

Presseinformation

Sympatex®: a membrane that's as recyclable as a PET bottle

Membranes are not all the same. In the complex world of membranes and laminates for functional clothing, there are many differences. Depending on the materials and manufacturing processes used, products range from the environmentally compatible to the distinctly incompatible. However, the environmental friendliness of a membrane depends on much more than the amount of energy used in the production and disposal processes and their corresponding CO₂ emissions. The environmental compatibility of the chemicals used in the manufacturing process is also of particular importance, as is the recyclability of the membranes and/or laminates used.

Sympatex Technology uses a material made from polyether and polyester – familiar from the production of PET water bottles – in the manufacture of its environmentally friendly membranes. Polyether ester is not only recyclable, but is food safe and completely free of health risks.

Composition of the Sympatex membrane

A closer look at the Sympatex membrane helps to explain its chemical composition. Since its earliest days, Sympatex Technology has used a production process based on polyether ester, a chain of polyester and polyether molecules. The advantage of this compound is that it is suitable for food use – like polyester-based PET bottles – and also environmentally compatible, consisting solely of oxygen, carbon and hydrogen. Because of this combination of human safety and environmentally friendly properties, the Sympatex membrane was awarded the Oeko-Tex Standard 100 certification. The independent testing institutes of the International Oeko-Tex association use the Oeko-Tex Standard 100 to certify that textile products of all kinds are free from harmful substances and pose no risk whatsoever to the health of wearers. Just like



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PET bottles, the Sympatex membrane is also fully recyclable and reusable. If a Sympatex membrane is burnt, all that is produced is CO₂ and water. Since Sympatex membranes are made out of ester and ether, they can be broken down by naturally occurring enzymes. They do not leave behind any non-degradable or poisonous materials.

Many other membranes used in functional clothing are based on fluorochemistry (Teflon) and do not offer these advantages. Materials based on these chemicals are classified as hazardous, as they can release poisonous and carcinogenic compounds when manufactured or burnt.

How the Sympatex membrane works

The secret of the Sympatex membrane lies in its functionality. This arises from the membrane's poreless construction and works according to a purely chemical-physical principle. The hydrophilic (water-attracting) components of the Sympatex membrane absorb moisture (perspiration) in the form of vapour from the body and transport it outwards, away from the skin. The closed structure of the material prevents drops of water (rain) from getting in. In addition to its highly effective climate management properties, the Sympatex membrane also provides excellent protection against dirt particles and liquids – the non-porous structure remains intact even after repeated washing and continues to offer excellent breathability and water protection.

Teflon (polytetrafluoroethylene or PTFE) and other fluoride compounds

These days, fluorides are found in many products, including frying pans, carpets and membranes. However, these can release harmful toxins during manufacture and disposal that the human body is unable to eliminate and which therefore accumulate in the tissues. Many fluorides are suspected of being carcinogenic.

Even the DWR (durable water repellent) layers of outer materials contain small amounts of fluoride compounds that are added to bring about the beading effect sought by customers. Unfortunately, the chemicals and textiles industry has not yet been able to develop a completely fluorine-free product to replace Teflon in performing this function. Although there are wax- or oil-based layers on the market that are free of fluorine, these solutions do not meet the high customer requirements regarding stability or dirt and water repellence. Because of this, the chemicals industry is currently channelling much effort into developing fluorine-free waterproofing agents, and is hopeful that nanotechnology may be the key to new solutions in the near future.

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Ecobalance and product life cycles

When determining or evaluating a product's ecobalance, it is crucial to analyse the entire product life cycle – from its manufacture, transport and usage all the way to disposal. In this regard, the main factors are energy consumption, environmental impact and health risks.

Innovation

This year, Sympatex Technology was even able to showcase a wholly recyclable laminate at the ispo SPORT & STYLE tradeshow. This new construction, known as Ecocycle SL, also reached the final of the ispo Eco Award competition. Needless to say, as well as being environmentally friendly, all Sympatex products are also highly functional. All Sympatex Technology laminate constructions and membranes are high-tech products that are continually developed and improved. The innovative nature of this approach is confirmed by the two ispo awards won by Sympatex Technology in the ski clothing and shoe categories in 2007.



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