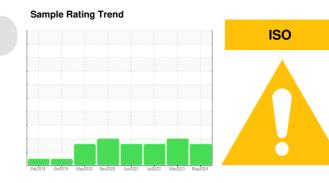


OIL ANALYSIS REPORT



Machine Id

KAESER SK 20 5828401 (S/N 1780)

Component Compressor Fluid

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

DIAGNOSIS

Recommendation

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.

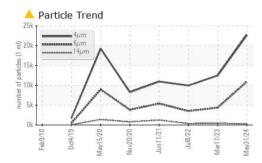
Fluid Condition

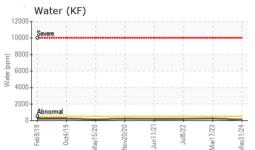
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

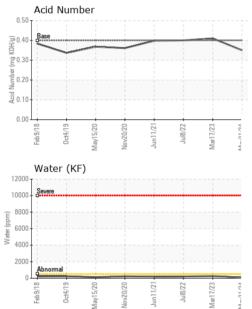
| Sample Date Client Info 31 May 2024 17 Mar 2023 08 Jul 20 Machine Age hrs Client Info 22185 18547 16333 Oil Age hrs Client Info 22185 18547 16333 Oil Changed Client Info Changed Not Changed Changed Sample Status ABNORMAL ABNORMAL <th>SAMPLE INFORM</th> <th>IATION</th> <th>method</th> <th>limit/base</th> <th>current</th> <th>history1</th> <th>history2</th> | SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 |
|---|------------------|---------------|--------------|------------|-------------------|-----------------|---------------|
| Machine Age hrs Client Info 22185 18547 16333 Oil Age hrs Client Info 4000 2214 6000 Oil Changed Client Info Changed Not Changd Changed Sample Status Imit/base current history1 history1 history1 WEAR METALS method limit/base current history1 clinot Iron ppm ASTM D5185m >50 <1 | Sample Number | | Client Info | | KC130332 | KC108308 | KC102492 |
| Oil Age hrs Client Info 4000 2214 6000 Oil Changed Client Info Changed Not Changed Changed Sample Status Image Limit/base current history1 history1 Veran ppm ASTM D5185m >50 <1 | Sample Date | | Client Info | | 31 May 2024 | 17 Mar 2023 | 08 Jul 2022 |
| Oil Changed Sample Status Client Info Changed ABNORMAL Not Changed ABNORMAL Changed ABNORMAL <thchanged A</thchanged | Machine Age | hrs | Client Info | | 22185 | 18547 | 16333 |
| Sample Status method limit/base current history1 ABNORMAL ABNORMAL WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 <1 | Oil Age | hrs | Client Info | | 4000 | 2214 | 6000 |
| WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >50 <1 | Oil Changed | | Client Info | | Changed | Not Changd | Changed |
| Iron ppm ASTM D5185m >50 <1 <1 <1 <1 Chromium ppm ASTM D5185m >10 <1 | Sample Status | | | | ABNORMAL | ABNORMAL | ABNORMAL |
| Chromium ppm ASTM D5185m >10 <1 0 0 Nickel ppm ASTM D5185m >3 0 0 0 Titanium ppm ASTM D5185m >3 0 0 0 Silver ppm ASTM D5185m >2 0 0 -1 Aluminum ppm ASTM D5185m >10 2 <1 | WEAR METALS | | method | limit/base | current | history1 | history2 |
| Nickel ppm ASTM D5185m >3 0 0 0 Titanium ppm ASTM D5185m >3 <1 | Iron | ppm | ASTM D5185m | >50 | <1 | <1 | <1 |
| Titanium ppm ASTM D5185m >2 0 0 Silver ppm ASTM D5185m >2 0 <1 | Chromium | ppm | ASTM D5185m | >10 | <1 | 0 | 0 |
| Titanium ppm ASTM D5185m >3 <1 0 0 Silver ppm ASTM D5185m >2 0 0 <1 | Nickel | ppm | ASTM D5185m | >3 | 0 | 0 | 0 |
| Silver ppm ASTM D5185m >2 0 0 <1 Aluminum ppm ASTM D5185m >10 2 <1 | Titanium | | ASTM D5185m | >3 | <1 | 0 | 0 |
| Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 16 6 14 Tin ppm ASTM D5185m >10 0 0 <11 | Silver | | ASTM D5185m | >2 | 0 | 0 | <1 |
| Lead ppm ASTM D5185m >10 0 0 0 Copper ppm ASTM D5185m >50 16 6 14 Tin ppm ASTM D5185m >10 0 0 <11 | Aluminum | ppm | ASTM D5185m | >10 | 2 | <1 | <1 |
| Copper ppm ASTM D5185m >50 16 6 14 Tin ppm ASTM D5185m >10 0 0 <1 | | | | | 0 | | |
| Tin ppm ASTM D5185m >10 0 0 <1 Antimony ppm ASTM D5185m 0 0 0 0 Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 histor Barium ppm ASTM D5185m 0 0 0 0 Maganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 0 1 0 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Silicon ppm ASTM D5185m 2 0 1 1 Sodium ppm ASTM D5185m 2 1 1 1 Sodium ppm ASTM D5185m >2 1 1 1 < | | | | >50 | | | |
| Antimony ppm ASTM D5185m Vanadium ppm ASTM D5185m 0 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 0 0 3 3 Barium ppm ASTM D5185m 0 0 0 0 Maganese ppm ASTM D5185m 0 0 0 0 Magnesium ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Silicon ppm ASTM D5185m 2 0 1 1 Sodium ppm ASTM D5185m >2 <1 | | | | | - | | |
| Vanadium ppm ASTM D5185m 0 0 0 Cadmium ppm ASTM D5185m 0 0 0 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 0 0 3 Barium ppm ASTM D5185m 0 0 3 Molybdenum ppm ASTM D5185m 0 0 0 0 Maganese ppm ASTM D5185m 90 28 711 34 Calcium ppm ASTM D5185m 90 28 711 34 Calcium ppm ASTM D5185m 90 28 711 34 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >20 2 41 1 Sodium ppm ASTM D5185m >20 2 42 0 Sodium </td <td></td> <td></td> <td></td> <td></td> <th>-</th> <td></td> <td></td> | | | | | - | | |
| Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 histor Boron ppm ASTM D5185m 0 0 3 Barium ppm ASTM D5185m 90 0 5 0 Molybdenum ppm ASTM D5185m 90 28 71 1 Magnese ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 0 Phosphorus ppm ASTM D5185m 90 28 71 0 CONTAMINANTS method limit/base current history1 history1 Sodium ppm ASTM D5185m >20 2 4 2 Sodium ppm ASTM D5185m >20 2 4 2 Vater % ASTM D6304 >0.05 0.0009 0.025 0.020 | | | | | 0 | 0 | 0 |
| ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 0 0 3 Barium ppm ASTM D5185m 90 0 5 0 Molybdenum ppm ASTM D5185m 90 0 0 0 0 Manganese ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 5 3 29 2 Zinc ppm ASTM D5185m 5 3 29 2 Silicon ppm ASTM D5185m >25 <1 | | | | | | | |
| Boron ppm ASTM D5185m 0 0 3 Barium ppm ASTM D5185m 90 0 5 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 17 8 9 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 2 4 2 Sodium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.0009 0.025 0. | | leler | | limit/base | - | | history2 |
| Barium ppm ASTM D5185m 90 0 5 0 Molybdenum ppm ASTM D5185m 0 0 0 0 Manganese ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 9 2 0 1 0 Phosphorus ppm ASTM D5185m 5 3 29 2 Zinc ppm ASTM D5185m 5 3 9 9 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >20 2 4 2 Sodium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 pm Water ppm ASTM D7647 >1300 <td< td=""><td></td><td>nnm</td><td></td><td></td><th></th><td></td><td></td></td<> | | nnm | | | | | |
| Molybdenum ppm ASTM D5185m 0 0 0 Manganese ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 9 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Zinc ppm ASTM D5185m 5 3 29 2 Zinc ppm ASTM D5185m 5 3 29 2 Silicon ppm ASTM D5185m >25 <1 | | | | 00 | - | | |
| Manganese ppm ASTM D5185m <1 <1 1 Magnesium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 5 3 29 Zinc ppm ASTM D5185m 5 3 29 CONTAMINANTS method limit/base current history1 histo Sodium ppm ASTM D5185m >25 <1 1 1 Sodium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm ASTM D6304 >500 92 252.0 205.9 99 FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 >1300 10948 4360 3510 | | | | 90 | | | |
| Magnesium ppm ASTM D5185m 90 28 71 34 Calcium ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 2 0 1 0 Zinc ppm ASTM D5185m 5 3 29 Zinc ppm ASTM D5185m 5 3 9 CONTAMINANTS method limit/base current history1 histo Sodium ppm ASTM D5185m >25 <1 | - | | | | - | | |
| Calcium ppm ASTM D5185m 2 0 1 0 Phosphorus ppm ASTM D5185m 5 3 29 Zinc ppm ASTM D5185m 5 3 29 Zinc ppm ASTM D5185m 17 8 9 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 <1 1 1 Sodium ppm ASTM D5185m >20 2 4 2 Water % ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm ASTM D647 22712 12492 9963 Particles >4µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >20 46 107 95 Particles >1µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 20< | • | | | 00 | | | |
| Phosphorus ppm ASTM D5185m 5 3 29 Zinc ppm ASTM D5185m 17 8 9 CONTAMINANTS method limit/base current history1 history1 Solium ppm ASTM D5185m >25 <1 1 1 Sodium ppm ASTM D5185m >20 2 4 2 Water % ASTM D5185m >20 2 4 2 Water % ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 histor Particles >4µm ASTM D7647 >1300 10948 4360 3510 Particles >21µm ASTM D7647 >80 247 429 352 Particles | 0 | | | | - | | |
| Zinc ppm ASTM D5185m 17 8 9 CONTAMINANTS method limit/base current history1 histor Silicon ppm ASTM D5185m >25 <1 | | | | 2 | - | | |
| CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 <1 | | | | | - | | |
| Silicon ppm ASTM D5185m >25 <1 1 1 Sodium ppm ASTM D5185m >20 2 4 2 Potassium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 histor Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >20 46 107 95 Particles >21µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 histor <td></td> <td></td> <td></td> <td></td> <th></th> <td></td> <td></td> | | | | | | | |
| Sodium ppm ASTM D5185m 7 21 11 Potassium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm Water pm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 histor Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >80 247 429 352 Particles >14µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 histor | | | | | | | history2 |
| Potassium ppm ASTM D5185m >20 2 4 2 Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 histor Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >20 46 107 95 Particles >21µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 histor | | | | >25 | | | |
| Water % ASTM D6304 >0.05 0.009 0.025 0.020 ppm Water ppm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 histor Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >80 247 429 352 Particles >21µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | | | | | | | |
| ppm Water ppm ASTM D6304 >500 92 252.0 205.9 FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >80 247 429 352 Particles >21µm ASTM D7647 >20 466 107 95 Particles >38µm ASTM D7647 >4 3 11 3 Particles >71µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | | | | | | | |
| FLUID CLEANLINESS method limit/base current history1 history1 Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >6µm ASTM D7647 >80 247 429 352 Particles >14µm ASTM D7647 >20 466 107 95 Particles >21µm ASTM D7647 >4 3 11 3 Particles >38µm ASTM D7647 >4 3 11 3 Particles >71µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | | | | | | | |
| Particles >4µm ASTM D7647 22712 12492 9963 Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >14µm ASTM D7647 >80 247 429 352 Particles >21µm ASTM D7647 >20 46 107 95 Particles >21µm ASTM D7647 >4 3 11 3 Particles >38µm ASTM D7647 >4 3 11 3 Particles >71µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | | | | | 92 | 252.0 | |
| Particles >6µm ASTM D7647 >1300 10948 4360 3510 Particles >14µm ASTM D7647 >80 247 429 352 Particles >21µm ASTM D7647 >20 46 107 95 Particles >38µm ASTM D7647 >4 3 11 3 Particles >38µm ASTM D7647 >4 3 11 3 Particles >71µm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 22/21/15 21/19/16 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | FLUID CLEANLIN | IESS | method | limit/base | | | history2 |
| Particles >14μm ASTM D7647 >80 ▲ 247 ▲ 429 ▲ 352 Particles >21μm ASTM D7647 >20 ▲ 46 ▲ 107 ▲ 95 Particles >38μm ASTM D7647 >4 3 ▲ 111 3 Particles >38μm ASTM D7647 >4 3 ▲ 111 3 Particles >71μm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 22/21/15 ▲ 21/19/16 ▲ 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | • | | | | | | |
| Particles >21μm ASTM D7647 >20 ▲ 46 ▲ 107 ● 95 Particles >38μm ASTM D7647 >4 3 ▲ 11 3 Particles >38μm ASTM D7647 >4 3 ▲ 111 3 Particles >71μm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 22/21/15 ▲ 21/19/16 ▲ 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | | | ASTM D7647 | >1300 | | 4360 | A 3510 |
| Particles >38μm ASTM D7647 >4 3 11 3 Particles >71μm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 22/21/15 ▲ 21/19/16 ▲ 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | Particles >14µm | | ASTM D7647 | >80 | <u> </u> | 4 29 | ▲ 352 |
| Particles >71μm ASTM D7647 >3 0 1 0 Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 22/21/15 ▲ 21/19/16 ▲ 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | Particles >21µm | | ASTM D7647 | >20 | <u> </u> | <u> </u> | A 95 |
| Oil Cleanliness ISO 4406 (c) >/17/13 ▲ 22/21/15 ▲ 21/19/16 ▲ 20/19/ FLUID DEGRADATION method limit/base current history1 history1 | Particles >38µm | | ASTM D7647 | >4 | 3 | 1 1 | 3 |
| FLUID DEGRADATION method limit/base current history1 histo | Particles >71µm | | ASTM D7647 | >3 | 0 | 1 | 0 |
| | Oil Cleanliness | | ISO 4406 (c) | >/17/13 | A 22/21/15 | 1 /19/16 | ▲ 20/19/16 |
| Acid Number (AN) mg KOH/g ASTM D8045 0.4 0.35 0.41 0.40 | FLUID DEGRADA | TION | method | limit/base | current | history1 | history2 |
| | Acid Number (AN) | mg KOH/g | ASTM D8045 | 0.4 | 0.35 | 0.41 | 0.40 |

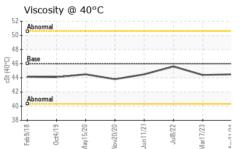


OIL ANALYSIS REPORT







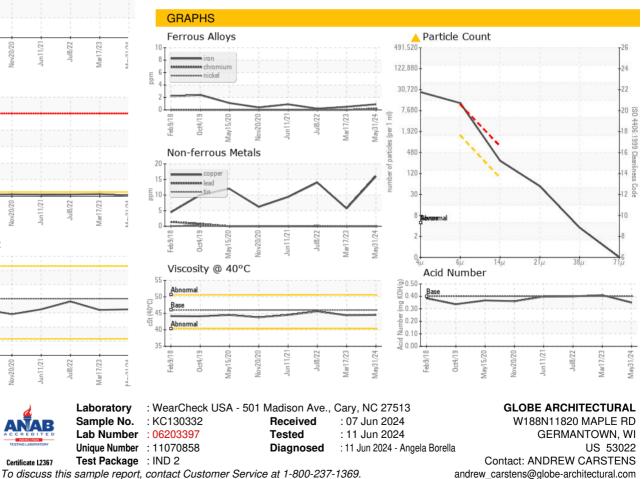




| VISUAL | | method | limit/base | current | history1 | history2 |
|------------------|--------|-----------|------------|---------|----------|----------|
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | LIGHT | 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 PROPERT | IES | method | limit/base | current | history1 | history2 |
| Visc @ 40°C | cSt | ASTM D445 | 46 | 44.5 | 44.4 | 45.6 |
| SAMPLE IMAGES | 6 | method | limit/base | current | history1 | history2 |
| Color | | | | a | | |



Bottom



* - 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)

Report Id: GLOGER [WUSCAR] 06203397 (Generated: 06/11/2024 18:51:39) Rev: 1

Certificate 12367

Contact/Location: ANDREW CARSTENS - GLOGER

Т:

F: