

OIL ANALYSIS REPORT

Samp

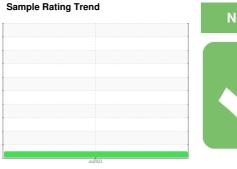
NORMAL



CATERPILLAR 21Z03394

Diesel Engine

DIESEL ENGINE OIL SAE 40 (--- GAL)



DIAGNOSIS

Recommendation

Resample at the next service interval to monitor. The fluid was not specified, however, a fluid match indicates that this fluid is (GENERIC) DIESEL ENGINE OIL SAE 40. Please confirm.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the

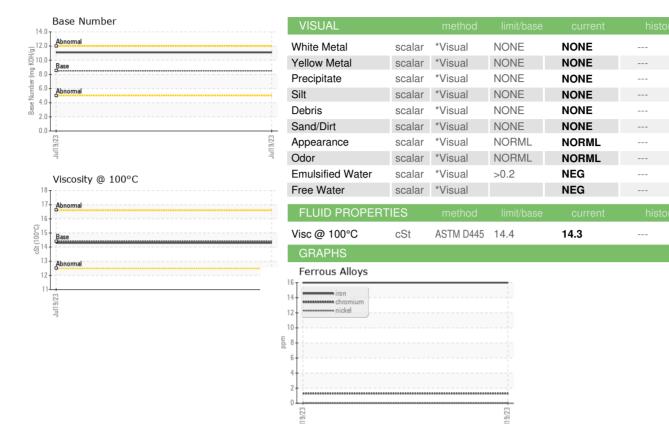
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

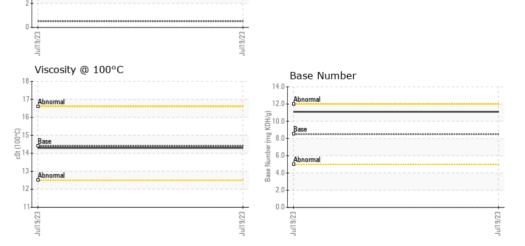
| Sample Number Client Info JR0174165 | AE 40 (GAL) | | | | Jul2023 | | |
|--|------------------|----------|-------------|------------|-------------|----------|----------|
| Sample Date Client Info 19 Jul 2023 | SAMPLE INFORM | MATION | method | limit/base | current | history1 | history2 |
| Machine Age hrs Client Info 5600 | Sample Number | | Client Info | | JR0174165 | | |
| Oil Age hrs Client Info N/A | Sample Date | | Client Info | | 19 Jul 2023 | | |
| Contamped Client Info N/A Common Contamped Client Info N/A Contamped Client Info N/A Contamped Client Info N/A Contamped Client Info Contamped Client Info Client | Machine Age | hrs | Client Info | | 5600 | | |
| CONTAMINATION | Oil Age | hrs | Client Info | | 0 | | |
| CONTAMINATION | Oil Changed | | Client Info | | N/A | | |
| WEAR METALS | Sample Status | | | | NORMAL | | |
| WEAR METALS | CONTAMINATIO | Ν | method | limit/base | current | history1 | history2 |
| WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >100 16 | Fuel | | WC Method | >5 | <1.0 | | |
| Concording Con | Glycol | | WC Method | | NEG | | |
| Chromium | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Nickel | Iron | ppm | ASTM D5185m | >100 | 16 | | |
| Description | Chromium | ppm | ASTM D5185m | >20 | 1 | | |
| Silver | Nickel | ppm | ASTM D5185m | >2 | 0 | | |
| Aluminum | Titanium | ppm | ASTM D5185m | >2 | 2 | | |
| Lead | Silver | ppm | ASTM D5185m | >2 | <1 | | |
| Copper | Aluminum | ppm | ASTM D5185m | >25 | 2 | | |
| Tin | Lead | ppm | ASTM D5185m | >40 | 5 | | |
| ASTM D5185m D1 D1 D5185m D5185m D1 D5185m D5185m | Copper | ppm | ASTM D5185m | >330 | 8 | | |
| Vanadium ppm ASTM D5185m 0 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 57 Barium ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 100 17 Magnesium ppm ASTM D5185m 450 680 Magnesium ppm ASTM D5185m 3000 1460 Phosphorus ppm ASTM D5185m 1350 1336 Zinc ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >25 5 | | ppm | ASTM D5185m | >15 | <1 | | |
| Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 250 57 Barium ppm ASTM D5185m 10 0 Molybdenum ppm ASTM D5185m 100 17 Manganese ppm ASTM D5185m 450 680 Magnesium ppm ASTM D5185m 3000 1460 Calcium ppm ASTM D5185m 350 1356 Phosphorus ppm ASTM D5185m 4250 4749 Zinc ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Sodium ppm ASTM D5185m >20 | Vanadium | | ASTM D5185m | | 0 | | |
| Boron ppm ASTM D5185m 250 57 Barium ppm ASTM D5185m 10 0 0 Molybdenum ppm ASTM D5185m 100 17 Magnese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 450 680 Magnesium ppm ASTM D5185m 3000 1460 Magnesium ppm ASTM D5185m 1150 1133 Magnesium ppm ASTM D5185m 1350 1356 Magnesium ppm ASTM D5185m 1350 1356 Magnesium ppm ASTM D5185m 4250 4749 Magnesium ppm ASTM D5185m >25 5 Magnesium ppm ASTM D5185m >216 41 Magnesium ppm ASTM D5185m >20 4 Magnesium Abs/.1mm *ASTM D7844 >3 0.7 Magnesium Abs/.1mm *ASTM D7845 >30 19.7 Magnesium Abs/.1mm *ASTM D7845 >30 19.7 Magnesium Abs/.1mm *ASTM D7844 >25 13.0 Magnesium Abs/.1mm *ASTM D7844 >25 13.0 Magnesium Abs/.1mm *ASTM D7844 >25 13.0 Magnesium Abs/.1mm *ASTM D7844 >25 13.0 | Cadmium | | ASTM D5185m | | 0 | | |
| Barium | ADDITIVES | | method | limit/base | current | history1 | history2 |
| Molybdenum ppm ASTM D5185m 100 17 Manganese ppm ASTM D5185m <1 | Boron | ppm | ASTM D5185m | 250 | 57 | | |
| Manganese ppm ASTM D5185m <1 Magnesium ppm ASTM D5185m 450 680 Calcium ppm ASTM D5185m 3000 1460 Phosphorus ppm ASTM D5185m 1150 1133 Zinc ppm ASTM D5185m 1350 1356 Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 Sodium ppm ASTM D5185m >216 41 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >3 | Barium | ppm | ASTM D5185m | 10 | 0 | | |
| Magnesium ppm ASTM D5185m 450 680 Calcium ppm ASTM D5185m 3000 1460 Phosphorus ppm ASTM D5185m 1150 1133 Zinc ppm ASTM D5185m 1350 1356 Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 Sodium ppm ASTM D5185m >216 41 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 0.7 Sulfation Abs/amm *ASTM D7415 <td>Molybdenum</td> <td>ppm</td> <td>ASTM D5185m</td> <td>100</td> <td>17</td> <td></td> <td></td> | Molybdenum | ppm | ASTM D5185m | 100 | 17 | | |
| Calcium ppm ASTM D5185m 3000 1460 Phosphorus ppm ASTM D5185m 1150 1133 Zinc ppm ASTM D5185m 1350 1356 Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Solicon ppm ASTM D5185m >25 5 Sodium ppm ASTM D5185m >216 41 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 0.7 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method l | Manganese | ppm | ASTM D5185m | | <1 | | |
| Phosphorus ppm ASTM D5185m 1150 1133 Zinc ppm ASTM D5185m 1350 1356 Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 Sodium ppm ASTM D5185m >216 41 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 >3 0.7 Sulfation Abs/:1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/:1mm *AST | Magnesium | ppm | ASTM D5185m | 450 | 680 | | |
| Zinc | Calcium | ppm | ASTM D5185m | 3000 | 1460 | | |
| Zinc ppm ASTM D5185m 1350 1356 Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 history2 history3 history4 history4 history4 history4 history5 hi | Phosphorus | ppm | ASTM D5185m | 1150 | 1133 | | |
| Sulfur ppm ASTM D5185m 4250 4749 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 5 Sodium ppm ASTM D5185m >216 41 Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >3 0.7 Sulfation Abs/cm *ASTM D7624 >20 8.1 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | | | ASTM D5185m | 1350 | 1356 | | |
| Silicon ppm ASTM D5185m >25 5 | Sulfur | | ASTM D5185m | | 4749 | | |
| Sodium | CONTAMINANTS | 6 | method | limit/base | current | history1 | history2 |
| Potassium ppm ASTM D5185m >20 4 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 >3 0.7 Nitration Abs/cm *ASTM D7624 >20 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | Silicon | ppm | ASTM D5185m | >25 | 5 | | |
| INFRA-RED | Sodium | ppm | ASTM D5185m | >216 | 41 | | |
| Soot % % *ASTM D7844 >3 0.7 Nitration Abs/cm *ASTM D7624 >20 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | Potassium | ppm | ASTM D5185m | >20 | 4 | | |
| Nitration Abs/cm *ASTM D7624 >20 8.1 Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | INFRA-RED | | method | limit/base | current | history1 | history2 |
| Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | Soot % | % | *ASTM D7844 | >3 | 0.7 | | |
| Sulfation Abs/.1mm *ASTM D7415 >30 19.7 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.0 | Nitration | Abs/cm | *ASTM D7624 | >20 | 8.1 | | |
| Oxidation | Sulfation | Abs/.1mm | | >30 | | | |
| | FLUID DEGRADA | NOITA | method | limit/base | current | history1 | history2 |
| Rase Number (RN) mg KOH/g ASTM D2896 8 5 11 1 | Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 13.0 | | |
| DAGO INUMBON (DIN) INUMBON ACTIVIDED OF CO. C. | Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | 11.1 | | |



OIL ANALYSIS REPORT



Non-ferrous Metals







Certificate L2367

Laboratory Sample No. Lab Number

Unique Number

: JR0174165 : 05905299 : 10566655

: WearCheck USA - 501 Madison Ave., Cary, NC 27513

Received Diagnosed

: 24 Jul 2023 : 25 Jul 2023

Diagnostician : Wes Davis

Test Package : CONST (Additional Tests: TBN) 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.

Contact: JUSTIN WILLIAMS justin.williams@jamesriverequipment.com T: (336)668-2762

Contact/Location: JUSTIN WILLIAMS - JAMGRE

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

411 SOUTH REGIONAL ROAD

JRE - GREENSBORO

GREENSBORO, NC

F: (336)665-9556

US 27409