

OIL ANALYSIS REPORT

Sample Rating Trend



NORMAL



Machine Id

BT-FOR-A1 (S/N TANK FT1 AGITATOR)

Component **Gearbox**

SHELL OMALA S2 GX 220 (--- GAL)

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Recommendation

No action required at this time. Resample at next normal interval.

Wear

Wear particles are low and acceptable.

Contamination

Contamination is on par with new unfiltered oil. Filtration can help to extend machine life.

Fluid Condition

Fluid health indicators are acceptable for continued use.

Sample Number Client Info PLS0000791 PLS0000805 PLS0000775 Sample Date Client Info 17 Apr 2024 31 Jan 2024 25 Oct 2023 Machine Age mths Client Info 0			Jec2014 Jani	020 Jul2020 Apr2021	Jul2022 Jan2023 Aug2023	Jan2024	
Sample Date	SAMPLE INFORM	/ATION	method	limit/base	current	history1	history2
Machine Age mths Client Info 3 3 0 Oil Age mths Client Info 0 0 1 Oil Changed Client Info N/A N/A N/A Changed Sample Status NORMAL NORMAL<	Sample Number		Client Info		PLS0000791	PLS0000805	PLS0000778
Oil Age mths Client Info N/A N/A N/A Changed Sample Status NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 20 15 12 Iron ppm ASTM D8185m >15 0 0 0 Chromium ppm ASTM D8185m >15 0 0 0 Nickel ppm ASTM D8185m >15 0 0 0 Silver ppm ASTM D8185m >15 0 0 0 Aluminum ppm ASTM D8185m >25 0 0 0 Capper ppm ASTM D8185m >20 -1 0 0	Sample Date		Client Info		17 Apr 2024	31 Jan 2024	25 Oct 2023
Oil Changed Sample Status Client Info N/A NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 20 15 12 Iron ppm ASTM D8185m >200 43 37 31 Chromium ppm ASTM D8185m >15 0 0 0 Nickel ppm ASTM D8185m >15 0 0 0 Silver ppm ASTM D8185m 0 0 0 0 Silver ppm ASTM D8185m >25 0 0 0 Silver ppm ASTM D8185m >20 0 0 Lead ppm ASTM D8185m >200 0 0 Copper<	Machine Age	mths	Client Info		3	3	0
NORMAL NORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history2 history2 NEG N	Oil Age	mths	Client Info		0	0	1
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8185m 200 43 37 31 Chromium ppm ASTM D5185m >20 0 0 Okchel ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m >25 0 0 0 Aluminum ppm ASTM D5185m >25 0 0 0 Lead ppm ASTM D5185m >20 <1 0 0 Copper ppm ASTM D5185m >20 <1 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium <td>Oil Changed</td> <td></td> <td>Client Info</td> <td></td> <th>N/A</th> <td>N/A</td> <td>Changed</td>	Oil Changed		Client Info		N/A	N/A	Changed
Water WC Method >0.2 NEG NEG NEG WEAR METALS method limit/base current history1 history2 PQ ASTM D8184 20 43 37 31 Iron ppm ASTM D8185m >20 43 37 31 Chromium ppm ASTM D8185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >20 <1 0 0 Aluminum ppm ASTM D5185m >20 <1 0 0 Lead ppm ASTM D5185m >20 <1 0 0 Copper ppm ASTM D5185m >20 <1 0 0 <th< td=""><td>Sample Status</td><td></td><td></td><td></td><th>NORMAL</th><td>NORMAL</td><td>NORMAL</td></th<>	Sample Status				NORMAL	NORMAL	NORMAL
WEAR METALS method limit/base current history1 history2 PQ ASTM D81844 20 15 12 Iron ppm ASTM D5185m >200 43 37 31 Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Silver ppm ASTM D5185m >15 0 0 0 Aluminum ppm ASTM D5185m >25 0 0 0 Aluminum ppm ASTM D5185m >100 <1	CONTAMINATIO	V	method	limit/base	current	history1	history2
PQ	Water		WC Method	>0.2	NEG	NEG	NEG
Irron	WEAR METALS		method	limit/base	current	history1	history2
Chromium ppm ASTM D5185m >15 0 0 0 Nickel ppm ASTM D5185m >15 0 0 0 Titanium ppm ASTM D5185m 0 0 0 0 Silver ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m 0 0 0 0 Aluminum ppm ASTM D5185m >25 0 0 0 0 Lead ppm ASTM D5185m >100 <1 0 0 0 Copper ppm ASTM D5185m >200 <1 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 Barium ppm ASTM D5185m 0.0 0 <1 4 4 Barium	PQ		ASTM D8184		20	15	
Nickel ppm ASTM D5185m >15 0 0 0 Titanium ppm ASTM D5185m 0 0 <1	Iron	ppm	ASTM D5185m	>200	43	37	31
Titanium	Chromium	ppm	ASTM D5185m	>15	0	0	0
Silver ppm ASTM D5185m 0 0 0 Aluminum ppm ASTM D5185m >25 0 0 0 Lead ppm ASTM D5185m >100 <1	Nickel	ppm	ASTM D5185m	>15	0	0	0
Aluminum ppm ASTM D5185m >25 0 0 0 Lead ppm ASTM D5185m >100 <1	Titanium	ppm	ASTM D5185m		0	0	<1
Lead ppm ASTM D5185m >100 <1 0 0 Copper ppm ASTM D5185m >200 <1	Silver	ppm	ASTM D5185m		0	0	0
Copper ppm ASTM D5185m >200 <1 0 0 Tin ppm ASTM D5185m >25 <1	Aluminum	ppm	ASTM D5185m	>25	0	0	0
Tin ppm ASTM D5185m >25 <1 <1 0 Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 6.2 <1 <1 4 Barium ppm ASTM D5185m 0.0 0 <1 0 Molybdenum ppm ASTM D5185m 0 0 <1 0 Manganese ppm ASTM D5185m 0 5 2 0 Magnesium ppm ASTM D5185m 0.0 7 5 0 Calcium ppm ASTM D5185m 0.0 7 5 0 Phosphorus ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 8167 12401 10212 8520 <td>Lead</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>100</td> <th><1</th> <td>0</td> <td>0</td>	Lead	ppm	ASTM D5185m	>100	<1	0	0
Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 6.2 <1 <1 4 Barium ppm ASTM D5185m 0.0 0 <1 0 Molybdenum ppm ASTM D5185m 0.0 0 <1 0 Manganese ppm ASTM D5185m 0 5 2 0 Magnesium ppm ASTM D5185m 0.0 7 5 0 Calcium ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2	Copper	ppm	ASTM D5185m	>200	<1	0	0
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 6.2 <1	Tin	ppm	ASTM D5185m	>25	<1	<1	0
ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 6.2 <1	Vanadium	ppm	ASTM D5185m		0	0	0
Boron ppm ASTM D5185m 6.2 <1 <1 4 Barium ppm ASTM D5185m 0.0 0 <1 0 Molybdenum ppm ASTM D5185m 0 0 0 <1 0 Manganese ppm ASTM D5185m 0 5 2 0 0 Magnesium ppm ASTM D5185m 0.0 7 5 0 0 Calcium ppm ASTM D5185m 0.0 7 5 0 0 Phosphorus ppm ASTM D5185m 290 306 311 201 2 Zinc ppm ASTM D5185m 3.8 19 26 19 3520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m >20 <1 0 0	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 0.0 0 <1 0 Molybdenum ppm ASTM D5185m 0 0 0 <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 <1 Manganese ppm ASTM D5185m 0 5 2 0 Magnesium ppm ASTM D5185m 0.0 7 5 0 Calcium ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Boron	ppm	ASTM D5185m	6.2	<1	<1	4
Manganese ppm ASTM D5185m <1 <1 0 Magnesium ppm ASTM D5185m 0 5 2 0 Calcium ppm ASTM D5185m 0.0 7 5 0 Phosphorus ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Barium	ppm	ASTM D5185m	0.0	0	<1	0
Magnesium ppm ASTM D5185m 0 5 2 0 Calcium ppm ASTM D5185m 0.0 7 5 0 Phosphorus ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 2 1 Sodium ppm ASTM D5185m 20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Molybdenum	ppm	ASTM D5185m	0	0	0	<1
Calcium ppm ASTM D5185m 0.0 7 5 0 Phosphorus ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 20 <1	Manganese	ppm	ASTM D5185m		<1	<1	0
Phosphorus ppm ASTM D5185m 290 306 311 201 Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1	Magnesium	ppm	ASTM D5185m	0	5	2	0
Zinc ppm ASTM D5185m 3.8 19 26 19 Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1	Calcium	ppm	ASTM D5185m	0.0	7	5	0
Sulfur ppm ASTM D5185m 8167 12401 10212 8520 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Phosphorus	ppm	ASTM D5185m	290	306	311	201
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1	Zinc	ppm	ASTM D5185m	3.8	19	26	19
Silicon ppm ASTM D5185m >50 2 2 1 Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0	Sulfur	ppm	ASTM D5185m	8167	12401	10212	8520
Sodium ppm ASTM D5185m 2 0 1 Potassium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0 0 0	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 <1 0 0 INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Silicon	ppm	ASTM D5185m	>50	2	2	1
INFRA-RED method limit/base current history1 history2 Soot % *ASTM D7844 0 0 0	Sodium	ppm	ASTM D5185m		2	0	1
Soot %	Potassium	ppm	ASTM D5185m	>20	<1	0	0
	INFRA-RED		method	limit/base	current	history1	history2
Nitration Abs/cm *ASTM D7624 3.1 3.0 3.0	Soot %	%	*ASTM D7844		0	0	0
	Nitration	Abs/cm	*ASTM D7624		3.1	3.0	3.0

Sulfation

Abs/.1mm *ASTM D7415

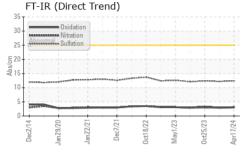
12.2

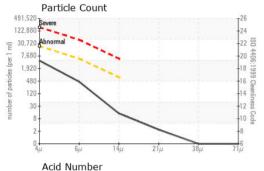
12.4

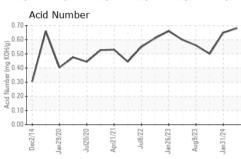
12.4

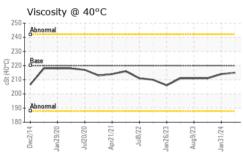


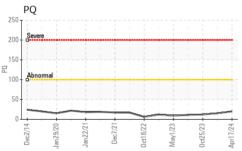
OIL ANALYSIS REPORT











FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >4µm		ASTM D7647	>20000	4085	6240	11329
Particles >6µm		ASTM D7647	>5000	398	640	648
Particles >14µm		ASTM D7647	>640	12	28	16
Particles >21µm		ASTM D7647	>160	2	8	4
Particles >38µm		ASTM D7647	>40	0	1	0
Particles >71µm		ASTM D7647	>10	0	0	0
Oil Cleanliness		ISO 4406 (c)	>21/19/16	19/16/11	20/16/12	21/17/11
FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414		3.0	2.9	3.3
Acid Number (AN)	mg KOH/g	ASTM D8045		0.68	0.65	0.50
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 PROPERT	TES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	220	215	214	211
SAMPLE IMAGES	3	method	limit/base	current	history1	history2
Color					100 100	17 (1815) (1814) 17 (1815) (1814) 18 (1814) (1814)
Bottom						





Certificate 12367

Sample No.

Laboratory

Lab Number : 06154195 Unique Number : 10989618

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : PLS0000791 Received : 19 Apr 2024

Tested : 06 May 2024 Diagnosed : 07 May 2024 - Mike Johnson Test Package : IND 2 (Additional Tests: FT-IR, PQ, 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.

HEXION - BAYTOWN PLANT

8450 WEST BAY RD BAYTOWN, TX

US 77520 Contact: BILL MINER bill.miner@momentive.com

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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