

# VAUDE | Bike Bag

The typical outdoor gear consumer is very environmentally minded. VAUDE wants to provide recyclable products as a world first for its clients. The company already has a strict policy on corporate social responsibility and also has its internal 'Green Shape Standard'.

## MATERIALS



PA woven fabric (335 g/m<sup>2</sup>) coated with:

- Heat triggerable INDAR primer layer (100 µm wet) including a fluorescent dye enabling sorting at end-of-life
- Two water based PU top coats (200 µm wet)

## IMPACT

Quantities of a typical product line are ca. 10.000 pieces/year, resulting in approximately 30 ton/year. The DECOAT technology is relevant for several product lines, including bike bags, several backpacks and rain coats.

VAUDE manufactured over 2.5 million products in 2016, with a total turnover of ca. €100 mio. The DECOAT solutions are relevant for the mid-term strategy, accounting for approximately 35% of turnover.

## RESULTS

### Solvent based recycling process

A polyester textile coated with a conventional PU coating was shredded and treated with the solvent-based recycling process. This allowed complete removal of the coating, without affecting the polyester material. The regained PET material will be reprocessed into new filaments via a melt spinning process.

### INDAR primer

A heat triggerable primer layer was implemented between the textile and the conventional PU top layers. Heating led to successful debonding of the PU top-coat. The primer did not affect abrasion resistance and waterproofness and can be washable, if desired.

DECOAT is focused on recycling of painted plastics and coated textiles, which currently present a significant challenge to recycle and end up in landfills or incineration. The project has tested innovative methods to remove the coatings/paints and reprocess the uncoated bulk material, with the aim of recovering high-value materials. The new solutions will improve the sustainability of a range of industries, including packaging, reducing waste and their environmental impact.

## DECOAT Innovation Potential

### Recycling of Coated Plastic Parts

The current technology often being used is based on chemical bath, which is expensive, prone to contamination, and difficult to implement on small scale. DECOAT is looking to find more environmental-friendly processes that are easier and cheaper to implement. It aims to achieve a removal efficiency of >99% in a single step, leading to higher quality recycled material at a market affordable price.

### Recycling of Coated Textiles

The project is working on coating solutions made with recycling in mind, both from the design and materials side. The development is aimed at creating a novel process step prior to the existing pure (thermo-) mechanical or chemical recycling processes. By separating the coating from textile substrate, these solutions will help to enhance the recycling of coated textiles.

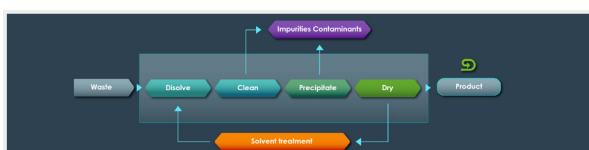
### Recycling of Automotive Plastics

DECOAT is developing novel solutions to enhance recycling. The new technologies enable active layer separation, making it easier to upgrade used parts by removing the coating so it can be recoated. It offers the possibility to remanufacture plastic coated parts. DECOAT will be useful to the further development of parts designed for recycling which will enable the growth remanufacturing sector.

## DECOAT Technologies

### Solvent-Based Recycling

The solvent-based technology from Fraunhofer IVV utilizes a solvent that is able to selectively dissolve specific polymers, leaving behind any other materials or impurities. The dissolved polymer can then be dried and recovered as a pure material. The polymer structure remains intact throughout the process. The process is efficient and environmentally friendly; the solvent mixture is non-toxic and can be reused. The technology has already been successfully used to recycle a wide range of products, including laminated packaging, and multilayer films, and can also be applied to dissolve or delaminate coatings, to recover the uncoated substrate.



### Debonding Primer-Based

The INDAR primer from Rescoll is a technology that allows to debond materials on demand using thermal triggering. The primer is deposited between the substrate and coating layer(s). When heated, the primer will separate the material layers, leading to quick and simple coating removal. If needed, the separated materials can be easily cleaned with alcohol after debonding, thus enabling good recycling options with high quality outputs. The addition of the primer has no impact on the functional properties (static and dynamical mechanical properties, fire resistance, etc).

