

OIL ANALYSIS REPORT

Sample Rating Trend

WATER



CARRIER 2003Q02700(1) Component Chiller

COMP OIL (POE) ISO 220 (--- GAL)

with Machine Age hrs Client Info 0 Machine Age hrs Client Info 0 -		SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 0 Oil Age hrs Client Info 0 Oil Changed Client Info N/A Sample Status Client Info N/A ed gration Image Nickel ppm ASTM D5185(m) >8 <1		Sample Number		Client Info		GTT0002015		
Nake Name Name <th< td=""><td rowspan="3">to early specify</td><td>Sample Date</td><td></td><td>Client Info</td><td></td><td>01 Mar 2024</td><td></td><td></td></th<>	to early specify	Sample Date		Client Info		01 Mar 2024		
Unr Next On Age Ins Client Info N/A		Machine Age	hrs	Client Info		0		
Oil Changed Client Info N/A Sample Status Image of the status Imag		Oil Age	hrs	Client Info		0		
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM 05/85(m) >8 <1	ui next	Oil Changed		Client Info		N/A		
gration ron ppm ASTM D5186(m) >8 <1 als of Chromium ppm ASTM D5185(m) <2		Sample Status				ABNORMAL		
Iron ppm ASIM Ubl8(m) >30 <1 als of Chromium ppm ASTM D5185(m) >2 0 Nickel ppm ASTM D5185(m) >2 0 Titanium ppm ASTM D5185(m) >2 0 with Silver ppm ASTM D5185(m) >3 <11	ted	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185(m) <1 Titanium ppm ASTM D5185(m) >2 0 Silver ppm ASTM D5185(m) >2 0 Aluminum ppm ASTM D5185(m) >2 2 Lead ppm ASTM D5185(m) >2 2 Copper ppm ASTM D5185(m) >2 2 Tin ppm ASTM D5185(m) >2 2 Antimony ppm ASTM D5185(m) >4 0 Vanadium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 5 0 Boron ppm ASTM D5185(m) 5 0 Molybdenum ppm ASTM D5185(m) 5	gration	Iron	ppm	ASTM D5185(m)	>8	<1		
Titanium ppm ASTM D5185(m) 0 Silver ppm ASTM D5185(m) >2 0 Aluminum ppm ASTM D5185(m) >3 <1	als of	Chromium	ppm	ASTM D5185(m)	>2	0		
Silver ppm ASTM D5185(m) >2 0 Aluminum ppm ASTM D5185(m) >3 <1		Nickel	ppm	ASTM D5185(m)		<1		
Aluminum ppm ASTM D5185(m) >3 <1 Lead ppm ASTM D5185(m) >2 2 Copper ppm ASTM D5185(m) >2 2 Tin ppm ASTM D5185(m) >4 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 0 Maganese ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 1 Magnesium ppm ASTM D5185(m) 5 <td< td=""><td></td><td>Titanium</td><td>ppm</td><td>ASTM D5185(m)</td><td></td><td>0</td><td></td><td></td></td<>		Titanium	ppm	ASTM D5185(m)		0		
Lead ppm ASTM D5185(m) >2 2 Copper ppm ASTM D5185(m) >8 9 Tin ppm ASTM D5185(m) >4 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 5 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 0 Malganese ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Sulfur ppm ASTM D5185(m)<	with	Silver	ppm	ASTM D5185(m)	>2	0		
Copper ppm ASTM D5185(m) >8 ▲ 9 Tin ppm ASTM D5185(m) >4 0 Antimony ppm ASTM D5185(m) 0 Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Phosphorus ppm ASTM D5185(m) 5 16 Sulfur ppm ASTM D51	sorb	Aluminum	ppm	ASTM D5185(m)	>3	<1		
TinppmASTM D5185(m)>40AntimonyppmASTM D5185(m)0VanadiumppmASTM D5185(m)0BerylliumppmASTM D5185(m)0CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)50BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)50MagnesiumppmASTM D5185(m)50PhosphorusppmASTM D5185(m)516ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>20<1		Lead	ppm	ASTM D5185(m)	>2	2		
AntimonyppmASTM D5185(m)0VanadiumppmASTM D5185(m)0BerylliumppmASTM D5185(m)0CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)50BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50MaganeseppmASTM D5185(m)50MagnesiumppmASTM D5185(m)50PhosphorusppmASTM D5185(m)516ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)>16SodiumppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>20PotassiumppmASTM D5185(m)>20ppm WaterppmASTM D5185(m)>20FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		Copper	ppm	ASTM D5185(m)	>8	<u> </u>		
Vanadium ppm ASTM D5185(m) 0 Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 0 Barium ppm ASTM D5185(m) 5 0 Molybdenum ppm ASTM D5185(m) 5 0 Maganese ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Zinc ppm ASTM D5185(m) 5 16		Tin	ppm	ASTM D5185(m)	>4	0		
Beryllium ppm ASTM D5185(m) 0 Cadmium ppm ASTM D5185(m) 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185(m) 5 0 Barium ppm ASTM D5185(m) 5 0 Molybdenum ppm ASTM D5185(m) 5 0 Maganese ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 0 Viance ppm ASTM D5185(m) 5 0 Magnesium ppm ASTM D5185(m) 5 16 Zinc ppm ASTM D5185(m) 100		Antimony	ppm	ASTM D5185(m)		0		
CadmiumppmASTM D5185(m)0ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)50BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)50MagnesiumppmASTM D5185(m)50CalciumppmASTM D5185(m)50PhosphorusppmASTM D5185(m)50ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>20<1		Vanadium	ppm	ASTM D5185(m)		0		
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185(m)50BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)50MagnesiumppmASTM D5185(m)5<1		Beryllium	ppm	ASTM D5185(m)		0		
BoronppmASTM D5185(m)50BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)50MagnesiumppmASTM D5185(m)5<1		Cadmium	ppm	ASTM D5185(m)		0		
BariumppmASTM D5185(m)50MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)0MagnesiumppmASTM D5185(m)5<1MagnesiumppmASTM D5185(m)5<1CalciumppmASTM D5185(m)50PhosphorusppmASTM D5185(m)516ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)1000SodiumppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>20<1PotassiumppmASTM D5185(m)>20<1ppm WaterppmASTM D6304*>100446FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		ADDITIVES		method	limit/base	current	history1	history2
MolybdenumppmASTM D5185(m)50ManganeseppmASTM D5185(m)5<1		Boron	ppm	ASTM D5185(m)	5	0		
ManganeseppmASTM D5185(m)0MagnesiumppmASTM D5185(m)5<1		Barium	ppm	ASTM D5185(m)	5	0		
MagnesiumppmASTM D5185(m)5<1CalciumppmASTM D5185(m)50PhosphorusppmASTM D5185(m)4002ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)1000CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1548PotassiumppmASTM D5185(m)>20<1		Molybdenum	ppm	ASTM D5185(m)	5	0		
Calcium ppm ASTM D5185(m) 5 0 Phosphorus ppm ASTM D5185(m) 400 2 Zinc ppm ASTM D5185(m) 5 16 Sulfur ppm ASTM D5185(m) 100 0 Lithium ppm ASTM D5185(m) 100 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 48 Sodium ppm ASTM D5185(m) >20 <1		Manganese	ppm	ASTM D5185(m)		0		
Phosphorus ppm ASTM D5185(m) 400 2 Zinc ppm ASTM D5185(m) 5 16 Sulfur ppm ASTM D5185(m) 100 0 Lithium ppm ASTM D5185(m) 100 0 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185(m) >15 48 Sodium ppm ASTM D5185(m) >20 <1 Potassium ppm ASTM D5185(m) >20 <1 ppm Water ppm ASTM D6304* >100 446 FLUID DEGRADATION method limit/base current history1 history2		Magnesium	ppm	ASTM D5185(m)	5	<1		
ZincppmASTM D5185(m)516SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)100<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>20<1		Calcium	ppm	ASTM D5185(m)	5	0		
SulfurppmASTM D5185(m)1000LithiumppmASTM D5185(m)100<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1548SodiumppmASTM D5185(m)0PotassiumppmASTM D5185(m)>20<1		Phosphorus	ppm	ASTM D5185(m)	400	2		
LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1548SodiumppmASTM D5185(m)0PotassiumppmASTM D5185(m)>20<1		Zinc	ppm	ASTM D5185(m)	5	16		
LithiumppmASTM D5185(m)<1CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185(m)>1548SodiumppmASTM D5185(m)>0PotassiumppmASTM D5185(m)>20<1		Sulfur	ppm	ASTM D5185(m)	100	0		
Silicon ppm ASTM D5185(m) >15 48 Sodium ppm ASTM D5185(m) 0 Potassium ppm ASTM D5185(m) >20 <1		Lithium	ppm	ASTM D5185(m)		<1		
SodiumppmASTM D5185(m)0PotassiumppmASTM D5185(m)>20<1ppm WaterppmASTM D6304*>100446FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		CONTAMINANTS	6	method	limit/base	current	history1	history2
Potassium ppm ASTM D5185(m) >20 <1 ppm Water ppm ASTM D6304* >100 446 FLUID DEGRADATION method limit/base current history1 history2		Silicon	ppm	ASTM D5185(m)	>15	48		
PotassiumppmASTM D5185(m)>20<1ppm WaterppmASTM D6304*>100446FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		Sodium		ASTM D5185(m)		0		
ppm WaterppmASTM D6304*>100446FLUID DEGRADATIONmethodlimit/basecurrenthistory1history2		D · · ·		ASTM D5185(m)	>20	<1		
		Potassium						
Acid Number (AN) mg KOH/g ASTM D974* 0.40 0.06				ASTM D6304*	>100	446		
		ppm Water	ppm					

DIAGNOSIS

Recommendation

If not recently done change any filter driers to reduce moisture level. We recommend an ea resample to monitor this condition. Please sp the brand, type, and viscosity of the oil on yo sample.

A Wear

Copper ppm levels are abnormal. The elevat copper reading suggests the effects of oil mi through the evaporator (oil loss from the compressor) possibly occurring during interv operation at low cooling load conditions.

Contamination

The elevated moisture content is associated POE oils which are hygroscopic, and can ab moisture from sampling and processing.

Fluid Condition

The AN level is acceptable for this fluid.



OIL ANALYSIS REPORT

VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE		
Yellow Metal	scalar	Visual*	NONE	NONE		
Precipitate	scalar	Visual*	NONE	NONE		
Silt	scalar	Visual*	NONE	NONE		
Debris	scalar	Visual*	NONE	NONE		
Sand/Dirt	scalar	Visual*	NONE	NONE		
Appearance	scalar	Visual*	NORML	NORML		
Odor	scalar	Visual*	NORML	NORML		
FLUID PROPERT	IES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	220	209		
SAMPLE IMAGES	6	method	limit/base	current	history1	history2
Color					no image	no image
Bottom				0	no image	no image
GRAPHS			_			



Sample No. : GTT0002015 Received : 14 Mar 2024 Lab Number : 02622184 Tested : 20 Mar 2024 Unique Number : 5747303 Diagnosed : 20 Mar 2024 - Bill Quesnel Contact: Service Manager Test Package : IND 2 (Additional Tests: KV40) To discuss this sample report, contact Customer Service at 1-905-847-9300 Ext 26. bcrooks@general-refrigeration.ca Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. Damages: Seller shall in no event be liable for special, incidental, or consequential damages, of a commercial nature, resulting from any cause.

Contact/Location: Service Manager - GTT0000378

CA

T:

F:

General Refrigeration