

Experimental methods friction tests

Equipment:

Friction tester at University of Twente mounted with a 1 kN loadcell. See schematic in paper mentioned in README file and references therein.

Ply-ply friction test procedure:

- Check if pressure plates are parallel (adjustable through the springs with bolts at the back).
- Intrinsic stiffness:
 - o Bring the pressure blocks together up to spacing of around the specimen thickness by applying pressure: normal force measured is the correction value to be used as a correction factor to determine the actual pressure applied on a specimen during a real test.
- Sample preparation:
 - o Two metal foils (120 mm x 55 mm), cleaned with isopropanol
 - o UD pre-preg tape material (50 mm width), overlap region: 65 mm (see 'Notes on friction tests' for detailed description).
 - o Metal foil at both sides of specimen to protect the pressure plates.
- Check displacement sensor (straightness (laser light) and proper working in range of interest)
- Mounting specimen: middle ply clamped in upper clamp (removed from tensile tester for convenience). Alignment check of the specimen w.r.t. the upper clamp using a laser light. Upper clamp reassembled in universal testing machine and crosshead moved downwards to mount the outer plies (with the metal foils) in the bottom clamp, first tightened by hand. Logging started and paperclips were removed from specimen. Application of normal pressure, followed by firmly tightening of the bottom clamp as well.
- A certain waiting time was used before starting the test (5 min).
- After testing: normal pressure removed and bottom fixture untightened
 - o Data logging continued: force recording while specimens hangs at upper clamp used for correction of pulling force (zero the force).