# OIL ANALYSIS REPORT

Sample Rating Trend


**WEAR**

Machine Id
## PETERBILT 37
Component
**Diesel Engine**
Fluid
**PETRO CANADA DURON SHP 10W30 (--- GAL)**

## DIAGNOSIS

**Recommendation**

The oil change at the time of sampling has been noted. Confirm the source of the lubricant being utilized for top-up/fill. We recommend an early resample to monitor this condition.

**Wear**

Iron ppm levels are abnormal. Cylinder, crank, or cam shaft wear is indicated.

**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**

Additive levels indicate the addition of a different brand, or type of oil. The oil is no longer serviceable as a result of the abnormal and/or severe wear.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **PC0073151** | --- | --- |
| Sample Date | | Client Info | | **08 Mar 2023** | --- | --- |
| Machine Age | kms | Client Info | | **513250** | --- | --- |
| Oil Age | kms | Client Info | | **46401** | --- | --- |
| Oil Changed | | Client Info | | **Changed** | --- | --- |
| Sample Status | | | | **ABNORMAL** | --- | --- |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<1.0** | --- | --- |
| Glycol | | WC Method | | **NEG** | --- | --- |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| PQ | | ASTM D8184* | | **0** | --- | --- |
| Iron | ppm | ASTM D5185(m) | >90 | ▲ **97** | --- | --- |
| Chromium | ppm | ASTM D5185(m) | >20 | **2** | --- | --- |
| Nickel | ppm | ASTM D5185(m) | >2 | **0** | --- | --- |
| Titanium | ppm | ASTM D5185(m) | >2 | **<1** | --- | --- |
| Silver | ppm | ASTM D5185(m) | >2 | **<1** | --- | --- |
| Aluminum | ppm | ASTM D5185(m) | >20 | **9** | --- | --- |
| Lead | ppm | ASTM D5185(m) | >40 | **6** | --- | --- |
| Copper | ppm | ASTM D5185(m) | >330 | **2** | --- | --- |
| Tin | ppm | ASTM D5185(m) | >15 | **<1** | --- | --- |
| Antimony | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Vanadium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Beryllium | ppm | ASTM D5185(m) | | **0** | --- | --- |
| Cadmium | ppm | ASTM D5185(m) | | **0** | --- | --- |

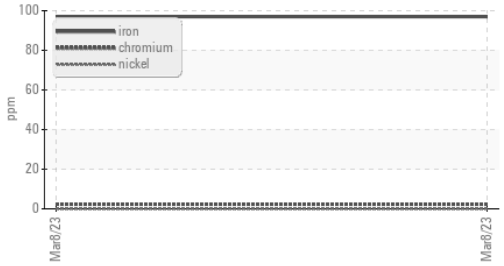
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 2 | **15** | --- | --- |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | --- | --- |
| Molybdenum | ppm | ASTM D5185(m) | 50 | **70** | --- | --- |
| Manganese | ppm | ASTM D5185(m) | 0 | **1** | --- | --- |
| Magnesium | ppm | ASTM D5185(m) | 950 | **193** | --- | --- |
| Calcium | ppm | ASTM D5185(m) | 1050 | **2176** | --- | --- |
| Phosphorus | ppm | ASTM D5185(m) | 995 | **1100** | --- | --- |
| Zinc | ppm | ASTM D5185(m) | 1180 | **1235** | --- | --- |
| Sulfur | ppm | ASTM D5185(m) | 2600 | **2962** | --- | --- |
| Lithium | ppm | ASTM D5185(m) | | **<1** | --- | --- |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **6** | --- | --- |
| Sodium | ppm | ASTM D5185(m) | | **3** | --- | --- |
| Potassium | ppm | ASTM D5185(m) | >20 | **12** | --- | --- |

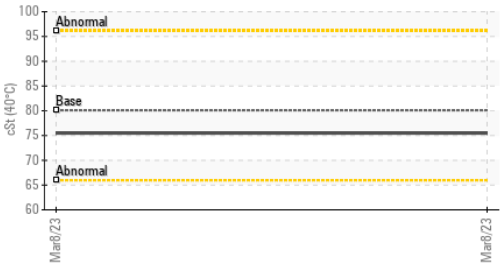
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >6 | **0.6** | --- | --- |
| Nitration | Abs/cm | ASTM D7624* | >20 | **12.9** | --- | --- |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **26.7** | --- | --- |

# OIL ANALYSIS REPORT

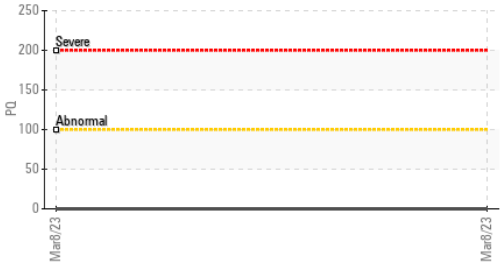
Ferrous Alloys



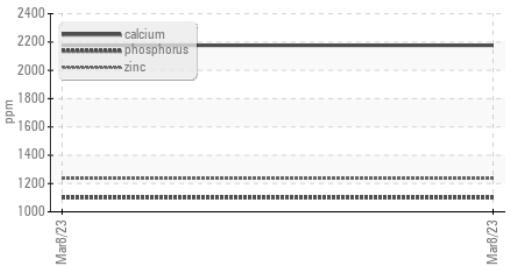

Viscosity @ 40°C



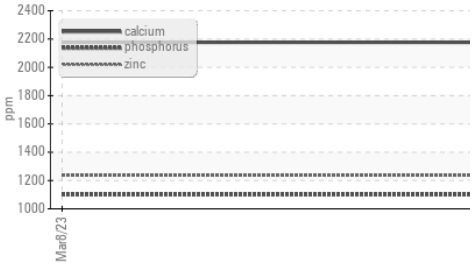

PQ




Additives




Additives




| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **19.5** | --- | --- |

| 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 | **VLITE** | --- | --- |
| 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 @ 40°C | cSt | ASTM D7279(m) | 80.1 | **75.5** | --- | --- |
| Visc @ 100°C | cSt | ASTM D7279(m) | 12.00 | **11.4** | --- | --- |
| Viscosity Index (VI) | Scale | ASTM D2270* | 144 | **143** | --- | --- |

## GRAPHS

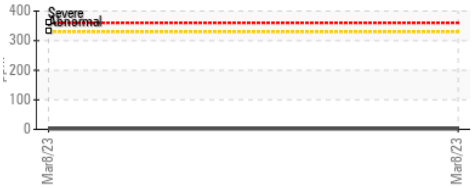
Iron (ppm)


Lead (ppm)

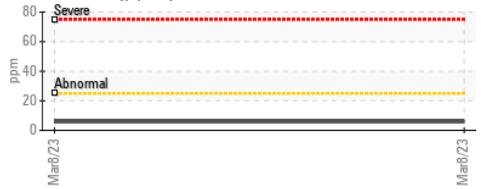

Aluminum (ppm)


Chromium (ppm)

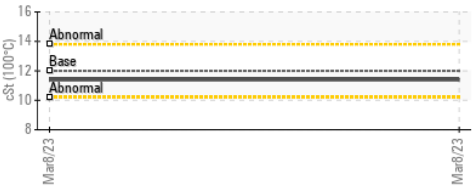

Copper (ppm)



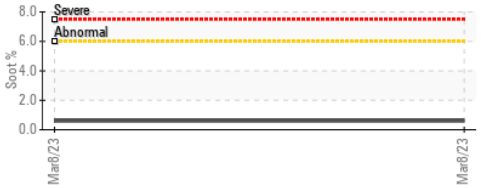

Silicon (ppm)




Viscosity @ 100°C




Soot %




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : PC0073151 **Received** : 31 Jul 2023
**Lab Number** : 02573154 **Diagnosed** : 01 Aug 2023
**Unique Number** : 5618205 **Diagnostician** : Kevin Marson
**Test Package** : MOB 1 ( Additional Tests: KV40, PQ, VI, Visual )

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*

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