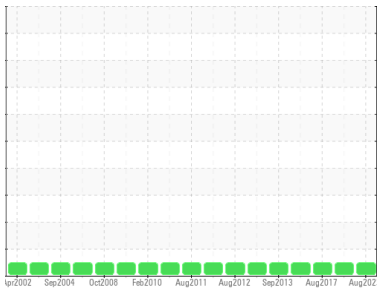
OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL

Machine Id
FLENDER EBL EXTRUDER (S/N D12-407-640-7-1)
Component
Gearbox
Fluid
GEAR OIL ISO 220 (17 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. The amount and size of particulates present in the system are acceptable.

Fluid Condition
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

SAMPLE INFORMATION		method	limit/base	current	history1	history2
Sample Number		Client Info		**USP0000398**	USP192094	USP162186
Sample Date		Client Info		**22 Aug 2023**	21 Aug 2019	24 Aug 2017
Machine Age	yrs	Client Info		**0**	0	0
Oil Age	yrs	Client Info		**0**	0	2
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**NORMAL**	NORMAL	NORMAL

WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>200	**3**	12	33
Chromium	ppm	ASTM D5185m	>15	**<1**	<1	<1
Nickel	ppm	ASTM D5185m	>15	**0**	<1	<1
Titanium	ppm	ASTM D5185m		**<1**	0	0
Silver	ppm	ASTM D5185m		**0**	<1	0
Aluminum	ppm	ASTM D5185m	>25	**<1**	<1	0
Lead	ppm	ASTM D5185m	>100	**<1**	<1	<1
Copper	ppm	ASTM D5185m	>200	**1**	6	14
Tin	ppm	ASTM D5185m	>25	**0**	0	0
Antimony	ppm	ASTM D5185m	>5	**---**	0	0
Vanadium	ppm	ASTM D5185m		**<1**	0	0
Cadmium	ppm	ASTM D5185m		**<1**	<1	<1

ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	50	**0**	0	3
Barium	ppm	ASTM D5185m	15	**0**	0	0
Molybdenum	ppm	ASTM D5185m	15	**0**	<1	<1
Manganese	ppm	ASTM D5185m		**<1**	<1	1
Magnesium	ppm	ASTM D5185m	50	**6**	3	0
Calcium	ppm	ASTM D5185m	50	**0**	7	2
Phosphorus	ppm	ASTM D5185m	350	**253**	299	290
Zinc	ppm	ASTM D5185m	100	**16**	6	13
Sulfur	ppm	ASTM D5185m	12500	**13318**	12908	8407

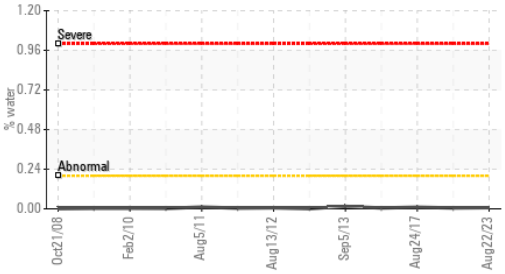
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>50	**<1**	1	0
Sodium	ppm	ASTM D5185m		**<1**	0	1
Potassium	ppm	ASTM D5185m	>20	**2**	0	<1
Water	%	ASTM D6304	>0.2	**0.007**	0.005	0.010
ppm Water	ppm	ASTM D6304	>2000	**77.1**	50	100

FLUID CLEANLINESS		method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>20000	**807**	1108	2199
Particles >6µm		ASTM D7647	>5000	**226**	274	421
Particles >14µm		ASTM D7647	>640	**33**	26	29
Particles >21µm		ASTM D7647	>160	**13**	8	10
Particles >38µm		ASTM D7647	>40	**0**	1	4
Particles >71µm		ASTM D7647	>10	**0**	0	3
Oil Cleanliness		ISO 4406 (c)	>21/19/16	**17/15/12**	17/15/12	18/16/12

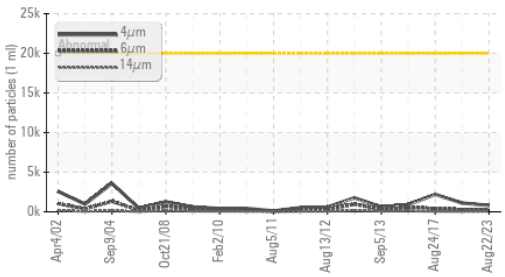
FLUID DEGRADATION		method	limit/base	current	history1	history2
Acid Number (AN)	mg KOH/g	ASTM D8045	0.85	**0.66**	0.515	0.827

OIL ANALYSIS REPORT

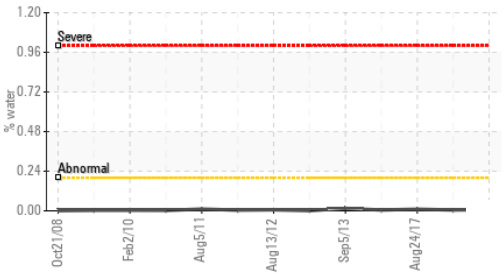
Water



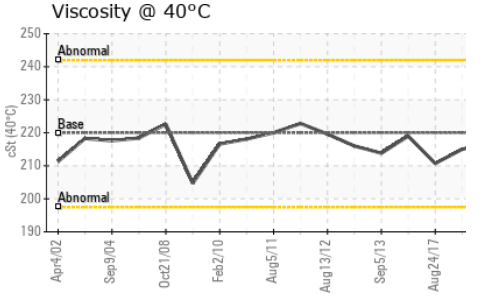
Particle Trend



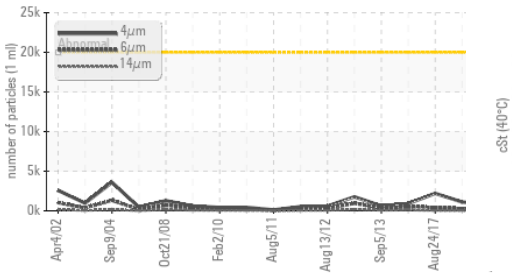
Water



Viscosity @ 40°C

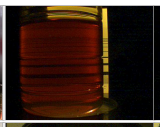
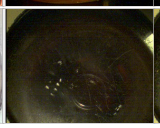


Particle Trend



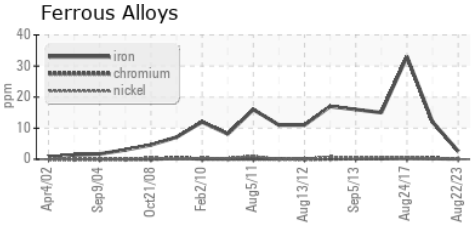
VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	VLITE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**NONE**	NONE	NONE
Sand/Dirt	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 @ 40°C	cSt	ASTM D445	220	**217**	215	210.7

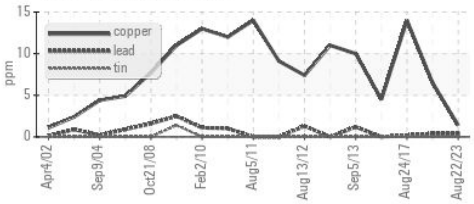
SAMPLE IMAGES	method	limit/base	current	history1	history2
Color					
Bottom					

GRAPHS

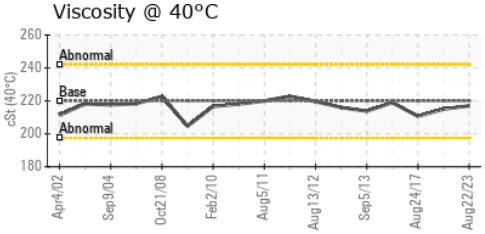
Ferrous Alloys



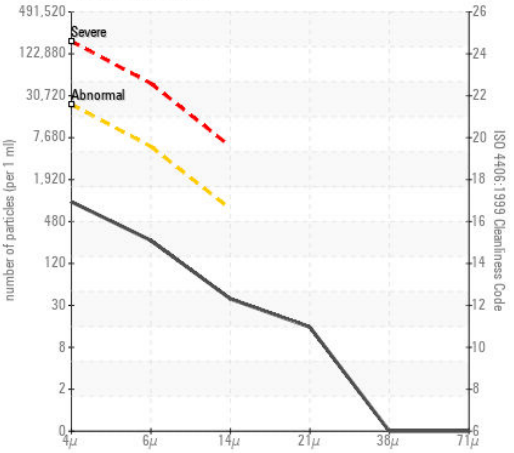
Non-ferrous Metals



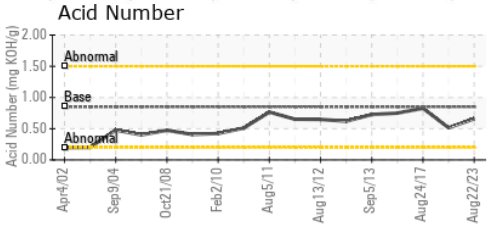
Viscosity @ 40°C



Particle Count



Acid Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : USP0000398
Lab Number : 05937276
Unique Number : 10622547
Test Package : IND 2

Received : 29 Aug 2023
Diagnosed : 30 Aug 2023
Diagnostician : Doug Bogart

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)

3M - FAIRMONT
710 NORTH STATE STREET
FAIRMONT, MN
US 56031
Contact: TODD MATHEWS
TAMATHEWS@MMM.COM
T: (507)235-2104
F: