

# **PROBLEM SUMMARY**

KAESER 6836432

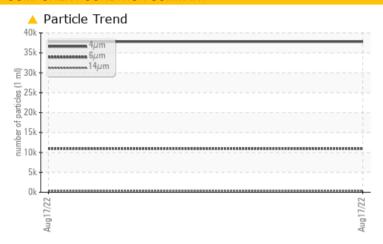
Component

Compressor

KAESER SIGMA (OEM) M-460 (--- GAL)

# Sample Rating Trend ISO

## **COMPONENT CONDITION SUMMARY**



### RECOMMENDATION

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. Resample at the next service interval to monitor.

PROBLEMATIC TEST	Γ RESULTS			
Sample Status			<b>ABNORMAL</b>	 
Particles >6µm	ASTM D7647	>1300	<b>10943</b>	 
Particles >14µm	ASTM D7647	>80	<b>▲</b> 373	 
Particles >21µm	ASTM D7647	>20	<b>△</b> 58	 
Oil Cleanliness	ISO 4406 (c)	>/17/13	<b>22/21/16</b>	 

**Customer Id: CARELL** Sample No.: KCP49394 Lab Number: 05635013 Test Package: IND 2



To manage this report scan the QR code

To discuss the diagnosis or test data:

Don Baldridge +1 don.b505@comcast.net

To change component or sample information: Customer Service +1 1-800-237-1369 customerservice@wearcheck.com

RECOMMENDED ACTIONS						
Action	Status	Date	Done By	Description		
Change Fluid			?	Oil and filter change at the time of sampling has been noted.		
Change Filter			?	Oil and filter change at the time of sampling has been noted.		

# HISTORICAL DIAGNOSIS



# **OIL ANALYSIS REPORT**

Sample Rating Trend



# **KAESER 6836432**

Component

Compressor

KAESER SIGMA (OEM) M-460 (--- GAL)

## **DIAGNOSIS**

#### Recommendation

Oil and filter change at the time of sampling has been noted. No corrective action is recommended at this time. 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.

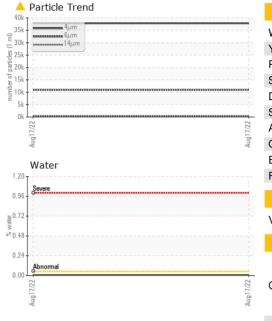
### **Fluid Condition**

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

Sample Date         IT Aug 2022					_		
Sample Number         KCP49394             Sample Date         17 Aug 2022             Machine Age         hrs         4364             Oil Age         hrs         3457             Oil Changed         Changed              Sample Status         method         limit/base         current         history 1         history 2           Iron         ppm         ASTM D5185m         >50         0             Chromium         ppm         ASTM D5185m         >10         0             Nickel         ppm         ASTM D5185m         >10         0             Silver         ppm         ASTM D5185m         >10         0             Aluminum         ppm         ASTM D5185m         >10         0             Aluminum         ppm         ASTM D5185m         >10         0             Lead         ppm         ASTM D5185m         >10         0					Aug2022		
Sample Date   Machine Age   hrs	SAMPLE INFORM	MATION	method	limit/base	current	history 1	history 2
Machine Age   hrs   Mas   M	Sample Number				KCP49394		
Oil Changed Sample Status         New Changed Sample Status         Changed Sample Status         Imition Changed Sample Status         Imition Status S	Sample Date				17 Aug 2022		
Changed   Cha	Machine Age	hrs			4364		
MEAR METALS	Oil Age	hrs			3457		
WEAR METALS         method         limit/base         current         history 1         history 2           Iron         ppm         ASTM D5185m         >50         0             Chromium         ppm         ASTM D5185m         >10         0             Nickel         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >2         0             Aluminum         ppm         ASTM D5185m         >2         0             Aluminum         ppm         ASTM D5185m         >10         0             Lead         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >10         <1	Oil Changed				Changed		
Iron	Sample Status				ABNORMAL		
Chromium         ppm         ASTM D5185m         >10         0             Nickel         ppm         ASTM D5185m         >3         0             Tittanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >2         0             Aluminium         ppm         ASTM D5185m         >10         0             Lead         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >10         <1             Vanadium         ppm         ASTM D5185m         0              ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         0         0             Malganesium         ppm         ASTM D5185m         0	WEAR METALS		method	limit/base	current	history 1	history 2
Nickel   ppm   ASTM D5185m   >3   0         Titanium   ppm   ASTM D5185m   >3   0         Silver   ppm   ASTM D5185m   >2   0         Aluminum   ppm   ASTM D5185m   >10   0         Lead   ppm   ASTM D5185m   >10   0         Copper   ppm   ASTM D5185m   >10   0         Copper   ppm   ASTM D5185m   >10   <1         Vanadium   ppm   ASTM D5185m   0         Cadmium   ppm   ASTM D5185m   0         Cadmium   ppm   ASTM D5185m   0         ADDITIVES   method   limit/base   current   history 1   history 2     Boron   ppm   ASTM D5185m   0   0         ADDISON   ppm   ASTM D5185m   0   0         Molybdenum   ppm   ASTM D5185m   0   0         Manganese   ppm   ASTM D5185m   0   0         Calcium   ppm   ASTM D5185m   0   0         Sulfur   ppm   ASTM D5185m   23500   15083         CONTAMINANTS   method   limit/base   current   history 1   history 2     Sodium   ppm   ASTM D6185m   >25   0         Potassium   ppm   ASTM D6185m   >20   0         FLUID CLEANLINESS   method   limit/base   current   history 1   history 2     Particles >4µm   ASTM D7647   >1300   10943         Particles >6µm   ASTM D7647   >4   0         Particles >1µm   ASTM D7647   >4   0         Particles >21µm   ASTM D	Iron	ppm	ASTM D5185m	>50	0		
Titanium         ppm         ASTM D5185m         >3         0             Silver         ppm         ASTM D5185m         >2         0             Aluminum         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >10         <1	Chromium	ppm	ASTM D5185m	>10	0		
Silver	Nickel	ppm	ASTM D5185m	>3	0		
Aluminum	Titanium	ppm	ASTM D5185m	>3	0		
Lead         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >50         35             Tin         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         90         0             Manganese         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         0             Salicum         ppm         ASTM D5185m         0         3             Sulfur         ppm         ASTM D5185m         0         0	Silver		ASTM D5185m	>2	0		
Lead         ppm         ASTM D5185m         >10         0             Copper         ppm         ASTM D5185m         >50         35             Tin         ppm         ASTM D5185m         0             Vanadium         ppm         ASTM D5185m         0             Cadmium         ppm         ASTM D5185m         0             Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         0        <	Aluminum	ppm	ASTM D5185m	>10	0		
Copper         ppm         ASTM D5185m         >50         35             Tin         ppm         ASTM D5185m         >10         <1	Lead		ASTM D5185m	>10	0		
Tin	Copper		ASTM D5185m	>50	35		
Vanadium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         0         0             Molybdenum         ppm         ASTM D5185m         0         0             Marganese         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         100         0             Magnesium         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         0         0             Phosphorus         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083	• •						
Cadmium         ppm         ASTM D5185m         0             ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         90         0             Molybdenum         ppm         ASTM D5185m         0         0             Manganese         ppm         ASTM D5185m         0         0             Magnesium         ppm         ASTM D5185m         100         0             Calcium         ppm         ASTM D5185m         0         3             Phosphorus         ppm         ASTM D5185m         0         3             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         0         0             Silicon         ppm         ASTM D5185m         >25         0							
ADDITIVES         method         limit/base         current         history 1         history 2           Boron         ppm         ASTM D5185m         0         0             Barium         ppm         ASTM D5185m         90         0             Molybdenum         ppm         ASTM D5185m         0         0             Manganese         ppm         ASTM D5185m         100         0             Magnesium         ppm         ASTM D5185m         100         0             Calcium         ppm         ASTM D5185m         0         3             Phosphorus         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         25         0             Sodium         ppm         ASTM D5185m         >25         0             Potassium         ppm         ASTM D5185m         >20					-		
Boron ppm ASTM D5185m 0 0 0		l= l=		11		la taran and a	later 0
Barium         ppm         ASTM D5185m         90         0             Molybdenum         ppm         ASTM D5185m         0         0             Manganese         ppm         ASTM D5185m         100         0             Magnesium         ppm         ASTM D5185m         100         0             Calcium         ppm         ASTM D5185m         0         3             Phosphorus         ppm         ASTM D5185m         0         3             Sulfur         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >	ADDITIVES		method	limit/base	current	history 1	history 2
Molybdenum         ppm         ASTM D5185m         0         0             Manganese         ppm         ASTM D5185m         100         0             Magnesium         ppm         ASTM D5185m         100         0             Calcium         ppm         ASTM D5185m         0         0             Phosphorus         ppm         ASTM D5185m         0         0             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.00<	Boron	ppm	ASTM D5185m	0	0		
Manganese         ppm         ASTM D5185m         0             Magnesium         ppm         ASTM D5185m         1 0 0         0             Calcium         ppm         ASTM D5185m         0         0             Phosphorus         ppm         ASTM D5185m         0         3             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         25         0             Sodium         ppm         ASTM D5185m         <1		ppm	ASTM D5185m	90	0		
Magnesium         ppm         ASTM D5185m         100         0             Calcium         ppm         ASTM D5185m         0         0             Phosphorus         ppm         ASTM D5185m         0         0             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         % ASTM D6304         >0.05         0.007             Water         % ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         h	Molybdenum	ppm	ASTM D5185m	0	0		
Calcium         ppm         ASTM D5185m         0         0             Phosphorus         ppm         ASTM D5185m         0         3             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.007             Particles > 4µm         ASTM D7647         >1300	Manganese	ppm	ASTM D5185m		0		
Phosphorus         ppm         ASTM D5185m         0         3             Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.007             Water         %         ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4µm         ASTM D7647         >1300         10943             Particles >21 µm         ASTM D7647         >80         <	Magnesium	ppm	ASTM D5185m	100	0		
Zinc         ppm         ASTM D5185m         0         0             Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.007             Water         %         ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4µm         ASTM D7647         >1300         10943             Particles >21 µm         ASTM D7647         >80         3	Calcium	ppm	ASTM D5185m	0	0		
Sulfur         ppm         ASTM D5185m         23500         15083             CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.0007             Particles >4µm         ASTM D6304         >500         74.7             Particles >4µm         ASTM D7647         >1300         10943             Particles >21µm         ASTM D7647         >80         373             Particles >21µm         ASTM D7647         >4         0	Phosphorus	ppm	ASTM D5185m	0	3		
CONTAMINANTS         method         limit/base         current         history 1         history 2           Silicon         ppm         ASTM D5185m         >25         0             Sodium         ppm         ASTM D5185m         >20         0             Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.007             ppm Water         ppm         ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4µm         ASTM D7647         >1300         10943             Particles >6µm         ASTM D7647         >80         373             Particles >21µm         ASTM D7647         >20         58             Particles >71µm         ASTM D7647         >3         0             Particles >71µm         ASTM D7647         >3         0	Zinc	ppm	ASTM D5185m	0	0		
Silicon ppm ASTM D5185m >25 0 Sodium ppm ASTM D5185m   <1   Potassium ppm ASTM D5185m >20 0   Water	Sulfur	ppm	ASTM D5185m	23500	15083		
Sodium         ppm         ASTM D5185m         <1	CONTAMINANTS		method	limit/base	current	history 1	history 2
Potassium         ppm         ASTM D5185m         >20         0             Water         %         ASTM D6304         >0.05         0.007             ppm Water         ppm         ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4μm         ASTM D7647         >1300         10943             Particles >6μm         ASTM D7647         >80         373             Particles >21μm         ASTM D7647         >20         58             Particles >38μm         ASTM D7647         >4         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         22/21/16             FLUID DEGRADATION         method         limit/base         current         history 1         history 2	Silicon	ppm	ASTM D5185m	>25	0		
Water         %         ASTM D6304         >0.05         0.007             ppm Water         ppm         ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4μm         ASTM D7647         37802             Particles >6μm         ASTM D7647         >1300         10943             Particles >14μm         ASTM D7647         >80         373             Particles >21μm         ASTM D7647         >20         58             Particles >38μm         ASTM D7647         >4         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         22/21/16             FLUID DEGRADATION         method         limit/base         current         history 1         history 2	Sodium	ppm	ASTM D5185m		<1		
ppm Water         ppm ASTM D6304         >500         74.7             FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4μm         ASTM D7647         37802             Particles >6μm         ASTM D7647         >1300         10943             Particles >14μm         ASTM D7647         >80         373             Particles >21μm         ASTM D7647         >20         58             Particles >38μm         ASTM D7647         >4         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         22/21/16             FLUID DEGRADATION         method         limit/base         current         history 1         history 2	Potassium	ppm	ASTM D5185m	>20	0		
FLUID CLEANLINESS         method         limit/base         current         history 1         history 2           Particles >4μm         ASTM D7647         37802             Particles >6μm         ASTM D7647         >1300         10943             Particles >14μm         ASTM D7647         >80         373             Particles >21μm         ASTM D7647         >20         58             Particles >38μm         ASTM D7647         >4         0             Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         22/21/16             FLUID DEGRADATION         method         limit/base         current         history 1         history 2	Water	%	ASTM D6304	>0.05	0.007		
Particles >4μm       ASTM D7647       37802           Particles >6μm       ASTM D7647       >1300       10943           Particles >14μm       ASTM D7647       >80       373           Particles >21μm       ASTM D7647       >20       58           Particles >38μm       ASTM D7647       >4       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >/17/13       22/21/16           FLUID DEGRADATION       method       limit/base       current       history 1       history 2	ppm Water	ppm	ASTM D6304	>500	74.7		
Particles >6μm       ASTM D7647       >1300       10943           Particles >14μm       ASTM D7647       >80       373           Particles >21μm       ASTM D7647       >20       58           Particles >38μm       ASTM D7647       >4       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >/17/13       22/21/16           FLUID DEGRADATION       method       limit/base       current       history 1       history 2	FLUID CLEANLIN	ESS	method	limit/base	current	history 1	history 2
Particles >14μm       ASTM D7647       >80       ▲ 373           Particles >21μm       ASTM D7647       >20       ▲ 58           Particles >38μm       ASTM D7647       >4       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >/17/13       ▲ 22/21/16           FLUID DEGRADATION       method       limit/base       current       history 1       history 2	Particles >4µm		ASTM D7647		37802		
Particles >21μm       ASTM D7647       >20       ▲ 58           Particles >38μm       ASTM D7647       >4       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >/17/13       ▲ 22/21/16           FLUID DEGRADATION       method       limit/base       current       history 1       history 2	Particles >6µm		ASTM D7647	>1300	<u> </u>		
Particles >38μm       ASTM D7647       >4       0           Particles >71μm       ASTM D7647       >3       0           Oil Cleanliness       ISO 4406 (c)       >/17/13       Δ 22/21/16           FLUID DEGRADATION       method       limit/base       current       history 1       history 2	Particles >14µm		ASTM D7647	>80	<b>▲</b> 373		
Particles >71μm         ASTM D7647         >3         0             Oil Cleanliness         ISO 4406 (c)         >/17/13         ▲ 22/21/16             FLUID DEGRADATION         method         limit/base         current         history 1         history 2	Particles >21µm		ASTM D7647	>20	<u></u> 58		
Oil Cleanliness ISO 4406 (c) >/17/13  22/21/16  FLUID DEGRADATION method limit/base current history 1 history 2	Particles >38µm		ASTM D7647	>4	0		
FLUID DEGRADATION method limit/base current history 1 history 2	Particles >71µm		ASTM D7647	>3	0		
	Oil Cleanliness		ISO 4406 (c)	>/17/13	<b>22/21/16</b>		
	FLUID DEGRADA	TION	method	limit/base	current	history 1	history 2
	Acid Number (AN)	mg KOH/g					



## **OIL ANALYSIS REPORT**



VISUAL		method	limit/base	current	history 1	history 2
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	LIGHT		
Sand/Dirt	scalar	*Visual	NONE	NONE		
Appearance	scalar	*Visual	NORML	NORML		
Odor	scalar	*Visual	NORML	NORML		
<b>Emulsified Water</b>	scalar	*Visual	>0.05	NEG		
Free Water	scalar	*Visual		NEG		
FLUID PROPERT	IES	method	limit/base	current	history 1	history 2
Visc @ 40°C	cSt	ASTM D445	45	44.8		
SAMPLE IMAGES	}	method	limit/base	current	history 1	history 2
Color					no image	no image

GRAPHS		
Ferrous Alloys	Particle Count	T
iron iron		
••••••••••••••••••••••••••••••••••••••	122,880	
	30,720	+
	7,680	-
Aug17/22.	Aug 17722 1782   1961   1782	
Non-ferrous Metals	in the state of th	
copper	120-	
seconomica till	30-	
	8 <b>Sebrese</b> mal	
7.22	2 2	
Aug17/22	Aug17/22	
Viscosity @ 40°C	$^{74\mu}$ $^{6\mu}$ $^{14\mu}$ Acid Number	21μ 38μ 71μ
Severe	1.20   Bboomal	
Abnormal	€0.72	
Base Abnormal		
Severe Severe	S 0.24-	
Aug 17/22 -	Aug 17,722 + Aug 1	



Laboratory Sample No. Lab Number Unique Number : 10124543

: KCP49394 : 05635013

**Bottom** 

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 Received

Diagnosed

: 06 Sep 2022 : 08 Sep 2022 Diagnostician : Don Baldridge

**CARMAX** 8901 EXECUTIVE CENTER DR ELLIOTT CITY, MD USA 21043

Contact: Service Manager

no image

no image

**Test Package**: IND 2 (Additional Tests: KF, PrtCount) Certificate L2367 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)

T:

F: