Artificial Aging Results

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Artificial Aging Test Status
Aged PET Film

Aged for 24 months:

- 120F
- 120F/100% Relative Humidity
- 160F
- 160F/100% Relative Humidity
- 200F
Artificial Aging – Cotton Swab Results

**CONTROL Unaged**
- Film Shrinkage - Fast
- Burn Length < 1”

**16 Month at 200F**
- Film Shrinkage - Moderate
- Burn Length ~ 3 - 4”
- Discolored Scrim Adhesive

**16 Month 160F/100%RH**
- Film Shrinkage - Moderate
- Burn Length ~ 3 - 4”

Presented July 2004
Artificial Aging – Cotton Swab Results

- **CONTROL Unaged**
  - Film Shrinkage – 10”

- **24 Month at 120F**
  - Film Shrinkage – 5.0”

- **24 Month 120F/100%RH**
  - Film Shrinkage – 6.5”
Artificial Aging – Cotton Swab Results

- **24 Months at 160F**
  - Film Shrinkage – 6.5”
  - Discolored Scrim Adhesive

- **24 Month 160F/100%RH**
  - Film Shrinkage – 8.5”
  - Low film strength

- **24 Months at 200F**
  - Film Shrinkage – 5.0”
  - Discolored Scrim Adhesive
SUMMARY & CONCLUSIONS:

- Film has sustained physical degradation
- Film has reached the end of its handling life – handling of in-service blankets would be difficult
- No flame propagation or cotton swab failures (< 8”)
- Film shrinkage behavior slightly different
- Degradation in flame propagation is not simply a material issue
- Actual in-service degradation mechanisms much more complex and involves contamination and service environment (many chemical and physical interactions)
RECOMMENDATIONS:

Due to the complex nature of developing long term aging studies…

- Task group should focus on evaluating the condition of the fleet
- Define flammability safety risk criteria for in-service insulation blankets
- Define test methods for evaluating in-service blankets against the safety risk criteria