EPS packaging for electronic devices: Tried and tested, safe, sustainable

A presentation of quantified environmental life cycle product information for expanded polystyrene (EPS) packaging systems.

The European Manufacturers of Expanded Polystyrene Packaging (EUMEPS Packaging) commissioned independent, international Consultants PricewaterhouseCoopers (PwC)/Ecobilan to conduct a Life Cycle Assessment (LCA) on Expanded Polystyrene (EPS) used in TV-packaging. The two objectives were to identify the sources of environmental impacts associated with the use of EPS packaging and to quantify the improvements by recycling.

Methodology

The LCA is an environmental analysis focusing on the entire life cycle of a product, from raw material acquisition, to processing, transportation and final disposition. It quantifies the energy requirements, solid wastes, atmospheric emissions, and waterborne wastes generated by the production and disposal of products. The data in the report represents 1,000 units of TV packaging systems.

Results

The established packaging system for TV packaging consists of polystyrene corners, LPDE film and cardboard. Taking into account the different TV sizes, the relative share of EPS is at 11%, Cardboard at 83% and LPDE-Film at 6%. The results demonstrate that EPS packaging parts have the

Table: Lifecycle of EPS packaging material

Especially regarding residual waste, water consumption and water emissions it has significant better results than LPDE and cardboard parts.

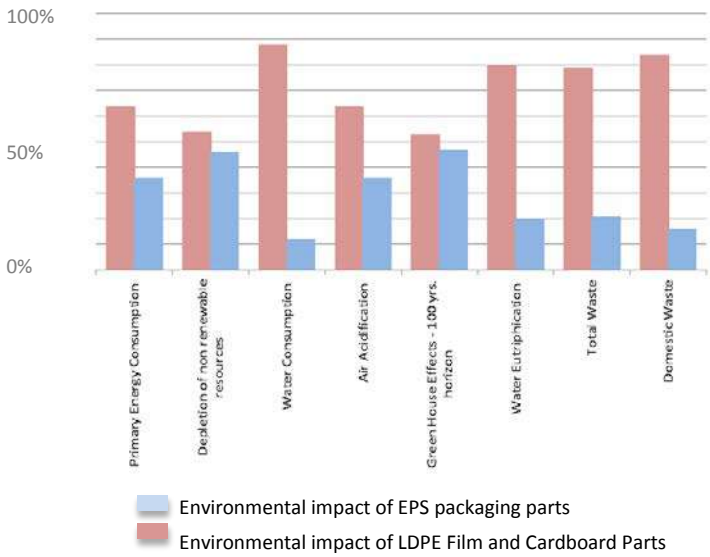

Table: Environmental Impact of Packaging Parts in a TV set

A reference scenario shows that the strong recycling activities have a high impact on the environmental performance of EPS packaging material, as atmospheric and waterborne emissions decrease in all categories. Therefore the promotion of recycling activities throughout Europe remains one of the focal issues of EUMEPS packaging.

Constant improvement measures of product and production process

A similar LCA study was already carried out in 2001 by PwC/Ecobilan, on the EPS packaging used for CRT (Cathode Ray Tube) TV tubes. Thus, the comparison of the results from 2001 and 2011 is of particular interest. The continuous modernization of production processes of polystyrene parts and their optimized product design have got a positive effect on the environmental impact. The weight has been reduced by close to 75%. **At the same time, during that period energy consumption was reduced by around 15%, and water consumption was reduced by almost 40%.**

The LCA demonstrates that EPS has excellent environmental performance in many aspects. Combined with its outstanding packaging properties, expanded polystyrene continues to be the first choice for a wide range of packaging applications.

About Expanded Polystyrene

In 1949, the BASF scientist Dr. Fritz Stasny invented the “expanded polystyrene”. The source material for polystyrene is styrene. During a chemical process bead-like, expanded polystyrene is generated. By heating up the beads with water vapor, they expand into a form that is roughly forty times their original size. These foamed beads can easily be reprocessed and is used for a variety of useful products. EPS consists of 98 % air. The remaining 2 % are polystyrene. Thanks to the good performance of this alliance, EPS a lightweight material with outstanding insulation and shock absorbent abilities. Whether used as protective packaging for fragile items during shipment, as insulation in building applications, or even as a bicycle helmet, EPS is serving an important role in our everyday lives.

Material Declaration

Polystyrene is produced by the polymerisation of styrene, a substance which also occurs naturally in foods such as strawberries, beef, coffee beans and cinnamon. Potential effects on the environment and human health have been examined by the EU Commission. It has been concluded that there is no need for any restrictions in the application and use of styrene based materials. Furthermore, EPS packaging material is free of bromated flame-retardants.

About EUMEPS

In 1998, the European Manufacturers of Expanded Polystyrene (EUMEPS) have merged into a European association. EUMEPS Packaging represents the European EPS packaging industry and promotes EPS as protective packaging material with economic and environmental strengths. Find more information on EUMEPS Packaging and on EPS packaging material on www.eumeps-packaging.eu.