

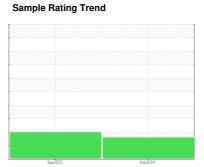
# **OIL ANALYSIS REPORT**

# Machine Id KAESER 6515044 (S/N 1204)

Component

Compressor

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 high 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         KCPA011753         KCPA000819            Sample Date         Client Info         05 Feb 2024         19 Sep 2023            Machine Age         hrs         Client Info         15801         14008            Oil Age         hrs         Client Info         N/A         N/A            Oil Changed         Client Info         N/A         N/A            Sample Status         ABNORMAL         ABNORMAL            Iron         ppm         ASTM05185m         >50         0         <1            KCPA0104B         ppm         ASTM05185m         >50         0         <1            Chromium         ppm         ASTM05185m         >10         <1         0            Nickel         ppm         ASTM05185m         >3         0         0            Itanium         ppm         ASTM05185m         >2         0         0            Silver         ppm         ASTM05185m         >10         <1         0            Copper         ppm         ASTM05185m         >10				Sep 2023	Feb2024		
Sample Date         Client Info         05 Feb 2024         19 Sep 2023	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age         hrs         Client Info         15801         14008            Oil Age         hrs         Client Info         0         0            Oil Changed         Client Info         N/A         N/A            Sample Status         N/A         N/A         ABNORMAL            WEAR METALS         method         limit/base         current         history1         hist           Iron         ppm         ASTM D5185m         >50         0         <1	Sample Number		Client Info		KCPA011753	KCPA000819	
Machine Age         hrs         Client Info         15801         14008            Oil Age         hrs         Client Info         0         0            Oil Changed         Client Info         N/A         N/A            Sample Status         MBNORMAL             WEAR METALS         method         limit/base         current         history1         hist           Iron         ppm         ASTM D5185m         >50         0         <1			Client Info		05 Feb 2024	19 Sep 2023	
Oil Changed Sample Status	•	hrs	Client Info		15801		
Sample Status         method         limit/base         current         history1         history2         history2         0         0	Oil Age	hrs	Client Info		0	0	
WEAR METALS         method         limit/base         current         history1         hist           Iron         ppm         ASTM D5185m         >50         0         <1			Client Info		N/A	N/A	
Irron	Sample Status				ABNORMAL	ABNORMAL	
Chromium         ppm         ASTM D5185m         >10         <1         0	WEAR METALS		method	limit/base	current	history1	history2
Nickel ppm ASTM D5185m >3 0 0 0  Titanium ppm ASTM D5185m >3 0 0 0  Silver ppm ASTM D5185m >2 0 0 0  Silver ppm ASTM D5185m >2 0 0 0  Aluminum ppm ASTM D5185m >10 0 0 0  Lead ppm ASTM D5185m >10 0 0 0  Copper ppm ASTM D5185m >50 2 10  Tin ppm ASTM D5185m >10 0 0  Vanadium ppm ASTM D5185m 0 0 0  Cadmium ppm ASTM D5185m 0 0 0  ADDITIVES method limit/base current history1 hist  Barium ppm ASTM D5185m 0 0 0  Manganese ppm ASTM D5185m 0 0 0  Salicum ppm ASTM D5185m 0 0 0  Manganese ppm ASTM D5185m 0 0 0  Manganesium ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 0 3 0  Phosphorus ppm ASTM D5185m 0 3 0  Calcium ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 0 3 0  CONTAMINANTS method limit/base current history1 hist  CONTAMINANTS method limit/base current history1 hist  Potassium ppm ASTM D5185m 229 8  CONTAMINANTS method limit/base current history1 hist  Particles >4µm ASTM D6185m 20 5 0.021  0.125  FLUID CLEANLINESS method limit/base current history1 hist  Particles >14µm ASTM D7647 >1300  4519 183  Particles >14µm ASTM D7647 >1300  4519 183  Particles >21µm ASTM D7647 >20  88 2  Particles >71µm ASTM D7647 >	Iron	ppm	ASTM D5185m	>50	0	<1	
Titanium	Chromium	ppm	ASTM D5185m	>10	<1	0	
Silver	Nickel	ppm	ASTM D5185m	>3	0	0	
Aluminum         ppm         ASTM D5185m         >10         <1         0	Titanium	ppm	ASTM D5185m	>3	0	0	
Lead         ppm         ASTM D5185m         >10         0         0	Silver	ppm	ASTM D5185m	>2	0	0	
Copper         ppm         ASTM D5185m         >50         2         10	Aluminum	ppm	ASTM D5185m	>10	<1	0	
Tin ppm ASTM D5185m > 10 0	Lead	ppm	ASTM D5185m	>10	0	0	
Vanadium         ppm         ASTM D5185m         0         0	Copper	ppm	ASTM D5185m	>50	2	10	
Cadmium         ppm         ASTM D5185m         0         0            ADDITIVES         method         limit/base         current         history1         hist           Boron         ppm         ASTM D5185m         0         0         0            Barium         ppm         ASTM D5185m         90         27         0            Molybdenum         ppm         ASTM D5185m         0         0         <1	Tin	ppm	ASTM D5185m	>10	0	<1	
### ADDITIVES   method   limit/base   current   history1   hist   ### Boron   ppm   ASTM D5185m   0   0   0   0   ### Barium   ppm   ASTM D5185m   90   27   0   0   0   ### Manganese   ppm   ASTM D5185m   0   0   <1   0   0   ### Manganese   ppm   ASTM D5185m   0   0   <1   0   0   ### Manganesium   ppm   ASTM D5185m   100   57   11   0   0   ### Calcium   ppm   ASTM D5185m   0   3   <1   0   0   ### Phosphorus   ppm   ASTM D5185m   0   3   <1   0   0   ### Zinc   ppm   ASTM D5185m   0   3   0   0   0   ### Zinc   ppm   ASTM D5185m   0   3   0   0   0   ### Sulfur   ppm   ASTM D5185m   23500   19148   24138   0   0   0   ### CONTAMINANTS   method   limit/base   current   history1   hist   ### Silicon   ppm   ASTM D5185m   29   8   0   0   ### Sodium   ppm   ASTM D5185m   29   8   0   0   ### Potassium   ppm   ASTM D5185m   20   5   3   0   0   ### Water   %   ASTM D6304   >0.05   0.021	Vanadium	ppm	ASTM D5185m		0	0	
Boron ppm ASTM D5185m 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Cadmium		ASTM D5185m		0	0	
Barium ppm ASTM D5185m 90 27 0  Molybdenum ppm ASTM D5185m 0 0 -1  Magnesium ppm ASTM D5185m 0 0 -1  Magnesium ppm ASTM D5185m 0 3 -1  Phosphorus ppm ASTM D5185m 0 3 -1  Zinc ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 23500 19148 24138  CONTAMINANTS method limit/base current history1 hist  Silicon ppm ASTM D5185m 29 8  Sodium ppm ASTM D5185m 29 8  Potassium ppm ASTM D5185m >25 <1 1 1  Sodium ppm ASTM D5185m 29 8  FLUID CLEANLINESS method limit/base current history1 hist  Particles >4μm ASTM D7647 >14136 2621  Particles >6μm ASTM D7647 >1300 4519 183  Particles >21μm ASTM D7647 >20 88 2  Particles >21μm ASTM D7647 >20 88 2  Particles >38μm ASTM D7647 >20 88 2  Particles >38μm ASTM D7647 >20 88 2  Particles >38μm ASTM D7647 >3 0 0  Particles >71μm ASTM D7647 >3 0 0  Particles >71μm ASTM D7647 >3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0 0  Particles >71μm ASTM D7647 >3 0 0 0	ADDITIVES		method	limit/base	current	history1	history2
Barium ppm ASTM D5185m 90 27 0  Manganese ppm ASTM D5185m 0 0 0 -1  Magnesium ppm ASTM D5185m 0 0 -1  Calcium ppm ASTM D5185m 0 3 -1  Phosphorus ppm ASTM D5185m 0 3  Zinc ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 0 3 0  Sulfur ppm ASTM D5185m 23500 19148 24138  CONTAMINANTS method limit/base current history1 hist  Silicon ppm ASTM D5185m 225 <1 1 1  Sodium ppm ASTM D5185m 299 8  Potassium ppm ASTM D5185m 220 5 3  Water % ASTM D5185m >20 5 3  FLUID CLEANLINESS method limit/base current history1 hist  Particles >4μm ASTM D7647 >14136 2621  Particles >6μm ASTM D7647 >1300 4519 183  Particles >21μm ASTM D7647 >20 88 2  Particles >21μm ASTM D7647 >20 88 2  Particles >38μm ASTM D7647 >4 3 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >4 3 0 0  Particles >71μm ASTM D7647 >3 0 0 0  Particles >71μm ASTM D7647 >4 3 0 0	Boron	maa	ASTM D5185m	0	0	0	
Molybdenum         ppm         ASTM D5185m         0         <1            Manganese         ppm         ASTM D5185m         0         <1            Magnesium         ppm         ASTM D5185m         100         57         11            Calcium         ppm         ASTM D5185m         0         3         <1            Phosphorus         ppm         ASTM D5185m         0         3         <1            Zinc         ppm         ASTM D5185m         0         3         0            Sulfur         ppm         ASTM D5185m         23500         19148         24138            CONTAMINANTS         method         limit/base         current         history1         hist           Silicon         ppm         ASTM D5185m         225         <1         1            Sodium         ppm         ASTM D5185m         229         8            Potassium         ppm         ASTM D5185m         20         5         3            Water         %         ASTM D6304         >0.05         0.021         0.125	Barium		ASTM D5185m	90	27	0	
Manganese         ppm         ASTM D5185m         0         <1            Magnesium         ppm         ASTM D5185m         100         57         11            Calcium         ppm         ASTM D5185m         0         3         <1				0	0	<1	
Magnesium         ppm         ASTM D5185m         100         57         11            Calcium         ppm         ASTM D5185m         0         3         <1					0		
Calcium         ppm         ASTM D5185m         0         3         <1            Phosphorus         ppm         ASTM D5185m         0         <1	•			100	57		
Phosphorus         ppm         ASTM D5185m         0         <1         3	-			0		<1	
Zinc         ppm         ASTM D5185m         0         3         0            Sulfur         ppm         ASTM D5185m         23500         19148         24138            CONTAMINANTS         method         limit/base         current         history1         hist           Silicon         ppm         ASTM D5185m         >25         <1         1            Sodium         ppm         ASTM D5185m         29         8            Potassium         ppm         ASTM D5185m         >20         5         3            Water         %         ASTM D6304         >0.05         0.021         △         0.125            ppm Water         ppm         ASTM D6304         >500         220         △         1250            FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4µm         ASTM D7647         >1300         △         4519         183            Particles >21µm         ASTM D7647         >80         △         400         7            Particles >21µm         ASTM D7647				0	<1	3	
Sulfur         ppm         ASTM D5185m         23500         19148         24138            CONTAMINANTS         method         limit/base         current         history1         hist           Silicon         ppm         ASTM D5185m         >25         <1				0	3		
CONTAMINANTS         method         limit/base         current         history1         hist           Silicon         ppm         ASTM D5185m         >25         <1	-			23500	19148		
Silicon ppm ASTM D5185m >25 <1 1 1  Sodium ppm ASTM D5185m 29 8  Potassium ppm ASTM D5185m >20 5 3  Water % ASTM D6304 >0.05 0.021 △ 0.125  ppm Water ppm ASTM D6304 >500 220 △ 1250  FLUID CLEANLINESS method limit/base current history1 hist  Particles >4µm ASTM D7647 14136 2621  Particles >6µm ASTM D7647 >1300 △ 4519 183  Particles >14µm ASTM D7647 >80 △ 400 7  Particles >21µm ASTM D7647 >20 △ 88 2  Particles >38µm ASTM D7647 >4 3 0  Particles >71µm ASTM D7647 >3 0 0 0  Particles >71µm ASTM D7647 >3 0 0 0  Particles >71µm ASTM D7647 >3 0 0 0  FLUID DEGRADATION method limit/base current history1 hist	CONTAMINANTS		method	limit/base	current	history1	history2
Sodium         ppm         ASTM D5185m         29         8            Potassium         ppm         ASTM D5185m         >20         5         3            Water         %         ASTM D6304         >0.05         0.021         △         0.125            ppm Water         ppm         ASTM D6304         >500         220         △         1250            FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4μm         ASTM D7647         14136         2621            Particles >6μm         ASTM D7647         >1300         △         4519         183            Particles >14μm         ASTM D7647         >80         △         400         7            Particles >21μm         ASTM D7647         >20         △         88         2            Particles >71μm         ASTM D7647         >3         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13							
Potassium         ppm         ASTM D5185m         >20         5         3            Water         %         ASTM D6304         >0.05         0.021         △         0.125            ppm Water         ppm         ASTM D6304         >500         220         △         1250            FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4μm         ASTM D7647         >1300         △         4519         183            Particles >14μm         ASTM D7647         >80         △         400         7            Particles >21μm         ASTM D7647         >20         △         88         2            Particles >38μm         ASTM D7647         >3         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         △         21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist				>25			
Water         %         ASTM D6304         >0.05         0.021         △         0.125            ppm Water         ppm ASTM D6304         >500         220         △         1250            FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4μm         ASTM D7647         >1300         △         4519         183            Particles >14μm         ASTM D7647         >80         △         400         7            Particles >21μm         ASTM D7647         >20         △         88         2            Particles >38μm         ASTM D7647         >4         3         0            Particles >71μm         ASTM D7647         >3         0         0            Oil Cleanliness         ISO 4406 (c)         >/17/13         △         21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist				00	-		
ppm Water         ppm         ASTM D6304         >500         220         ▲ 1250            FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4μm         ASTM D7647         14136         2621            Particles >6μm         ASTM D7647         >1300         ▲ 4519         183            Particles >14μm         ASTM D7647         >80         ▲ 400         7            Particles >21μm         ASTM D7647         >20         ▲ 88         2            Particles >38μm         ASTM D7647         >4         3         0            Particles >71μm         ASTM D7647         >3         0         0            Oil Cleanliness         ISO 4406 (c)         >/17/13         Δ 21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist							
FLUID CLEANLINESS         method         limit/base         current         history1         hist           Particles >4μm         ASTM D7647         14136         2621            Particles >6μm         ASTM D7647         >1300         4519         183            Particles >14μm         ASTM D7647         >80         400         7            Particles >21μm         ASTM D7647         >20         88         2            Particles >38μm         ASTM D7647         >4         3         0            Particles >71μm         ASTM D7647         >3         0         0            Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist							
Particles >4μm       ASTM D7647       14136       2621          Particles >6μm       ASTM D7647       >1300       4519       183          Particles >14μm       ASTM D7647       >80       400       7          Particles >21μm       ASTM D7647       >20       88       2          Particles >38μm       ASTM D7647       >4       3       0          Particles >71μm       ASTM D7647       >3       0       0          Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/16       19/15/10          FLUID DEGRADATION       method       limit/base       current       history1       hist							hiotom (O
Particles >6μm       ASTM D7647       >1300       4519       183          Particles >14μm       ASTM D7647       >80       400       7          Particles >21μm       ASTM D7647       >20       88       2          Particles >38μm       ASTM D7647       >4       3       0          Particles >71μm       ASTM D7647       >3       0       0          Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/16       19/15/10          FLUID DEGRADATION       method       limit/base       current       history1       hist		NESS		imivbase			history2
Particles >14μm       ASTM D7647       >80       400       7          Particles >21μm       ASTM D7647       >20       88       2          Particles >38μm       ASTM D7647       >4       3       0          Particles >71μm       ASTM D7647       >3       0       0          Oil Cleanliness       ISO 4406 (c)       >/17/13       21/19/16       19/15/10          FLUID DEGRADATION       method       limit/base       current       history1       hist	•			. 1200			
Particles >21μm         ASTM D7647         >20         488         2            Particles >38μm         ASTM D7647         >4         3         0            Particles >71μm         ASTM D7647         >3         0         0            Oil Cleanliness         ISO 4406 (c)         >/17/13         21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist	·						
Particles >38μm       ASTM D7647       >4       3       0          Particles >71μm       ASTM D7647       >3       0       0          Oil Cleanliness       ISO 4406 (c)       >/17/13       Δ 21/19/16       19/15/10          FLUID DEGRADATION       method       limit/base       current       history1       hist	•						
Particles >71μm         ASTM D7647         >3         0         0            Oil Cleanliness         ISO 4406 (c)         >/17/13         ▲ 21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist							
Oil Cleanliness         ISO 4406 (c)         >/17/13         ▲ 21/19/16         19/15/10            FLUID DEGRADATION         method         limit/base         current         history1         hist	•						
FLUID DEGRADATION method limit/base current history1 hist	•						
•			` '				
Acid Number (AN)         mg K0H/g         ASTM D8045         1.0         0.39         0.44							history2
	Acid Number (AN)	mg KOH/g	ASTM D8045	1.0	0.39	0.44	



## **OIL ANALYSIS REPORT**

