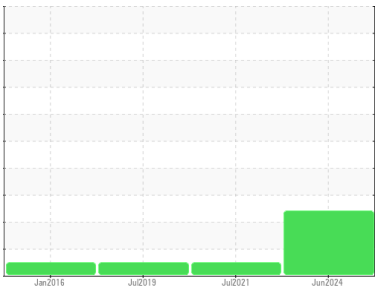
FUEL REPORT

Sample Rating Trend



ISO

Area
STEAM CHILLER
Machine Id
DUKE HOSPITAL 250000 GALLON TANK
Component
Diesel Fuel
Fluid
No.2 DIESEL FUEL (ULTRALOW SULPHUR) (250000 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 system.

Contaminants
There is a high amount of particulates present in the fuel. Light concentration of visible dirt/debris 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. Sulfur level is acceptable for ULSD specification.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**WC0949581**	WC05303119	WC04753258
Sample Date		Client Info		**14 Jun 2024**	14 Jul 2021	11 Jul 2019
Machine Age	hrs	Client Info		**0**	0	0
Sample Status				**ABNORMAL**	NORMAL	NORMAL

PHYSICAL PROPERTIES		method	limit/base	current	history1	history2
Specific Gravity		*ASTM D1298	0.839	**---**	0.842	0.842
Fuel Color	text	*Visual Screen	Yllow	**Red**	Red	Red
ASTM Color	scalar	*ASTM D1500		**L4.5**	5.0	L5.5
Pensky-Martens Flash Point	°C	*PMCC Calculated	52	**61.9**	64	65

SULFUR CONTENT		method	limit/base	current	history1	history2
Sulfur	ppm	ASTM D5185m	10	**0**	0	5
Sulfur (UVF)	ppm	ASTM D5453		**9**	10	10

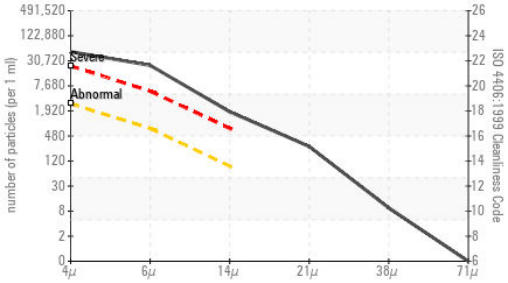
DISTILLATION		method	limit/base	current	history1	history2
Initial Boiling Point	°C	ASTM D86	165	**173**	166	166
5% Distillation Point	°C	ASTM D86		**196**	191	191
10% Distill Point	°C	ASTM D86	201	**206**	203	203
15% Distillation Point	°C	ASTM D86		**213**	211	212
20% Distill Point	°C	ASTM D86	216	**221**	219	219
30% Distill Point	°C	ASTM D86	230	**236**	233	233
40% Distill Point	°C	ASTM D86	243	**249**	247	246
50% Distill Point	°C	ASTM D86	255	**262**	261	260
60% Distill Point	°C	ASTM D86	267	**276**	275	274
70% Distill Point	°C	ASTM D86	280	**290**	289	289
80% Distill Point	°C	ASTM D86	295	**306**	306	305
85% Distillation Point	°C	ASTM D86		**317**	315	315
90% Distill Point	°C	ASTM D86	310	**327**	326	326
95% Distillation Point	°C	ASTM D86		**344**	343	343
Final Boiling Point	°C	ASTM D86	341	**357**	353	352
Distillation Residue	%	ASTM D86	3.0	**---**	1.4	1.4
Distillation Loss	%	ASTM D86	3.0	**---**	0.7	0.8

IGNITION QUALITY		method	limit/base	current	history1	history2
API Gravity		ASTM D7777	37.7	**36**	36.6	36.6
Cetane Index		ASTM D4737	<40.0	**48**	47.9	48.0

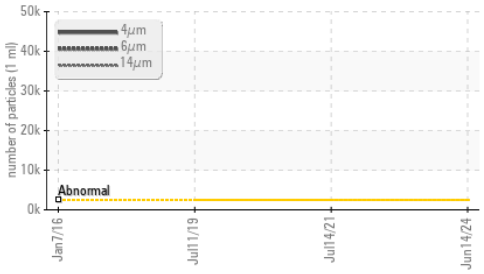
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	<1.0	**0**	1	2
Sodium	ppm	ASTM D5185m	<0.1	**<1**	0	<1
Potassium	ppm	ASTM D5185m	<0.1	**0**	0	10
Water	%	ASTM D6304	<0.05	**0.004**	0.005	0.004
ppm Water	ppm	ASTM D6304	<500	**45**	56.2	40
% Gasoline	%	*In-House	<0.50	**0.0**	0.0	0.0
% Biodiesel	%	*In-House	<20.0	**1.4**	0.0	0.4

FUEL REPORT

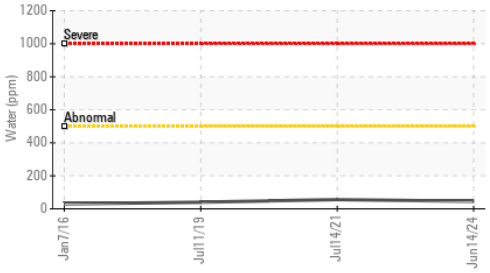
Particle Count



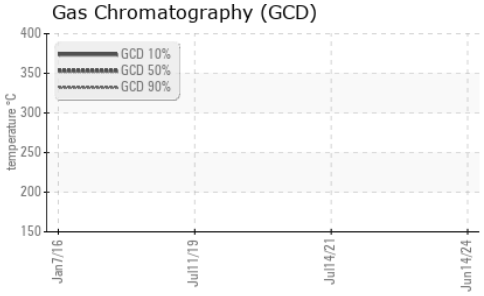
Particle Trend



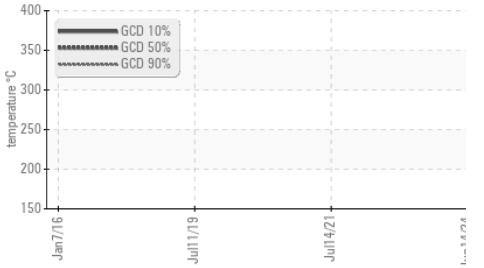
Water (KF)



Gas Chromatography (GCD)

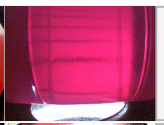
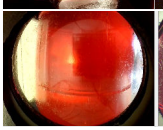


Gas Chromatography (GCD)



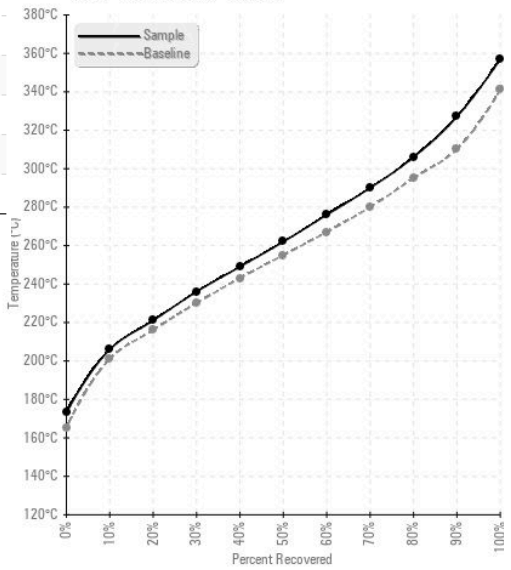
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	▲ **43911**	---	---
Particles >6µm	ASTM D7647	>640	▲ **20738**	---	---
Particles >14µm	ASTM D7647	>80	▲ **1603**	---	---
Particles >21µm	ASTM D7647	>20	▲ **237**	---	---
Particles >38µm	ASTM D7647	>4	▲ **8**	---	---
Particles >71µm	ASTM D7647	>3	**0**	---	---
Oil Cleanliness	ISO 4406 (c)	>18/16/13	▲ **23/22/18**	---	---

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	0
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	<1
Calcium	ppm	ASTM D5185m	<0.1	**1**	0	0
Magnesium	ppm	ASTM D5185m	<0.1	**0**	0	0
Phosphorus	ppm	ASTM D5185m	<0.1	**<1**	0	0
Zinc	ppm	ASTM D5185m	<0.1	**0**	0	0

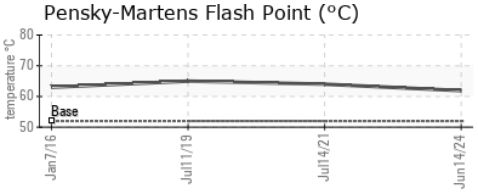
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					*no image*
Bottom					*no image*

GRAPHS

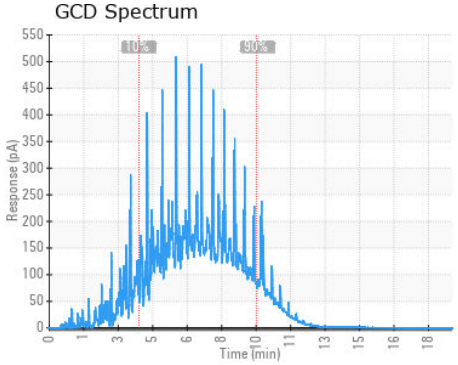
Fuel Distillation Curve



Pensky-Martens Flash Point (°C)



GCD Spectrum



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : WC0949581 **Received** : 14 Jun 2024
Lab Number : 06211170 **Tested** : 20 Jun 2024
Unique Number : 11084034 **Diagnosed** : 20 Jun 2024 - Elizabeth Valachovic
Test Package : DF-2 (Additional Tests: 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)

COUCH OIL COMPANY
2907 HILLSBOROUGH RD
DURHAM, NC
US 27705
Contact: JESSE BROWN
jesse@couchoilcompany.com
T: (919)285-5408
F:

Report Id: COUDUR [WUSCAR] 06211170 (Generated: 06/22/2024 04:53:42) Rev: 1

Submitted By: CARLOS RAND