TRAAP
Texas Refinery Advanced Analysis Program

# OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | ABNORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | ABNORMAL |

Machine Id
## PETERBILT TK22
Component
## Diesel Engine
Fluid
## TRC MOLY XL PRO-SPEC III SYNTHETIC15W40 (5 GAL)

## RECOMMENDATION

We recommend that you drain the oil from the component if this has not already been done. We recommend an early resample to monitor this condition.

## WEAR

Cylinder, crank, or cam shaft wear is indicated.

## CONTAMINATION

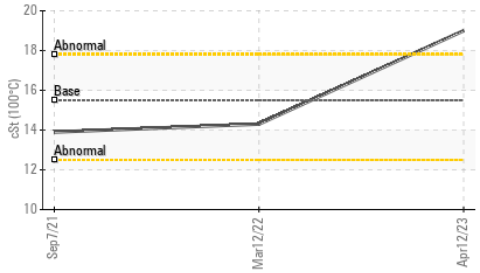
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. There is no indication of any contamination in the oil.

## FLUID CONDITION

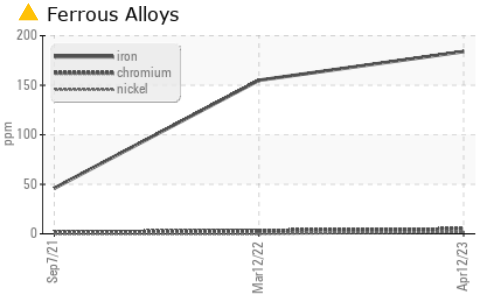
The oil viscosity is higher than normal. The BN result indicates that there is suitable alkalinity remaining in the oil.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | TR05841638 | TR05525869 | TR05379235 |
| Sample Date | | Client Info | | 12 Apr 2023 | 12 Mar 2022 | 07 Sep 2021 |
| Machine Age | mls | Client Info | | 0 | 0 | 28712 |
| Oil Age | mls | Client Info | | 122966 | 32547 | 18712 |
| Filter Age | mls | Client Info | | 122966 | 0 | 18712 |
| Oil Changed | | Client Info | | N/A | N/A | Changed |
| Filter Changed | | Client Info | | N/A | N/A | Changed |
| Sample Status | | | | ABNORMAL | ABNORMAL | MARGINAL |
| Iron | ppm | ASTM D5185m | >90 | ▲ 184 | ▲ 155 | 46 |
| Chromium | ppm | ASTM D5185m | >20 | 5 | 3 | 2 |
| Nickel | ppm | ASTM D5185m | >2 | 2 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 96 | 39 | 101 |
| Lead | ppm | ASTM D5185m | >40 | <1 | 0 | 0 |
| Copper | ppm | ASTM D5185m | >330 | 7 | 12 | 127 |
| Tin | ppm | ASTM D5185m | >15 | <1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >25 | 18 | 19 | 19 |
| Potassium | ppm | ASTM D5185m | >20 | 175 | 78 | ▲ 315 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >6 | 1.2 | 1.3 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 26.9 | 19.8 | 11.6 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 39.0 | 33.1 | 25 |
| 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 |
| Sodium | ppm | ASTM D5185m | | 1 | 2 | 0 |
| Boron | ppm | ASTM D5185m | | 62 | 87 | 147 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 1 |
| Molybdenum | ppm | ASTM D5185m | | 227 | 180 | 223 |
| Manganese | ppm | ASTM D5185m | | 2 | 2 | 2 |
| Magnesium | ppm | ASTM D5185m | | 454 | 496 | 439 |
| Calcium | ppm | ASTM D5185m | 4500 | 4376 | 3982 | 4118 |
| Phosphorus | ppm | ASTM D5185m | | 918 | 883 | 871 |
| Zinc | ppm | ASTM D5185m | 1400 | 1121 | 1074 | 1056 |
| Sulfur | ppm | ASTM D5185m | | 3856 | 2932 | 3029 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 50.6 | 31.2 | 19.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 15 | 9.74 | 10.7 | 12.7 |
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | ▲ 19.0 | 14.3 | 13.9 |

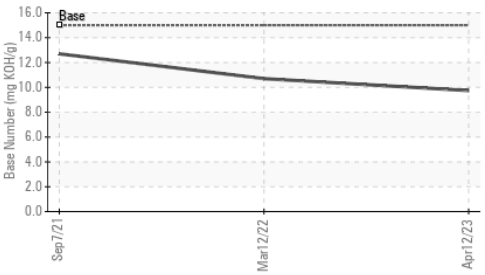
Viscosity @ 100°C



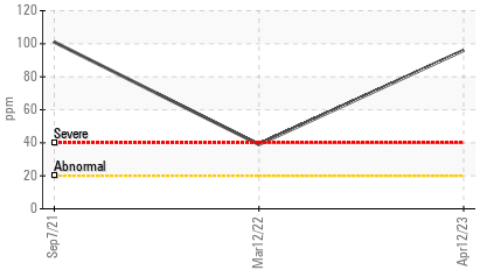

Ferrous Alloys



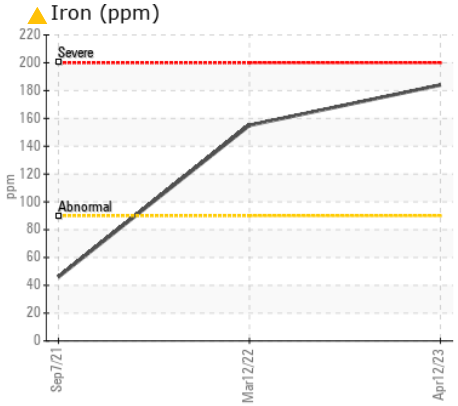

Base Number



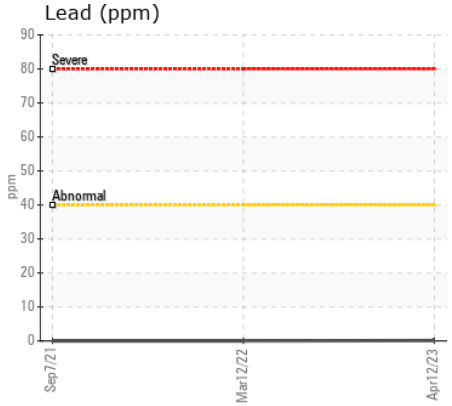

Aluminum (ppm)



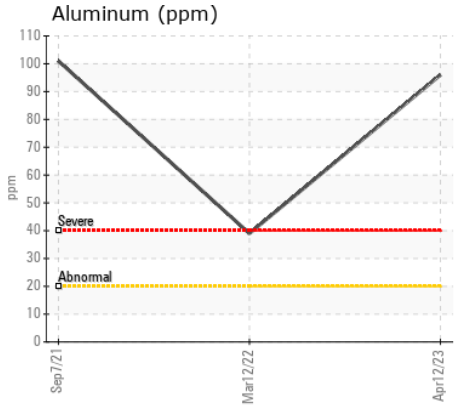

Iron (ppm)



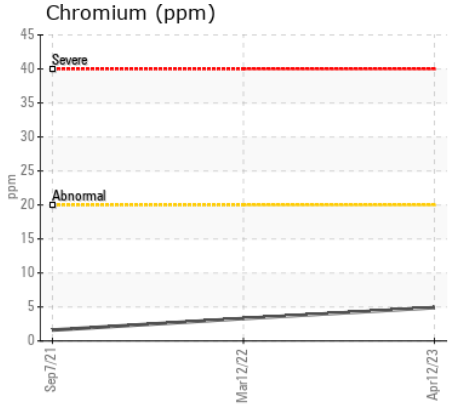

Lead (ppm)



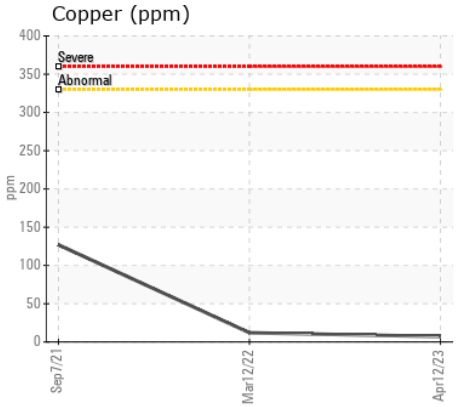

Aluminum (ppm)



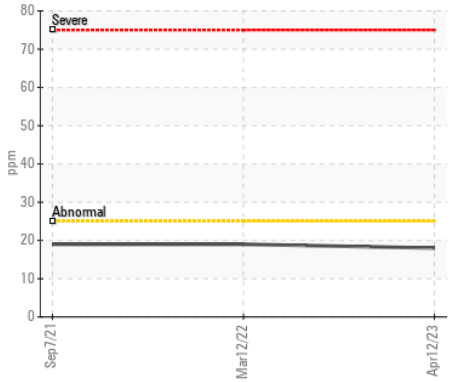

Chromium (ppm)



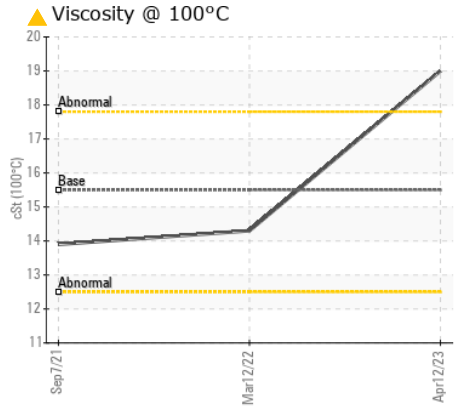

Copper (ppm)



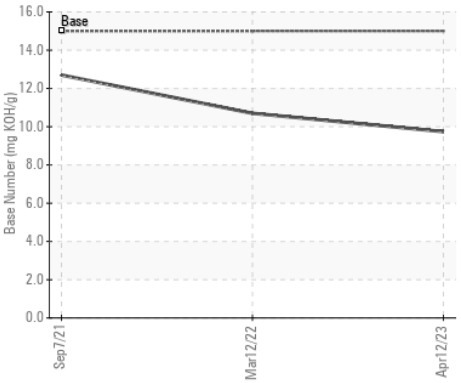

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : TR05841638
**Lab Number** : 05841638
**Unique Number** : 10460441
**Test Package** : MOB 2

**Received** : 08 May 2023
**Tested** : 12 May 2023
**Diagnosed** : 12 May 2023 - Jonathan Hester

**COPPLES WRECKER SERVICE**
8775 W ST RD 252
EDINBURGH, IN
US 46124
Contact: MARC DEMOTT

*To discuss this sample report, contact Customer Service at 1-800-827-0711.*
** - 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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