

The Nonwovens Institute

Staple Nonwovens Laboratory

The Nonwovens Institute at NC State University has created a state-of-the-art Staple Nonwovens facility on Centennial Campus, Raleigh NC. The laboratory is equipped with Trützschler feeding systems and extensive opening systems that allows for blending of various types of fibers as well as the formation of composites. There are two separate opening and blending systems which can be used independently to feed the card or the Scanfeed system for high loft substrates. This facility also includes a 1 meter wide Trützschler High-Speed Nonwoven Card EWK 413 which processes fibers from .5 to 20 denier with basis weights ranging from 30 to 100 gsm direct lay.



The Asselin "Profile 415-FD" crosslapper has automatic batt width adjustment, automatic overlap control and adjustment, and full control over the number of layers, with automatic computation of the necessary delivery speed on the floor apron. This equipment is capable of producing very light batts. The "Profile", as its name implies, is capable of shaping the outgoing material to optimize weight distribution from center to side of the fabric.

A Scanfeed is situated behind the crosslapper to allow for manufacturing of high loft webs. The batt can be fed directly to the needle punch equipment or can be used to form a layered composite with the lapped web from the card and the crosslapper.

The laboratory includes two bonding technologies, needle punch and thru-air bonding. The pre-needler is a Trützschler single board needle loom ENL. The lab also features the Asselin A.50-RL needle loom, DF-4 version with 4-boards, two up, two down stroke. The needle loom has a highly flexible needle pattern and results are repeatable with industrial scale machines. For thru-air bonding the lab includes a Fleissner flat 4-zone impingement/thru-air oven. Additional bonding technologies are available in other NWI labs.

The Staple Nonwovens facility use rates are shown in the schedule below and **are subject to change without notice.**

Staple Nonwovens Pilot Capabilities

Trützschler Nonwovens EWK 413	
Maximum delivery speed	Up to 100 meters/min (direct lay)
Fiber range	Up to 60mm / 0.5 to 20 denier
Web weights	30 to 100 gsm direct lay random web
Web width	1 meter

Trützschler Nonwovens Needle Loom ENL	
Type	Single board
Maximum input/output	20 meters/minute
Needle boards	Up to 5000 needles/meter
Stroke frequency	1200 rpm

Asselin "Profile" 415-FD Crosslapper	
Maximum input	50 m/min
Fold range	2-50 folds
Delivery web width	0.6 to 1.5 meters

Trützschler Scanfeed	
Maximum throughput	400 kg/h
Fiber range	2 to 4 inches / 0.5 to 20 denier
Web weights	300 to 1500 gsm
Web width	1.5 meters

Fleissner Oven	
Maximum width	1.2 m
Maximum input/output	0 to 15 m/min
Maximum temperature	446 F

Asselin A.50-RL Needle Loom	
Type	4-board 2 boards up stroke 2 boards down stroke
Maximum width	1.5 meters
Maximum speed	130 m/min
Maximum stroke frequency	1200 rpm
Needle board	7,000 needle/m 10,000 needle/m

Parkinson Winder	
Maximum input/output	0 to 400 m/min

These details are subject to change without notice.

To learn more about our capabilities, please contact us by email at nonwovens@ncsu.edu or write us at The Nonwovens Institute, NC State University, 2401 Research Drive, Campus Box 8301, Raleigh, NC 27695-8301.