

# TECHNOMELT PA 668 Discoloration Study

Irvine Technical Center  
9/2/2014



Excellence is our Passion

# Contents

1. Objective
2. Experimental
3. Results
4. Conclusion

# Objective

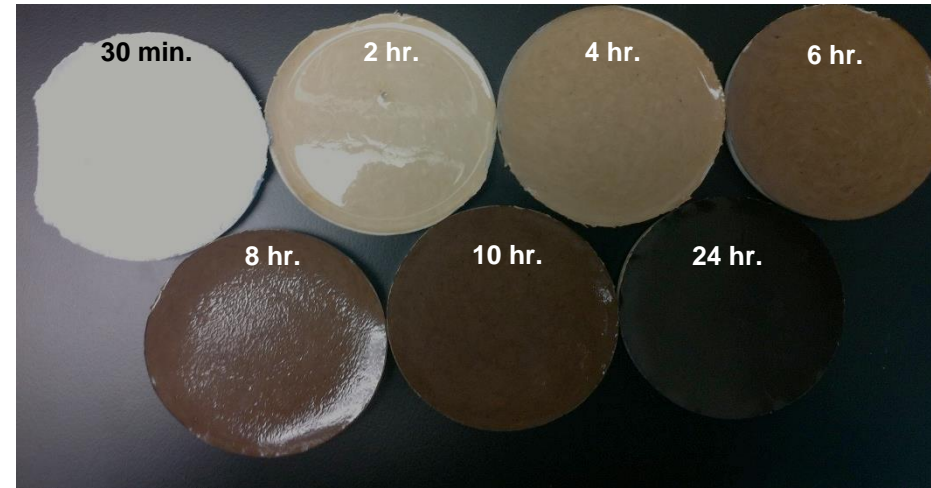
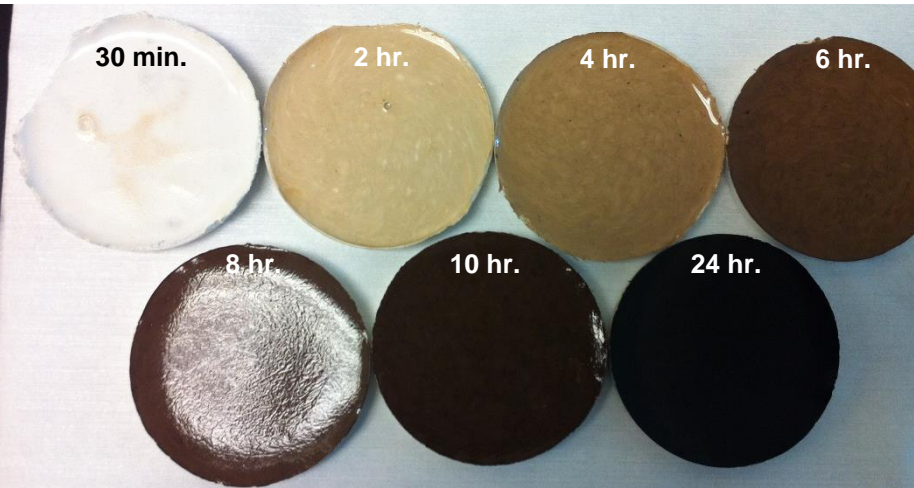
- The objective of this study is to determine a way to mitigate discoloration of TECHNOMELT PA 668

# Evaluation Procedure

- Material:
  - TECHNOMELT PA 668
- Test Method:
  - Aging in box oven at 230°C
    - Atmosphere: Air
      - Samples analyzed after aging intervals of 0, 2, 4, 6, 8, 10 and 24 hours
  - Aging in box oven at 230°C
    - Atmosphere: Nitrogen
      - Samples analyzed after aging intervals of 0, 2, 4, 6, and 8 hours
- Results:
  - Analyzed via visual inspection

# Results

Color stability air oven

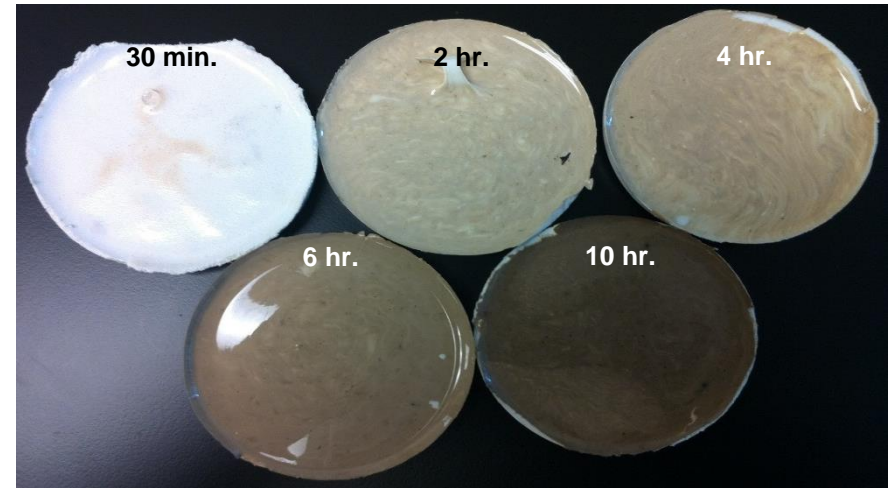
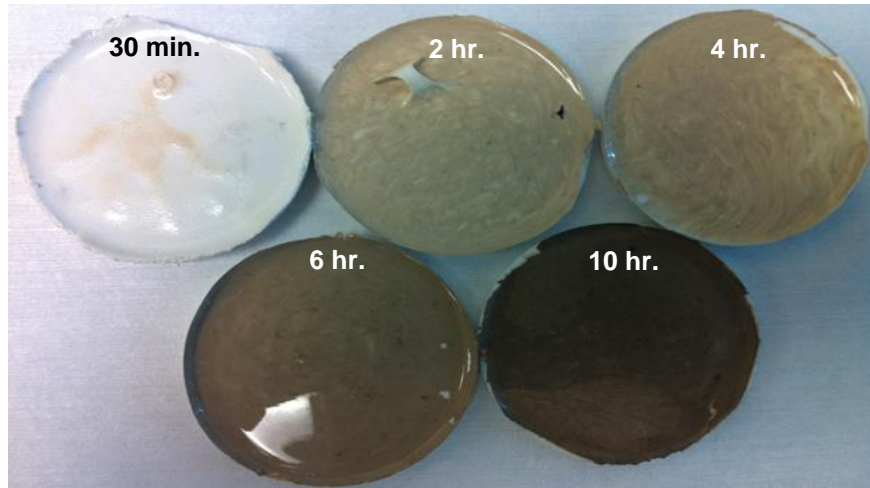


*Difference in brown color due to lighting during image collection*

- Observations:
  - Discoloration starts to occur within 30 min. at 230°C
  - Discoloration continues to increase over the course of 24 hours

# Results (continued...)

Color stability nitrogen oven

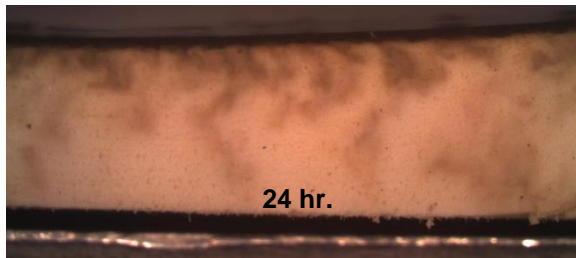
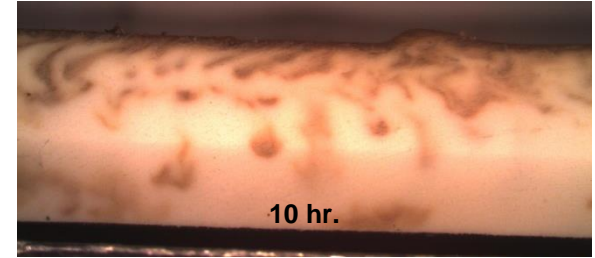
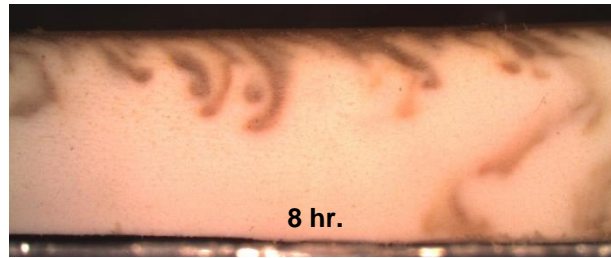
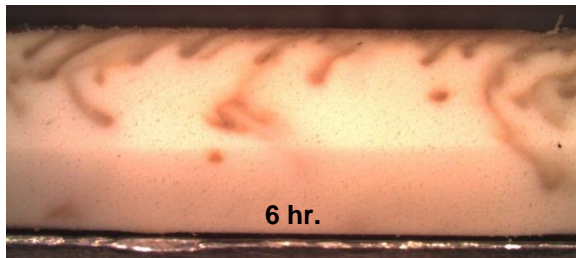
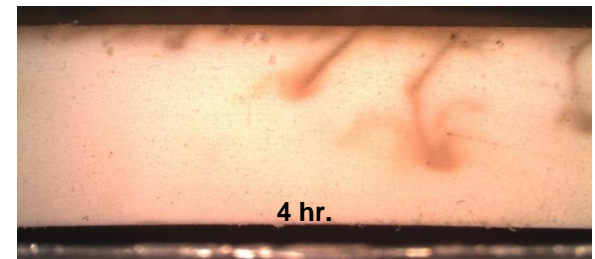
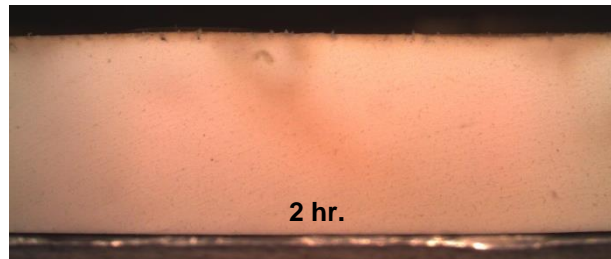
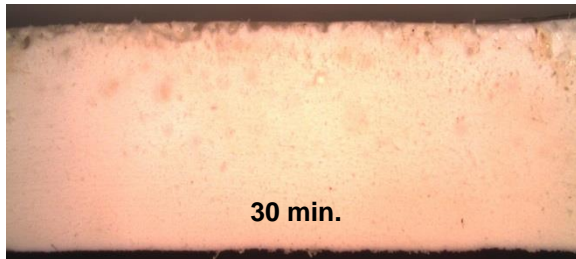


*Difference in brown color due to lighting during image collection*

- Observations:
  - Discoloration is still visible after 2 hours in a nitrogen oven
    - Only partial nitrogen oven not complete
    - However, rate of discoloration is slowed with use of nitrogen oven

# Results (continued...)

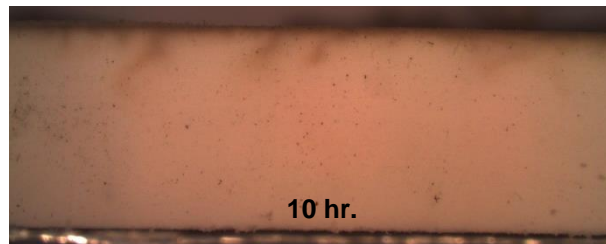
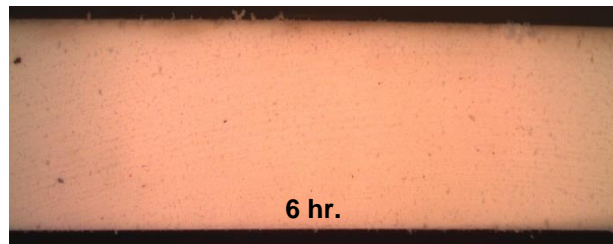
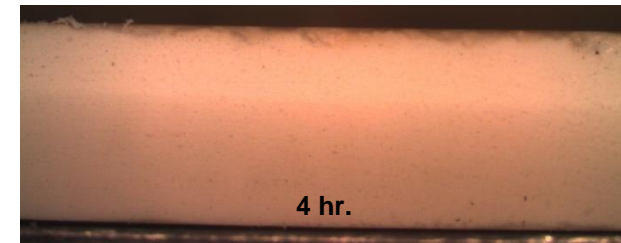
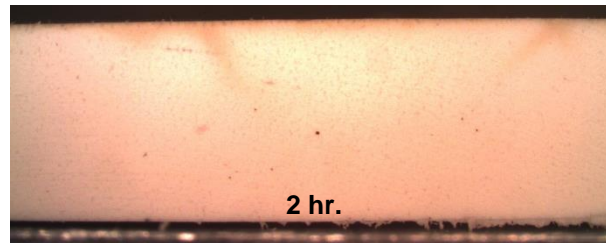
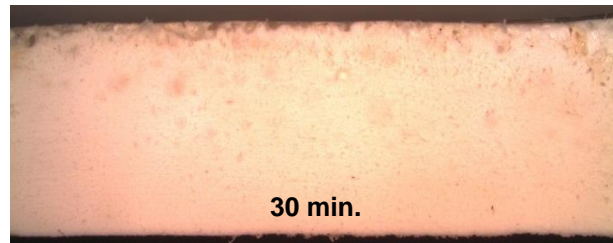
Material analysis uncovered



- Observations:
  - Discoloration begins to penetrate into the bulk of the material after ~4 hours
  - Significant discoloration of the bulk after 10 hours
  - Thickness of surface discoloration sees significant increase after 6 hours

# Results (continued...)

Material analysis nitrogen oven



- Observations:

- No pronounced bulk discoloration after 10 hours
- Thickness of surface discoloration does not increase over the course of 10 hours
- After 10 hours, the surface discoloration begins to penetrate the bulk
  - Only a small amount when compared to the other two sample sets



# Conclusion

- The use of a nitrogen oven significantly decreases discoloration and the onset of discoloration is delayed
- A nitrogen atmosphere provides a significant benefit in delaying and minimizing TECHNOMELT PA 668 discoloration

**Thank you!**