

GURIT TESTING CAPABILITIES

Gurit Composite Engineering is a specialist consulting company, providing independent services within the field of Structural Engineering for Fibre Reinforced Polymers (FRP), Carbon Fibre Reinforced Polymers (CFRP), and Mechanical Testing with extensive experience in the design of composite structures for over 35 years.

Significant to the design and engineering of composite structures is understanding how the material behaves and performs. Gurit engineering runs an internationally accredited mechanical testing laboratory from the Auckland site, which specialises in the mechanical testing of FRP composites for our customers. The laboratory has been operating since 2005, and holds independent accreditation by IANZ (International Accreditation New Zealand).

Mechanical testing can be done for a number of purposes:

- Design certification and third party approval of as-built properties
- Post build surveys, forensics or to establish repair specifications
- Establish baseline material properties for design
- Research and development to test new ideas, validate concepts and build methods

Key to the success of this laboratory, is that it is run by experienced composite design engineers who have an integrated skill set of engineering analysis, materials and processing knowledge, and are able to design, carry out and interpret testing accurately. This includes design of test specimens for standard programs, design and implementation of customised and specific tests, interpretation and reporting on the results to enable them to be applied to your project or process. This unique service is critical in the modern testing laboratory environment and provides Gurit customers the assurance that test programs and individual custom tests can be relied upon for the design and certification of composite structures.



Mechanical testing laboratory set up with:

- Instron 50kN Universal Test Machine. A-Grade annual calibration report available
- LVDT (Linear Variable Displacement Transducer) - Large scale displacement measurement
- Extensometer - Initial modulus/strain measurement
- Strain gauge controller - Calibrated Vishay 2 Channel Controller. Direct strain measurement including strain to failure.

In addition to the mechanical testing at the Auckland site the test lab is also linked with the Gurit UK test lab for a variety of testing for Tg (DSC and DMTA), fibre weight fraction (by burnoff and microscopy) environmental exposures and additional mechanical testing, as well as links to universities and commercial laboratories for specialised testing.

GURIT PROVIDES TESTING TO THE FOLLOWING STANDARDS UNDER OUR IANZ ACCREDITATION:

a) Tensile tests in accordance with the following standards up to 50 kN force

ASTM C 297/C 297M Flatwise tensile strength of sandwich constructions

ASTM D 1623 Tensile and tensile adhesion properties of rigid cellular plastics

ASTM D 3039/D 3039M Tensile properties of polymer matrix composite materials

ISO 527-5 Plastics Determination of tensile properties – Part 5: Test conditions for unidirectional fibre-reinforced plastic composites

(b) Compression tests in accordance with the following standards up to 50 kN force

ASTM C 365/C 365M Flatwise compressive properties of sandwich cores

ASTM D 695 Compressive properties of rigid plastics

ASTM D 1621 Compressive properties of rigid cellular plastics

ASTM D 6641/D 6641M Compressive properties of polymer matrix composite materials using a combined loading compression (CLC) test fixture

ISO 844 Rigid cellular plastics – Determination of compression properties

(c) Flexure and stiffness in accordance with the following standards

AS 3572.10 Determination of the initial ring stiffness of glass filament reinforced plastic pipes (constant deflection test only)

ASTM D 790 Flexural properties of unreinforced and reinforced plastics and electrical insulating materials

ASTM D 2344/D 2344M Short-beam strength of polymer matrix composite materials and their laminates

ASTM D 2412 Determination of external loading characteristics of plastic pipe by parallel-plate loading

ASTM D 6272 Flexural properties of unreinforced and reinforced plastics and electrical insulating materials by four-point bending

ASTM D 7249/D 7249M Facing properties of sandwich constructions by long beam flexure

ASTM D 7250/D 7250M Determining sandwich beam flexural and shear stiffness

(d) Shear strength in accordance with the following standards

ASTM C393/C 393M Core shear properties of sandwich constructions by beam flexure

ASTM D 3165 Strength properties of adhesives in shear by tension loading of single-lap-joint laminated assemblies

ASTM D 3528 Strength properties of double lap shear adhesive joints by tension

(e) Density and specific gravity in accordance with the following standards

ASTM C 271/C 271M Density of sandwich core materials

(f) Constituent tests in accordance with the following standards

ASTM D 3171 Constituent content of composite materials (weight fraction test only)

(h) Other tests

ASTM D 5961/D 5961M Bearing response of polymer matrix composite laminates (ultimate bearing strength test only)

OTHER CUSTOM & SPECIALITY TESTING*

ISO 8521 Hoop Tensile Strength of Pipe

ISO 8513 Longitudinal Tensile Strength of Pipe

AS 4257.6 (Plastic roof and wall cladding materials – determination of impact resistance)

Screw retention in composite panels

Indentation resistance

Curved beam flexure (through thickness tension)

Peel



*Further specialist testing is available, please contact us to discuss your project and testing requirements.

CONTACT US

Call or e-mail to discuss your project.



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