

TENSILE TEST METHOD FOR 3-D FABRICS

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**Final Year Project Report Submitted in Partial Fulfillment of the
Requirements for the Degree of Bachelor of Science (Hons.) Textile Technology
In the Faculty of Applied Science
Universiti Teknologi MARA**

April 2002

ACKNOWLEDGEMENTS

I would like to record my deepest gratitude to my supervisor, Associate Professor Dr. Jamil Salleh for his detailed and constructive comments through out my final project and also for his feedback.

Special thanks to En. Rahimi Mohamed, Production Supervisor of KJSB INDUSTRIAL Corporation (M) Sdn. Bhd. for his help to get the material of the project and the information about glass fabric.

I also want to extend my warmest appreciation to Associate Professor Dr. Wan Yunus Wan Ahmad, head of Textile Programme and Pn. Norsaadah Zakaria, coordinator of final project for their support, guidance and advice for my final project.

Also special thanks to all textile lab assistants for their help and all my friends for their ideas and suggestion.

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ABSTRACT

TENSILE TEST METHOD FOR 3-D FABRIC

3-dimensional (3-D) fabrics are woven using yarn in three mutually orthogonal directions to each other. These fabrics are used for composite and it is usually made from the high performance fibres such as carbon and glass, which are very brittle. Determining tensile properties of brittle fabrics can be problematic because these fabrics will be crushed at the jaws of the test machine. Several Four-layer 3-D fabrics were chosen in the project: stitch satin (SS), 3-float angle interlock (3A), 3-float angle layer interlock (3AL) and 4-float layer-to-layer interlock (4L). The structures of the fabrics are angle interlock and stitched satin which are novel structures from an earlier research. To make these fabrics suitable for tensile testing, the tabbing area of the fabric should be treated with resin. This tabbing process was done using plastic mould. The fabrics were tested using Testometric Tensile Tester. It was found that an angle layer interlock structure 3AL has the highest strength and 3A the lowest. The result of the tensile testing was compared with the strength of the composite. It was found that there is no correlation between fabric and composite strength except 3AL.