



# New solution to waterproofing footwear

**I**talian company Nextec srl of Varese has developed a patented lamination process, where a permeable waterproof membrane can be bonded to the back of leather. The product is trademarked OutDry and turns the leather itself into an impenetrable barrier against water. Nextec claims it offers maximum protection against water and humidity penetration, while allowing a high degree of moisture permeability and absorption of condensation. The comfort and flexibility of the leather is not affected.

OutDry is an extremely thin, high technology, resin membrane specifically developed to be waterproof and transpirable with excellent moisture permeability properties. Inverted cup ASTM E96-BW tests with membrane laminated to 1.2mm nappa leather show results of 4850 gr/m<sup>2</sup>/24H against 3500 gr/m<sup>2</sup>/24H for a conventional PTFE membrane.

The membrane is flexible and elastic with perfect adhesion properties even under stress and is easily bonded to stretchable natural materials such as light substance leather. Transpiration through the membrane is by chemical osmosis and does not involve the passage of perspiration through micropores, which may be deformed during laminating. The hydrophilic property of the membrane lessens condensation inside footwear or clothing, preventing perspiration saturation and a consequent loss of body heat.

Creating the laminate is a patented process employing a special hot melt adhesive system applied to the back of the leather, using technology provided by Nextec and equipment made to the company's specification. The exciting aspect for shoemakers lies in the ability to do this operation in the round, when the maximum amount of upper stitching has been completed. The creation of a totally waterproof upper, requiring only the addition of a conventional lining, has important performance, comfort and cost advantages for manufacturers.

- Upper and not lining becomes waterproof.
- Combinations of upper material are possible.
- Expensive taping is reduced to a minimum.
- Standard cement lasting can be employed.
- More flexible and more comfortable shoes are the result.

The process involves placing the stitched upper inside-out over a shaped form. The membrane, in either one or two cut shapes with overlap allowances, is laid over the upper and the form enters the laminator. On completion of the cycle, the upper requires only one (back seam), or at most two, applications of heat-seal tape to



complete the waterproofing process. A conventional lining is then stitched round the throat and topline to complete the assembly.

Nextec does advise that design of the upper can contribute to the success of the process. The reversed upper must fit as closely to the form as possible to ensure maximum overall contact with the membrane and so open front derby styles are not recommended. The company will assist at the modelling stage, so that designers can optimise all the advantages available. Nextec already works with leading manufacturers Prada, Mib, Bally, Gronell, La Sportiva and Artioli on a variety of footwear types.

Nextec says the Outdry process can in theory be used in almost any type of footwear, including leather and synthetic combination uppers, perforated uppers (micro holes to increase transpiration for special applications) where the membrane will still guarantee waterproof resistance, and even on leather soling. Twelve months has been spent refining the laminating technology to the point where the first commercial machines will shortly become available. 🧴

*Philip Lattaway*

*Membrane laminated to the upper, without any interspace.*

