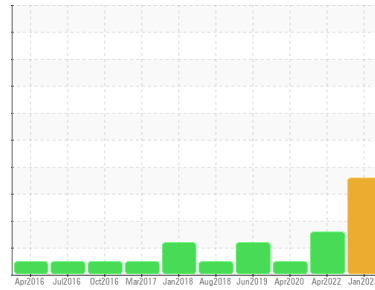




OIL ANALYSIS REPORT

Sample Rating Trend



DEGRADATION



Machine Id
NISSAN NISSAN TITAN
 Component
Front Gasoline Engine
 Fluid
SHELL (7 QTS)

DIAGNOSIS

Recommendation

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is a high amount of particulates present in the oil. There is no indication of any contamination in the oil.

Fluid Condition

The AN level is at the top-end of the recommended limit. The condition of the oil is acceptable for the time in service.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		KLM2338196	KL0006449	KLM2334896
Sample Date	Client Info		20 Jan 2023	25 Apr 2022	10 Apr 2020
Machine Age	mls	Client Info	143694	133205	109620
Oil Age	mls	Client Info	28640	34461	10876
Oil Changed	Client Info		Changed	Not Changd	Not Changd
Sample Status			ABNORMAL	ATTENTION	NORMAL

CONTAMINATION

	method	limit/base	current	history1	history2
Fuel	WC Method	>4.0	<1.0	<1.0	<1.0
Glycol	WC Method		NEG	NEG	NEG

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m	>150	49	21	16
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>5	0	<1	<1
Titanium	ppm	ASTM D5185m		<1	<1	<1
Silver	ppm	ASTM D5185m	>2	0	<1	0
Aluminum	ppm	ASTM D5185m	>40	7	4	4
Lead	ppm	ASTM D5185m	>50	13	9	5
Copper	ppm	ASTM D5185m	>155	5	3	2
Tin	ppm	ASTM D5185m	>10	2	<1	1
Antimony	ppm	ASTM D5185m		---	---	0
Vanadium	ppm	ASTM D5185m		<1	<1	<1
Cadmium	ppm	ASTM D5185m		0	0	0

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m		13	19	18
Barium	ppm	ASTM D5185m		0	0	<1
Molybdenum	ppm	ASTM D5185m		81	86	103
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m		390	467	410
Calcium	ppm	ASTM D5185m		1261	1114	1416
Phosphorus	ppm	ASTM D5185m		590	628	604
Zinc	ppm	ASTM D5185m		646	651	688
Sulfur	ppm	ASTM D5185m		3018	2729	2677

CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m	>30	27	14	13
Sodium	ppm	ASTM D5185m	>400	22	11	7
Potassium	ppm	ASTM D5185m	>20	4	2	<1

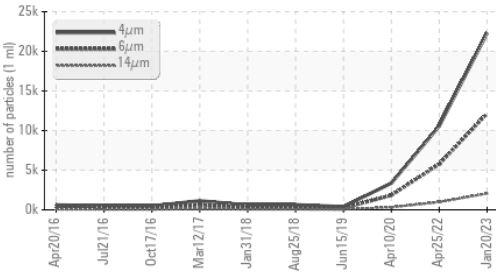
INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844		0.1	0.1	0.1
Nitration	Abs/cm	*ASTM D7624	>20	19.0	16.4	14
Sulfation	Abs./1mm	*ASTM D7415	>30	46.2	39.9	31.3

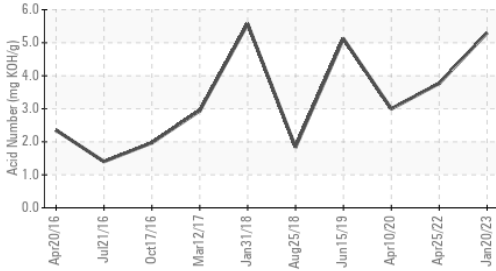


OIL ANALYSIS REPORT

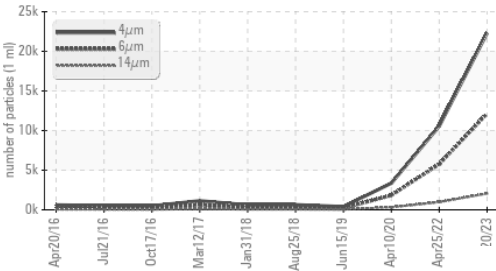
▲ Particle Trend



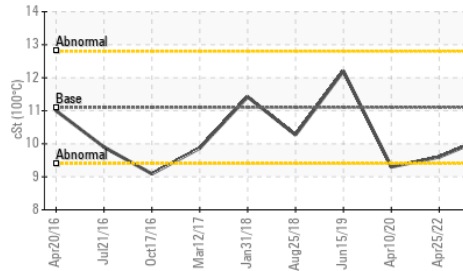
▲ Acid Number



▲ Particle Trend



Viscosity @ 100°C



FLUID CLEANLINESS

	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647		22297	10555	3359
Particles >6µm	ASTM D7647	>5000	▲ 12147	▲ 5750	1829
Particles >14µm	ASTM D7647	>640	▲ 2067	▲ 979	311
Particles >21µm	ASTM D7647	>160	▲ 696	▲ 330	105
Particles >38µm	ASTM D7647	>40	▲ 107	▲ 51	16
Particles >71µm	ASTM D7647	>10	▲ 11	5	1
Oil Cleanliness	ISO 4406 (c)	>19/16	▲ 21/18	▲ 20/17	18/15

FLUID DEGRADATION

	method	limit/base	current	history1	history2
Oxidation	Abs./1mm *ASTM D7414	>25	38.9	32.0	24.9
Acid Number (AN)	mg KOH/g ASTM D8045		▲ 5.30	3.77	2.998

VISUAL

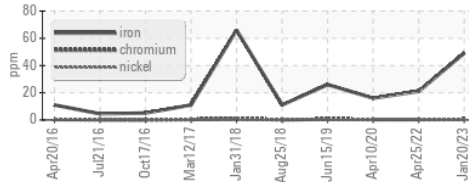
	method	limit/base	current	history1	history2
White Metal	scalar *Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar *Visual	NONE	NONE	NONE	NONE
Precipitate	scalar *Visual	NONE	NONE	NONE	NONE
Silt	scalar *Visual	NONE	NONE	NONE	NONE
Debris	scalar *Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar *Visual	NONE	NONE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

FLUID PROPERTIES

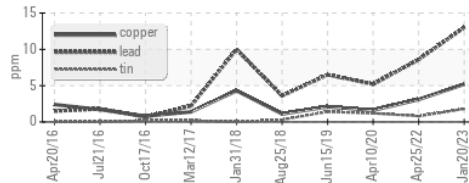
	method	limit/base	current	history1	history2
Visc @ 100°C	cSt ASTM D445	11.1	10.2	9.6	9.3

GRAPHS

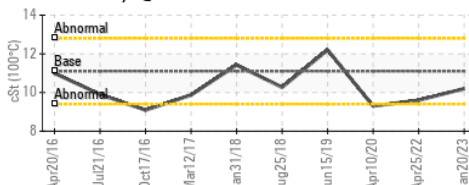
Ferrous Alloys



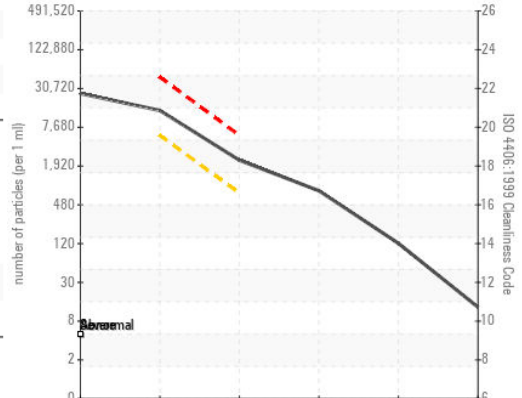
Non-ferrous Metals



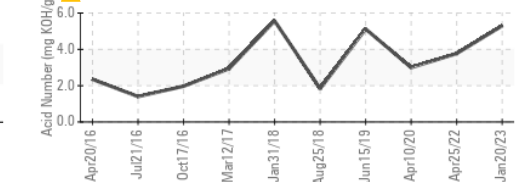
Viscosity @ 100°C



▲ Particle Count



▲ Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : KLM2338196 **Received** : 13 Feb 2023
Lab Number : 05766684 **Diagnosed** : 15 Feb 2023
Unique Number : 10336292 **Diagnostician** : Don Baldrige
Test Package : MOB 2 (Additional Tests: PrtCount)

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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