



Certificate of Analysis
Lab Number V7052826

Nancy McAtee
National Transportation Safety Board
490 L'Enfant Plaza, SW
Washington DC 20594

09/19/2019

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Client Code [REDACTED] Sample Date : 08/07/2019 P.O. Number : [REDACTED]
Herguth ID : [REDACTED]
Description : Sample ID: HR175, MRA41011400-101, Red Hydraulic Fluid

Test Performed	Proc-Rev	Result
Metals by ICP, Organic	1158-4.1	
Iron (Fe)		1 ppm
Aluminum (Al)		12 ppm
Chromium (Cr)		1 ppm
Copper (Cu)		1 ppm
Lead (Pb)		1 ppm
Tin (Sn)		<2 ppm
Nickel (Ni)		<1 ppm
Silver (Ag)		<0.1 ppm
Silicon (Si)		2 ppm
Sodium (Na)		<2 ppm
Boron (B)		<1 ppm
Zinc (Zn)		10 ppm
Phosphorus (P)		399 ppm
Calcium (Ca)		<1 ppm
Magnesium (Mg)		4 ppm
Barium (Ba)		<1 ppm
Molybdenum (Mo)		<1 ppm
Vanadium (V)		<1 ppm
Titanium (Ti)		<1 ppm
Manganese (Mn)		<1 ppm
Potassium (K)		<4 ppm
Antimony (Sb)		<1 ppm
Particle Count by HIAC HL-1185	1185-2.0	
4 to 6 microns		311830 /100 mL
6 to 10 microns		37040 /100 mL
10 to 14 microns		7490 /100 mL
14 to 25 microns		3930 /100 mL
25 to 50 microns		1010 /100 mL
50 to 100 microns		80 /100 mL
>100 microns		10 /100 mL
ISO 4406 Solid Contamination Code		19/16/13



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Test Performed	Proc-Rev	Result
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Data is reported per client specified testing request.

Respectfully Submitted,
SGS North America

[Redacted Signature]

cc: Nancy McAtee

Bobby R Licu, Evaluations Manager

The results shown in this test report specifically refer to the sample(s) tested as received unless otherwise stated. All tests have been performed using the latest revision of the methods indicated, unless specifically marked otherwise on the report. Precision parameters apply in the determination of the above results. Users of the data shown on this report should refer to the latest published revisions of ASTM D-3244, IP 367, ISO 4259 and Appendix E of IP Standard Methods for Analysis and Testing when utilizing the test data to determine conformance with any specification or process requirement. This Test Report is issued under the Company's General Conditions of Service (copy available upon request or on the company website at

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Client Code [REDACTED] Sample Date : 08/07/2019 P.O. Number : [REDACTED]
Herguth ID : [REDACTED]
Description : Sample ID: HR1490, MRA41011400-103, Red Hydraulic Fluid

Test Performed	Proc-Rev	Result
Metals by ICP, Organic	1158-4.1	
Iron (Fe)		1 ppm
Aluminum (Al)		11 ppm
Chromium (Cr)		1 ppm
Copper (Cu)		2 ppm
Lead (Pb)		1 ppm
Tin (Sn)		<2 ppm
Nickel (Ni)		<1 ppm
Silver (Ag)		<0.1 ppm
Silicon (Si)		1 ppm
Sodium (Na)		2 ppm
Boron (B)		<1 ppm
Zinc (Zn)		12 ppm
Phosphorus (P)		401 ppm
Calcium (Ca)		<1 ppm
Magnesium (Mg)		3 ppm
Barium (Ba)		<1 ppm
Molybdenum (Mo)		<1 ppm
Vanadium (V)		<1 ppm
Titanium (Ti)		<1 ppm
Manganese (Mn)		<1 ppm
Potassium (K)		<4 ppm
Antimony (Sb)		<1 ppm
Particle Count by HIAC HL-1185	1185-2.0	
4 to 6 microns		H2O /100 mL
6 to 10 microns		H2O /100 mL
10 to 14 microns		H2O /100 mL
14 to 25 microns		H2O /100 mL
25 to 50 microns		H2O /100 mL
50 to 100 microns		H2O /100 mL
>100 microns		H2O /100 mL
ISO 4406 Solid Contamination Code		H2O



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Test Performed

Proc-Rev

Result

Data is reported per client specified testing request.

NOTE: H2O - Testing could not be completed due to water contamination. Sample appearance is cloudy.

Respectfully Submitted,
SGS North America

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Client Code [REDACTED] Sample Date : 08/07/2019 P.O. Number : [REDACTED]
Herguth ID : [REDACTED]
Description : Sample ID: HR302, MRA41011400-103, Red Hydraulic Fluid

Test Performed	Proc-Rev	Result
Metals by ICP, Organic	1158-4.1	
Iron (Fe)		1 ppm
Aluminum (Al)		11 ppm
Chromium (Cr)		1 ppm
Copper (Cu)		2 ppm
Lead (Pb)		1 ppm
Tin (Sn)		<2 ppm
Nickel (Ni)		<1 ppm
Silver (Ag)		<0.1 ppm
Silicon (Si)		1 ppm
Sodium (Na)		<2 ppm
Boron (B)		<1 ppm
Zinc (Zn)		12 ppm
Phosphorus (P)		418 ppm
Calcium (Ca)		<1 ppm
Magnesium (Mg)		2 ppm
Barium (Ba)		<1 ppm
Molybdenum (Mo)		<1 ppm
Vanadium (V)		<1 ppm
Titanium (Ti)		<1 ppm
Manganese (Mn)		<1 ppm
Potassium (K)		<4 ppm
Antimony (Sb)		1 ppm
Particle Count by HIAC HL-1185	1185-2.0	
4 to 6 microns		H2O /100 mL
6 to 10 microns		H2O /100 mL
10 to 14 microns		H2O /100 mL
14 to 25 microns		H2O /100 mL
25 to 50 microns		H2O /100 mL
50 to 100 microns		H2O /100 mL
>100 microns		H2O /100 mL
ISO 4406 Solid Contamination Code		H2O



Certificate of Analysis
Lab Number V7052828

Test Performed

Proc-Rev

Result

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NOTE: H2O - Testing could not be completed due to water contamination. Sample appearance is cloudy.

Respectfully Submitted,
SGS North America

cc: Nancy McAtee

[REDACTED]
Bobby R Licu, Evaluations Manager



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09/19/2019

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Client Code [REDACTED] Sample Date : 08/07/2019 P.O. Number : [REDACTED]
Herguth ID : [REDACTED]
Description : Sample ID: HR568, 41011400-105 TRA, Red Hydraulic Fluid

Test Performed	Proc-Rev	Result
Metals by ICP, Organic	1158-4.1	
Iron (Fe)		1 ppm
Aluminum (Al)		11 ppm
Chromium (Cr)		1 ppm
Copper (Cu)		2 ppm
Lead (Pb)		<1 ppm
Tin (Sn)		<2 ppm
Nickel (Ni)		<1 ppm
Silver (Ag)		<0.1 ppm
Silicon (Si)		1 ppm
Sodium (Na)		2 ppm
Boron (B)		<1 ppm
Zinc (Zn)		11 ppm
Phosphorus (P)		396 ppm
Calcium (Ca)		1 ppm
Magnesium (Mg)		3 ppm
Barium (Ba)		<1 ppm
Molybdenum (Mo)		<1 ppm
Vanadium (V)		<1 ppm
Titanium (Ti)		<1 ppm
Manganese (Mn)		<1 ppm
Potassium (K)		<4 ppm
Antimony (Sb)		<1 ppm
Particle Count by HIAC HL-1185	1185-2.0	
4 to 6 microns		424460 /100 mL
6 to 10 microns		78880 /100 mL
10 to 14 microns		18170 /100 mL
14 to 25 microns		9780 /100 mL
25 to 50 microns		1640 /100 mL
50 to 100 microns		50 /100 mL
>100 microns		0 /100 mL
ISO 4406 Solid Contamination Code		20/17/14



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Test Performed	Proc-Rev	Result
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SGS North America

[Redacted Signature]

cc: Nancy McAtee

Bobby R Licu, Evaluations Manager

