# FUEL REPORT

Sample Rating Trend


ISO

Machine Id
## EPA UST 4
Component
**Tank Diesel Fuel**
Fluid
**DIESEL FUEL No. 2 (--- GAL)**

## DIAGNOSIS

**Recommendation**

We advise that you filter this fluid before use. All laboratory tests indicate that this sample meets specifications for No.2 low-sulfur diesel fuel.

**Corrosion**

All metal levels are normal indicating no corrosion in the system.

**Contaminants**

There is a high amount of particulates present in the fuel. There is no bacteria or fungus (yeast and/or mold) indicated in the sample. The water content is negligible.

**Fuel Condition**

Sulfur value derived by ASTM D5453 method for ULSD validation.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0879220** | --- | --- |
| Sample Date | | Client Info | | **13 Nov 2023** | --- | --- |
| Machine Age | hrs | Client Info | | **0** | --- | --- |
| Sample Status | | | | **ATTENTION** | --- | --- |

| PHYSICAL PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Specific Gravity | | *ASTM D1298 | | **0.841** | --- | --- |
| Fuel Color | text | *Visual Screen | | **Red** | --- | --- |
| ASTM Color | scalar | *ASTM D1500 | | **L4.5** | --- | --- |
| Visc @ 40°C | cSt | ASTM D445 | 4.1 | **2.54** | --- | --- |
| Pensky-Martens Flash Point | °C | *PMCC Calculated | | **65** | --- | --- |

| SULFUR CONTENT | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sulfur | ppm | ASTM D5185m | | **41** | --- | --- |
| Sulfur (UVF) | ppm | ASTM D5453 | | **48** | --- | --- |

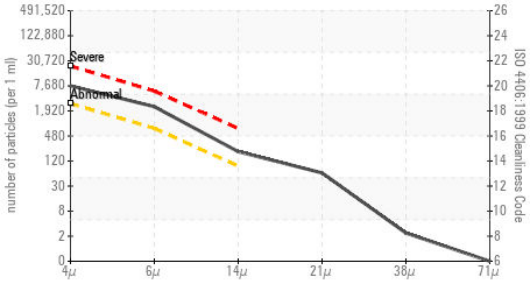
| DISTILLATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Initial Boiling Point | °C | ASTM D86 | | **175** | --- | --- |
| 5% Distillation Point | °C | ASTM D86 | | **197** | --- | --- |
| 10% Distill Point | °C | ASTM D86 | | **206** | --- | --- |
| 15% Distillation Point | °C | ASTM D86 | | **214** | --- | --- |
| 20% Distill Point | °C | ASTM D86 | | **221** | --- | --- |
| 30% Distill Point | °C | ASTM D86 | | **234** | --- | --- |
| 40% Distill Point | °C | ASTM D86 | | **248** | --- | --- |
| 50% Distill Point | °C | ASTM D86 | | **261** | --- | --- |
| 60% Distill Point | °C | ASTM D86 | | **275** | --- | --- |
| 70% Distill Point | °C | ASTM D86 | | **290** | --- | --- |
| 80% Distill Point | °C | ASTM D86 | | **307** | --- | --- |
| 85% Distillation Point | °C | ASTM D86 | | **316** | --- | --- |
| 90% Distill Point | °C | ASTM D86 | | **328** | --- | --- |
| 95% Distillation Point | °C | ASTM D86 | | **344** | --- | --- |
| Final Boiling Point | °C | ASTM D86 | | **351** | --- | --- |
| Distillation Residue | % | ASTM D86 | | **1.4** | --- | --- |
| Distillation Loss | % | ASTM D86 | | **0.9** | --- | --- |

| IGNITION QUALITY | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| API Gravity | | ASTM D7777 | | **36.8** | --- | --- |
| Cetane Index | | ASTM D4737 | <40.0 | **48.7** | --- | --- |

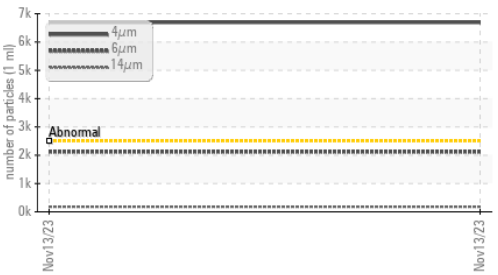
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | <1.0 | **0** | --- | --- |
| Sodium | ppm | ASTM D5185m | <0.1 | **3** | --- | --- |
| Potassium | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Water | % | ASTM D6304 | <0.05 | **0.004** | --- | --- |
| ppm Water | ppm | ASTM D6304 | <500 | **44.0** | --- | --- |
| % Gasoline | % | *In-House | <0.50 | **0.0** | --- | --- |
| % Biodiesel | % | *In-House | <20.0 | **1.6** | --- | --- |

# FUEL REPORT

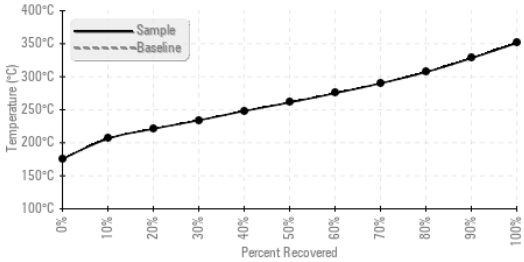
Particle Count



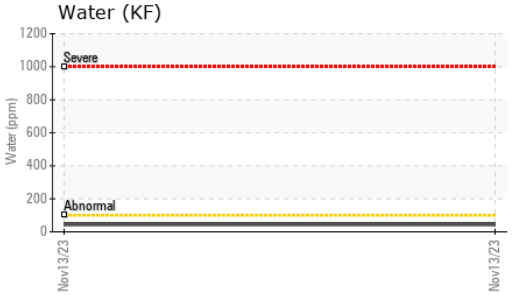

Particle Trend



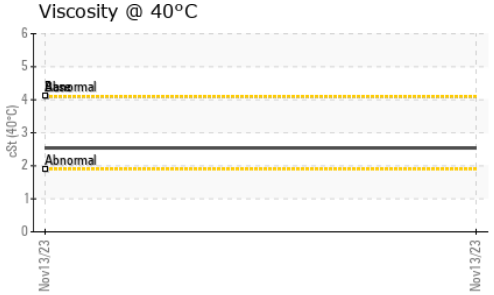

Fuel Distillation Curve




Water (KF)



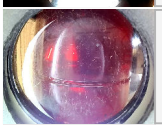

Viscosity @ 40°C




| FLUID CLEANLINESS | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Particles >4µm | ASTM D7647 | >2500 | ▲ **6692** | --- | --- |
| Particles >6µm | ASTM D7647 | >640 | ▲ **2122** | --- | --- |
| Particles >14µm | ASTM D7647 | >80 | ▲ **178** | --- | --- |
| Particles >21µm | ASTM D7647 | >20 | ▲ **55** | --- | --- |
| Particles >38µm | ASTM D7647 | >4 | **2** | --- | --- |
| Particles >71µm | ASTM D7647 | >3 | **0** | --- | --- |
| Oil Cleanliness | ISO 4406 (c) | >18/16/13 | ▲ **20/18/15** | --- | --- |

| MICROBIAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Bacteria | CFU/ml | WC-Method | >=100000 | **0** | --- | --- |
| Yeast | CFU/ml | WC-Method | >=100000 | **0** | --- | --- |
| Mold | Colonies | WC-Method | MODER | **---** | --- | --- |

| HEAVY METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Aluminum | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Nickel | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Lead | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Vanadium | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Iron | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Calcium | ppm | ASTM D5185m | <0.1 | **2** | --- | --- |
| Magnesium | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |
| Phosphorus | ppm | ASTM D5185m | <0.1 | **3** | --- | --- |
| Zinc | ppm | ASTM D5185m | <0.1 | **0** | --- | --- |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | *no image* | *no image* |
| Bottom | | |  | *no image* | *no image* |

Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0879220 **Received** : 16 Nov 2023
**Lab Number** : 06010444 **Diagnosed** : 10 Dec 2023
**Unique Number** : 10749588 **Diagnostician** : Doug Bogart
**Test Package** : DF-2 ( Additional Tests: Bacteria, Screen )

*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)*


**Red Star Oil Co.**
802 Purser Drive
Raleigh, NC
US 27603
Contact: DANNY DURHAM
ddurham@redstaroil.com
T:
F: (919)779-8871