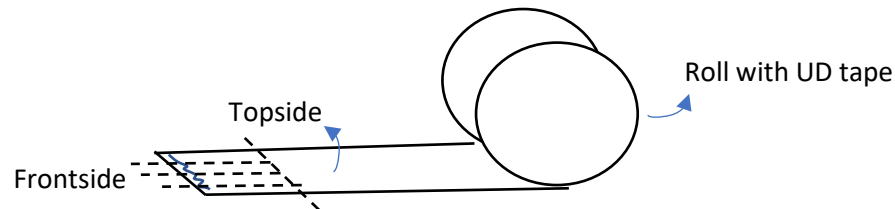


Notes on friction tests

Date: 24-aug-2020

Tape material: TC1200 UD C/PEEK, Ten Cate, produced: 17-apr-2020. Material cut: 50x250 mm² middle ply, 50x120 mm² outer plies (see schematic illustration in aforementioned paper). Metal foil (protection heating blocks): 55x120 mm² (as advised in Friction Tester protocol). Cutting convention:



Date: 27-aug-2020

Specimen lay-up: frontside at the upper (central ply) or bottom (side plies) clamps. First outer plies with topside faced on the table. Then central (or middle) ply with topside faced upwards and afterwards a second outer ply with topside facing upwards. Total contact length of 65 mm (overlap between sides and central plies). Plies are held together using paperclips, which are removed after mounting the specimen (before normal pressure is applied using the pressure platens).

Normal force correction value: -24.6 N (by carefully checking the spacing between the plates corresponding to specimen thickness, labeled as 'intrinsic stiffness').

⇒ Sum loadcell at 62.1 N (37.5+24.6 N) during test (for 15 kPa normal pressure on specimen)

Parallelism of pressure plates was checked.

Starting values: P: 15 kPa, U: 25 mm/min, T: 385 deg C.

Sp	Comments
2-1	Looks good, waiting time: 5 min
2-2	Specimen not completely straight
2-3	Fibers look a bit distorted; small amount of squeeze?
2-4	Proper alignment, overshoot in T (389) at start of test, seems okay
2-5	Overshoot in both p and T at start test, Note: during fixation of bottom clamp: metal foil bends out-of-plane, clamps fixed during waiting time period, again small wave during recovery, seems okay
-	BREAK (heaters shutdown)
2-6	5 mm/min, small overshoot in pressure (-66 N), bottom clamp fixed during waiting time (normally: bottom clamp directly after normal pressure application), different response?

Date: 2-9-2020

Continue with previous series. Metal foil cleaned with isopropanol. Normal correction found to be equal to previous series, -24.6 N, so 62.1 N in total during test (15kPa). Waiting time of 5 minutes.

Sp	Comments
3-7	5 mm/min, small increase in force during measurement, metal foil on specimen is rotated after testing (unclear when this happened) -> bad alignment?
3-8	5 mm/min

Date: 20-5-2021

Logging via laptop (excluding temperature measurement; T checked regularly) to measure friction response with higher sampling rate. Same lay-up as earlier used. Location of prepreg tape from roll in width also tracked, with location 1 the left edge of the roll (when looking from the back to frontside)

and location 6 the right edge of the roll. Get additional data points for series 2 & 3 data (higher V range).

15-7	125 mm/min, 385 deg C, 5 min waiting time, T ok
15-8	125 mm/min, T ok
15-9	125 mm/min, T ok

Date: 28-5-2021

15-17	40 mm/min, earlier measured material, mat loc 5
15-18	60 mm/min, earlier measured material, mat loc 4, T good

Date: 25-6-2021

Toray C/LMPAEK ply-ply measurements, 365 degC, 15 kPa (-62.1 N in LabVIEW), range of sliding velocities, logging via laptop, lay-up as earlier (topside down, front at bottom clamp – topside up, front at upper clamp – topside up, front at bottom clamp) with 65 mm contact length and 5 min waiting time.

17-4	5 mm/min, T good, loc 3
17-5	5 mm/min, slightly touched sides during lowering, too long slip distance, loc 2
17-6	5 mm/min, alignment not perfect in friction tester, started measurement first on position (instead of meas mode) -> seems not to have affected further measurement, loc 1
17-7	25 mm/min, T good, loc 6
17-8	25 mm/min, T good, loc 5
17-9	25 mm/min, loc 4
17-10	125 mm/min, no perfect alignment specimen, loc 3
17-11	125 mm/min, no perfect alignment specimen, loc 2
17-12	125 mm/min, problem with logging: error (already existing file) -> longer waiting time, slightly hit bottom clamp (lowered to far), loc 1

Date: 17-8-2021

Toray C/LM-PAEK ply-ply, additional intermediate velocity experiments (between 20 and 75 mm/min) to supplement earlier measured data. Laptop logging, T: 365 degC, p: 15 kPa, 5 min waiting time (-62.1 N in LabVIEW; intrinsic stiffness of -24.6 N checked after several measurements and found to be consistent and OK).

17-31	Break, loc 6, again 40 mm/min, no displacement reading -> hence logging restarted during waiting time (17-31_0 and 17-31), lower response -> perhaps due to specimen location in width of prepreg roll (loc 6: at right side)?
17-34	60 mm/min, loc 3, T good