

## EPS Recycling Technology

for expanded polystyrene (EPS) & polysterene (PS)

Transformed back into high purity polystyrene (PS)

# IDEAS INSIDE



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The EPC Group is certified according to DIN EN ISO 9001:2008

### EPC Group offers engineering and technology for turn-key EPS/PS recycling plants.

EPC Group together with an alliance of German companies has developed an advanced EPS recycling technology. The innovative CreaSolv® Technology has been developed and optimized at the Fraunhofer Institute for Process Engineering and Packaging IVW in cooperation with the solvent formulator CreaCycle GmbH. The EPC Group has transferred the CreaSolv® Technology into a high efficient recycling plant design which produces high-quality recycled polystyrene.

EPC Engineering Consulting GmbH is the first company world-wide offering this plant design based on the proprietary CreaSolv® Technology on a commercial scale for turnkey projects.



## Process Description

### Economically feasible solution

#### Step 1: Mechanical Crushing

The collected EPS/ PS waste is crushed and broken into smaller pieces. This process step is always tailored to the waste composition.

#### Step 2: Dissolving of EPS

The EPS/PS pieces are dissolved by using the special CreaSolv® Formulation, ensuring that only polystyrene is dissolved and therefore all other plastics and impurities remain in solid phase in the slurry.

#### Step 3: Slurry Filtration

In order to separate solid impurities from the liquid, the slurry is transferred into EPC's unique separation vessel. This step is followed by a multistage filtration. Only the dissolved polystyrene enters the next process stage.

#### Step 4: Polystyrene Precipitation

The PS gel is separated from the solvent. Both, precipitant and solvent, are recovered and fed back into the process circuit. At this stage dissolved impurities like HBCD (brominated flame retardant) will be extracted from the PS below the actual European limit values (POP regulations)

#### Step 5: Final Product

Melt extrusion, optional filtration and granulation to high quality recycled PS chips. The resulting PS chips have a high pureness. HBCD-Additives will be reduced below 100 ppm during recycling process.

Qualities of end products were positively assessed by European EPS producers.

Solvent recovery > 99% solvent recirculation.

#### ENVIRONMENTAL ISSUES

In contrast to the current practices of incineration or landfill the unique EPS recycling plant based on the CreaSolv® Process is the first "closed-loop" recycling process for PS/ EPS wastes with or without hazardous impurities. The used CreaSolv® Formulation is not considered as hazardous according to the Globally Harmonized System (GHS). EPC Group offers an innovative EPS/PS recycling CreaSolv® plant design that provides an economical feasible solution to an environmental issue.

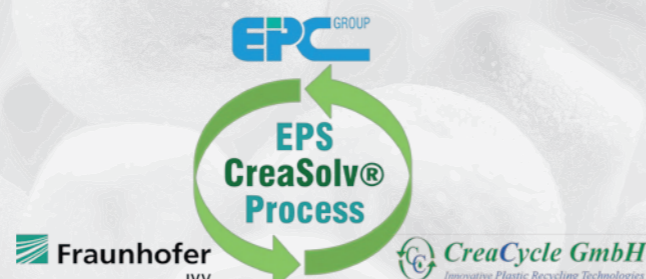
#### ADVANTAGES

- Alternative to EPS combustion and landfill
- Environmentally benign process liquid
- Highly efficient solvent recovery - 99% solvent recirculation
- Option to transport EPS in solution; reduced transportation costs
- EPC has four (4) standardized plant designs "of the shelf" available.
- Nearly all input stream compositions can be converted (feasibility to be checked individually).

#### TAILOR-MADE DESIGN

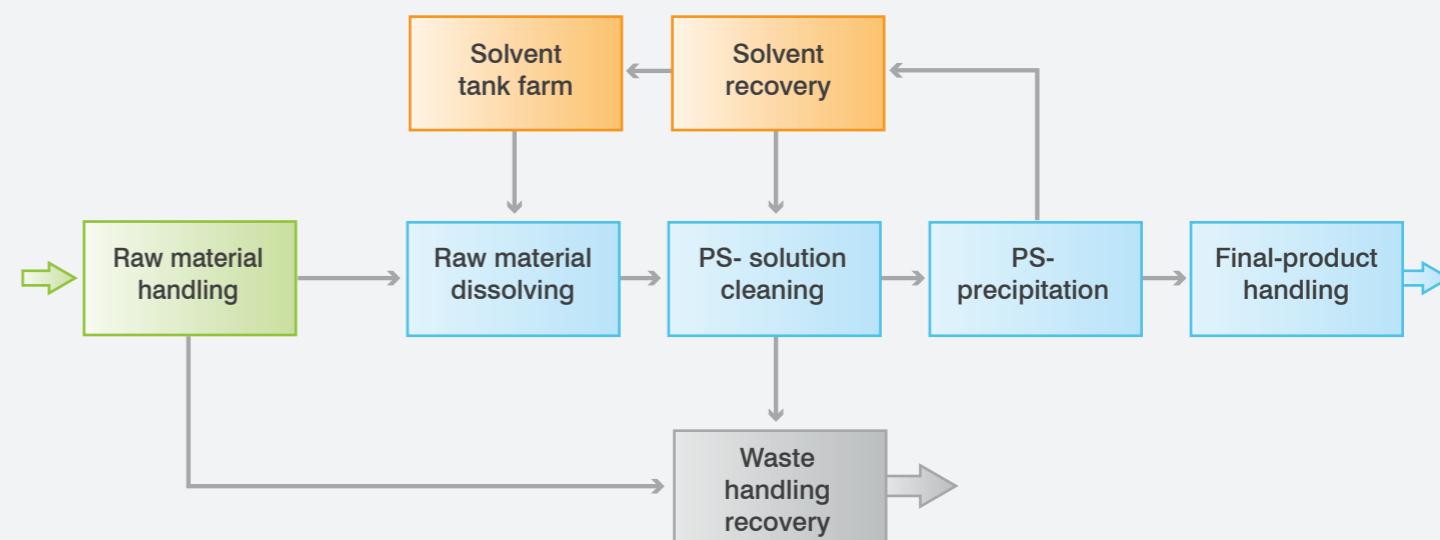
EPC Group works with each client individually to develop a tailor-made concept, based on EPC's basic design that can be optimized for the specific EPS feedstock.

### Cooperation for EPS Recycling



(CreaSolv® is a registered trademark of CreaCycle GmbH)

### How CreaSolv® Technology works for EPS Recycling



Turn-key solutions including required auxiliary units, civil and authority engineering offered by EPC Group.

### Typical raw material sources

#### Construction Waste



#### General Packaging



#### Food Packaging



### CONTACT PERSON

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