

A PRELIMINARY NOVEL STUDY ON THE GRAVITY EFFECTS OF CURING OR DRYING ANGLE AT LAMINATED COMPOSITE STRUCTURE

Problem Statements:

1. Current curing or drying technique of composite requires approximately 24 hours at the horizontal plane.
2. The curing process occupies too much space for long hours if room temperature is preferred.
3. The challenge faced by composite industries especially Small & Medium Industry (SMI) is to have confined working space.
4. A considerably large space is needed to accommodate the composites in order to meet the production demand within its due date else limited space may reduce its production or causes overdue delivery.

Objectives:

1. A feasibility study of vertically or angle-cured laminated thermoset composite having same properties as horizontal cured composite is investigated.
2. To investigate the mechanical properties (tensile, flexural, hardness and compression testing for laminated composite cured at different angle positions between 0° - 90° .
3. To investigate the physical properties such as density, water absorption and swelling for laminated thermoset composite cured at different angle.
4. To observe the morphology of the laminated composite which cured under different angle positions using SEM and EDX.

Novelties:

1. Minimize space usage
2. Increase productivity
3. Promote lean manufacturing - minimize wastage

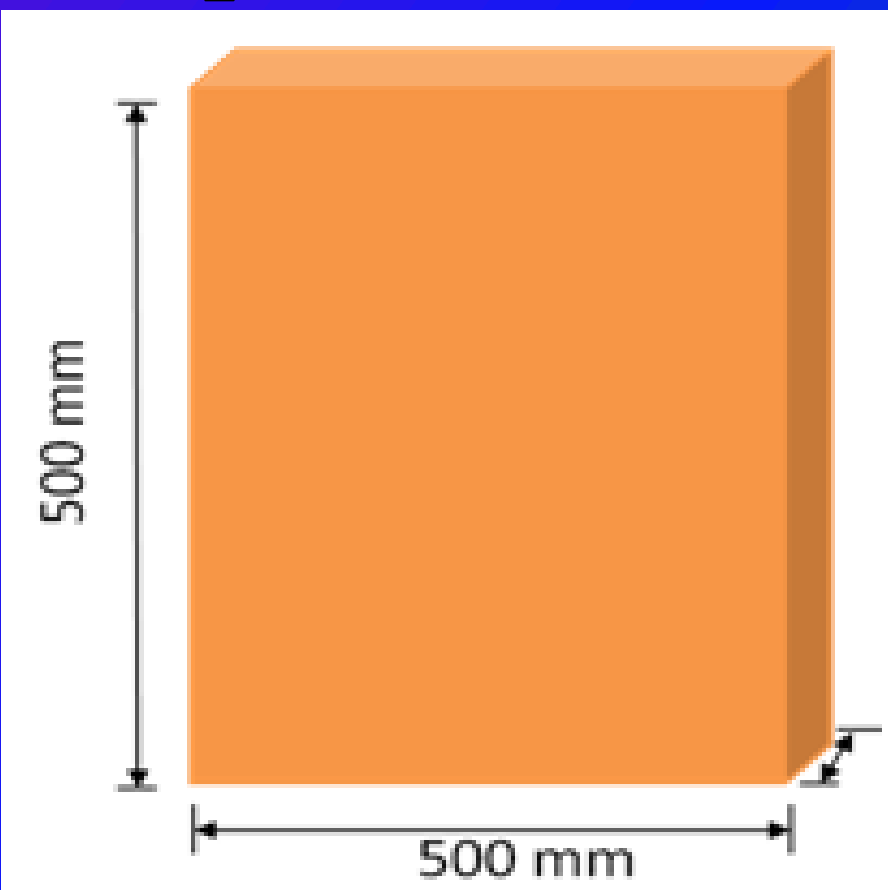
Benefits:

- a) Safe cost
- b) Safe space
- c) Safe time

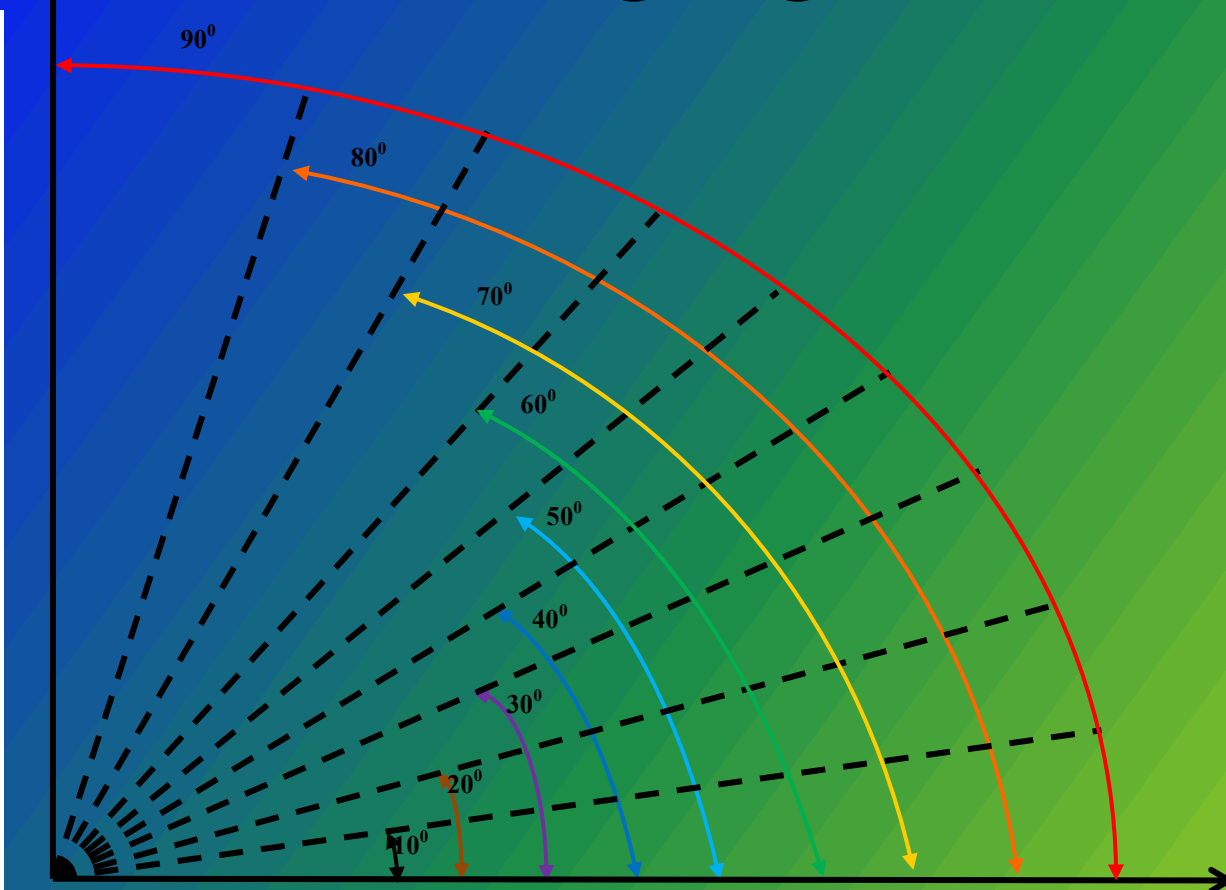
Potential Market:

- a) Composite industries
- b) Ship & automobiles industries
- c) Small and Medium Industry (SMI) in manufacturing factories

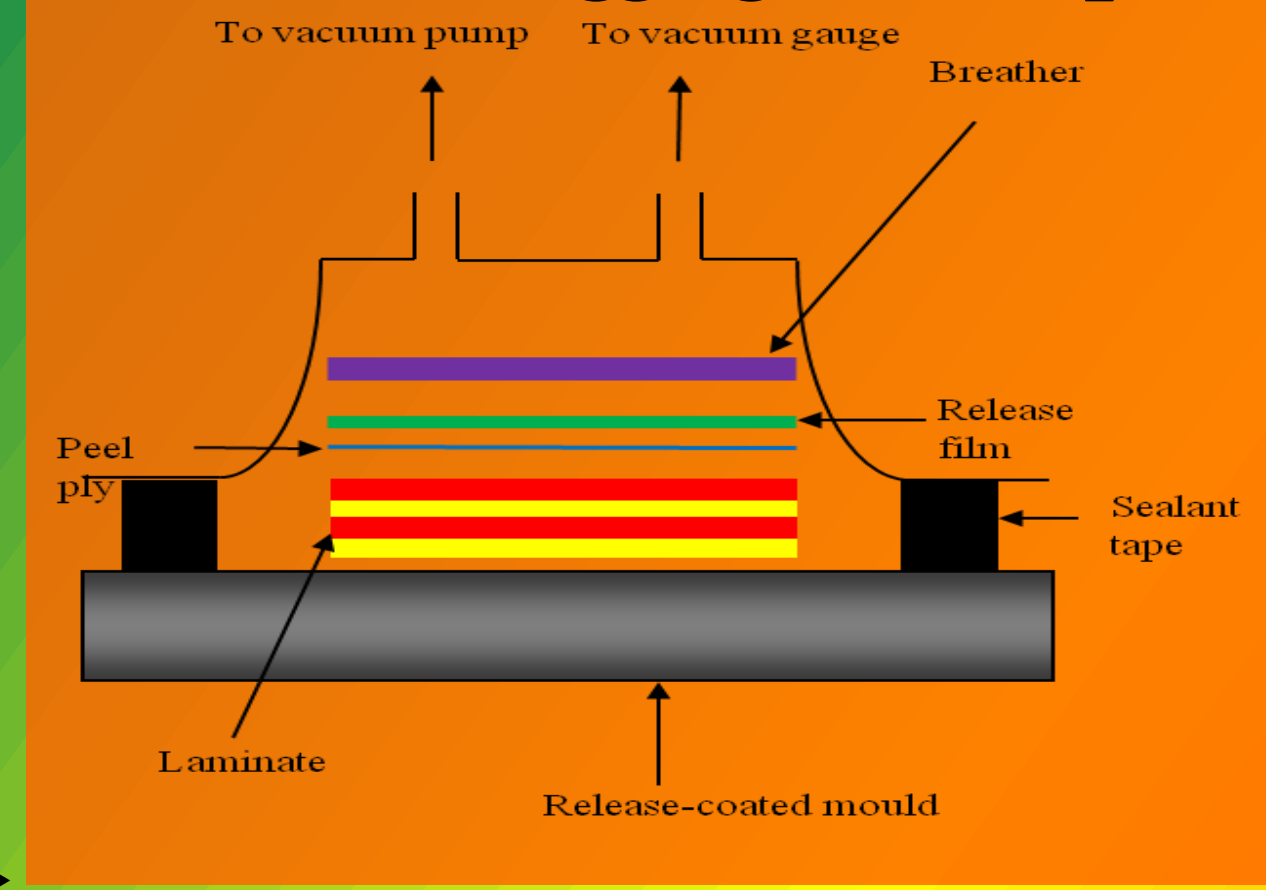
Composite Dimension



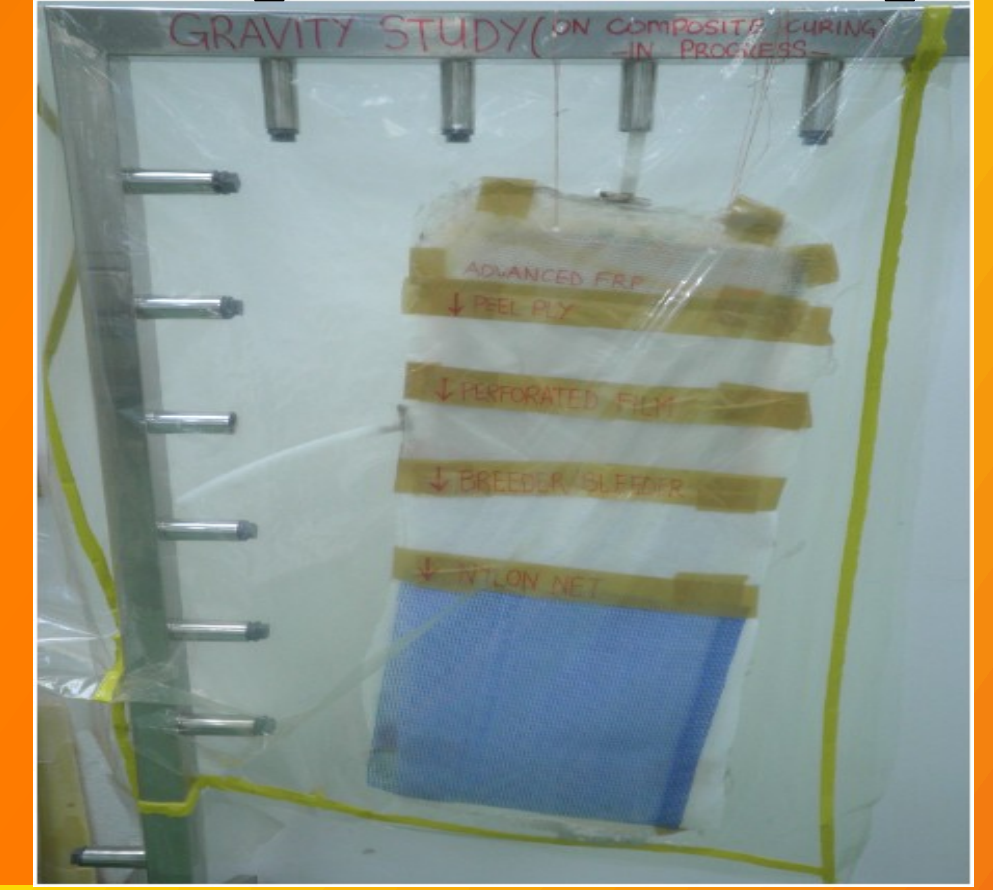
Curing Angles



Vacuum Bagging Technique



Experimental Set Up



~ EXPERIMENTAL FLOW ~



Testing Standards:

- a) Tensile Test >> ASTM D3039
- b) Flexural Test >> ASTM D790
- c) Hardness Test >> ASTM D2240
- d) Water Absorption & Swelling Test >> ASTM D570

Expected Results:

- a) The laminated composite should be able to cure at the angle position between 0° - 90° .
- b) The laminated composite may not have or negligible effect on the top, middle or bottom area of the laminated composite.
- c) The laminated composite cured at angle position is aimed to improve the curing process for better space, time and cost management.



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