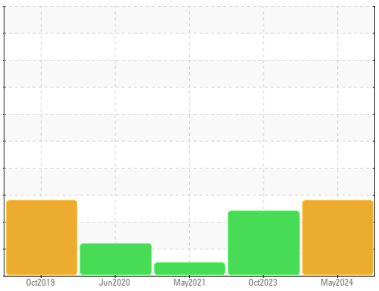
# FUEL REPORT

Sample Rating Trend




ISO

Machine Id
## CYRUSONE MAIN TANK 1
Component
**Diesel Fuel**
Fluid
**No.2 DIESEL FUEL (ULTRALOW SULPHUR) (--- GAL)**

## DIAGNOSIS

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

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

**Contaminants**
There is a high amount of particulates present in the fuel. Moderate concentration of visible dirt/debris present in the fuel. There is no bacteria or fungus (yeast and/or mold) present in the sample. The water content is negligible.

**Fuel Condition**
Sulfur value derived by ASTM D5453 method for ULSD validation. Sulfur level is acceptable for ULSD specification.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **WC0929960** | WC0869456 | WCDF03699 |
| Sample Date | | Client Info | | **28 May 2024** | 12 Oct 2023 | 03 May 2021 |
| Machine Age | hrs | Client Info | | **0** | 0 | 0 |
| Sample Status | | | | **ATTENTION** | ATTENTION | NORMAL |

| PHYSICAL PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Specific Gravity | | *ASTM D1298 | 0.839 | **---** | 0.841 | 0.843 |
| Fuel Color | text | *Visual Screen | Yllow | **Red** | Red | Red |
| ASTM Color | scalar | *ASTM D1500 | | **L4.5** | L4.5 | L6.0 |
| Visc @ 40°C | cSt | ASTM D445 | 3.0 | **2.53** | 2.46 | 2.55 |
| Pensky-Martens Flash Point | °C | *PMCC Calculated | 52 | **60.3** | 58 | 64 |

| SULFUR CONTENT | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sulfur | ppm | ASTM D5185m | 10 | **2** | 0 | 12 |
| Sulfur (UVF) | ppm | ASTM D5453 | | **7** | 7 | 8 |

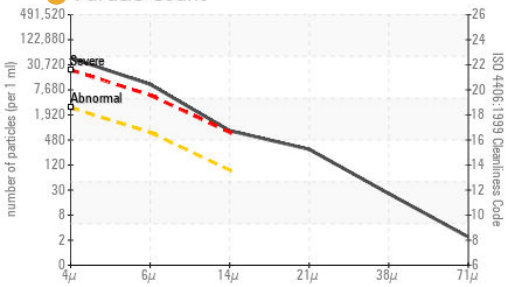
| DISTILLATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Initial Boiling Point | °C | ASTM D86 | 165 | **171** | 162 | 155 |
| 5% Distillation Point | °C | ASTM D86 | | **194** | 188 | 190 |
| 10% Distill Point | °C | ASTM D86 | 201 | **204** | 199 | 202 |
| 15% Distillation Point | °C | ASTM D86 | | **212** | 209 | 211 |
| 20% Distill Point | °C | ASTM D86 | 216 | **220** | 216 | 220 |
| 30% Distill Point | °C | ASTM D86 | 230 | **235** | 233 | 234 |
| 40% Distill Point | °C | ASTM D86 | 243 | **248** | 247 | 249 |
| 50% Distill Point | °C | ASTM D86 | 255 | **262** | 262 | 263 |
| 60% Distill Point | °C | ASTM D86 | 267 | **276** | 276 | 277 |
| 70% Distill Point | °C | ASTM D86 | 280 | **291** | 291 | 292 |
| 80% Distill Point | °C | ASTM D86 | 295 | **307** | 307 | 308 |
| 85% Distillation Point | °C | ASTM D86 | | **317** | 317 | 317 |
| 90% Distill Point | °C | ASTM D86 | 310 | **328** | 328 | 329 |
| 95% Distillation Point | °C | ASTM D86 | | **345** | 344 | 346 |
| Final Boiling Point | °C | ASTM D86 | 341 | **359** | 352 | 351 |
| Distillation Residue | % | ASTM D86 | 3.0 | **---** | 1.4 | 1.4 |
| Distillation Loss | % | ASTM D86 | 3.0 | **---** | 1.0 | 0.8 |

| IGNITION QUALITY | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| API Gravity | | ASTM D7777 | 37.7 | **36** | 36.8 | 36.4 |
| Cetane Index | | ASTM D4737 | <40.0 | **48** | 48.1 | 47.7 |

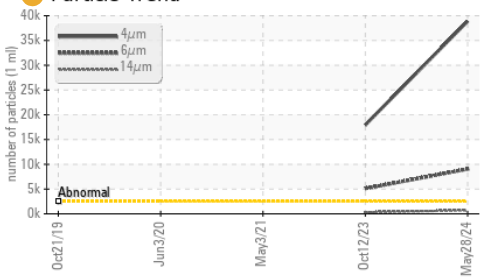
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | <1.0 | **0** | 0 | 0 |
| Sodium | ppm | ASTM D5185m | <0.1 | **<1** | 0 | 0 |
| Potassium | ppm | ASTM D5185m | <0.1 | **0** | <1 | <1 |
| Water | % | ASTM D6304 | <0.05 | **0.004** | 0.004 | 0.004 |
| ppm Water | ppm | ASTM D6304 | <500 | **49** | 48.6 | 41.6 |
| % Gasoline | % | *In-House | <0.50 | **0.0** | 0.0 | 0.0 |
| % Biodiesel | % | *In-House | <20.0 | **1.2** | 1.3 | 1.0 |

# FUEL REPORT

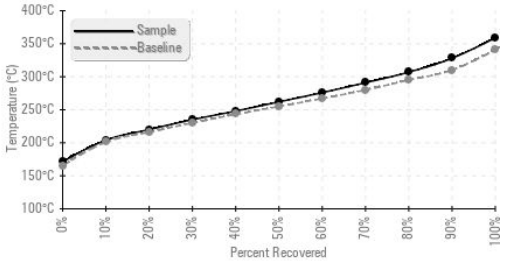
Particle Count



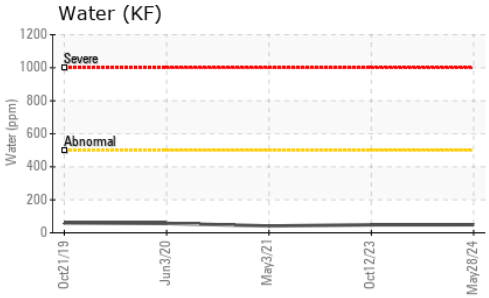

Particle Trend



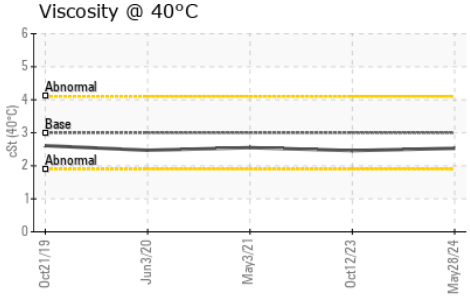

Fuel Distillation Curve




Water (KF)



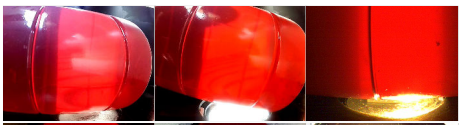
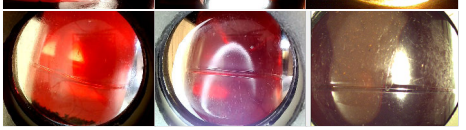

Viscosity @ 40°C




| FLUID CLEANLINESS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Particles >4µm | | ASTM D7647 | >2500 | **38893** | 17943 | --- |
| Particles >6µm | | ASTM D7647 | >640 | **9056** | 5102 | --- |
| Particles >14µm | | ASTM D7647 | >80 | **702** | 314 | --- |
| Particles >21µm | | ASTM D7647 | >20 | **252** | 87 | --- |
| Particles >38µm | | ASTM D7647 | >4 | **22** | 7 | --- |
| Particles >71µm | | ASTM D7647 | >3 | **2** | 1 | --- |
| Oil Cleanliness | | ISO 4406 (c) | >18/16/13 | **22/20/17** | 21/20/15 | --- |

| 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** | 0 | <1 |
| Nickel | ppm | ASTM D5185m | <0.1 | **0** | 0 | <1 |
| Lead | ppm | ASTM D5185m | <0.1 | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185m | <0.1 | **0** | 0 | 0 |
| Iron | ppm | ASTM D5185m | <0.1 | **0** | 0 | 2 |
| Calcium | ppm | ASTM D5185m | <0.1 | **0** | <1 | 3 |
| Magnesium | ppm | ASTM D5185m | <0.1 | **0** | 0 | <1 |
| Phosphorus | ppm | ASTM D5185m | <0.1 | **0** | 6 | 4 |
| Zinc | ppm | ASTM D5185m | <0.1 | **0** | 0 | 0 |

| SAMPLE IMAGES | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|
| Color | | |  | | |
| Bottom | | |  | | |

Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0929960 **Received** : 30 May 2024
**Lab Number** : 06195859 **Tested** : 11 Jun 2024
**Unique Number** : 11057982 **Diagnosed** : 11 Jun 2024 - Doug Bogart
**Test Package** : DF-2 ( Additional Tests: BACTERIA, Fuel, 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)*

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Report Id: VITAPE [WUSCAR] 06195859 (Generated: 06/11/2024 14:16:01) Rev: 1

Contact/Location: SERVICE ? - VITAPE