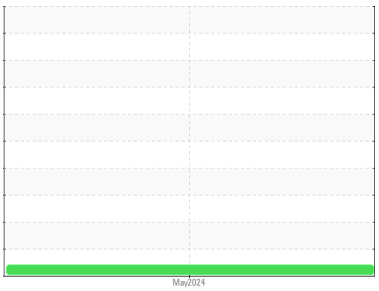
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




VISCOSITY

Machine Id
**2327214**
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 15W40 (--- QTS)**

## DIAGNOSIS

**Recommendation**
Oil and filter 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**
Metal levels are typical for a new component breaking in.

**Contamination**
Fuel content negligible. 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 oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0123195** | --- | --- |
| Sample Date | | Client Info | | **25 May 2024** | --- | --- |
| Machine Age | mls | Client Info | | **23000** | --- | --- |
| Oil Age | mls | Client Info | | **23000** | --- | --- |
| Oil Changed | | Client Info | | **Changed** | --- | --- |
| Sample Status | | | | **ATTENTION** | --- | --- |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **61** | --- | --- |
| Chromium | ppm | ASTM D5185m | >20 | **3** | --- | --- |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | --- | --- |
| Titanium | ppm | ASTM D5185m | | **<1** | --- | --- |
| Silver | ppm | ASTM D5185m | >3 | **<1** | --- | --- |
| Aluminum | ppm | ASTM D5185m | >20 | **80** | --- | --- |
| Lead | ppm | ASTM D5185m | >40 | **<1** | --- | --- |
| Copper | ppm | ASTM D5185m | >330 | **309** | --- | --- |
| Tin | ppm | ASTM D5185m | >15 | **6** | --- | --- |
| Vanadium | ppm | ASTM D5185m | | **0** | --- | --- |
| Cadmium | ppm | ASTM D5185m | | **0** | --- | --- |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 0 | **56** | --- | --- |
| Barium | ppm | ASTM D5185m | 0 | **<1** | --- | --- |
| Molybdenum | ppm | ASTM D5185m | 60 | **47** | --- | --- |
| Manganese | ppm | ASTM D5185m | 0 | **7** | --- | --- |
| Magnesium | ppm | ASTM D5185m | 1010 | **533** | --- | --- |
| Calcium | ppm | ASTM D5185m | 1070 | **1687** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | 1150 | **788** | --- | --- |
| Zinc | ppm | ASTM D5185m | 1270 | **904** | --- | --- |
| Sulfur | ppm | ASTM D5185m | 2060 | **2616** | --- | --- |

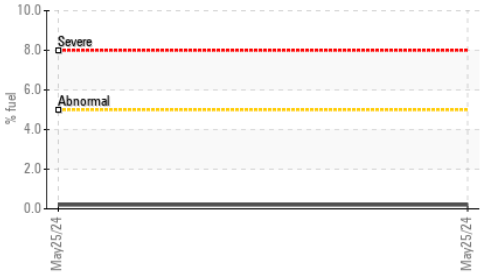
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | --- | --- |
| Sodium | ppm | ASTM D5185m | | **8** | --- | --- |
| Potassium | ppm | ASTM D5185m | >20 | **245** | --- | --- |
| Fuel | % | ASTM D3524 | >5 | **0.2** | --- | --- |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | --- | --- |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.7** | --- | --- |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.0** | --- | --- |

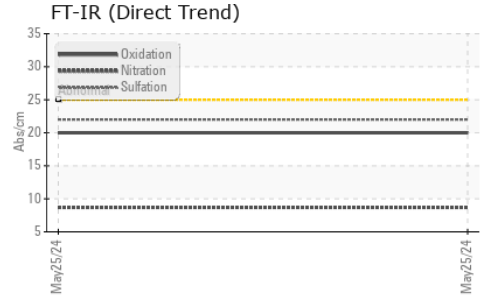
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **20.0** | --- | --- |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 9.8 | **8.1** | --- | --- |

# OIL ANALYSIS REPORT

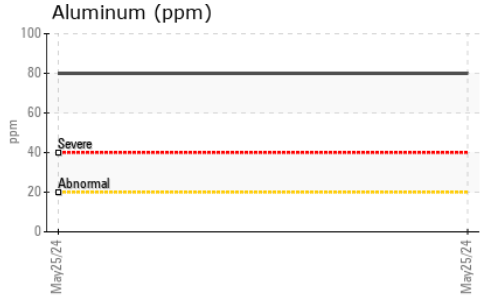
Fuel Dilution



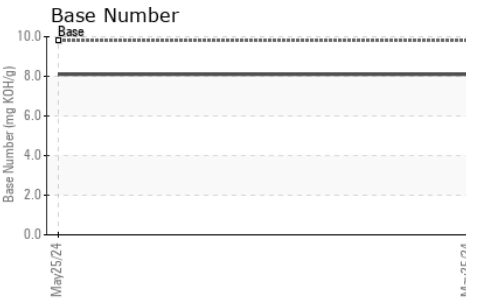

FT-IR (Direct Trend)



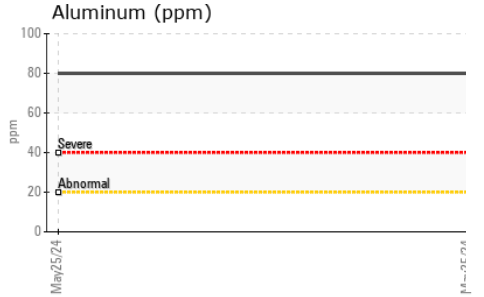

Aluminum (ppm)




Base Number




Aluminum (ppm)

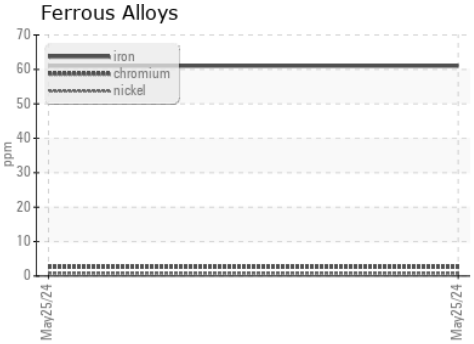



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | --- | --- |
| Precipitate | scalar | *Visual | NONE | **NONE** | --- | --- |
| Silt |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

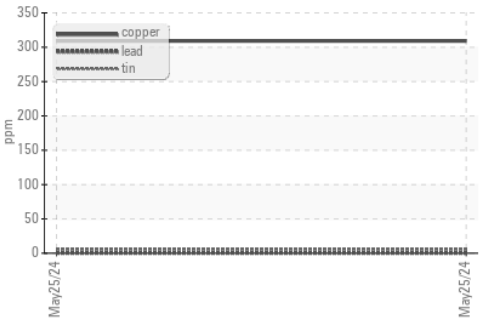
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.4 | **9.6** | --- | --- |

## GRAPHS

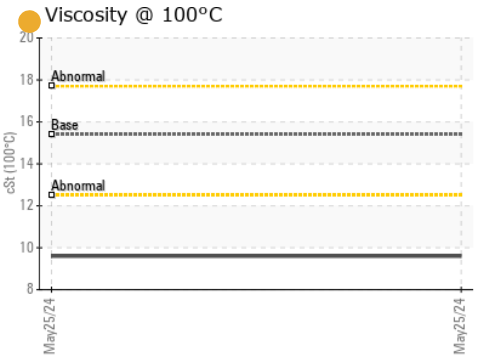
Ferrous Alloys



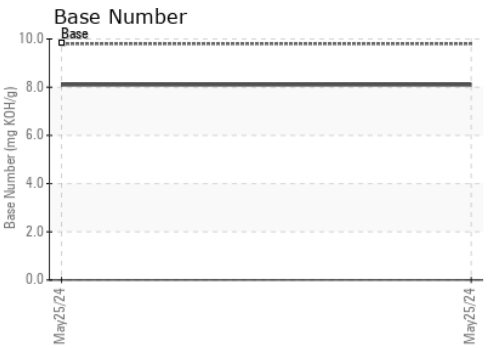

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0123195 **Received** : 06 Jun 2024
**Lab Number** : 06201209 **Tested** : 11 Jun 2024
**Unique Number** : 11063332 **Diagnosed** : 11 Jun 2024 - Sean Felton
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

*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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