

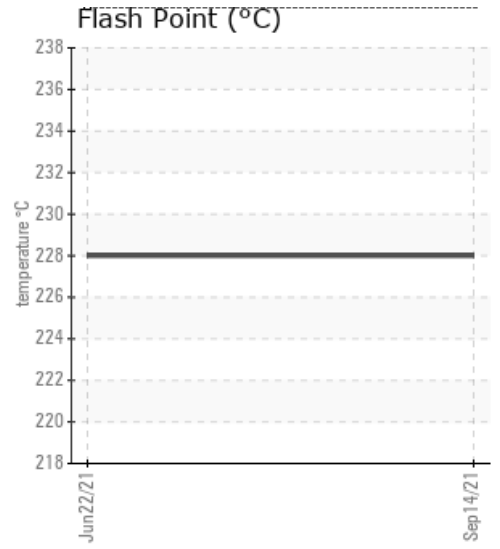
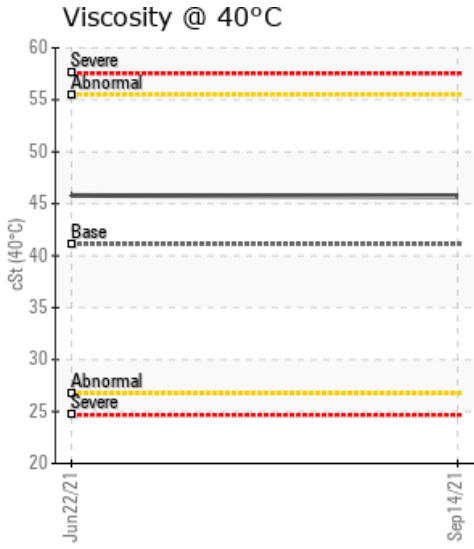
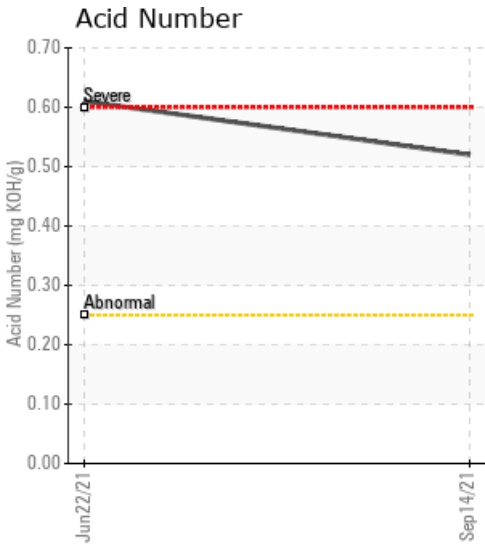
HEAT TRANSFER

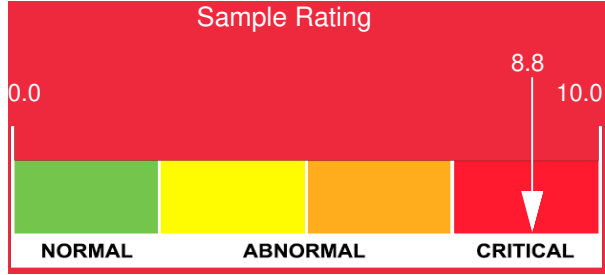
Customer: PTRHTF10248	System Information	Sample Information
INLAND ASPHALT CO. 5111 E. BROADWAY AVE P.O. BOX 3366 SPOKANE, WA 99212 USA Attn: Jon Mummey Tel: (509)536-3408 E-Mail: jon.mummey@inlandnw.com	System Volume: 500 gal Bulk Operating Temp: 380F / 193C Heating Source: Blanket: Fluid: CHEVRON HEAT TRANSFER OIL 46 Make: GENCO HYWAY	Lab No: 02446365 Analyst: Ron LeBlanc Sample Date: 09/14/21 Received Date: 09/27/21 Completed: 10/13/21 Ron LeBlanc Ronald.LeBlancSr@hollyfrontier.com

Recommendation: This is the second sample of 2 taken to confirm results. The oil is out of specification with additives not typically found in this brand of oil. The AN is abnormally high indicating Thermal degradation of the oil over time. Sludge and corrosives can be present based on the results of the oil sample. Cleaning, Flushing and fill with new oil is recommended.

Comments: Sodium ppm levels are severely high. Calcium ppm levels are severely high. Acid Number (AN) is abnormally high. Barium ppm levels are abnormally high.

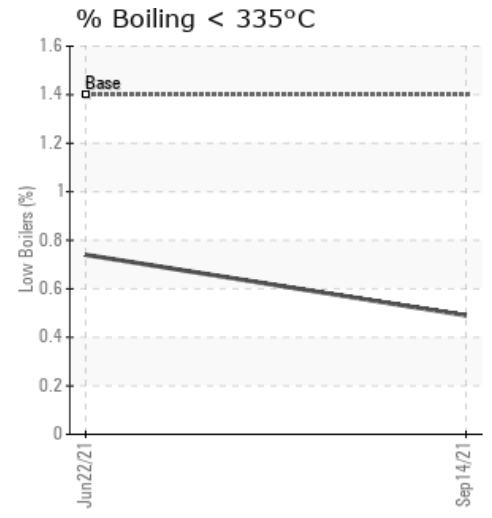
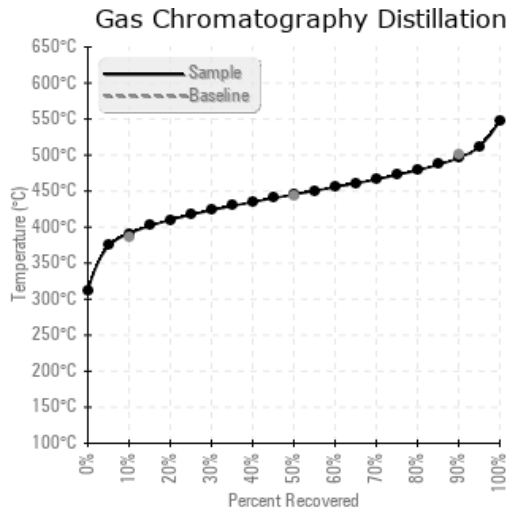
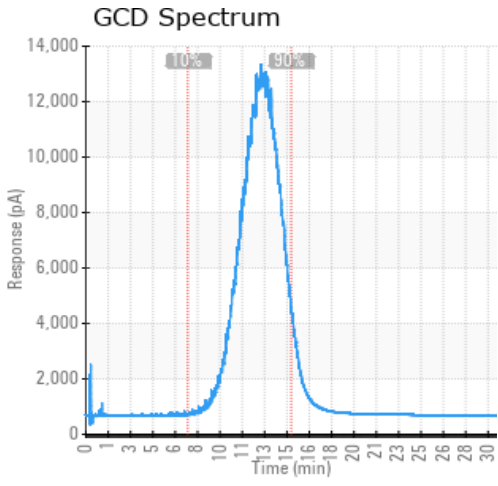
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/14/21	09/27/21	20.0y	HOT OIL VALVE	442 / 228	61.4	45.7	0.52	0.057	736 / 391	833 / 445	925 / 496	0.49
06/22/21	09/07/21	20.0y	HOT OIL VALVE	442 / 228	119.7	45.8	0.61	0.103	735 / 390	834 / 445	926 / 497	0.74
Baseline Data				464 / 240		41.1			727 / 386	828 / 442	932 / 500	1.4





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
09/14/21	23	0	0	0	2	2	0	0	0	0	2	113	2	0	0	0	0	0	1	3	308	25	25	18
06/22/21	24	0	0	0	1	2	0	0	0	0	2	116	1	0	0	0	0	0	1	3	322	26	25	18
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

06/22/21	Sodium ppm levels are severely high. Acid Number (AN) is severely high. Calcium ppm levels are severely high. Barium ppm levels are abnormally high. Acid Number (AN) elevated typically is due to oxidation stress. 500 gallon system oil should be changed when AN reaches 0.8. Water is present in system. Water can cause an increase in iron due to system corrosion. Water can also contribute to fluid oxidation and formation of acids. Pentane insolubles can indicate foreign solids due to oxidation. Viscosity is normal. Calcium is shown in the system at a severely high level. This can indicate an oil different than the reported oil was added. It is suggested to take another sample and make sure to purge plenty of oil from the sample port. We can then evaluate the system with accuracy if the same results show up. Sodium ppm levels are severely high. Acid Number (AN) is severely high. Calcium ppm levels are severely high. Barium ppm levels are abnormally high.

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