

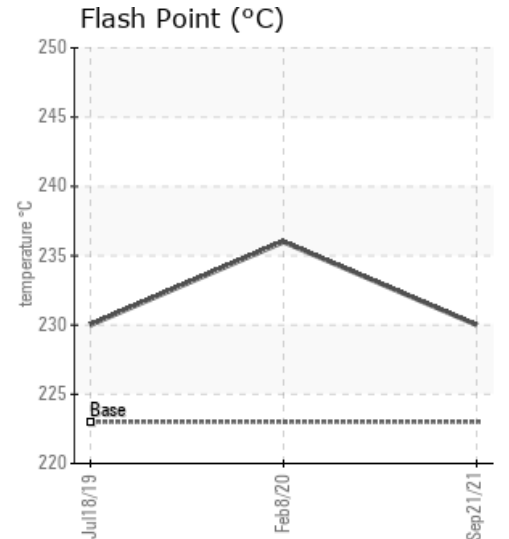
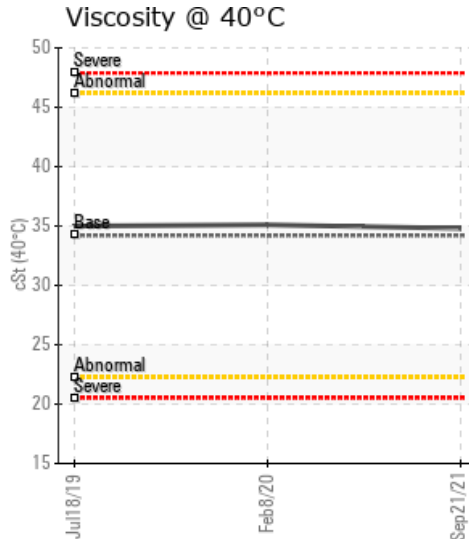
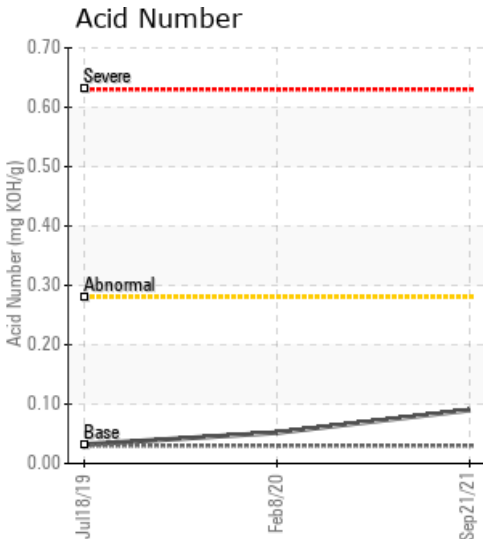
[C-60-A/94-B-16] HEAT TRANSFER OIL

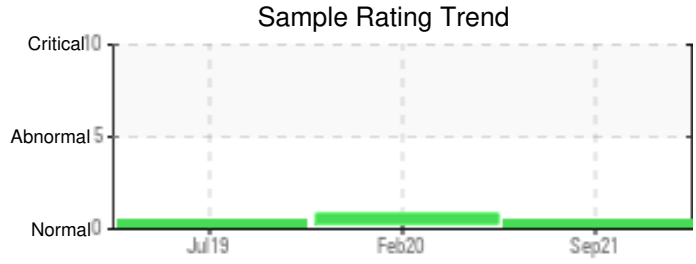
Customer: PTRHTF20216	System Information	Sample Information
TOURMALINE OIL C-60-A/94-B-16 103, 6911-100 AVE FORT ST. JOHN, BC V1J 1T8 Canada Attn: Brian Plontke Tel: (780)524-9780 E-Mail: brian.plontke@tourmalineoil.com	System Volume: 95000 ltr Bulk Operating Temp: 392F / 200C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: PETRO TECH	Lab No: 02448602 Analyst: Clinton Buhler Sample Date: 09/21/21 Received Date: 10/06/21 Completed: 10/15/21 Clinton Buhler Clinton.Buhler@hollyfrontier.com

Recommendation: Sample results indicate the fluid is in suitable condition for continued service. Please re-sample in 12 months

Comments:

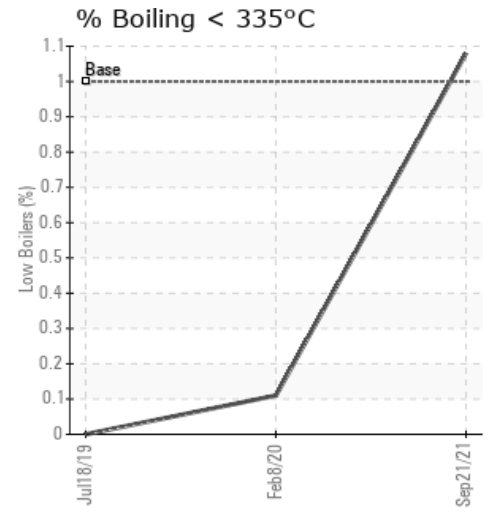
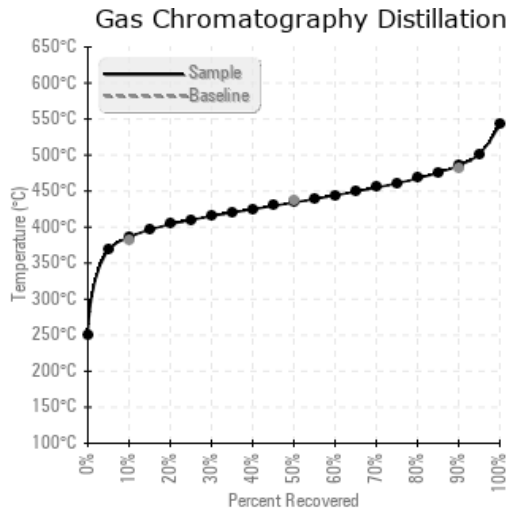
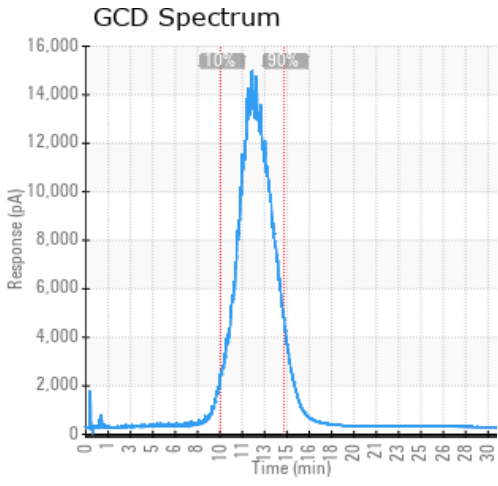
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/21/21	10/06/21	0.0m	pump discharge	446 / 230	63.8	34.8	0.09	0.041	727 / 386	814 / 434	906 / 485	1.08
02/08/20	03/02/20	10.0m	PUMP DISCHARGE	457 / 236	162.4	35.1	0.052	0.119	729 / 387	829 / 443	925 / 496	0.11
07/18/19	07/25/19	2.5m	PUMP DISCHARGE	446 / 230	173.0	35.0	0.032	0.258	717 / 381	801 / 427	894 / 479	0.00
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
09/21/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
02/08/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
07/18/19	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]



Historical Comments

02/08/20	Sample results indicate that the fluid is suitable for continued service. (GCD) 90% Distillation Point is marginally high but this does not reduce the fluid's performance. Please resample in 12 months.
07/18/19	First run of sample results indicate that the heat transfer fluid is suitable for continued service. Please re-sample in 6 months

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