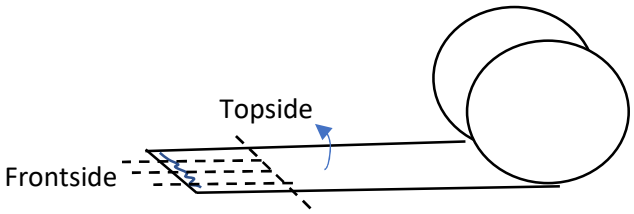
Notes on friction tests

Date: 24-aug-2020
Tape material: TC1200 UD C/PEEK, Ten Cate, produced: 17-apr-2020
Specimens cut: 50x250 mm^2 middle ply, 50x120 mm^2 outer plies
Metal foil (protection heating blocks): 55x120 mm^2 (as advised in Friction Tester protocol)
Cutting convention:



Date: 27-aug-2020
Specimen lay-up: frontsides at the upper or bottom clamps. First outer plies with topside faced on the table. Then middle ply with topside faced upwards and afterwards a second outer ply with topside facing upwards. Plies are held together using paperclips, which are removed after mounting the specimen (before normal pressure is applied).
Normal force correction value: -24.6 N (by carefully checking the spacing between the plates corresponding to specimen thickness, '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 fully straight
2-3	Fibers look a bit distorted; small amount of squeeze?
2-4	Proper alingment, 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?
2-7	2 mm/min, almost no recovery, waves in signal
2-8	1 mm/min, bottom clamp fixed right before test, again waves in signal, normal force adjusted to the setpoint halfway the test
2-9	75 mm/min, specimen hit the pressure plate during mounting, but alignment seems okay
2-10	125 mm/min
2-11	200 mm/min, bottom clamp fixed during waiting time
2-12	Specimen not straight, bad cut, ply split in middle ply in contact zone, 25 mm/min, several times interrupted (Stop&Go)

Date: 2-9-2020
Metal foil cleaned with isopropanol
Normaal correction found to be equal to previous series, -24.6 N, so 62.1 N in total during test (15kPa)

Sp	Comments
3-1	Waiting time: 5 min, 10 mm/min, seems good
3-2	10 mm/min, alingment not perfect, overshoot in p
3-3	15 mm/min, paperclips not removed, so data not usable!
3-4	15 mm/min
3-5	7.5 mm/min, mounted a bit too far into the machine (specimen slightly curved during heating)
3-6	6 mm/min
3-7	5 mm/min, small increase in force during measurment, metal foil on specimen is rotated after testing (unclear when this happened) -> bad alignment?
3-8	5 mm/min
3-9	4 mm/min, logging started too late (during waiting time), metal foil slightly rotated on specimen, small increase force during test
3-10	3 mm/min, no peak, small increase during test
3-11	2 mm/min, no peak, small increase during test
3-12	1 mm/min, no peak, small increase during test, jump in cross head movement data in begin measurement (artificial or tightening of clamps (at 40 s)) -> removed for data analysis (disturbed selection of start and end of measurement)

Date: 26-okt-2020

Stop & go experiments with 25 mm/min (interrupted velocity measurements), target rest times: 0, 0.5, 1, 2, 4 en 8 seconds after slip length of ~7.5 mm
Normal force correction as earlier, so -62.1 N in LABview
5 min waiting time

7-1	25 mm/min, ~7.5 mm slip, rest period, sliding velocity restarted
7-2	25 mm/min, ~1 s rest time
7-3	25 mm/min, not perfectly cut (outer plies slightly smaller, couple millimeters), immediately restarted
7-4	25 mm/min, 2 s rest time
7-5	25 mm/min, 4 s rest time
7-6	25 mm/min, 8 s rest time
7-7	25 mm/min, 16 s rest time