oerlikon
nonwoven

Spunbond solutions for roofing substrates and underlayments

From Melt to Nonwovens

Why we should be your partner

Based on our long-time experiences we developed the process and engineered a spunbond production line from melt to nonwoven for geotextile applications made of polypropylene or polyester.

- Low production costs through high capacity production, less space, machines and operators, low waste rate, low energy consumption and higher yield
- High product performance with low basis weight to meet the leading market requirements

As part of the Oerlikon Manmade Fibers segment we are a leading solution provider of a wide range of nonwoven technologies - with spunbond, meltblown and airlaid solutions, we cover the technical and disposable nonwoven markets.

Oerlikon Nonwoven spunbond technologies – perfection from the start

The basis for an excellent end product is an optimum spinning result. It makes no difference whether you want to produce bitumen roofing substrates, roofing underlayments, or other techncial nonwovens, the Oerlikon spinning technology is the ideal starting basis.

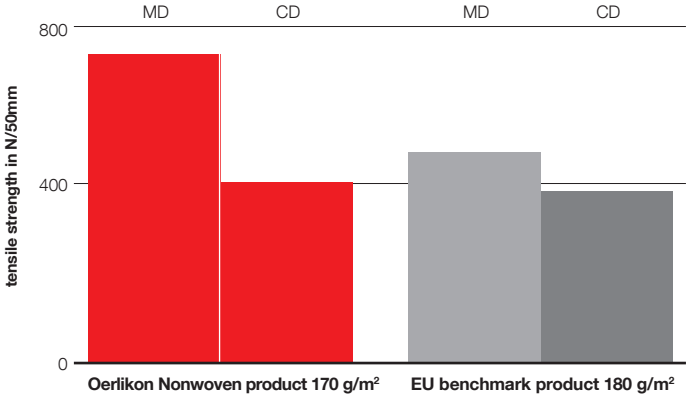
For optimal spinning, the polymer must be distributed in the spinning beam under very uniform conditions. With our segmented distribution system, a uniform residence time and heat transfer is achieved for the polymer across the beam and spinneret. As a result of the excellent polymer distribution, our spunbond technology achieves homogeneous web characteristics. To this end, consistent tenacity and elongation values in both cross and machine direction, are achievable.

The results are:

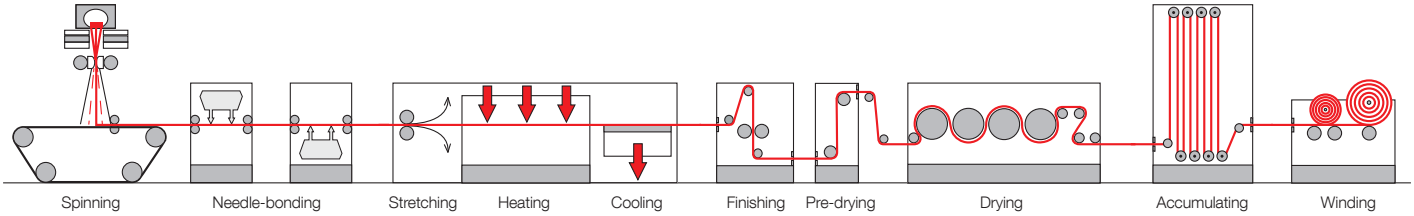
- Bitumen roofing substrate nonwovens from 100% PET spunbond with our technology are comparable to glass fiber reinforced products.
- High grade roofing underlayment nonwovens, a high standard with future opportunities.

Improved strength / lower basis weight (Benchmark example)

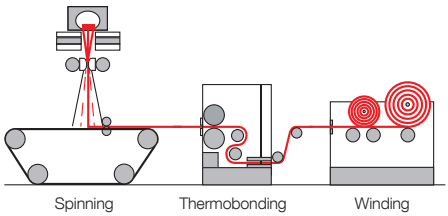
Bitumen roofing substrate



Spunbond plant for bitumen roofing substrates



Spunbond plant for roofing underlayment



High production capacities at low costs

Low consumption values for energy, gas, air and water, low personnel requirement as well as a low waste rate with raw material consumption, ensure that the investment of your plant is amortized within 2-4 years.[1]

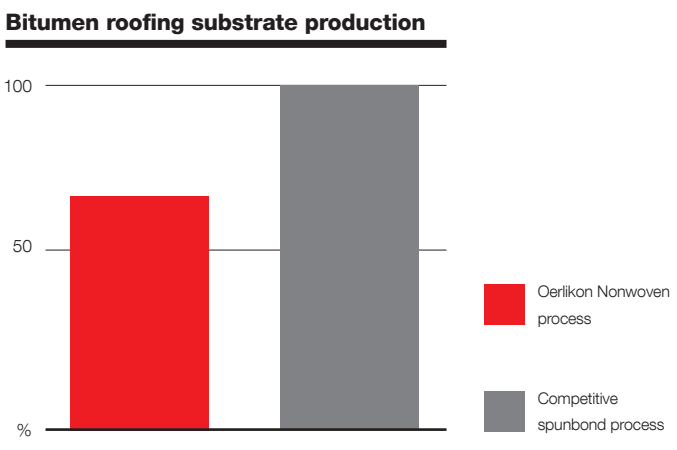
Bitumen Roofing Substrate (for top layer, often flat roofs)

Polymer	PET, rPET
Basis weight	100 – 300 g/m^3
Filament size	2 – 6 dtex
Standard product width	1.010 mm
Machine standard width (trimmed)	3.030 mm (other widths on request)
Line capacity	up to 8.000 tons per year

Roofing Underlayment (for use between roofing tiles, wooden roof)

Polymer	PP, PE, PET
Basis weight	50 - 120 g/m^3
Filament size	4 – 7 dtex
Standard product width	1.500 mm
Machine standard width (trimmed)	3.200 mm (others on request)
Line capacity	up to 6.000 tons per year

Example conversion costs (excl. raw material)



[1] At full production and 25% sales margin of the nonwoven roll good on average.

High throughputs
Our spunbond technology enables significantly higher throughputs than achievable with other standard systems available on the market: up to 300 kg/(h*m) for virgin polyester and up to 240 kg/(h*m) for polypropylene.

Low energy consumption
As a result of the optimization of the draw slot and a process optimization, the energy consumption for compressed air has been reduced, compared to our previous solutions, by 18%.

Low waste rate
Due to the high system up-time with planned maintenance intervals and the possibility of recycling the majority of the waste, the non-recyclable trim waste is less than 1%.

Economical plant
Our one-step spunbond process from chips to roll goods eliminates the need of semi-product stores and saves space in particular vs. two-step processes like carding (fiber and nonwoven production). Our compact spinning units need a maximum height of 12 meters. An additional building level for the processing is not necessary.

Due to easy-to-operate components and our single process control system, the plant can be operated by only 3-5 operators.

Innovative, powerful and flexible – production with Oerlikon Nonwoven technology

With more than 100 systems for PET, PP and bicomponent staple fibers installed worldwide – with production capacities in excess of 4.3 million tons/year – we are able to draw on comprehensive and proven know-how in the processing of polyester and polypropylene. This expertise is deployed for your benefit in the production of technical nonwovens.

All key components of the Oerlikon Nonwoven spunbond technology are manufactured in our factory in Neumünster. We also work with renowned partners.

Outstanding flexibility in polymer use

Our spunbond technology is designed for a wide variety of melt spinning polymers such as PET, R-PET, PP, PE, PA, PLA and PPS.

Additionally, our lines can be optionally equipped with bicomponent technology which has been installed in a number of commercial lines. Our unique bicomponent system allows:

- Core/sheath with a sheath content as low as 5%
- Decreased costs per unit with cost-efficient polymer, e.g. recycled polymer in the core
- A wide range of polymer combinations, polymer ratios and viscosities
- Adding value by utilizing different core and sheath properties, e.g. strength, softness and elongation

Draw slot technology

In the draw slot, the filaments are accelerated by induced compressed air, thus controlling the filament draw ratio. The drawing is independent of the spinning and quenching for obtaining the desired filament characteristics.

Our draw slot is designed to enable an improved air velocity distribution over the draw slot width. This design offers a more homogeneous distribution and thus a more homogeneous web-formation. The achieved, significantly lower basis weight spread results in the reduction of the mean basis weight by maintaining required technical characteristics like tensile, puncture and tear strength, thus leading to savings in polymer costs.

Improved forming zone

Better formation for less edge trim and therefore savings in raw material costs.

In the forming zone, which directly adjoins the draw slot, the filament speed is reduced in order to open and oscillate the filaments for a homogeneous distribution and fiber orientation. Our forming zone design allows a controlled air and filament guidance for achieving clear and homogeneous web edges. Therefore the edge trim can be significantly reduced or even eliminated – depending on the product requirements.

The suction box offers a more robust formation and a wider process window which is essential for a broad and flexible product portfolio. Our design leads to controllable settings for individual products, improved formation freezing and improved web transfer.

This results in an extended process flexibility which enables the production of nonwovens with varying characteristics in terms of:

- Polymers used,
- Filament fineness and cross sections,
- Fiber orientation and
- Basis weights.


oerlikon

Oerlikon Nonwoven
Zweigniederlassung der
Oerlikon Textile GmbH & Co. KG
Christianstraße 168 – 170
24536 Neumünster
Germany
T +49 4321 305-672
F +49 4321 305-231
sales.nonwoven@oerlikon.com
www.oerlikon.com/manmade-fibers