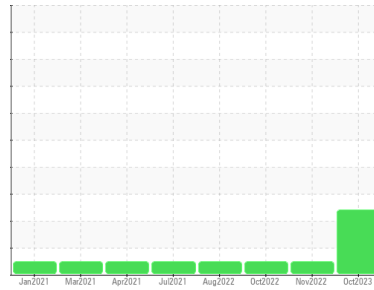




# OIL ANALYSIS REPORT

Sample Rating Trend



DIRT



Machine Id  
**CATERPILLAR 5178**  
 Component  
**Diesel Engine**  
 Fluid  
**DIESSEL ENGINE OIL SAE 15W40 (--- QTS)**

## DIAGNOSIS

### Recommendation

We advise that you check the air filter, air induction system, and any areas where dirt may enter the component. Resample at the next service interval to monitor.

### Wear

All component wear rates are normal.

### Contamination

Elemental levels of silicon (Si) and aluminum (Al) indicate alumina-silicate (coarse dirt) ingress.

### Fluid Condition

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

## SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		<b>WC0745209</b>	WC0744171	WC0725589
Sample Date	Client Info		<b>20 Oct 2023</b>	29 Nov 2022	21 Oct 2022
Machine Age	hrs	Client Info	<b>0</b>	8155	7853
Oil Age	hrs	Client Info	<b>0</b>	0	0
Oil Changed	Client Info		<b>N/A</b>	N/A	N/A
Sample Status			<b>ABNORMAL</b>	NORMAL	NORMAL

## CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Glycol	WC Method		<b>NEG</b>	NEG	NEG

## WEAR METALS

	method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m >100	<b>49</b>	7	13
Chromium	ppm	ASTM D5185m >20	<b>2</b>	<1	<1
Nickel	ppm	ASTM D5185m >4	<b>0</b>	<1	0
Titanium	ppm	ASTM D5185m	<b>0</b>	0	0
Silver	ppm	ASTM D5185m >3	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m >20	<b>▲ 31</b>	5	6
Lead	ppm	ASTM D5185m >40	<b>&lt;1</b>	<1	1
Copper	ppm	ASTM D5185m >330	<b>5</b>	1	6
Tin	ppm	ASTM D5185m >15	<b>0</b>	<1	<1
Vanadium	ppm	ASTM D5185m	<b>0</b>	0	0
Cadmium	ppm	ASTM D5185m	<b>0</b>	0	0

## ADDITIVES

	method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m 250	<b>0</b>	13	7
Barium	ppm	ASTM D5185m 10	<b>0</b>	0	0
Molybdenum	ppm	ASTM D5185m 100	<b>61</b>	61	62
Manganese	ppm	ASTM D5185m	<b>0</b>	<1	<1
Magnesium	ppm	ASTM D5185m 450	<b>895</b>	905	862
Calcium	ppm	ASTM D5185m 3000	<b>1152</b>	1150	1177
Phosphorus	ppm	ASTM D5185m 1150	<b>984</b>	1008	997
Zinc	ppm	ASTM D5185m 1350	<b>1226</b>	1204	1199
Sulfur	ppm	ASTM D5185m 4250	<b>2799</b>	3612	3782

## CONTAMINANTS

	method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m >25	<b>▲ 28</b>	6	6
Sodium	ppm	ASTM D5185m >158	<b>15</b>	2	0
Potassium	ppm	ASTM D5185m >20	<b>0</b>	0	1

## INFRA-RED

	method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844 >3	<b>2.4</b>	0.5	0.7
Nitration	Abs/cm	*ASTM D7624 >20	<b>11.2</b>	7.5	8.0
Sulfation	Abs/.1mm	*ASTM D7415 >30	<b>24.5</b>	20.1	21.0

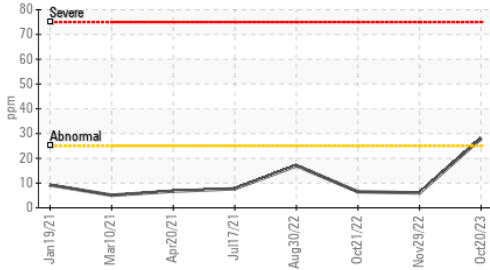
## FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414 >25	<b>17.9</b>	14.7	15.1
Base Number (BN)	mg KOH/g	ASTM D2896 8.5	<b>7.6</b>	10.5	10.4

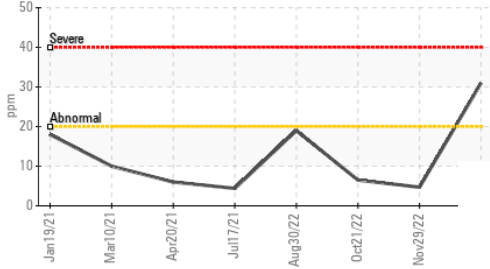


# OIL ANALYSIS REPORT

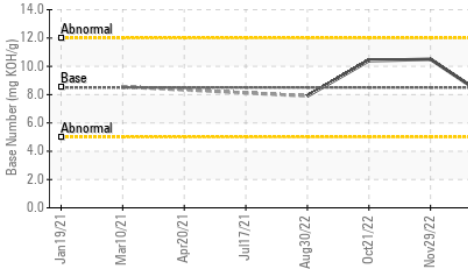
▲ Silicon (ppm)



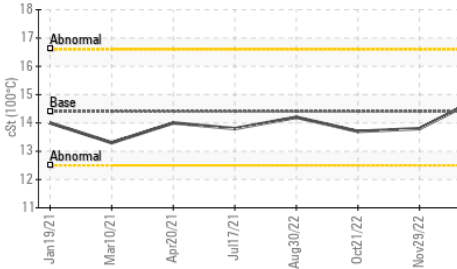
▲ Aluminum (ppm)



Base Number



Viscosity @ 100°C

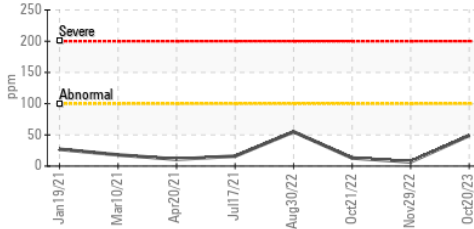


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

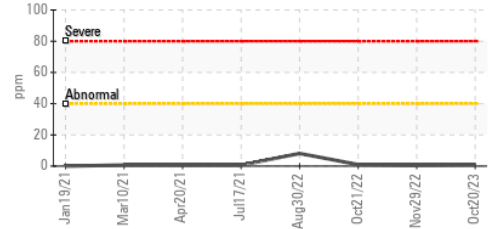
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	14.4	14.9	13.8

## GRAPHS

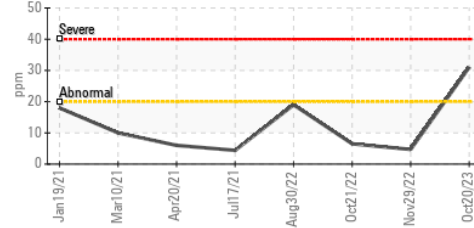
Iron (ppm)



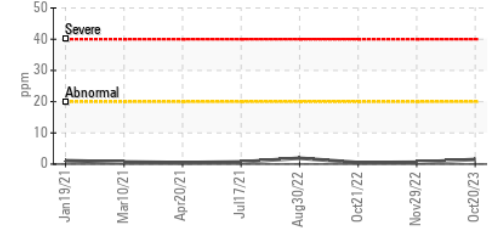
Lead (ppm)



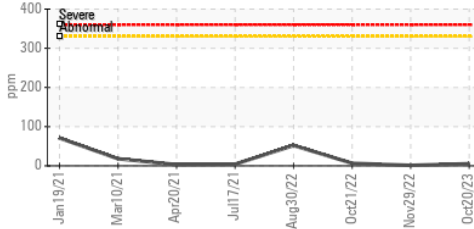
▲ Aluminum (ppm)



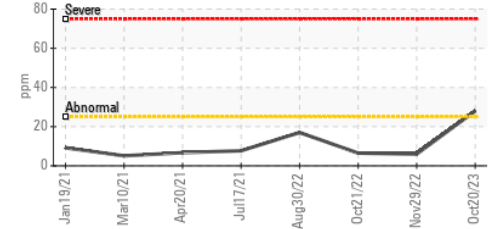
Chromium (ppm)



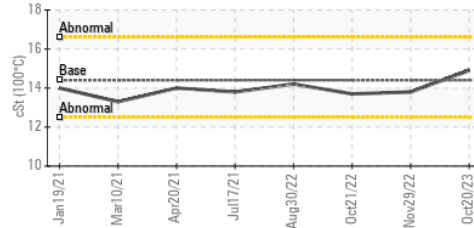
Copper (ppm)



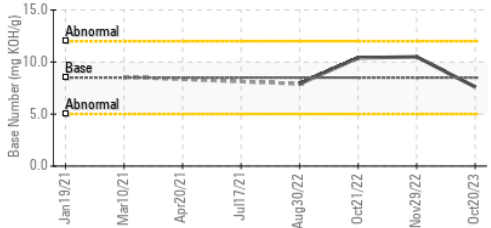
▲ Silicon (ppm)



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
 Sample No. : WC0745209 Received : 06 Nov 2023  
 Lab Number : 05998697 Diagnosed : 07 Nov 2023  
 Unique Number : 10727057 Diagnostician : Don Baldrige  
 Test Package : MOB 1 ( Additional Tests: TBN )

**INTERSTATE WASTE-CHESTER**  
 89 BLACK MEADOW RD  
 CHESTER, NY  
 US 10918  
 Contact: ROB CLARKE  
 rclarke@interstatewaste.com  
 T:  
 F: (845)572-3301

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)