

# Panasonic | Switches & Sockets

PANASONIC wants to produce a 'green line' of products that are fully environmentally friendly without compromising on the aesthetics.

## MATERIALS



- PC, ABS and PC-ABS as substrate materials
- Three types of 'coatings':
  - Foil Print with aluminium foil (ca 50µm)
  - Chrome coating via dipping (primer of copper, chrome top layer)
  - Painted layer, based on styrene-acrylic emulsion (ca 15µm)

## IMPACT

PANASONIC produces approximately 60 tons of coated plastic switches, sockets and other coated electronics parts each year. The DECOAT approach is expected to be integrated into 80% of them within 5 years after project end.

## RESULTS

### Solvent based recycling

The process worked well for the recycling of Panasonic's PC/ABS material, a complete removal of the coating was achieved. Upcoming tests are expected to demonstrate that blended recyclate with virgin materials and impact modifier will maintain the original material properties.

### INDAR primer

The primer was applied on PC/ABS material. Painting comparison and color check were not suitable, orange peeling appearance detected on the product, UV resistance test were not good. It was decided to continue working with the ABS material (frame).

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.

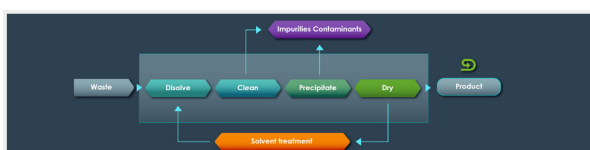
### Recycling of Automotive Plastics

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).

