

OIL ANALYSIS REPORT

Area **Direct Strip Mill/Finishing** HSM MINERAL BLK (S/N DSC 198)

Hydraulic System

AW HYDRAULIC OIL ISO 46 (--- GAL)

DIAGNOSIS

Recommendation

Little or no information is provided as to the component and lubricant being tested. Recommendations are therefore generic in nature and may not apply to the current application. Please forward information as to equipment type, reservoir capacity, lubricant type and any pertinent information to allow for a more accurate assessment. Resample at the next service interval to monitor. NOTE: Please provide information regarding reservoir capacity, filter type and micron rating with next sample. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

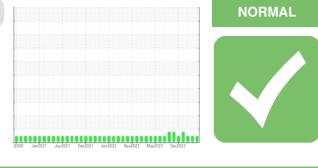
All component wear rates are normal.

Contamination

The system cleanliness is acceptable for your target ISO 4406 cleanliness code. The system and fluid cleanliness is acceptable.

Fluid Condition

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

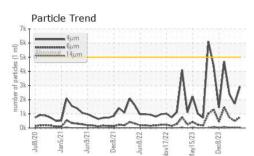


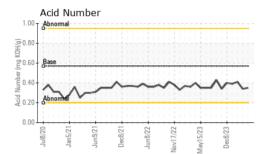
Sample Rating Trend

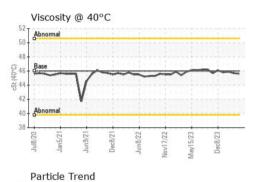
| SAMPLE INFORM | IATION | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | WC0837389 | WC0837383 | WC0837559 |
| Sample Date | | Client Info | | 16 Apr 2024 | 28 Feb 2024 | 18 Jan 2024 |
| Machine Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Age | hrs | Client Info | | 0 | 0 | 0 |
| Oil Changed | | Client Info | | N/A | N/A | N/A |
| Sample Status | | | | NORMAL | NORMAL | NORMAL |
| CONTAMINATION | ٧ | method | limit/base | current | history1 | history2 |
| Water | | WC Method | >0.05 | NEG | NEG | NEG |
| WEAR METALS | | method | limit/base | current | history1 | history2 |
| Iron | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Chromium | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Nickel | ppm | ASTM D5185(m) | >20 | 0 | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Silver | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | 0 | <1 | <1 |
| Lead | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Tin | ppm | ASTM D5185(m) | >20 | 0 | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | 0 | 0 | 0 |
| | | | | | | |
| ADDITIVES | | method | limit/base | current | history1 | history2 |
| ADDITIVES Boron | ppm | method ASTM D5185(m) | limit/base 5 | current 0 | history1 0 | history2 0 |
| | ppm ppm | | | | | |
| Boron | | ASTM D5185(m) | 5 | 0 | 0 0 0 | 0 0 0 |
| Boron Barium | ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 | 0 0 | 0 | 0 |
| Boron Barium Molybdenum | ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 | 0 0 0 | 0 0 0 | 0 0 0 |
| Boron Barium Molybdenum Manganese | ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 5 | 0 0 0 0 | 0 0 0 0 | 0 0 0 0 |
| Boron Barium Molybdenum Manganese Magnesium | ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 300 | 0 0 0 61 20 270 | 0 0 0 63 13 280 | 0 0 0 62 13 276 |
| Boron Barium Molybdenum Manganese Magnesium Calcium | ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 | 0 0 0 61 20 | 0 0 0 63 13 | 0 0 0 62 13 276 330 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus | ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 300 | 0 0 0 61 20 270 329 641 | 0 0 0 63 13 280 | 0 0 0 62 13 276 330 669 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc | ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 25 200 300 370 | 0 0 0 61 20 270 329 | 0 0 0 63 13 280 330 | 0 0 0 62 13 276 330 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 25 200 300 370 | 0 0 0 61 20 270 329 641 | 0 0 0 63 13 280 330 676 | 0 0 0 62 13 276 330 669 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 25 200 300 370 2500 | 0 0 0 61 20 270 329 641 <1 | 0 0 0 63 13 280 330 676 <1 | 0 0 0 62 13 276 330 669 <1 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS | ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 300 370 2500 limit/base | 0 0 0 61 20 270 329 641 <1 | 0 0 0 63 13 280 330 676 <1 history1 | 0 0 0 62 13 276 330 669 <1 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon | ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) method ASTM D5185(m) | 5 5 5 25 200 300 370 2500 limit/base | 0 0 0 61 20 270 329 641 <1 current 0 | 0 0 0 63 13 280 330 676 <1 history1 | 0 0 0 62 13 276 330 669 <1 history2 0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 300 370 2500 limit/base >15 | 0 0 0 61 20 270 329 641 <1 current 0 0 | 0 0 0 63 13 280 330 676 <1 history1 0 0 | 0 0 0 62 13 276 330 669 <1 history2 0 0 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 5 200 300 370 2500 limit/base >15 >20 | 0 0 0 61 20 270 329 641 <1 <i>current</i> 0 0 0 | 0 0 0 63 13 280 330 676 <1 history1 0 0 0 | 0 0 0 62 13 276 330 669 <1 history2 0 0 0 1 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 5 25 200 300 370 2500 imit/base >15 >20 imit/base | 0 0 0 61 20 270 329 641 <1 <1 current 0 0 0 0 0 0 | 0 0 0 63 13 280 330 676 <1 history1 0 0 <1 history1 | 0 0 0 62 13 276 330 669 <1 history2 0 0 <1 history2 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 5 200 25 200 300 370 2500 imit/base >20 imit/base | 0 0 0 61 20 270 329 641 <1 <1 <i>current</i> 0 0 0 0 <i>current</i> 2925 | 0 0 0 63 13 280 330 676 <1 history1 0 0 <1 history1 1708 | 0 0 0 62 13 276 330 669 <1 history2 0 0 <1 history2 2397 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4μm Particles >6μm | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D5185(m) | 5 5 5 200 300 370 2500 2500 imit/base >20 imit/base >5000 >1300 | 0 0 0 61 20 270 329 641 <1 <i>current</i> 0 0 0 0 <i>current</i> 2925 765 | 0 0 0 63 13 280 330 676 <1 <u>history1</u> 0 0 <1 <u>history1</u> 1708 493 | 0 0 0 62 13 276 330 669 <1 history2 0 0 <1 history2 2397 744 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 | 5 5 5 200 25 0 0 300 370 2500 1 imit/base >20 imit/base >5000 >1300 >1300 >1000 | 0 0 0 61 20 270 329 641 <1 <i>current</i> 0 0 0 0 2 2925 765 30 | 0 0 0 63 13 280 330 676 <1 history1 0 0 <1 history1 1708 493 33 | 0 0 0 62 13 276 330 669 <1 history2 0 0 0 <1 history2 2397 744 46 |
| Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm | ppm ppm ppm ppm ppm ppm ppm ppm ppm | ASTM D5185(m) ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 | 5 5 5 25 200 300 370 2500 2500 limit/base >15 20 limit/base >20 limit/base >15 0 >160 >1300 >160 >10 | 0 0 0 61 20 270 329 641 <1 current 0 0 0 0 0 0 2925 765 30 4 | 0 0 0 63 13 280 330 676 <1 history1 0 0 <1 1 1708 493 33 4 | 0 0 0 62 13 276 330 669 <1 history2 0 0 0 <1 history2 2397 744 46 7 |

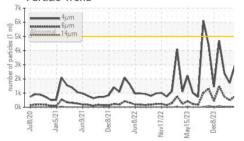


OIL ANALYSIS REPORT





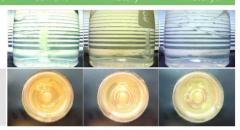




| FLUID DEGRADA | TION | method | limit/base | current | history1 | history2 |
|------------------|----------|---------------|------------|---------|----------|----------|
| Acid Number (AN) | mg KOH/g | ASTM D974* | 0.57 | 0.35 | 0.34 | 0.41 |
| VISUAL | | method | limit/base | current | history1 | 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 | NONE | 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 D7279(m) | 46 | 45.6 | 45.7 | 45.9 |
| SAMPLE IMAGES | | method | limit/base | current | history1 | history2 |
| | | | | 12=== | 6 | E |

Color

Bottom



Ferrous Alloys Particle Count 491,520 122,880 n ch 30,72 ISO 4406:1999 Clea 20 n/8//0 un9/21 1777 lov17/22 /lav15/23 Jec8/23 Jec8/7 per 1,92 18 cles 16 Non-ferrous Metals 480 120 14 30 12 8 18/20 an 5/21 02/2J Dec8/71 Mav15/23 lec8/73 2 14 Viscosity @ 40°C Acid Number KOH/g) 55-1.00 Abnor Abnorma () 0 0 € 45 er (ma Base Ba 帮 40. Abno AL Acid N 35 0.00 Nov17/22 Nov17/22 un9/21 Dec8/23 an5/21 un9/21 Dec8/21 118/20 an5/71)ec8/71 CC/800 May15/23 10/8/20 May15/23 Dec8/23

Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9 ALGOMA STEEL INC. - STORES DEPT. CALA : WC0837389 Sample No. Received : 22 Apr 2024 301 WALLACE TERRACE Lab Number : 02630584 Tested : 23 Apr 2024 SAULT STE MARIE, ON ISO 17025:2017 Accredited Laboratory Unique Number : 5763716 Diagnosed : 23 Apr 2024 - Kevin Marson CA P6C 1K8 Test Package : IND 2 Contact: Algoma Reliability To discuss this sample report, contact Customer Service at 1-800-268-2131. algomareliability@algoma.com Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab. T: (705)206-1059 Validity of results and interpretation are based on the sample and information as supplied. F: (705)945-3585

Report Id: ALGSSM [WCAMIS] 02630584 (Generated: 04/23/2024 13:44:13) Rev: 1

Contact/Location: Maintenance Technology - Algoma Reliability - ALGSSM