

INTRODUCTION TO COMPOSITES -- MFG 555

Fall 2008 – Exam 1

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Name: \_\_\_\_\_

All problems have the same value, although some problems may have several parts.

1. Give three factors that determine the flammability of a polymer and how those might be useful or not in actual products. Describe composite resins which illustrate two of the flammability characteristics.

2. You are a molder of polyester fiberglass composite tub/shower units. Recently the government has reduced the allowable emission level for styrene and you find that your plant is no longer in compliance. Discuss two steps that you could do in modifying the resin mixture that would help lower styrene content in the air. For each of these modifications, explain why the change would help and also discuss the likely effect the change would have in the processing and in the properties of the resulting product.

3. Outline (with diagrams) the curing (crosslinking) mechanisms for polyester, epoxy, and phenolic resins. Discuss the differences in sensitivity to concentrations of components, temperatures, and volume of material (part thickness) between these systems.

4. Discuss the consequences (good and bad) for properties and processing of using a highly aromatic thermoplastic resin as the matrix for a composite part.