

OIL ANALYSIS REPORT

Sample Rating Trend



KAESER 7718980

Component Compressor

KAESER SIGMA (OEM) S-460 (--- 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.

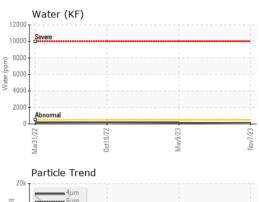
Fluid Condition

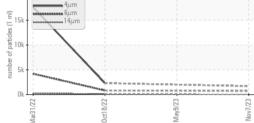
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

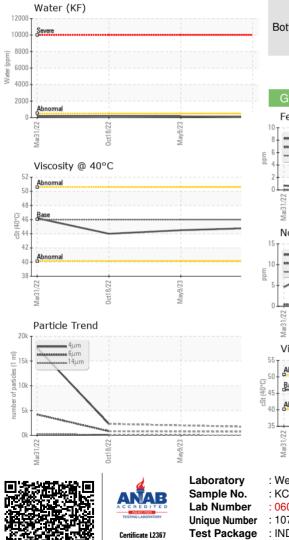
SAMPLE INFORMATION method limit/base current history1 history2 Sample Number Client Info KC101705 KC101527 KC103828 Sample Date Client Info 12043 9835 7460 Oil Age hrs Client Info 12043 9835 7460 Oil Age hrs Client Info 4500 2400 4800 Oil Changed Client Info Changed Not Changd Changed Sample Status method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >10 0 0 0 Silver ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >10 0 0 0 Client Info pASTM D5185m >10 0 0 0 0 Norkel pp			Mar202	2 Oct2022	May2023 No	v2023	
Sample Date Client Info 07 Nov 2023 09 May 2023 18 Oct 2022 Machine Age hrs Client Info 12043 9835 7460 Oil Age hrs Client Info 4500 2400 4800 Oil Changed Client Info ASTM D5185m NorRMAL ABNORMAL ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
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Oil Age hrs Client Info 4500 2400 4800 Oil Changed Client Info Changed Not Changed ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Okromium ppm ASTM D5185m >30 0 0 0 Nickel ppm ASTM D5185m >3 <1 0 0 Nickel ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0 Boron ppm ASTM D5185m 0 0 0 0	Sample Date		Client Info		07 Nov 2023	09 May 2023	18 Oct 2022
Oil Changed Sample Status Client Info Changed NORMAL Not Changed ABNORMAL Changed ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >10 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 <1 0 0 Silver ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0	Machine Age	hrs	Client Info		12043	9835	7460
Sample Status Image NORMAL ABNORMAL ATTENTION WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Ohromium ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >3 <1 0 0 Aluminum ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0	Oil Age	hrs	Client Info		4500	2400	4800
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >50 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >2 0 0 0 Lead ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 0 0 0 0	Oil Changed		Client Info		Changed	Not Changd	Changed
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Titanium ppm ASTM D5185m >3 <1	Chromium	ppm	ASTM D5185m	>10	0	0	0
Silver ppm ASTM D5185m >2 0 0 0 Aluminum ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 12 7 13 Tin ppm ASTM D5185m >10 0 0 0 Vanadium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m <1 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 90 0 0 0 0 Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 20	Nickel	ppm	ASTM D5185m	>3	0	0	0
Aluminum ppm ASTM D5185m >10 1 0 2 Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 12 7 13 Tin ppm ASTM D5185m >10 0 0 0 Vanadium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Boron ppm ASTM D5185m 90 0 0 0 0 Malganese ppm ASTM D5185m 90 0 0 0 0 0 Magnesium ppm ASTM D5185m 90 0 222 14 1 Calcium ppm ASTM D5185m <th>Titanium</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>3</th> <th><1</th> <th>0</th> <th>0</th>	Titanium	ppm	ASTM D5185m	>3	<1	0	0
Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 12 7 13 Tin ppm ASTM D5185m >10 0 0 0 Vanadium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 <11	Silver	ppm	ASTM D5185m	>2	0	0	0
Copper ppm ASTM D5185m >50 12 7 13 Tin ppm ASTM D5185m >10 0 0 0 Vanadium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 90 0 0 0 Malganese ppm ASTM D5185m 90 0 0 <11 Magnesium ppm ASTM D5185m 90 0 0 <11 Magnesium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 24 56 103 </th <th>Aluminum</th> <th>ppm</th> <th>ASTM D5185m</th> <th>>10</th> <th>1</th> <th>0</th> <th>2</th>	Aluminum	ppm	ASTM D5185m	>10	1	0	2
Tin ppm ASTM D5185m >10 0 0 0 Vanadium ppm ASTM D5185m >10 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 0 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 0 Molybdenum ppm ASTM D5185m 90 0 0 0 0 Magnesium ppm ASTM D5185m 90 0 0 0 22 Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 2 0 <1<	Lead	ppm	ASTM D5185m	>10	0	0	0
Vanadium ppm ASTM D5185m <1	Copper	ppm	ASTM D5185m	>50	12	7	13
CadmiumppmASTM D5185m000ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m0000BariumppmASTM D5185m900000MolybdenumppmASTM D5185m0000ManganeseppmASTM D5185m9000<1MagnesiumppmASTM D5185m9002214CalciumppmASTM D5185m2000PhosphorusppmASTM D5185m2456103ZincppmASTM D5185m>2500<1SiliconppmASTM D5185m>2500<1SodiumppmASTM D5185m>20005	Tin	ppm	ASTM D5185m	>10	0	0	0
ADDITIVESmethodlimit/basecurrenthistory1history2BoronppmASTM D5185m000BariumppmASTM D5185m90000MolybdenumppmASTM D5185m0000ManganeseppmASTM D5185m000<1MagnesiumppmASTM D5185m9002214CalciumppmASTM D5185m2000PhosphorusppmASTM D5185m2000PhosphorusppmASTM D5185m2456103CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2500<1SodiumppmASTM D5185m5104PotassiumppmASTM D5185m>20005	Vanadium	ppm	ASTM D5185m		<1	0	0
Boron ppm ASTM D5185m 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m 90 0 0 0 Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 90 0 21 4 Calcium ppm ASTM D5185m 90 0 21 14 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 2 0 0 1 1 Zinc ppm ASTM D5185m 2 0 0 103 2 Silicon ppm ASTM D5185m >25 0 0 <1 4 Sodium ppm ASTM D5185m >20 0 </th <th>Cadmium</th> <th>ppm</th> <th>ASTM D5185m</th> <th></th> <th>0</th> <th>0</th> <th>0</th>	Cadmium	ppm	ASTM D5185m		0	0	0
Barium ppm ASTM D5185m 90 0 0 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 0 0 0 <1 Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 2 0 0 0 Zinc ppm ASTM D5185m 2 0 <1 <1 Zinc ppm ASTM D5185m 2 0 <10 <103 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 0 0 <1 Sodium ppm ASTM D5185m >20 0 0 5	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 0 0 <1 Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 24 56 103 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 0 0 <1 Sodium ppm ASTM D5185m >25 0 0 <1 Potassium ppm ASTM D5185m >20 0 0 5	Boron	ppm	ASTM D5185m		0		
Manganese ppm ASTM D5185m 0 0 <1	Barium	ppm	ASTM D5185m	90	0	0	0
Magnesium ppm ASTM D5185m 90 0 22 14 Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 2 0 0 <1	Molybdenum	ppm	ASTM D5185m		0	0	0
Calcium ppm ASTM D5185m 2 0 0 0 Phosphorus ppm ASTM D5185m 0 <1 <1 Zinc ppm ASTM D5185m 24 56 103 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >25 0 0 <1	Manganese	ppm	ASTM D5185m		0	0	
Phosphorus ppm ASTM D5185m 0 <1	Magnesium	ppm	ASTM D5185m	90			
ZincppmASTM D5185m2456103CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m<>2500<1SodiumppmASTM D5185m5104PotassiumppmASTM D5185m>2005	Calcium	ppm	ASTM D5185m	2		0	
CONTAMINANTSmethodlimit/basecurrenthistory1history2SiliconppmASTM D5185m>2500<1SodiumppmASTM D5185m5104PotassiumppmASTM D5185m>20005	Phosphorus	ppm			-		
Silicon ppm ASTM D5185m >25 0 0 <1	Zinc	ppm	ASTM D5185m		24	56	103
Sodium ppm ASTM D5185m 5 10 4 Potassium ppm ASTM D5185m >20 0 0 5	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 0 5	Silicon	ppm	ASTM D5185m	>25	0	0	<1
	Sodium	ppm	ASTM D5185m		5	10	4
			ASTM D5185m	>20	0	0	5
	Water	%	ASTM D6304	>0.05	0.009	0.015	0.020
ppm Water ppm ASTM D6304 >500 96.7 152.8 204.5	ppm Water	ppm	ASTM D6304	>500	96.7	152.8	204.5
FLUID CLEANLINESS method limit/base current history1 history2	FLUID CLEANLINE	ESS	method	limit/base	current	history1	history2
Particles >4μm ASTM D7647 1700 2301	Particles >4µm		ASTM D7647		1700		2301
Particles >6μm ASTM D7647 >1300 709 822	Particles >6µm		ASTM D7647	>1300	709		
Particles >14μm ASTM D7647 >80 32 ▲ 110	Particles >14µm		ASTM D7647	>80	32		1 10
Particles >21μm ASTM D7647 >20 6 ▲ 35				>20	6		
Particles >38μm ASTM D7647 >4 0 2							
Particles >71μm ASTM D7647 >3 0 0			ASTM D7647	>3	0		
Oil Cleanliness ISO 4406 (c) >17/13 17/12 ▲ 17/14	Oil Cleanliness		ISO 4406 (c)	>17/13	17/12		▲ 17/14
FLUID DEGRADATION method limit/base current history1 history2	FLUID DEGRADAT	ΓΙΟΝ	method	limit/base	current	history1	history2
Acid Number (AN) mg KOH/g ASTM D8045 0.4 0.36 0.39 0.36	Acid Number (AN)	mg KOH/g	ASTM D8045	0.4	0.36	0.39	0.36



OIL ANALYSIS REPORT

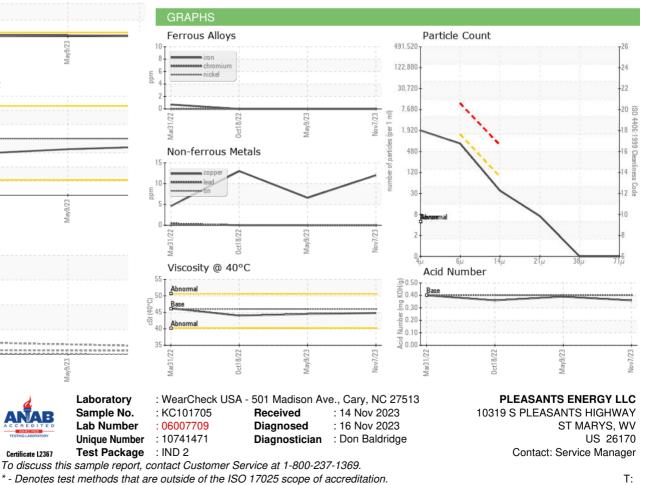






VISUAL		method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	🔺 MODER	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPER1	TIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D445	46	44.8	44.5	44.0
SAMPLE IMAGES	S	method	limit/base	current	history1	history2
Color				•		

Bottom



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

Contact/Location: Service Manager - PLESTM