

# **OIL ANALYSIS REPORT**

### Sample Rating Trend

ISO

# KAESER 9017137

#### Compressor Fluid KAESER SIGMA (OEM) M-460 (--- GAL)

#### DIAGNOSIS

#### Recommendation

No corrective action is recommended at this time. The 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 moderate amount of particulates present in the oil.

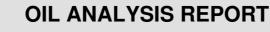
#### Fluid Condition

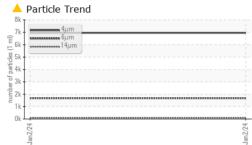
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Sample Number     Client Info     KCPA011721     ···     ···       Sample Date     Client Info     02 Jan 2024     ···     ···       Machine Age     hrs     Client Info     0     ···     ···       Ol Age     hrs     Client Info     N/A     ···     ···       Ol Changed     Client Info     N/A     ···     ···       Sample Status     method     Imit/base     current     history1     history2       Iron     ppm     ASTM 05185m     >50     1     ···     ···       Chromium     ppm     ASTM 05185m     >3     0     ···     ···       Silver     ppm     ASTM 05185m     >3     10     ···     ···       Aluminum     ppm     ASTM 05185m     >10     1     ···     ···       Silver     ppm     ASTM 05185m     >10     1     ···     ···       Auminum     ppm     ASTM 05185m     0     4     ···<     ···       Auminum     ppm	SAMPLE INFORM	<b>MATION</b>	method	limit/base	current	history1	history2
Machine Age     hrs     Client Info     3477         Oil Age     hrs     Client Info     0         Sample Status     Client Info     N/A         WEAR METALS     method     limit/base     current     history1     history2       Iron     ppm     ASTM 05185m     >50     1         Nickel     ppm     ASTM 05185m     >10     <1	Sample Number		Client Info		KCPA011721		
Machine Age     hrs     Client Info     3477         Oil Age     hrs     Client Info     0         Sample Status     Client Info     N/A         WEAR METALS     method     Imit/base     current     history1     history2       Iron     ppm     ASTM 05185m     >50     1         Nickel     ppm     ASTM 05185m     >3     0         Silver     ppm     ASTM 05185m     >3     <1			Client Info		02 Jan 2024		
Oil Age     Ins     Client Info     0         OIL Changed     Client Info     N/A         WEAR METALS     method     Imitibase     current     history1     history2       Iron     ppm     ASTM D5185m     >50     1         Chromium     ppm     ASTM D5185m     >3     0         Nickel     ppm     ASTM D5185m     >3     <1	•	hrs	Client Info		3477		
Oil Changed     Client Info     N/A         Sample Status     Imit/base     current     history1     history2       Iron     ppm     ASTM D5185n     >50     1         Nickel     ppm     ASTM D5185n     >30     0         Titanium     ppm     ASTM D5185n     >33     <1	Ũ				-		
Sample Status     ATTENTION         WEAR METALS     method     limit/base     current     history1     history2       tron     ppm     ASTM D5185m     >50     1         Chromium     ppm     ASTM D5185m     >3     0         Nickel     ppm     ASTM D5185m     >3     0         Silver     ppm     ASTM D5185m     >10     2         Auminum     ppm     ASTM D5185m     >10     0         Copper     ppm     ASTM D5185m     >10     0         Vanadium     ppm     ASTM D5185m     0     0         ADDITVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0         ADDITVES     method     limit/base     current     history1     history2	-						
WEAR METALS     method     limit/base     current     history1     history2       Knomium     ppm     ASTM D5185m     >50     1         Nickel     ppm     ASTM D5185m     >3     0         Nickel     ppm     ASTM D5185m     >3     0         Silver     ppm     ASTM D5185m     >2     0         Lead     ppm     ASTM D5185m     >10     2         Copper     ppm     ASTM D5185m     >10     0         Vanadium     ppm     ASTM D5185m     >10     0         ASTM D5185m     0     0           ASTM D5185m     0     0           ASTM D5185m     0     0           ASTM D5185m     0     0	-						
Iron     ppm     ASTM D5185m     >50     1         Chromium     ppm     ASTM D5185m     >10     <1							
Ppm     ASTM D5185m     >10     <1	WEAR METALS		method	limit/base	current	history1	history2
Nickel     ppm     ASTM D5185m     >3     0         Titanium     ppm     ASTM D5185m     >3     <1	Iron	ppm	ASTM D5185m		-		
Titanium   ppm   ASTM D5185m   >3   <1       Silver   ppm   ASTM D5185m   >2   0       Aluminum   ppm   ASTM D5185m   >10   2       Lead   ppm   ASTM D5185m   >10   0       Copper   ppm   ASTM D5185m   >10   <1	Chromium	ppm	ASTM D5185m	>10	<1		
Silver     ppm     ASTM D5185m     >2     0         Aluminum     ppm     ASTM D5185m     >10     2         Lead     ppm     ASTM D5185m     >10     0         Copper     ppm     ASTM D5185m     >10     <1	Nickel	ppm	ASTM D5185m	>3	0		
Aluminum   ppm   ASTM D5185m   >10   2       Lead   ppm   ASTM D5185m   >10   0       Copper   ppm   ASTM D5185m   >50   4       Vanadium   ppm   ASTM D5185m   0        Vanadium   ppm   ASTM D5185m   0        ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0       Molybdenum   ppm   ASTM D5185m   0   0       Magnese   ppm   ASTM D5185m   0   0       Magnesium   ppm   ASTM D5185m   0   24       Zinc   ppm   ASTM D5185m   23500   20022       Sulfur   ppm   ASTM D5185m   225   <1	Titanium	ppm	ASTM D5185m	>3	<1		
Lead     ppm     ASTM D5185m     >10     0         Copper     ppm     ASTM D5185m     >50     4         Vanadium     ppm     ASTM D5185m     >10     <1	Silver	ppm	ASTM D5185m	>2	0		
Copper     ppm     ASTM D5185m     >50     4         Tin     ppm     ASTM D5185m     >10     <1	Aluminum	ppm	ASTM D5185m	>10	2		
Tin     ppm     ASTM D5185m     >10     <1         Vanadium     ppm     ASTM D5185m     0         Cadmium     ppm     ASTM D5185m     0         ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0         Magnese     ppm     ASTM D5185m     0     0         Magnesium     ppm     ASTM D5185m     0     44         Calcium     ppm     ASTM D5185m     0     4         Calcium     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     25     <1	Lead	ppm	ASTM D5185m	>10	0		
Tin   ppm   ASTM D5185m   >10   <1       Vanadium   ppm   ASTM D5185m   0       Cadmium   ppm   ASTM D5185m   0       ADDITIVES   method   limit/base   current   history1   history2     Boron   ppm   ASTM D5185m   0   0       Barium   ppm   ASTM D5185m   0   0       Molybdenum   ppm   ASTM D5185m   0   0       Manganese   ppm   ASTM D5185m   0   44       Calcium   ppm   ASTM D5185m   0   24       Zinc   ppm   ASTM D5185m   0   0       Sulfur   ppm   ASTM D5185m   23500   20022       Sulfur   ppm   ASTM D5185m   25   <1	Copper	ppm	ASTM D5185m	>50	4		
Vanadium     ppm     ASTM D5185m     0         Cadmium     ppm     ASTM D5185m     0         ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0         Barium     ppm     ASTM D5185m     0     0         Maganese     ppm     ASTM D5185m     0     0         Magnesium     ppm     ASTM D5185m     100     77         Calcium     ppm     ASTM D5185m     0     4         Calcium     ppm     ASTM D5185m     0     24         Sulfur     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         Solicon     ppm     ASTM D5185m     >25     <1	••		ASTM D5185m	>10	<1		
Cadmium     ppm     ASTM D5185m     0         ADDITIVES     method     limit/base     current     history1     history2       Boron     ppm     ASTM D5185m     0     0         Barium     ppm     ASTM D5185m     0     0         Manganese     ppm     ASTM D5185m     0     0         Manganese     ppm     ASTM D5185m     0     44         Calcium     ppm     ASTM D5185m     0     4         Calcium     ppm     ASTM D5185m     0     24         Sulfur     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         Solicon     ppm     ASTM D5185m     >20     34	Vanadium		ASTM D5185m				
Boron     ppm     ASTM D5185m     0     0         Barium     ppm     ASTM D5185m     90     43         Molybdenum     ppm     ASTM D5185m     0     0         Manganese     ppm     ASTM D5185m     100     77         Calcium     ppm     ASTM D5185m     0     4         Calcium     ppm     ASTM D5185m     0     24         Zinc     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         Sodium     ppm     ASTM D5185m     21         Potassium     ppm     ASTM D5185m     >20     34         Water     %     ASTM D6304     >0.05     0.018         Particles >4µm     ASTM D7647     6954	Cadmium		ASTM D5185m		0		
Barium     ppm     ASTM D5185m     90     43         Molybdenum     ppm     ASTM D5185m     0     0         Manganese     ppm     ASTM D5185m     0     0         Magnesium     ppm     ASTM D5185m     100     77         Calcium     ppm     ASTM D5185m     0     4         Calcium     ppm     ASTM D5185m     0     24         Zinc     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         Sodium     ppm     ASTM D5185m     225     <1	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum   ppm   ASTM D5165m   0       Manganese   ppm   ASTM D5185m   100   77       Magnesium   ppm   ASTM D5185m   100   77       Calcium   ppm   ASTM D5185m   0   4       Calcium   ppm   ASTM D5185m   0   24       Zinc   ppm   ASTM D5185m   0   0       Sulfur   ppm   ASTM D5185m   23500   20022       Sodium   ppm   ASTM D5185m   >25   <1	Boron	ppm	ASTM D5185m	0	0		
Marganese   ppm   ASTM D5185m   0       Magnesium   ppm   ASTM D5185m   100   77       Calcium   ppm   ASTM D5185m   0   4       Calcium   ppm   ASTM D5185m   0   24       Zinc   ppm   ASTM D5185m   0   0       Sulfur   ppm   ASTM D5185m   23500   20022       Sulfur   ppm   ASTM D5185m   23500   20022       CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   <1	Barium	ppm	ASTM D5185m	90	43		
Magnesium   ppm   ASTM D5185m   100   77       Calcium   ppm   ASTM D5185m   0   4       Phosphorus   ppm   ASTM D5185m   0   0       Zinc   ppm   ASTM D5185m   0   0       Sulfur   ppm   ASTM D5185m   23500   20022       CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   <1	Molybdenum	ppm	ASTM D5185m	0	0		
Calcium   ppm   ASTM D5185m   0   4       Phosphorus   ppm   ASTM D5185m   0   0       Zinc   ppm   ASTM D5185m   0   0       Sulfur   ppm   ASTM D5185m   23500   20022       CONTAMINANTS   method   limit/base   current   history1   history2     Silicon   ppm   ASTM D5185m   >25   <1	Manganese	ppm	ASTM D5185m		0		
Phosphorus     ppm     ASTM D5185m     0     24         Zinc     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     <1	Magnesium	ppm	ASTM D5185m	100	77		
Phosphorus     ppm     ASTM D5185m     0     24         Zinc     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     <1	Calcium	ppm	ASTM D5185m	0	4		
Zinc     ppm     ASTM D5185m     0     0         Sulfur     ppm     ASTM D5185m     23500     20022         CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     <1	Phosphorus		ASTM D5185m	0	24		
Sulfur     ppm     ASTM D5185m     23500     20022         CONTAMINANTS     method     limit/base     current     history1     history2       Silicon     ppm     ASTM D5185m     >25     <1			ASTM D5185m	0	0		
Silicon   ppm   ASTM D5185m   >25   <1       Sodium   ppm   ASTM D5185m   21       Potassium   ppm   ASTM D5185m   >20   34       Water   %   ASTM D6304   >0.05   0.018       Water   ppm   ASTM D6304   >500   180       ppm Water   ppm   ASTM D7647   6954       Particles >4µm   ASTM D7647   >1300   1681       Particles >6µm   ASTM D7647   >80   99       Particles >1µm   ASTM D7647   >20   24       Particles >21µm   ASTM D7647   >3   0       Particles >38µm   ASTM D7647   >3   0       Particles >71µm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   20/18/14	Sulfur				20022		
Sodium     ppm     ASTM D5185m     21         Potassium     ppm     ASTM D5185m     >20     34         Water     %     ASTM D6304     >0.05     0.018         ppm Water     ppm     ASTM D6304     >500     180         FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     6954          Particles >6µm     ASTM D7647     >1300     1681         Particles >14µm     ASTM D7647     >20     24         Particles >21µm     ASTM D7647     >20     24         Particles >38µm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	CONTAMINANTS	;	method	limit/base	current	history1	history2
Potassium     ppm     ASTM D5185m     >20     34         Water     %     ASTM D6304     >0.05     0.018         ppm Water     ppm     ASTM D6304     >500     180         FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     6954         Particles >6µm     ASTM D7647     >1300     1681        Particles >6µm     ASTM D7647     >80     99         Particles >14µm     ASTM D7647     >20     24         Particles >21µm     ASTM D7647     >3     0         Particles >38µm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Silicon	ppm	ASTM D5185m	>25	<1		
Water   %   ASTM D6304   >0.05   0.018       ppm Water   ppm   ASTM D6304   >500   180       FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   6954       Particles >6µm   ASTM D7647   >1300   1681       Particles >14µm   ASTM D7647   >80   99       Particles >14µm   ASTM D7647   >20   24       Particles >21µm   ASTM D7647   >4   1       Particles >38µm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2	Sodium	ppm	ASTM D5185m		21		
ppm Water     ppm     ASTM D6304     >500     180         FLUID CLEANLINESS     method     limit/base     current     history1     history2       Particles >4µm     ASTM D7647     6954         Particles >6µm     ASTM D7647     >1300     1681         Particles >6µm     ASTM D7647     >80     99         Particles >14µm     ASTM D7647     >20     24         Particles >21µm     ASTM D7647     >4     1         Particles >38µm     ASTM D7647     >4     1         Particles >71µm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)    /17/13     20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Potassium	ppm	ASTM D5185m	>20	34		
FLUID CLEANLINESS   method   limit/base   current   history1   history2     Particles >4µm   ASTM D7647   6954       Particles >6µm   ASTM D7647   >1300   1681       Particles >6µm   ASTM D7647   >80   99       Particles >14µm   ASTM D7647   >80   99       Particles >21µm   ASTM D7647   >20   24       Particles >38µm   ASTM D7647   >4   1       Particles >38µm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2	Water	%	ASTM D6304	>0.05	0.018		
Particles >4µm   ASTM D7647   6954       Particles >6µm   ASTM D7647   >1300   1681       Particles >14µm   ASTM D7647   >80   99       Particles >14µm   ASTM D7647   >20   24       Particles >21µm   ASTM D7647   >20   24       Particles >38µm   ASTM D7647   >4   1       Particles >71µm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2	ppm Water	ppm	ASTM D6304	>500	180		
Particles >6µm   ASTM D7647   >1300   ▲ 1681       Particles >14µm   ASTM D7647   >80   ▲ 99       Particles >21µm   ASTM D7647   >20   ▲ 24       Particles >21µm   ASTM D7647   >20   ▲ 24       Particles >38µm   ASTM D7647   >4   1       Particles >71µm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   ▲ 20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2	FLUID CLEANLIN	IESS	method	limit/base	current	history1	history2
Particles >14μm   ASTM D7647   >80   ▲ 99       Particles >21μm   ASTM D7647   >20   ▲ 24       Particles >38μm   ASTM D7647   >4   1       Particles >38μm   ASTM D7647   >4   1       Particles >71μm   ASTM D7647   >3   0       Oil Cleanliness   ISO 4406 (c)   >/17/13   ▲ 20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2	Particles >4µm		ASTM D7647		6954		
Particles >21μm     ASTM D7647     >20     24         Particles >38μm     ASTM D7647     >4     1         Particles >37μm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Particles >6µm		ASTM D7647	>1300	<b>1681</b>		
Particles >38μm     ASTM D7647     >4     1         Particles >71μm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Particles >14µm		ASTM D7647	>80	<b>9</b> 9		
Particles >71μm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     ▲ 20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Particles >21µm		ASTM D7647	>20	<b>A</b> 24		
Particles >71μm     ASTM D7647     >3     0         Oil Cleanliness     ISO 4406 (c)     >/17/13     ▲ 20/18/14         FLUID DEGRADATION     method     limit/base     current     history1     history2	Particles >38µm		ASTM D7647	>4	1		
Oil Cleanliness   ISO 4406 (c) >/17/13 ▲ 20/18/14       FLUID DEGRADATION   method   limit/base   current   history1   history2			ASTM D7647	>3	0		
Acid Number (AN) mg KOH/g ASTM D8045 1.0 0.28	FLUID DEGRADA		method	limit/base	current	history1	history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.28		

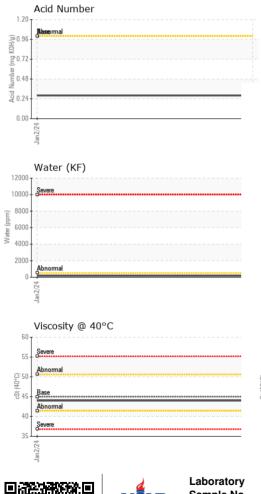


#### Built for a lifetime."









VISUAL		method	limit/base	current	history1	histor
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		
Emulsified Water	scalar	*Visual	>0.05	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPERTI	ES	method	limit/base	current	history1	histor
Visc @ 40°C	cSt	ASTM D445	45	44.0		
SAMPLE IMAGES		method	limit/base	current	history1	histor
Color					no image	no imag
Bottom					no image	no imag
GRAPHS			-			1
Ferrous Alloys				Particle Count	:	
10 8			491,520			
E 6			122,880	1		
4			30,720	+		
2 -			7,680			
0 124				1		
Jan2/24			Jan2/24 (per 1 ml)			
Non-ferrous Metals			·문 480		<b>`</b>	
10 T			of ba			
8 - copper			jag 120	1		
E 6			30	-	1	
4					1	
2				<b>Berme</b> mal		
Jan2/24	<del></del>		Jan 2/24			/
Jan			E C			
Viscosity @ 40°C				Acid Number	14µ 21µ	38µ
60 Severe						
55 Severe			(B)HO 9.96 BU 0.72 bu 0.72 bu 0.74 bu 0.74 bu 0.24 V 0.00	Basermal		
9 30			Ë 0.72			
Automa		******	- g 0.48	+		
40 - Severe			Pg 0.24	-		
35			0.00 V 24			
Jan2/24			Jan2/24	Jan 2/24		
	)1 Madia ecieved	d :11.	iry, NC 27513 Jan 2024 Jan 2024	3		ARGROVE IARGROVI LANHAM

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)

Certificate L2367