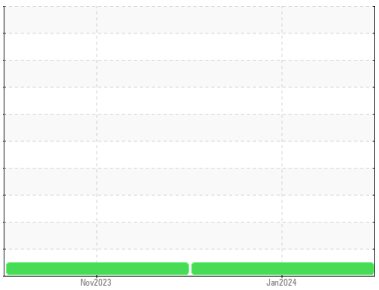
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**236424**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- GAL)**

## DIAGNOSIS

**Recommendation**
The oil change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**Contamination**
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 acceptable for the time in service.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0110150** | PCA0099707 | --- |
| Sample Date | | Client Info | | **24 Jan 2024** | 02 Nov 2023 | --- |
| Machine Age | mls | Client Info | | **12289** | 0 | --- |
| Oil Age | mls | Client Info | | **12289** | 10000 | --- |
| Oil Changed | | Client Info | | **Changed** | Changed | --- |
| Sample Status | | | | **NORMAL** | NORMAL | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | --- |
| Water | | WC Method | >0.2 | **NEG** | NEG | --- |
| Glycol | | WC Method | | **NEG** | NEG | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **79** | 19 | --- |
| Chromium | ppm | ASTM D5185m | >20 | **2** | 1 | --- |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 6 | --- |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | --- |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **25** | 2 | --- |
| Lead | ppm | ASTM D5185m | >40 | **0** | 1 | --- |
| Copper | ppm | ASTM D5185m | >330 | **27** | 2 | --- |
| Tin | ppm | ASTM D5185m | >15 | **3** | <1 | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **35** | 2 | --- |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | --- |
| Molybdenum | ppm | ASTM D5185m | 50 | **45** | 71 | --- |
| Manganese | ppm | ASTM D5185m | 0 | **8** | <1 | --- |
| Magnesium | ppm | ASTM D5185m | 950 | **582** | 1037 | --- |
| Calcium | ppm | ASTM D5185m | 1050 | **1661** | 1146 | --- |
| Phosphorus | ppm | ASTM D5185m | 995 | **841** | 1140 | --- |
| Zinc | ppm | ASTM D5185m | 1180 | **986** | 1340 | --- |
| Sulfur | ppm | ASTM D5185m | 2600 | **2928** | 3614 | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **11** | 8 | --- |
| Sodium | ppm | ASTM D5185m | | **6** | 0 | --- |
| Potassium | ppm | ASTM D5185m | >20 | **60** | 2 | --- |

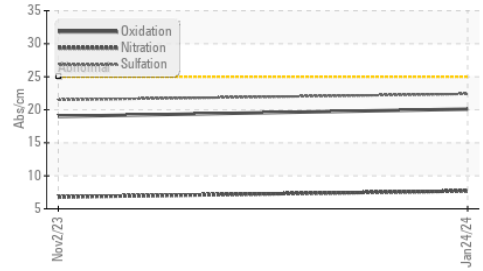
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.4** | 0.3 | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.7** | 6.8 | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.4** | 21.5 | --- |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **20.1** | 19.0 | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **10.0** | 9.9 | --- |

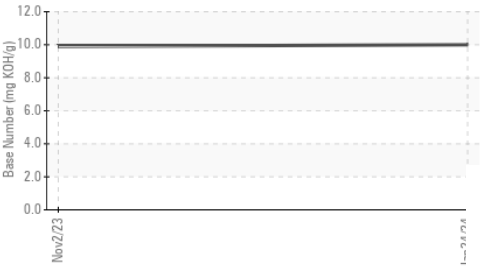
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

FT-IR (Direct Trend)




Base Number



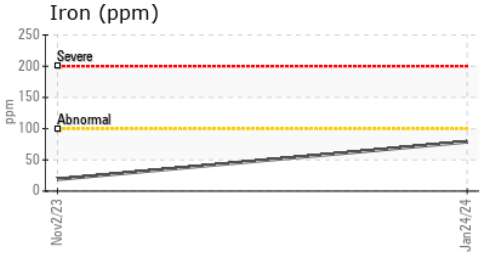

Viscosity @ 100°C


| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Silt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Debris | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Sand/Dirt | scalar | *Visual | NONE | **NONE** | NONE | --- |
| Appearance | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Odor | scalar | *Visual | NORML | **NORML** | NORML | --- |
| Emulsified Water | scalar | *Visual | >0.2 | **NEG** | NEG | --- |
| Free Water | scalar | *Visual | | **NEG** | NEG | --- |

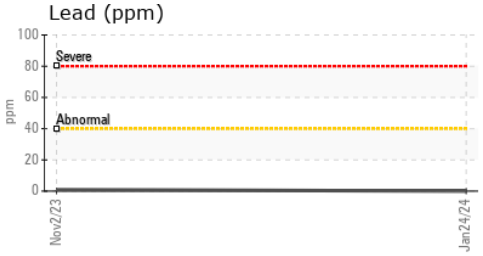
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **9.8** | 9.9 | --- |

## GRAPHS

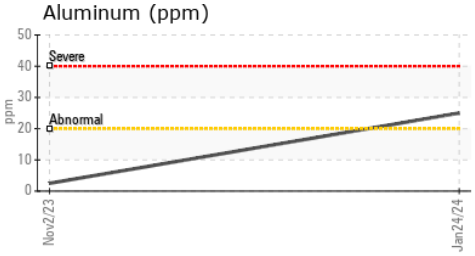
Iron (ppm)



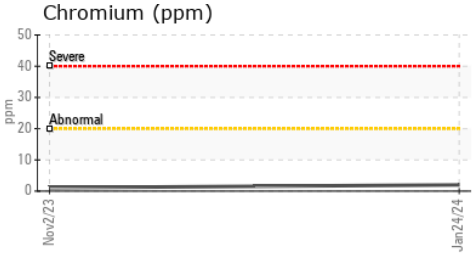

Lead (ppm)



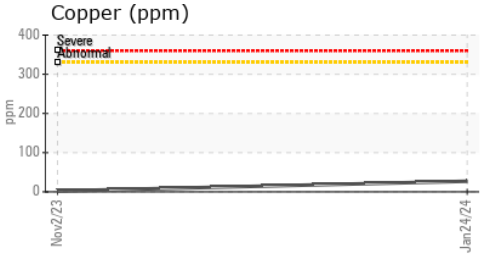

Aluminum (ppm)



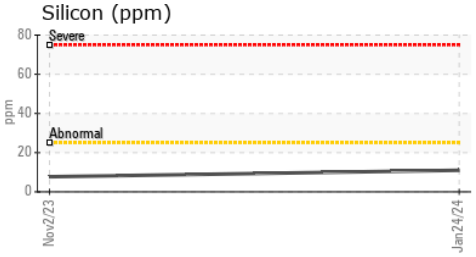

Chromium (ppm)



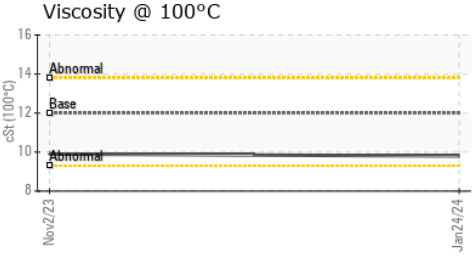

Copper (ppm)



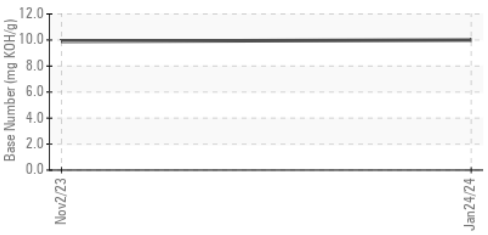

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0110150 **Received** : 12 Apr 2024
**Lab Number** : 06147080 **Tested** : 15 Apr 2024
**Unique Number** : 10977158 **Diagnosed** : 15 Apr 2024 - Sean Felton
**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)*

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