

# #1 COOKER (I-852-1-0140)

**Customer: PTRHTF10156**  
 INGREDION  
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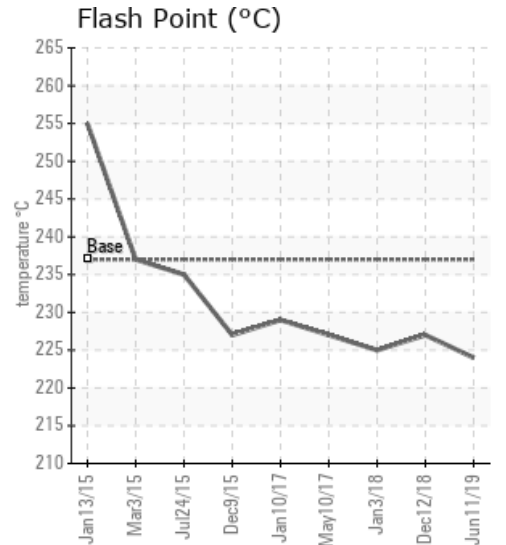
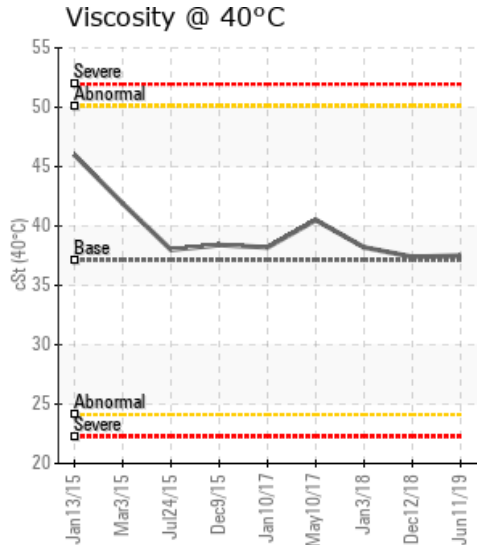
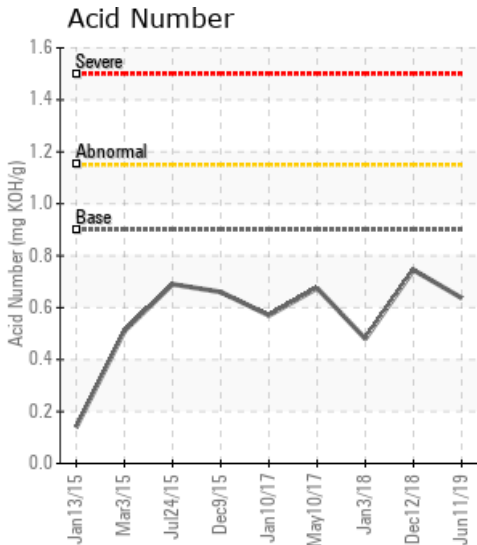
**System Information**  
 System Volume: 200 gal  
 Bulk Operating Temp: 400F / 204C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID  
 Make: HEAT EXCHANGE/TRAN

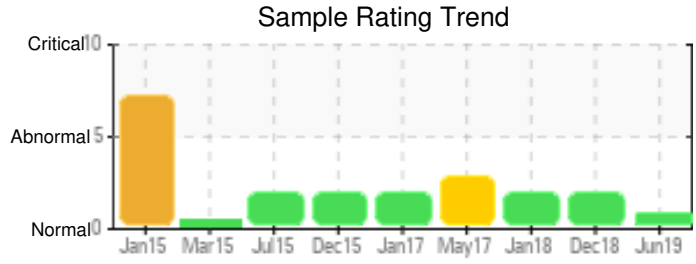
**Sample Information**  
 Lab No: 02294441  
 Analyst: Yvette Trzcinski  
 Sample Date: 06/11/19  
 Received Date: 06/28/19  
 Completed: 07/22/19

Recommendation: Oxidation is occurring in the system but total acid number and GCD at 90% are slightly better than the sample results in December 2018. Fluid is acceptable for continued service and re sample in 6 months

Comments: (GCD) 90% Distillation Point is abnormally high.

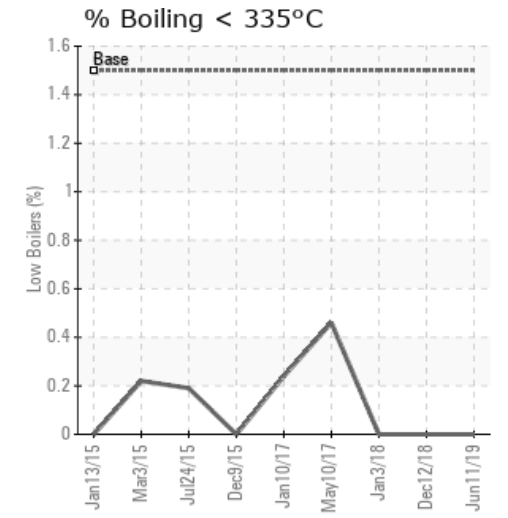
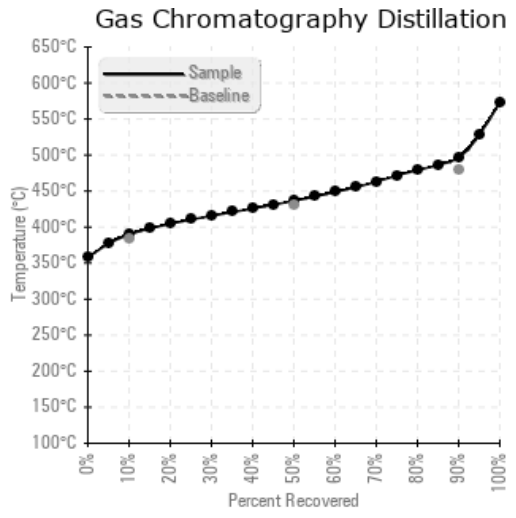
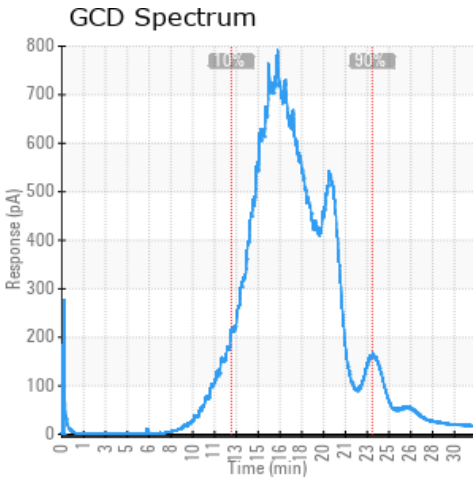
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/11/19	06/28/19	0m	SAMPLE PORT	435 / 224	33.2	37.5	0.637	0.048	733 / 390	818 / 437	925 / 496	0.00
12/12/18	06/20/19	0m	SAMPLE PORT	441 / 227	27.3	37.4	0.745	0.295	746 / 396	829 / 443	939 / 504	0.00
01/03/18	02/13/18	12m		437 / 225	15.1	38.2	0.48	0.051	744 / 396	829 / 443	935 / 502	0.00
05/10/17	05/16/17	6m	DRAIN PORT	441 / 227	31.8	40.5	0.675	0.045	735 / 391	844 / 451	992 / 533	0.46
01/10/17	01/23/17	9m		444 / 229	14.2	38.2	0.57	0.063	735 / 391	839 / 448	983 / 528	0.24
12/09/15	04/19/16	6m	HOT OIL HEAT EXCHNGR	441 / 227	207.5	38.4	0.66	0.259	779 / 415	848 / 453	942 / 505	0.00
<b>Baseline Data</b>				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5





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	
06/11/19	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	4	
12/12/18	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	161	6
01/03/18	20	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	142	0
05/10/17	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	150	0
01/10/17	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	146	0
12/09/15	40	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	160	0
Baseline Data			0	0						0			0	0					0					230	

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



Historical Comments	
12/12/18	Sample is dated December 12, 2018 a new sample should be taken and sent in. Oil is showing signs of oxidation the acid number is increasing as is the 90% boiling point indicating heavier molecules from oxidation occurring. Resample within the next 2-3 months (GCD) 90% Distillation Point is severely high.
01/03/18	Viscosity and Acid number are within acceptable levels and low insoluble levels fluid is acceptable for further service. resample in 4 months
05/10/17	This system has seen little to no addition judging by the results, therefore the condition appears to be similar to the last sample. No action deemed necessary at this time, just re-sample in 6 months for normal monitoring. (GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is marginally high.
01/10/17	This system has seen little to no addition judging by the results, therefore the condition appears to be similar to the last sample. No action deemed necessary at this time, just re-sample in 6 months for normal monitoring. (GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is marginally high.
12/09/15	The sample is dated Dec 9 2015, so a fresh sample would provide more insight into the current fluid condition. The amount of Purity FG HTF has increased to >50% in this system. We notice a bit more solids and moisture in this sample, which may be caused by the way the sample was taken. Sampling should include letting a good amount of oil flow through the sampling valve before collecting the sample, so we get a representative sample of what is flowing in the pipes. Please keep monitoring every 6 months considering how critical these cookers are. (GCD) 10% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is marginally high.

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