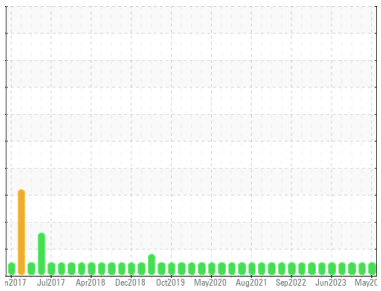
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
## HYUNDAI LB-51 - 0000016
Component
**Diesel Engine**
Fluid
**FLEETLINE SUPERFLEET XHD 15W40 (12 GAL)**

## 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 | | **PCA0109833** | LP0000576 | LP0000607 |
| Sample Date | | Client Info | | **09 May 2024** | 09 Nov 2023 | 05 Sep 2023 |
| Machine Age | hrs | Client Info | | **12798** | 12227 | 11962 |
| Oil Age | hrs | Client Info | | **288** | 265 | 298 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| 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 | **1** | 0 | 1 |
| Chromium | ppm | ASTM D5185m | >20 | **0** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **2** | <1 | <1 |
| Lead | ppm | ASTM D5185m | >40 | **0** | 0 | 1 |
| Copper | ppm | ASTM D5185m | >330 | **<1** | 0 | 0 |
| Tin | ppm | ASTM D5185m | >15 | **0** | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **25** | 14 | 2 |
| Barium | ppm | ASTM D5185m | | **0** | 0 | 3 |
| Molybdenum | ppm | ASTM D5185m | | **38** | 24 | 59 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Magnesium | ppm | ASTM D5185m | | **222** | 343 | 1010 |
| Calcium | ppm | ASTM D5185m | | **1986** | 1674 | 1085 |
| Phosphorus | ppm | ASTM D5185m | | **957** | 905 | 1105 |
| Zinc | ppm | ASTM D5185m | | **1114** | 1053 | 1340 |
| Sulfur | ppm | ASTM D5185m | | **4067** | 3237 | 3384 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 4 | 3 |
| Sodium | ppm | ASTM D5185m | | **3** | <1 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 0 | 3 |

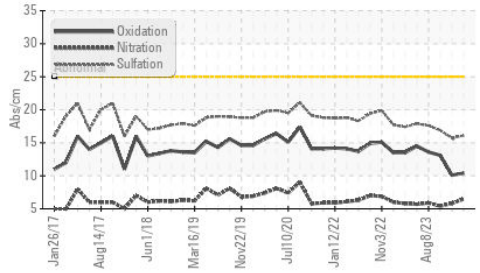
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **6.5** | 5.8 | 5.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **16.1** | 15.7 | 16.9 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **10.4** | 10.1 | 13.1 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | **9.15** | 9.53 | 8.65 |

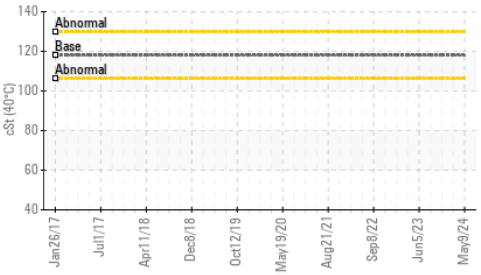
OIL DIAGNOSTICS

# OIL ANALYSIS REPORT

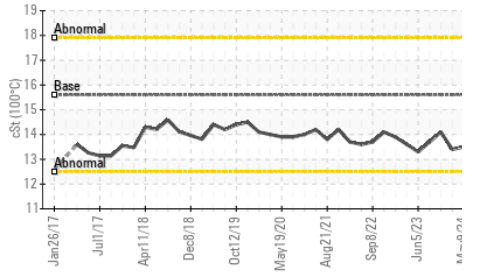
FT-IR (Direct Trend)



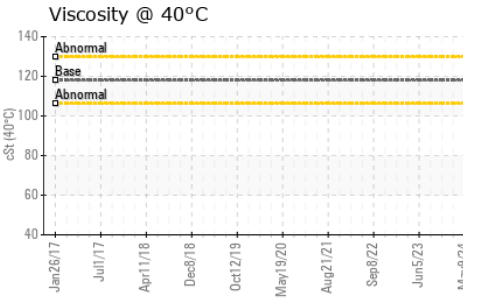

Viscosity @ 40°C




Viscosity @ 100°C




Viscosity @ 40°C

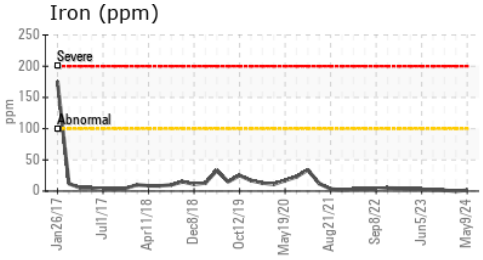



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

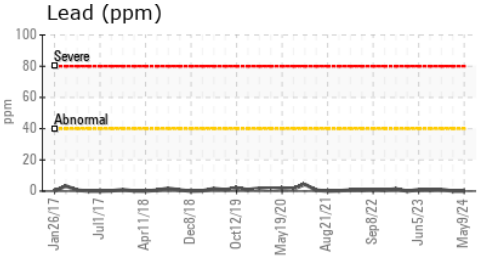
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.6 | **13.5** | 13.4 | 14.1 |

## GRAPHS

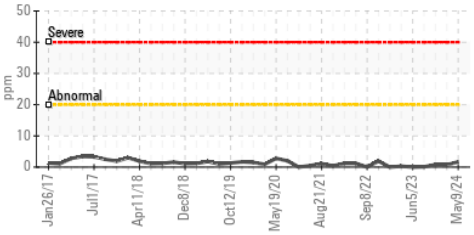
Iron (ppm)



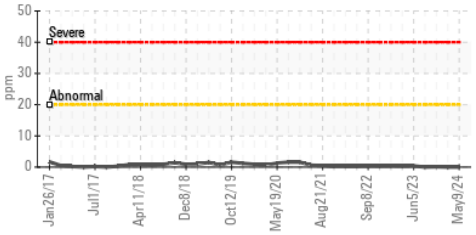

Lead (ppm)



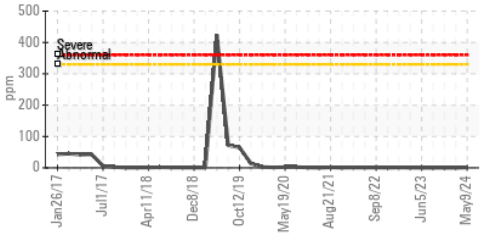

Aluminum (ppm)



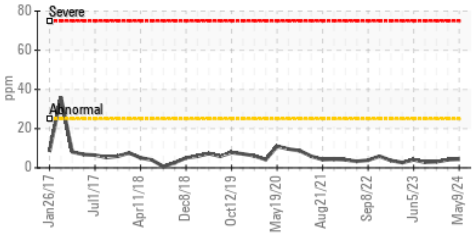

Chromium (ppm)



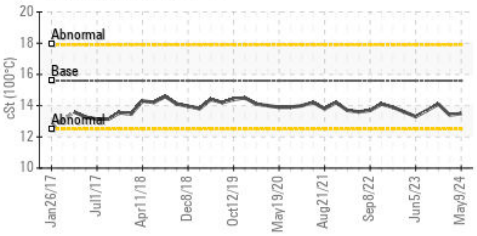

Copper (ppm)



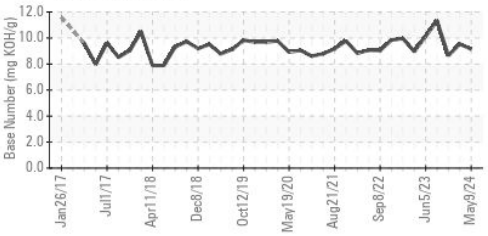

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : PCA0109833
**Lab Number** : 06223651
**Unique Number** : 11101848
**Test Package** : MOB 2 ( Additional Tests: KV40 )

**Received** : 28 Jun 2024
**Tested** : 01 Jul 2024
**Diagnosed** : 01 Jul 2024 - Jonathan Hester

*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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