

RAP Heating

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Heating Scenarios Effects

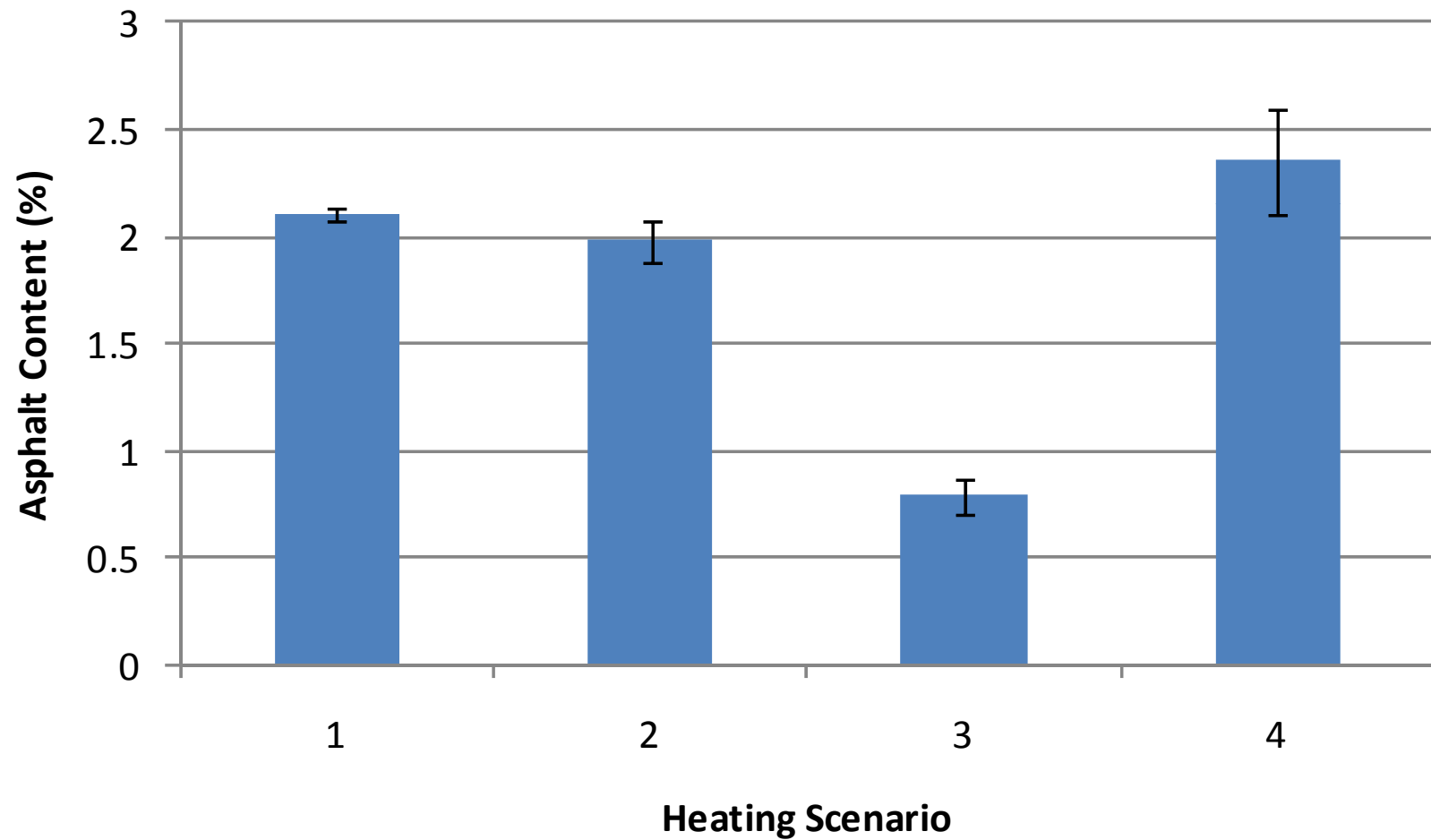
Heating Scenarios

Heating Scenario	Virgin Heating Time	Virgin Temperature	RAP Heating Time	RAP Temperature
1	3 hours	355 °F	3 hours	355 °F
2	16 hours	355 °F	16 hours	355 °F
3	3 hours	355 °F	30 min	355 °F
4	3 min	500 °F	0	ambient

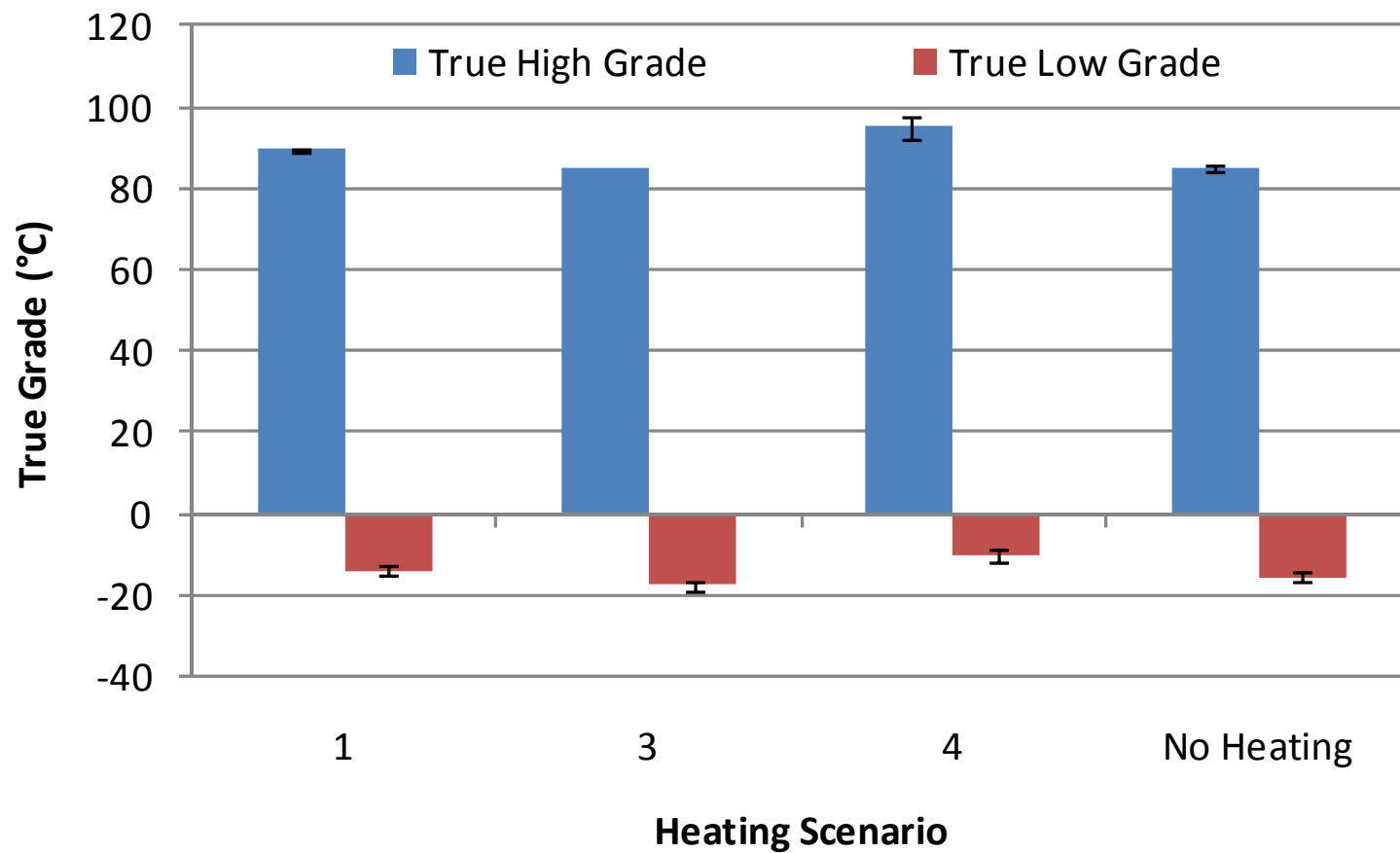
Mixing

- Mixed 2500 grams of RAP with 2500 grams of virgin
- Recovered asphalt from the virgin aggregate
 - Asphalt content
 - Binder grading

Asphalt Content



Binder Grade



Summary of Heating Scenario

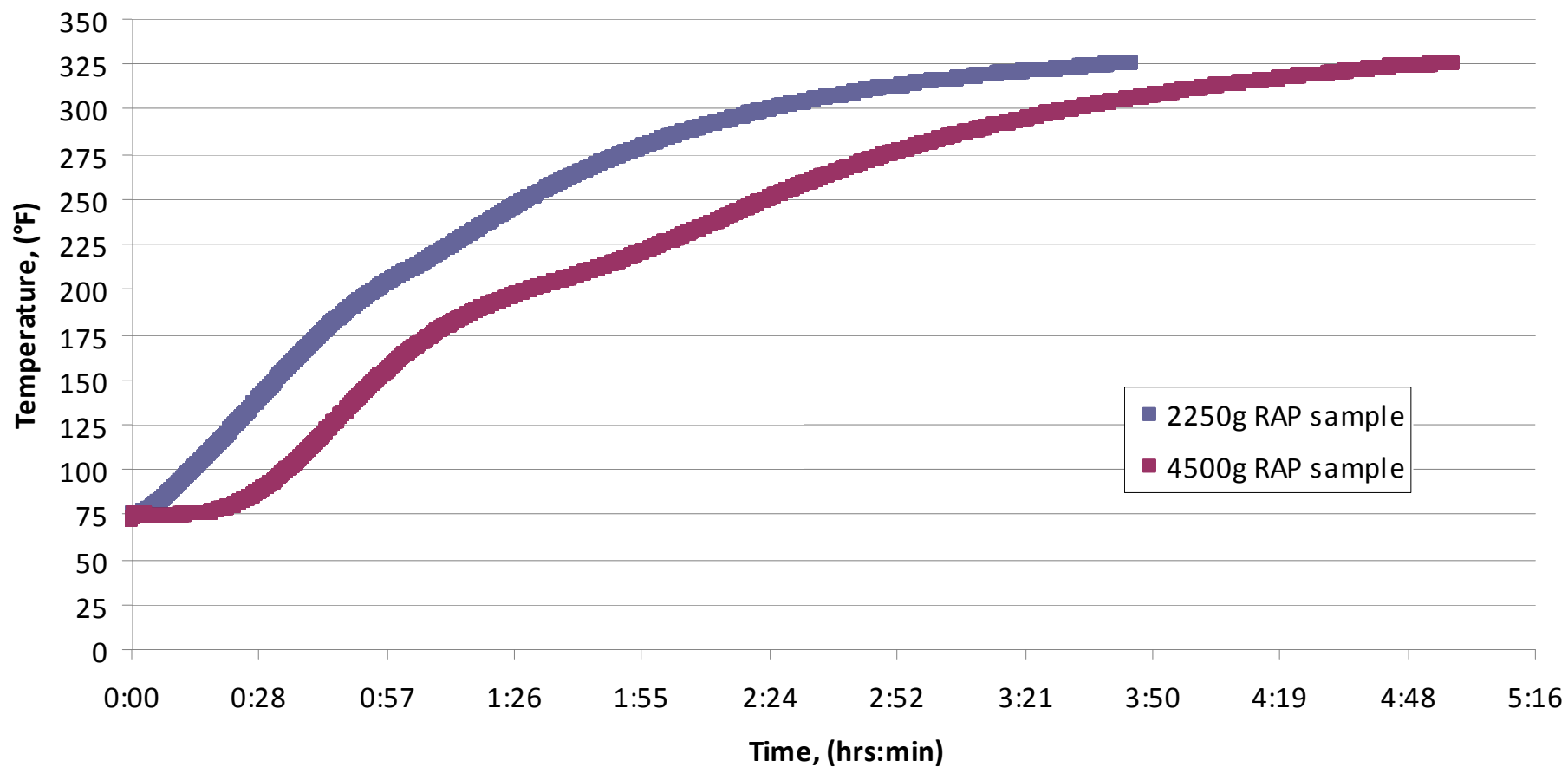
- Heating overnight should never be done for RAP
- Asphalt contents more consistent for 3 hour heating versus 30 minute
- Aging for three hours stiffened binder by one grade compared to original on high end
- Superheating more variable binder transfer and stiffened high end by 2 grades and low end by 1 grade

Determining Time to Heat

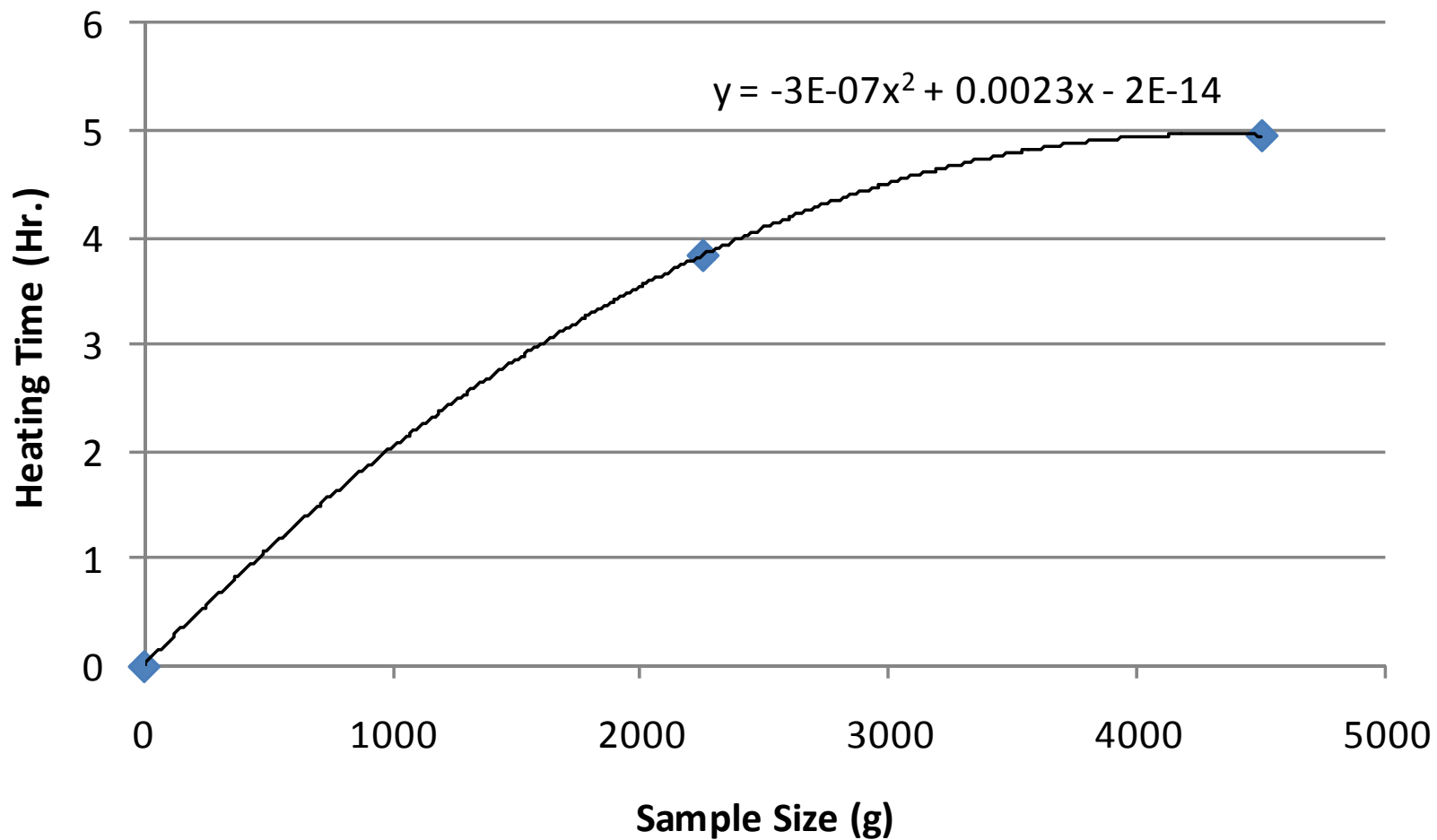
RAP Reheating Experiment

- Determine time required to heat RAP to desired temperature
- Heat RAP at desired mixing temperature until temperature reached
 - Two samples sizes evaluated (2250 and 4500 g)
 - Three samples per sample size
 - Thermocouple with data logger used to monitor temperature.

Time to Heat RAP to 325°F



Heating Trend



Recommended Heating Times

Sample Size (g)	Est. Heating Time (hr)
500	1hr
1000	2hr
1500	2hr 45min
2000	3hr 30min
2500	4hr
3000	4hr 15min

QUESTIONS

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