

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

Customer: PTRHTF10156
 INGREDION
 1515 SOUTH DROVER ST
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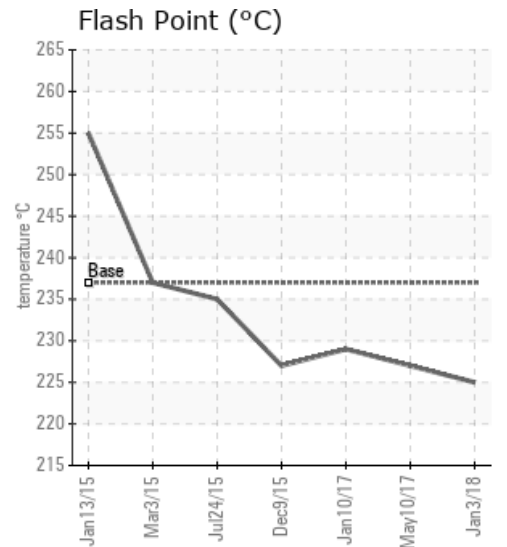
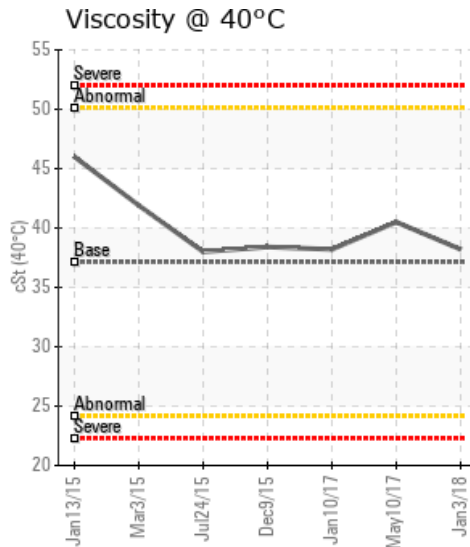
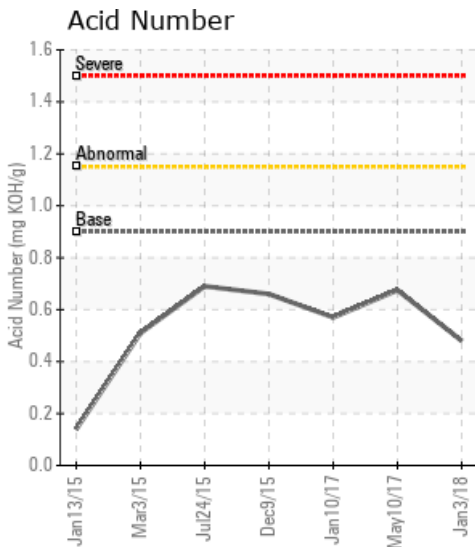
System Information
 System Volume: 200 gal
 Bulk Operating Temp: 400F / 204C
 Heating Source:
 Blanket:
 Fluid: PETRO CANADA PURITY FG HEAT TRANSFER FLUID
 Make: HEAT EXCHANGE/TRAN

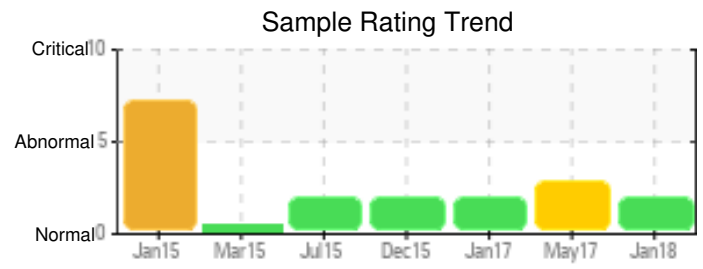
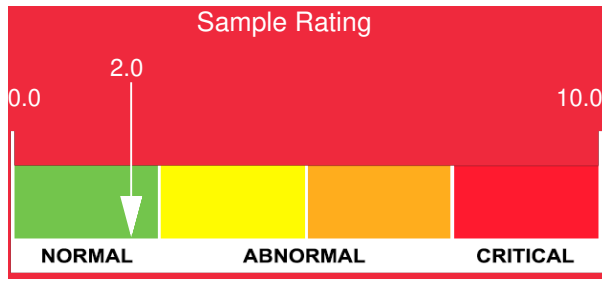
Sample Information
 Lab No: 02198371
 Analyst: Yvette Trzcinski
 Sample Date: 01/03/18
 Received Date: 02/13/18
 Completed: 03/01/18

Recommendation: Viscosity and Acid number are within acceptable levels and low insoluble levels fluid is acceptable for further service. resample in 4 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	%
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
07/24/15	08/06/15	0m	PAST THE STRAINER	455 / 235	6.0	38.0	0.69	0.102	734 / 390	839 / 448	984 / 529	0.19
03/03/15	03/12/15	1m	1 D.T.C	459 / 237	17.1	41.9	0.51	0.139	748 / 398	883 / 473	1008 / 542	0.22
Baseline Data				459 / 237		37.12	0.90		721 / 383	807 / 431	892 / 478	1.5

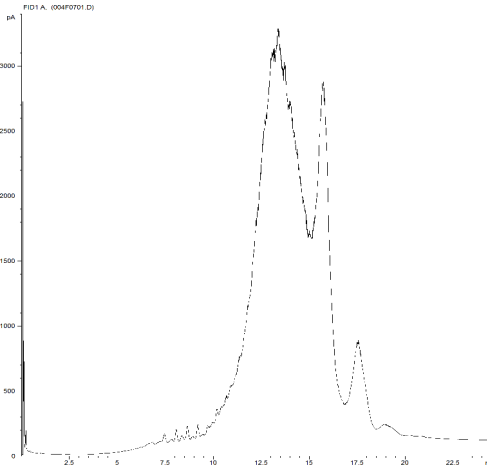




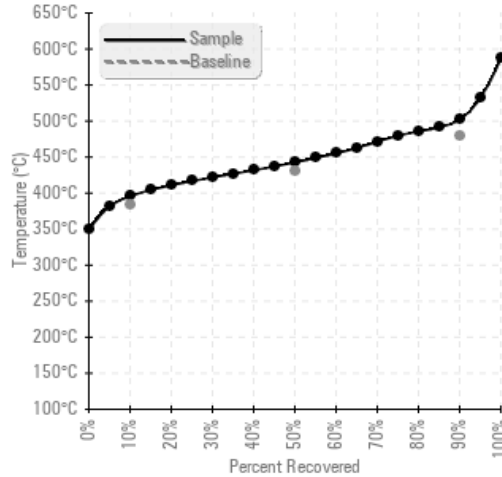
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
01/03/18	20	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	142	0
05/10/17	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	160	0
07/24/15	27	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	170	0
03/03/15	46	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	115	0
Baseline Data			0	0						0			0	0					0				230	

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

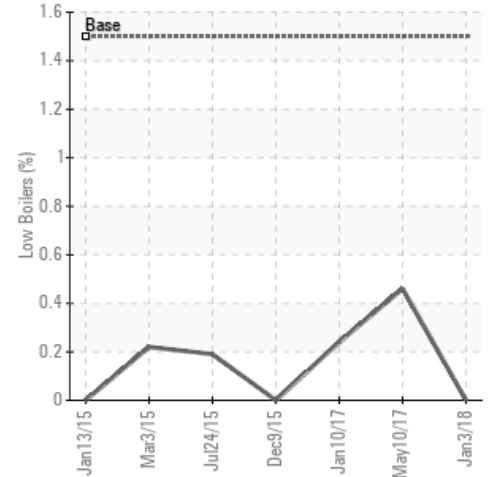
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments

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) 90% Distillation Point is severely high. (GCD) 50% Distillation Point is marginally high. (GCD) 10% Distillation Point is severely high.
07/24/15	There is a steady change in properties to show the increasing amount of Purity FG HTF in the system (estimated at 65%). The overall condition of the fluid appears to be good based on the results with metals, water and insoluble solids at low levels. Please re-sample at next scheduled interval. (GCD) 90% Distillation Point is severely high.
03/03/15	The system had a significant addition of Purity FG HTF to where FG HTF is about 40% of the system now. The viscosity and boiling properties are shifting towards Purity FG HTF. Nothing alarming to report at this time. we suggest to sample every 3-4 months to monitor the fluid condition. (GCD) 50% Distillation Point is severely high. (GCD) 90% Distillation Point is severely high. Visc @ 40°C is abnormally high.

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