

Experimental methods

Equipment:

Friction tester at University of Twente mounted with a 1 kN loadcell.

Experimental conditions as mentioned in 'Specimens.pdf' document per specimen.

Ply-ply friction test procedure:

- Check if pressure plates are parallel (adjustable through the bolts behind the springs)
- 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.
- Specimen preparation:
 - o Two metal foils (120 mm x 55 mm), cleaned with isopropanol.
 - o Composite material (50 mm width, pre-preg tape), overlap region: 65 mm (see schematic illustration in ESAFORM 2022 conference paper).
 - o Assemble metal foils at both sides of the tape material to obtain two tool-ply interfaces. Paperclips were used to keep the components together before the specimen was mounted in the friction tester.
- Check displacement sensor (straightness (laser leveler) and proper working in range of interest) as well as proper working of load cells.
- Mounting specimen:
 - o Central 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 leveler. Upper clamp reassembled in universal testing machine and crosshead moved downwards to mount the specimen (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.
- A certain heating time was used before starting the test.
- 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).