

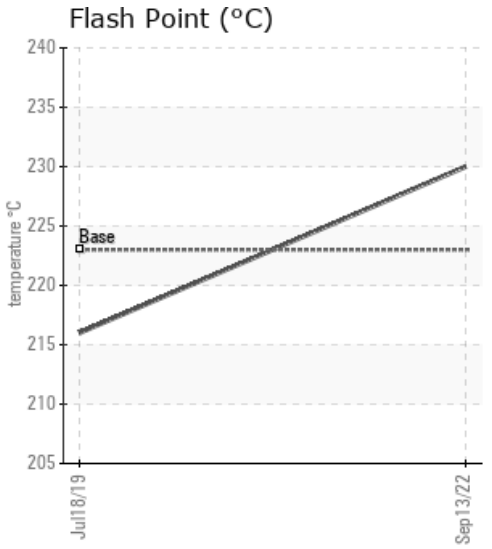
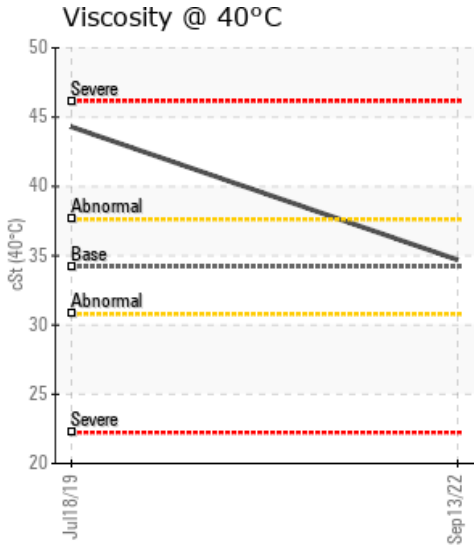
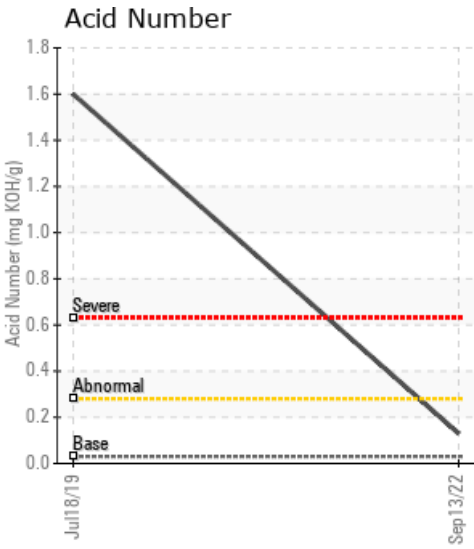
# HEATTRANSFER

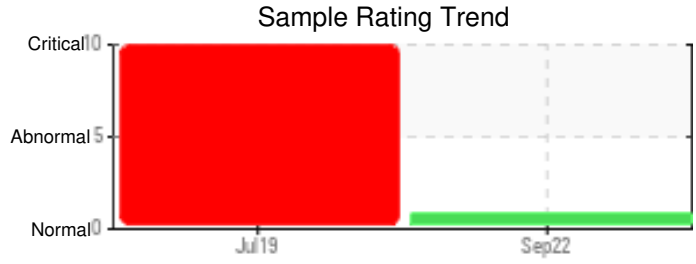
Customer: PTRHTF20215	System Information	Sample Information
McAsphalt Industries LTD 600 Arcola Ave Regina, SK S4N 0S5 Canada Attn: Joe Nurkowsky Tel: (306)781-6960 E-Mail: jnurkowski@mcasphalt.com	System Volume: 15000 ltr Bulk Operating Temp: 338F / 170C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: HEATEC	Lab No: 02510959 Analyst: Behshad Sabah Sample Date: 09/13/22 Received Date: 09/15/22 Completed: 09/21/22 Behshad Sabah behshad.sabah@HFSinclair.com

Recommendation:

Comments: (GCD) 90% Distillation Point is marginally high. in total the oil is in good shape. please take another sample next year to monitor.

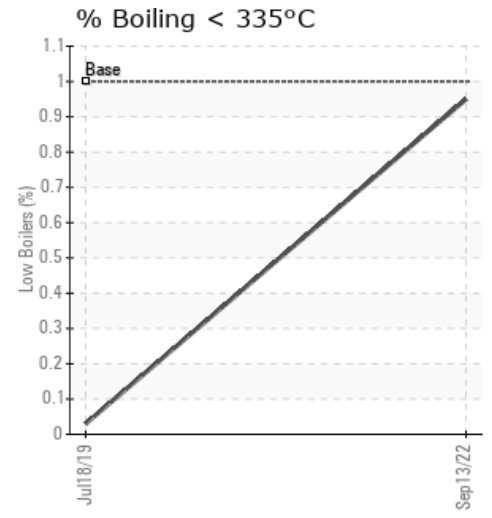
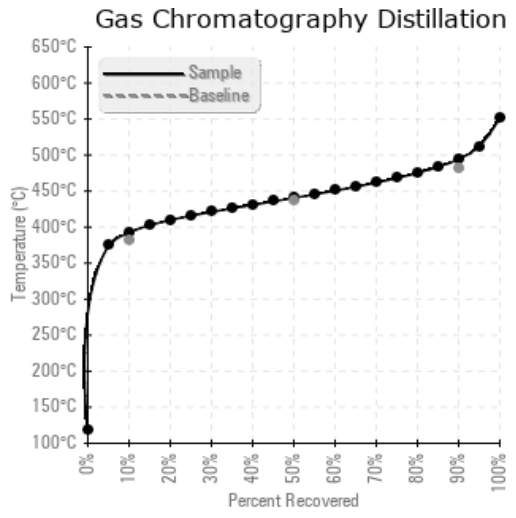
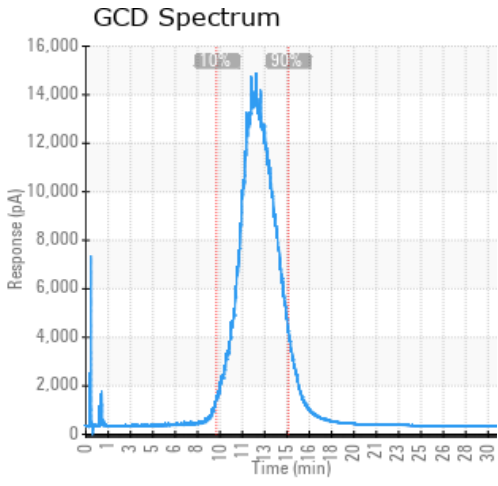
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/13/22	09/15/22	3.0y	system supply header	446 / 230	21.8	34.7	0.13	0.056	738 / 392	825 / 441	922 / 494	0.95
07/18/19	07/23/19	8.0y	SYSTEM LINE	421 / 216	61.0	44.3	1.60	1.82	697 / 369	784 / 418	875 / 468	0.03
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
09/13/22	8	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0
07/18/19	202	0	0	0	0	0	0	0	0	0	0	11	41	0	0	0	4	0	0	0	1	0	2	2
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

07/18/19	The current fluid Therm Oil 32 has extremely high Acid Number and Viscosity comparing with the fresh fluid indicating the oil has been oxidized and creating the tremendous solids and deposits in the system. The heat transfer coefficient is reduced because of the oil oxidation and deposits. Please arrange the fluid change as soon as possible. A system inspection is also recommended to determine if a system cleaning or flushing is needed. Iron ppm levels are abnormal. Potassium ppm levels are severely high. Solid levels are severely high. Visc @ 40°C is high.

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