

# **OIL ANALYSIS REPORT**

### Sample Rating Trend



NORMAL



Machine Id
3729
Component
Diesel Engine

# PETRO CANADA DURON SHP 15W40 (11 GAL)

## DIAGNOSIS

### Recommendation

Resample at the next service interval to monitor.

#### Wear

All component wear rates are normal.

### Contamination

There is no indication of any contamination in the oil.

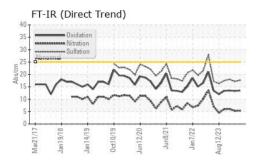
## **Fluid Condition**

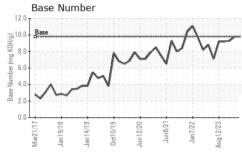
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

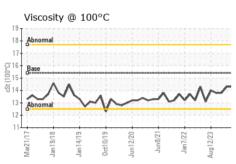
SAMPLE INFORMATION         method         timil/base         current         history1         history2           Sample Number         Client Info         GFL0118642         GFL0100267         GFL0100197           Sample Date         Client Info         15 Apr 2024         25 Jan 2024         02 Jan 2024           Machine Age         hrs         Client Info         18318         0         18041           Oil Changed         Client Info         200         600         600         Changed           Oil Changed Status         Client Info         NoRMAL         NORMAL         NORMAL         ABNORMAL           CONTAMINATION         method         Imilibase         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0         <1.0	JAL)		Irzu17 Janzu	10 Jan2019 Oct2019	Junzuzu Junzuzi Janzuzz .	Augzuz3	
Sample Date	SAMPLE INFOR	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         18318         0         18041           Oil Age         hrs         Client Info         200         600         600           Oil Changed         Client Info         Not Changd         Changed         Changed           Sample Status         NoRMAL         NORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0           Water         WC Method         NEG         NEG         NEG         NEG           Glycol         WC Method         NEG         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history2           WEAR METALS         method         limit/base         current         history1           WEAR METALS         method         limit/base         current         history1           WEAR METALS         method         limit/base         neg         NEG         NEG           NEG         NEG         NEG         NEG         NEG           WEAR METALS	Sample Number		Client Info		GFL0118642	GFL0100267	GFL0100197
Oil Age         hrs         Client Info         200         600         600           Oil Changed         Client Info         Not Changed         Changed         Changed           Sample Status         Client Info         NoRMAL         NORMAL         ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0			Client Info		15 Apr 2024	25 Jan 2024	02 Jan 2024
Oil Changed Sample Status         Client Info         Not Changd NORMAL         Changed NORMAL         Changed ABNORMAL           CONTAMINATION         method         limit/base         current         history1         history2           Fuel         WC Method         >3.0         <1.0         <1.0         <1.0         <1.0           Water         WC Method         >0.2         NEG         NEG         NEG           Glycol         WC Method         >0.2         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5188m         >75         9         5         15           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5188m         >5         1         0         <1           Nickel         ppm         ASTM D5188m         >2         <1         0         0           Silver         ppm         ASTM D5188m         >2         <1         0         0           Lead         ppm         ASTM D5188m         >10         0         <1         <	Machine Age	hrs	Client Info		-	0	18041
Sample Status	Oil Age	hrs	Client Info		200	600	600
Fuel	Oil Changed		Client Info		Not Changd	Changed	Changed
Fuel	Sample Status				NORMAL	NORMAL	ABNORMAL
Water Glycol         WC Method Glycol         NEG NEG         NEG NEG         NEG NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >75         9         5         15           Chromium         ppm         ASTM D5185m         >5         1         0         <1           Nickel         ppm         ASTM D5185m         >4         1         <1         0         0           Sliver         ppm         ASTM D5185m         >2         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >2         <1         0         0         0           Aluminum         ppm         ASTM D5185m         >15         2         3         6         6           Lead         ppm         ASTM D5185m         >10         0         <1         0         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         <1         0         0          <1         0         <1         0         <1	CONTAMINAT	ION	method	limit/base	current	history1	history2
Glycol         WC Method         NEG         NEG         NEG           WEAR METALS         method         limit/base         current         history1         history2           Iron         ppm         ASTM D5185m         >75         9         5         15           Chromium         ppm         ASTM D5185m         >5         1         0         <1	Fuel		WC Method	>3.0	<1.0	<1.0	<1.0
WEAR METALS	Water		WC Method	>0.2	NEG	NEG	NEG
Iron	Glycol		WC Method		NEG	NEG	NEG
Chromium         ppm         ASTM D5185m         >5         1         0         <1           Nickel         ppm         ASTM D5185m         >4         1         <1	WEAR METAL	S	method	limit/base	current	history1	history2
Nickel         ppm         ASTM D5185m         >4         1         <1         0           Titanium         ppm         ASTM D5185m         >2         <1	Iron	ppm	ASTM D5185m	>75	9	5	15
Titanium         ppm         ASTM D5185m         >2         <1         0         0           Silver         ppm         ASTM D5185m         >2         <1         0         0           Aluminum         ppm         ASTM D5185m         >15         2         3         6           Lead         ppm         ASTM D5185m         >25         1         0         0           Copper         ppm         ASTM D5185m         >100         4         0         <1           Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         <4         1         <1         0           Cadmium         ppm         ASTM D5185m         <4         1         <1         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         2         4           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0	Chromium	ppm	ASTM D5185m	>5	1	0	<1
Silver         ppm         ASTM D5185m         >2         <1         0         0           Aluminum         ppm         ASTM D5185m         >15         2         3         6           Lead         ppm         ASTM D5185m         >25         1         0         0           Copper         ppm         ASTM D5185m         >100         4         0         <1           Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         <1         <1         0         0           Cadmium         ppm         ASTM D5185m         <1         0         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         2         4           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         0         1         -1	Nickel	ppm	ASTM D5185m	>4	1	<1	0
Aluminum         ppm         ASTM D5185m         >15         2         3         6           Lead         ppm         ASTM D5185m         >25         1         0         0           Copper         ppm         ASTM D5185m         >100         4         0         <1	Titanium	ppm	ASTM D5185m	>2	<1	0	0
Lead         ppm         ASTM D5185m         >25         1         0         0           Copper         ppm         ASTM D5185m         >100         4         0         <1           Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         < -1         <1         0         0           Cadmium         ppm         ASTM D5185m         0         <1         <1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         2         4           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         1         <1         0         0           Magnesium         ppm         ASTM D5185m         0         1         <1         0         0           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm <t< td=""><td>Silver</td><td>ppm</td><td>ASTM D5185m</td><td>&gt;2</td><th>&lt;1</th><td>0</td><td>0</td></t<>	Silver	ppm	ASTM D5185m	>2	<1	0	0
Copper         ppm         ASTM D5185m         >100         4         0         <1           Tin         ppm         ASTM D5185m         >4         1         <1	Aluminum	ppm	ASTM D5185m	>15	2	3	6
Tin         ppm         ASTM D5185m         >4         1         <1         0           Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         2         4           Barium         ppm         ASTM D5185m         0         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         1         <1         0         0           Manganese         ppm         ASTM D5185m         0         1         <1         0         0           Magnesium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1070         1167         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060	Lead	ppm	ASTM D5185m	>25	1	0	0
Vanadium         ppm         ASTM D5185m         <1         <1         0           Cadmium         ppm         ASTM D5185m         1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1         2         4           Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         0         62         59         66           Manganese         ppm         ASTM D5185m         1010         913         947         980           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1 <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>&gt;100</td> <th>4</th> <td>0</td> <td>&lt;1</td>	Copper	ppm	ASTM D5185m	>100	4	0	<1
Cadmium         ppm         ASTM D5185m         1         0         0           ADDITIVES         method         limit/base         current         history1         history2           Boron         ppm         ASTM D5185m         0         <1	Tin	ppm	ASTM D5185m	>4	1	<1	0
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1	<1	0
Boron         ppm         ASTM D5185m         0         <1	Cadmium	ppm	ASTM D5185m		1	0	0
Barium         ppm         ASTM D5185m         0         0         0         0           Molybdenum         ppm         ASTM D5185m         60         62         59         66           Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         913         947         980           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base<	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum         ppm         ASTM D5185m         60         62         59         66           Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         913         947         980           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         *ASTM D7844         >6<	Boron	ppm	ASTM D5185m	0	<1	2	4
Manganese         ppm         ASTM D5185m         0         1         <1         0           Magnesium         ppm         ASTM D5185m         1010         913         947         980           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7	Barium	ppm	ASTM D5185m	0	0	0	0
Magnesium         ppm         ASTM D5185m         1010         913         947         980           Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         *ASTM D7414	Molybdenum	ppm	ASTM D5185m	60	62	59	66
Calcium         ppm         ASTM D5185m         1070         1057         1000         1080           Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm	Manganese	ppm	ASTM D5185m	0	1	<1	0
Phosphorus         ppm         ASTM D5185m         1150         1107         1028         1030           Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Ab	Magnesium	ppm	ASTM D5185m	1010	913	947	980
Zinc         ppm         ASTM D5185m         1270         1182         1264         1263           Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Calcium	ppm	ASTM D5185m	1070	1057	1000	1080
Sulfur         ppm         ASTM D5185m         2060         3478         3142         3216           CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Phosphorus	ppm		1150	1107	1028	1030
CONTAMINANTS         method         limit/base         current         history1         history2           Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         60         43         116           Potassium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Zinc	ppm	ASTM D5185m	1270	1182	1264	1263
Silicon         ppm         ASTM D5185m         >25         6         5         8           Sodium         ppm         ASTM D5185m         60         43         116           Potassium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Sulfur	ppm	ASTM D5185m	2060	3478	3142	3216
Sodium         ppm         ASTM D5185m         60         43         ▲ 116           Potassium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	CONTAMINAN	ITS	method	limit/base	current	history1	history2
Potassium         ppm         ASTM D5185m         >20         5         3         8           INFRA-RED         method         limit/base         current         history1         history2           Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION         method         limit/base         current         history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Silicon	ppm	ASTM D5185m	>25	6	5	8
INFRA-RED	Sodium	ppm	ASTM D5185m		60	43	<u> 116</u>
Soot %         %         *ASTM D7844         >6         0.2         0.1         0.2           Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Potassium	ppm	ASTM D5185m	>20	5	3	8
Nitration         Abs/cm         *ASTM D7624         >20         5.4         5.3         6.1           Sulfation         Abs/.1mm         *ASTM D7615         >30         17.6         17.2         18.0           FLUID DEGRADATION method limit/base current         bistory1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	INFRA-RED		method	limit/base	current	history1	history2
Sulfation         Abs/.1mm         *ASTM D7415         >30         17.6         17.2         18.0           FLUID DEGRADATION method limit/base current history1         history2           Oxidation         Abs/.1mm         *ASTM D7414         >25         13.5         13.3         13.5	Soot %	%	*ASTM D7844	>6	0.2	0.1	0.2
FLUID DEGRADATION method limit/base current history1 history2  Oxidation Abs/.1mm *ASTM D7414 >25 13.5 13.3 13.5	Nitration	Abs/cm	*ASTM D7624	>20	5.4	5.3	6.1
Oxidation Abs/.1mm *ASTM D7414 >25 <b>13.5</b> 13.3 13.5	Sulfation	Abs/.1mm	*ASTM D7415	>30	17.6	17.2	18.0
	FLUID DEGRA	DATION	method	limit/base	current	history1	history2
	Oxidation	Abs/.1mm	*ASTM D7414	>25	13.5	13.3	13.5



# **OIL ANALYSIS REPORT**



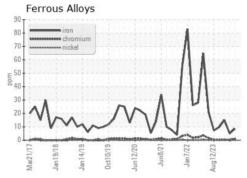


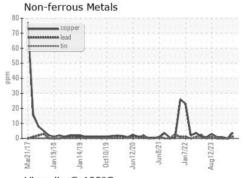


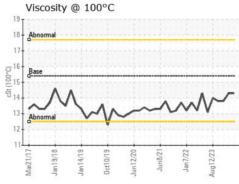
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual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

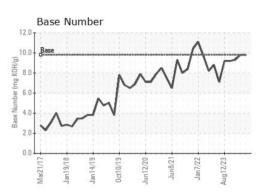
FLUID PROPERTIES		method				history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.3	13.8

## **GRAPHS**













Certificate 12367

Laboratory Sample No.

: GFL0118642 Lab Number : 06152751 Unique Number : 10982829 Test Package : FLEET

To discuss this sample report, contact Customer Service at 1-800-237-1369.

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received : 18 Apr 2024

**Tested** : 18 Apr 2024 Diagnosed : 18 Apr 2024 - Wes Davis

GFL Environmental - 166 - Phenix City

18 Old Brickyard Rd Phenix City, AL US 36869

Contact: DEAN PEACE JR

dean.peace@gflenv.com T:

\* - 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)

F: