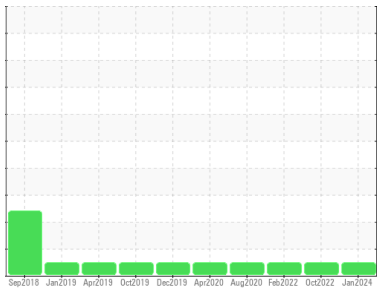
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
## COOPER ELECTRIC
Machine Id
## HINO 388518
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (16 QTS)**

## 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 INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PCA0110167** | PCA0077051 | PCA0057726 |
| Sample Date | | Client Info | | **29 Jan 2024** | 01 Oct 2022 | 10 Feb 2022 |
| Machine Age | mls | Client Info | | **263669** | 217283 | 202072 |
| Oil Age | mls | Client Info | | **20000** | 12316 | 0 |
| Oil Changed | | Client Info | | **Changed** | Changed | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **20** | 12 | 4 |
| Chromium | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **4** | 5 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | 2 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **5** | 2 | 2 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | 1 | <1 |
| Antimony | ppm | ASTM D5185m | | **---** | --- | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 2 | **14** | 17 | 9 |
| Barium | ppm | ASTM D5185m | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 50 | **77** | 75 | 66 |
| Manganese | ppm | ASTM D5185m | 0 | **1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 950 | **876** | 883 | 1002 |
| Calcium | ppm | ASTM D5185m | 1050 | **1235** | 1237 | 1166 |
| Phosphorus | ppm | ASTM D5185m | 995 | **1071** | 982 | 1120 |
| Zinc | ppm | ASTM D5185m | 1180 | **1269** | 1252 | 1377 |
| Sulfur | ppm | ASTM D5185m | 2600 | **3630** | 3320 | 2928 |

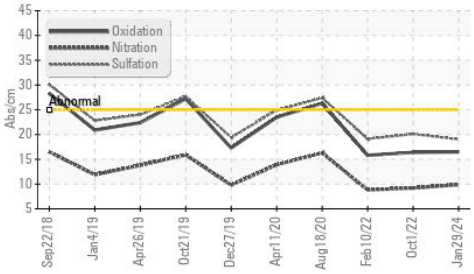
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 2 | 4 |
| Sodium | ppm | ASTM D5185m | | **5** | 4 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **8** | 2 | 4 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.6** | 0.5 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.9** | 9.2 | 8.8 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.0** | 20.1 | 19.1 |

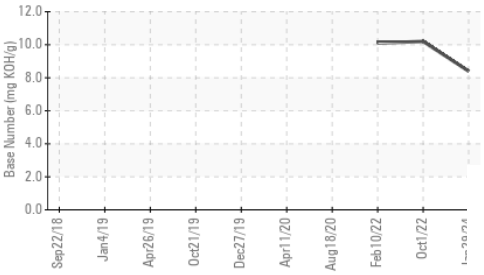
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **16.5** | 16.4 | 15.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **8.4** | 10.2 | 10.1 |

# OIL ANALYSIS REPORT

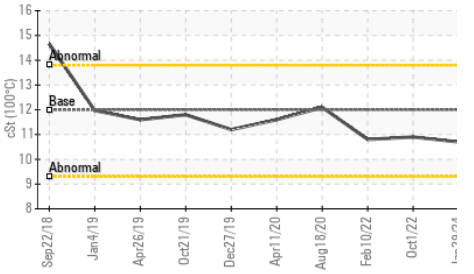
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

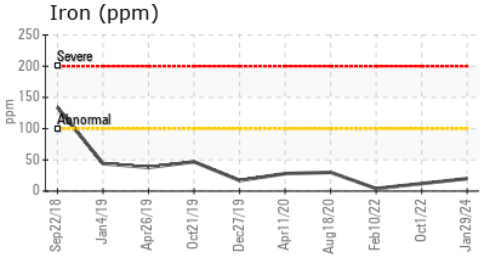



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |

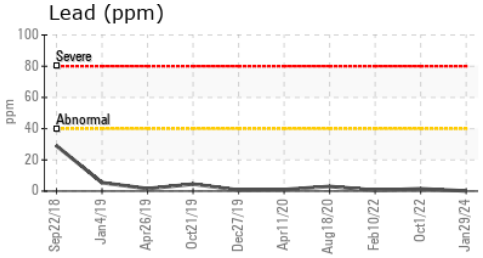
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 12.00 | **10.7** | 10.9 | 10.8 |

## GRAPHS

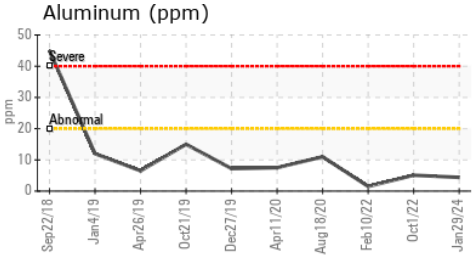
Iron (ppm)



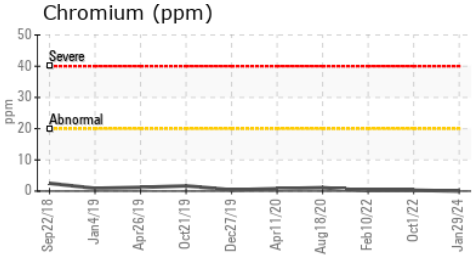

Lead (ppm)



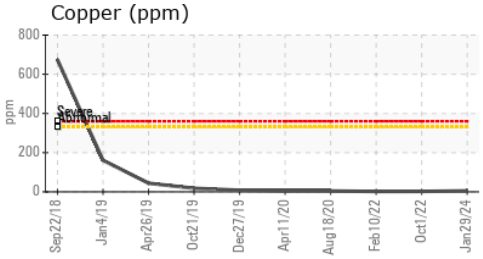

Aluminum (ppm)



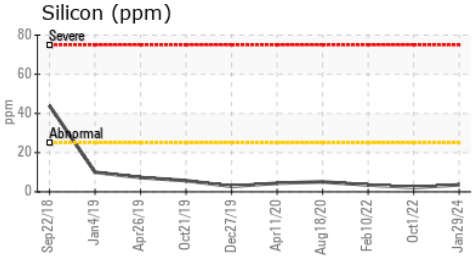

Chromium (ppm)



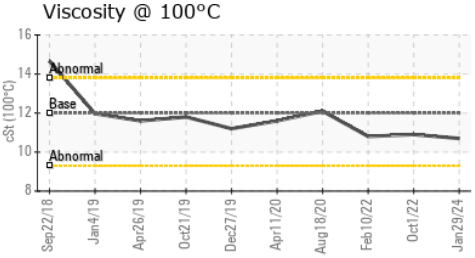

Copper (ppm)



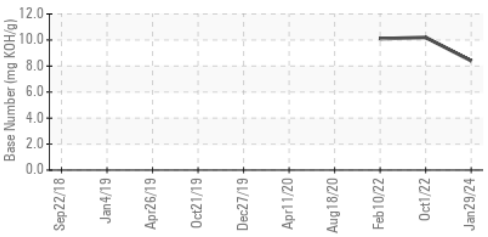

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0110167
**Lab Number** : 06147081
**Unique Number** : 10977159
**Test Package** : MOB 1 ( Additional Tests: TBN )

**Received** : 12 Apr 2024
**Tested** : 15 Apr 2024
**Diagnosed** : 15 Apr 2024 - Wes Davis

*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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Report Id: MILNEW [WUSCAR] 06147081 (Generated: 04/15/2024 18:59:20) Rev: 1

Contact/Location: Anthony Cursi - MILNEW