

Preliminary Report / Synopsis of Alphagen/Britt Fire Panels Testing

TO: Frank Britt

FROM: Dr. Uday Vaidya, Department of Materials Science & Engineering, UAB

REF: Alphagen/Frank Britt Burn Through Fire Testing

DATE: June 23, 2008

- 9 panels supplied by Frank Britt to UAB. The panels have the following nomenclature:
 - ✚ Type 1 ---- 24111C1 – (F#1, F#2, F#3)
 - ✚ Type 2 ---- 24150C1 – (F#1, F#2, F#3)
 - ✚ Type 3 ---- 24125C1 – (F#1, F#2, F#3)
- F#1's from all the 3 types were tested
- Three thermocouples were used to measure back face temperature at different positions on the back face. The ambient temperature was recorded as well.
- Type 1 – F#1 was tested for 30 min to get a feel for how the panels burn. Then, Type 2 & 3 –F#1' were tested for 60 min each.
- Heat flux in all the cases : $45 \pm 3 \text{ kW/m}^2$. The heat flux is chosen based on referenced literature where a typical harsh forest fire is reported to have this heat flux range.

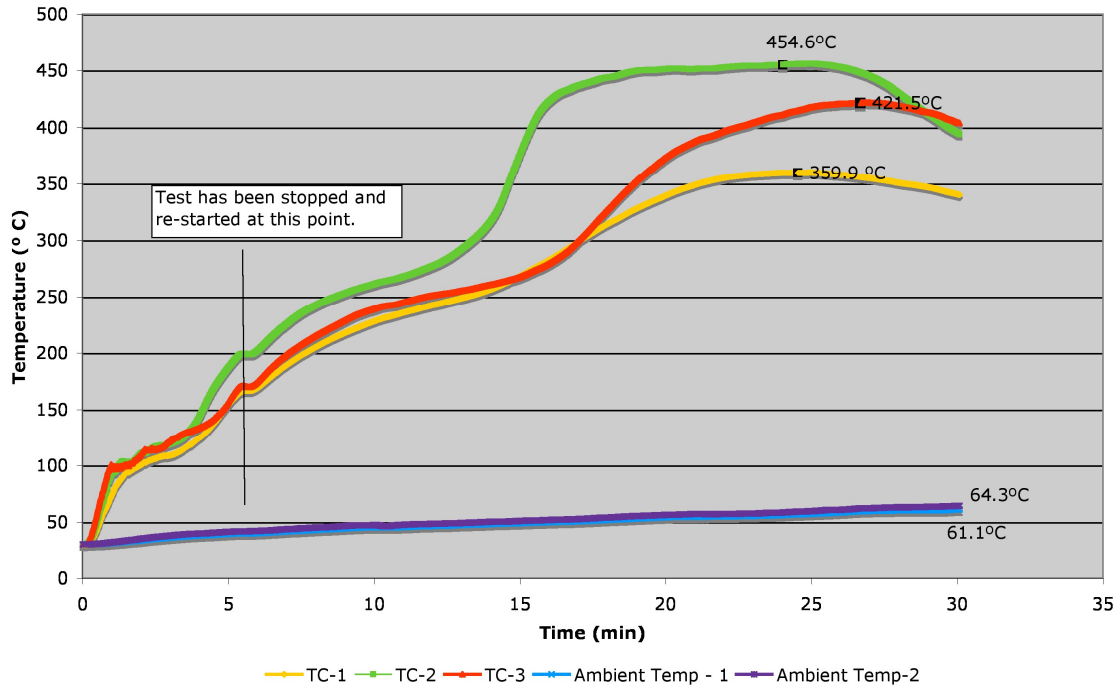
Primary Observations

- ✚ The flame is self-extinguishing. Upon removal of the source, the fire gets suppressed in the panel.
- ✚ The back face temperature was measured to be in the following order:
Type 1 - 24111C1 (~ Average 420°C) > Type 3 - 24125C1 (~ Average 365°C) > Type 2 (~ Average 328°C)
- ✚ Although there is significant charring on the back face, the panels sustained the 30 to 60 minute burn-through. In other words, there was no collapse or degradation of the panel.

Panel – 24111C1F#1 --- Tested for 30 min

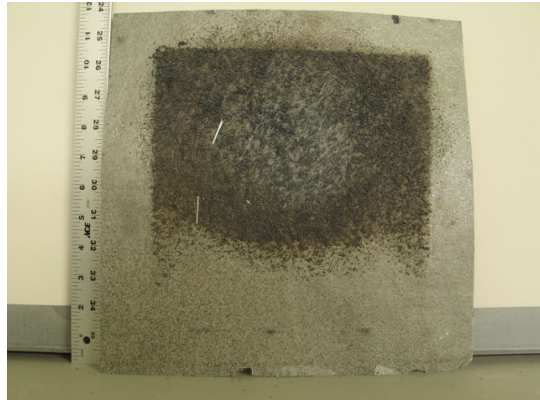
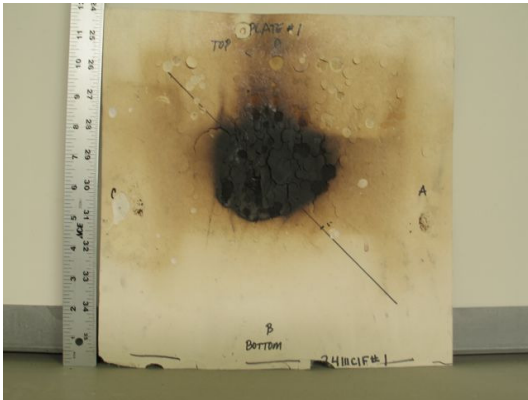
- Avg. Thickness on 4 sides – 3.0 mm, 2.2 mm, 2.5 mm, 3.1 mm
- Weight before testing – 279.2 g
- Weight after testing – 227.1 g
- Weight loss % – 18.6

Panel - 24111C1-F#1



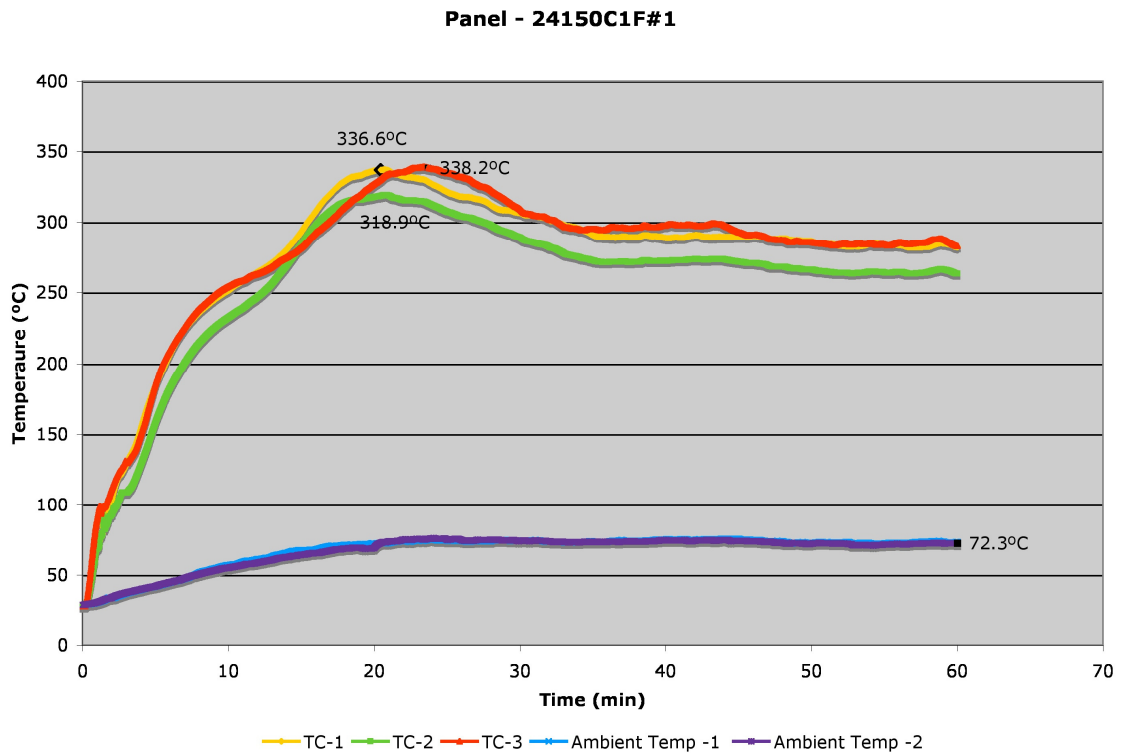
The test was stopped and restarted at ~6 minutes to confirm self-extinguishing. The flame extinguished once the fire source was removed (stopped).

Back & Front face Damage

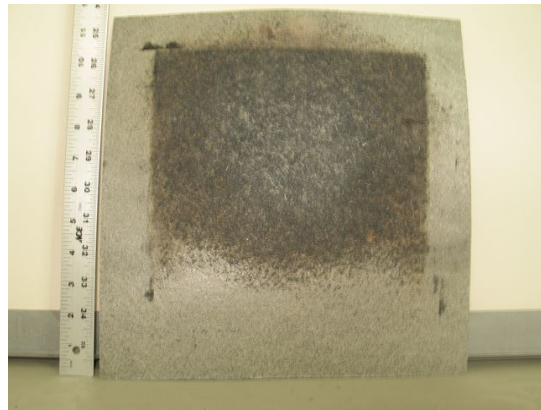
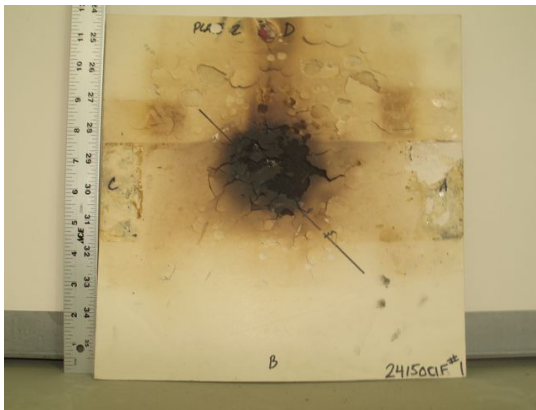


Panel – 24150C1F#1 – Tested for 60 min

- Avg. Thickness on 4 sides – 3.1 mm, 2.6 mm, 2.9 mm, 3.4 mm
- Weight before testing – 310.5 g
- Weight after testing – 256.0 g
- Weight loss % – 17.5

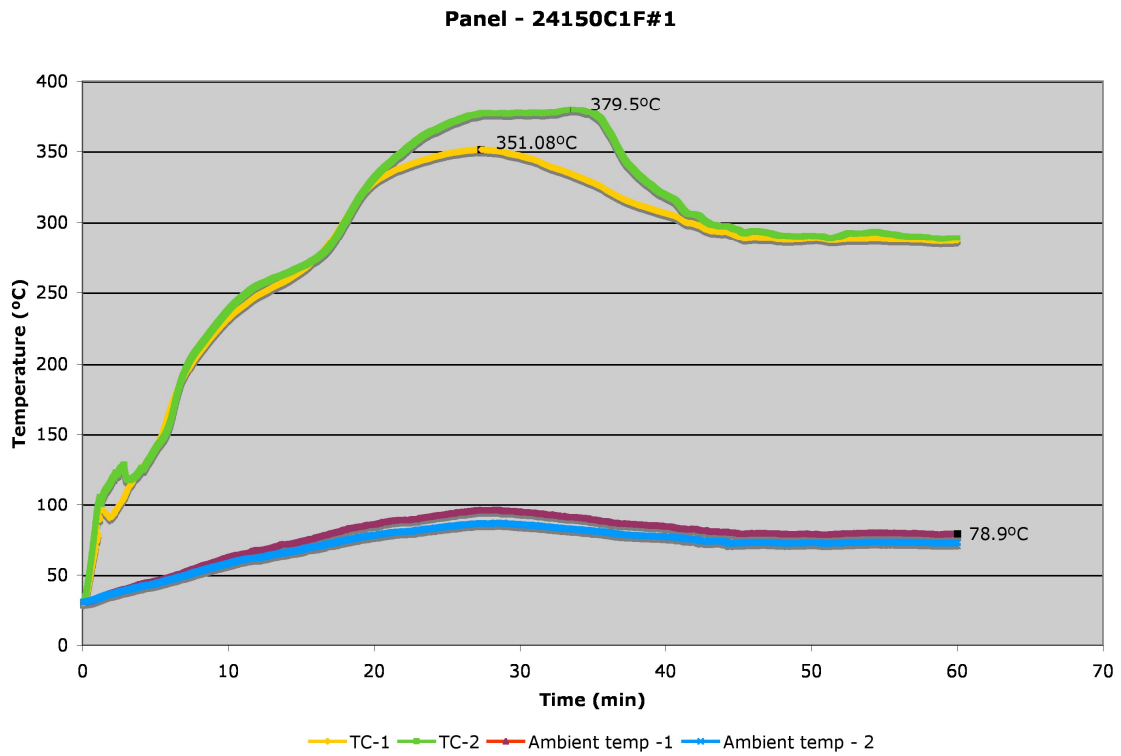


Back & Front face Damage:



Panel – 24125C1F#1 ---- Tested for 60 min

- Avg. Thickness on 4 sides – 2.9 mm, 3.3 mm, 3.1 mm, 3.1 mm
- Weight before testing – 337.1 g
- Weight after testing – 227.0 g
- Weight loss % – 16.4



Back & Front face Damage:

