 >330	<1.0 NEG current 6 <1 4 0 <1 2 <1 2 <1	<1.0 NEG history1 10 <1 6 0 <1 1 0 4 <1	<1.0 NEG history2 4 0 0 0 0 0 <1 <1 <1
Glycol WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	limit/base >120 >20 >5 >2 >2 >2 >2 >40 >330	NEG current 6 <1 4 0 <1 2 <1 2 <1	NEG history1 10 <1 6 0 <1 1 0 4 <1	NEG history2 4 0 0 0 0 0 0 0 <
WEAR METALS Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m	>120 >20 >5 >2 >2 >2 >2 >20 >40 >330	current 6 <1 4 0 <1 2 <1 2 <1	history1 10 <1 6 0 <1 1 0 4 <1	history2 4 0 0 0 0 0 0 <1 <1 <1
Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>120 >20 >5 >2 >2 >2 >2 >20 >40 >330	6 <1 4 0 <1 2 <1 2 <1	10 <1 6 0 <1 1 0 4 <1	4 0 0 0 0 0 0 0 0 0
Iron Chromium Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >5 >2 >2 >2 >20 >40 >330	<1 4 0 <1 2 <1 2 <1	<1 6 0 <1 1 0 4 <1	0 0 0 0 0 0 0 <1 <1
Nickel Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >2 >2 >2 >20 >40 >330	4 0 <1 2 <1 2 <1	6 0 <1 1 0 4 <1	0 0 0 0 0 0 <1 <1
Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>5 >2 >2 >2 >20 >40 >330	4 0 <1 2 <1 2 <1	6 0 <1 1 0 4 <1	0 0 0 0 <1 <1
Titanium Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >2 >20 >40 >330	<1 2 <1 2 <1	0 <1 1 0 4 <1	0 0 0 0 <1 <1
Silver Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>2 >20 >40 >330	<1 2 <1 2 <1	<1 1 0 4 <1	0 0 0 0 <1 <1
Aluminum Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>20 >40 >330	2 <1 2 <1	1 0 4 <1	0 0 0 <1 <1
Lead Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	>40 >330	<1 2 <1	0 4 <1	0 <1 <1
Copper Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	>330	2 <1	4 <1	<1 <1
Tin Vanadium Cadmium ADDITIVES Boron Barium	ppm	ASTM D5185m ASTM D5185m		<1	<1	<1
Vanadium Cadmium ADDITIVES Boron Barium	ppm	ASTM D5185m	>13			
Cadmium ADDITIVES Boron Barium				U		0
ADDITIVES Boron Barium	Pp	7.01 20.00		<1	0	0
Boron Barium		method	limit/base	current	history1	history2
Barium	ppm	ASTM D5185m	0	<1	0	0
	ppm		0	4	0	0
		ASTM D5185m	60	63	66	55
-	ppm	ASTM D5185m		<1	<1	0
Manganese Magnesium	ppm	ASTM D5185m	1010	910	1049	884
Calcium	ppm	ASTM D5185m	1070	1065	1153	969
		ASTM D5185m	1150	1005	1043	904
Phosphorus Zinc	ppm	ASTM D5185m	1270	1177	1297	1111
Sulfur	ppm ppm	ASTM D5185m	2060	3237	3421	3411
CONTAMINAN		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	5	5	3
Sodium	ppm	ASTM D5185m		3	13	7
Potassium	ppm	ASTM D5185m	>20	5	3	2
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>4	0.2	0.4	0.2
Nitration	Abs/cm	*ASTM D7624		6.9	8.4	6.8
Sulfation	Abs/.1mm	*ASTM D7415	>30	19.0	19.8	19.6
FLUID DEGRAD	ATION		limit/lease			
	7111011	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	current 14.7	history1 16.1	history2



OIL ANALYSIS REPORT

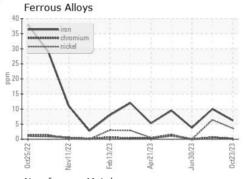


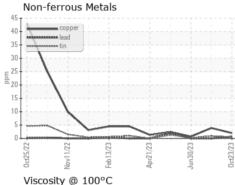


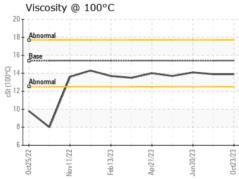
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	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

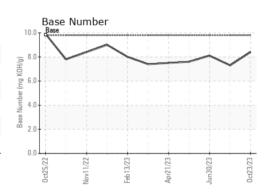
FLUID PROPI	ERTIES	method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	13.9	13.9	14.1

GRAPHS













Certificate L2367

Laboratory Sample No. Lab Number

Unique Number : 10723359

: PCA0105994 : 05994999 Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 31 Oct 2023 Diagnosed : 01 Nov 2023

Diagnostician : Wes Davis

LRS - BETHEL HEIGHTS (NWA AR)

848 HWY 264 E BETHEL HEIGHTS, AR US 72764

Contact: JAMIE HAYWORTH jhayworth@Irsrecycles.com T: (479)878-1384

* - 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)