



RESEARCH AND TECHNOLOGY DEVELOPMENT
Racional Energy and Environment Co.

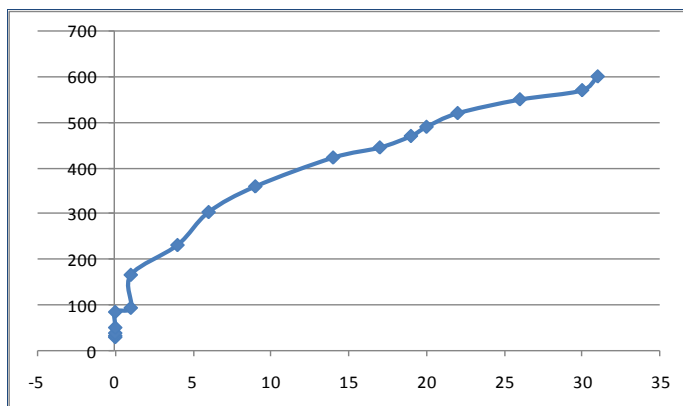
CATALYTIC PYROLYSIS

1. CHARACTERIZATION OF MEXICAN HEAVY OIL

PARAMETERS	UNIT	RESULTS
Density	Gr / cm ³	0.977
Viscosity	Cp	13580- 19,000
API	°API	13
Boiling Point	°C	95
Flash Point	°C	66

1.1 HEAVY OIL SIMPLE DISTILLATION

LIQUID (°C)	VAPOR (°C)	DISTILLED (gr)	DISTILLED (%)
205	108	1.75	0.7
293	140	2.61	1.04
319	188	4.66	1.86
326	190	14.29	5.71
339	200	31.86	12.74
343	202	32.94	13.17
400 ND		29.3	11.72
TOTAL			46.94



NOTES:

The distillate rate was 46.94%, the rest remains in the flask as high viscosity HC which requires for its recovery temperatures of 500-700 oC.

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2. ASSEMBLY TESTING EQUIPMENT



Reactor



Capacitor

Condensed Hydrocarbons

3. CATALYTIC PYROLYSIS TESTS WITH MEXICAN HEAVY CRUDE

Test No.	Catalyst used and % w	Obtained Fractions	Test Time (hr)	Operating Temperature (oC)	Middle Fractions Recovery (%)
1	CAT-A (50%) CAT-D (5%)	7	2	400	81
6	CAT-A (50%) CAT-E (5%)	4	1.25	400-460	76
7	CAT-A (50%) CAT-B (5%)	ND	1.0	450	81



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9	CAT-A (50%) CAT-B -colloids	ND	1.2	450	80
4	CAT-A (50%) CAT-C (5%)	6	1.0	450	80

4. CATALYTIC PYROLYSIS TESTS WITH SPENT OILS

Test No	Catalyst used and % w	Obtained Fractions	Test Time (hr)	Operating Temperature (oC)	Middle Fractions Recovery (%)
1	CAT-A (30%) CAT-B (5%)	4-5	1.2	400-500	86
6	CAT-A (30%) CAT-C (5%)	1	0.75	400-500	84
7	CAT-A (30%) CAT-E (5%)	4-5	1.5	400-500	84