FACT SHEET

Recycling and Recovery of Polyurethanes

RECYCLING & RECOVERY OF COMFORT PU FOAM

The market sector for flexible PU foam has two major sales outlets, furniture and bedding. Presently, these market sections are not regulated via harmonised legislation in the EU however, national regulations do exist.

End of life foam is part of household (HH) bulky waste and is mostly collected through road side collection by the local waste authority. Waste management of this HH waste is covered through the Directive 2008/98/EC on waste (Waste Framework Directive, WFD).

The List of Wastes (LoW), formerly known as the European Waste Catalogue, forms the basis for classifying all types of hazardous and non-hazardous waste and for defining handling, disposal and recovery operations. It assigns six-digit waste classification numbers for different types of waste.

Technology

The comfort foam market is one of the two dominating outlets. Flexible PU foam with > 1.5 Mio t and of similar l size the rigid foam building and construction market. Flexible polyurethane foam is an essential component of the production of upholstered furniture and mattresses and therefore automatically contained in the EoL phase of these products.

Application Description

Foam manufacturers, together with raw material suppliers, have developed special foam grades with high comfort properties and outstanding durable behaviour. They are offered to the fabrication of products with an extended lifespan. The application of these high quality foam grades leads to an extended lifespan of upholstered furniture and mattresses and as a consequence, reduces the amount of post-consumer waste.

Foam producers have optimised the foam manufacturing processes with a special focus on the reduction of raw material use, efficient high foam yields and minimized waste creation during foaming due to cost reasons. The best available manufacturing technology achieves a waste reduction of below 1 %.

PU Product Characteristics

Characteristically, bedding and furniture are extensively composed of many different materials, due to manufacturing with wood, metals, textiles and PU. This integrated multi material composition offers few advantages to recycling. According to Europur around 40 % of market sales of PU end up as waste to energy. 60% are being landfilled.

Recycling & Recovery Technologies

Trials in Belgium and the Netherlands = on the separate collection of EL mattresses for a specific recycling procedure have been abandoned due to environmental inefficiencies and economic unattractiveness.

The dismantling of EL mattresses has the potential to raise serious hygienic and health-related problems due to bacteria content, sweat and dust. Moreover, suitable operational units such as logistics, dismantling and recycling of the different materials are lacking in the market today.

The method of choice for direct bulky HH waste with PU is municipal solid waste incineration.

Shredded residues including PU from bulky HH waste can be also used for fluid bed incinerators (see ISOPA Factsheet Energy Recovery).

Eco-Considerations

When compared to MSW incineration, health and hygienic issues of material recycling need to be considered especially, besides high cost (foam logistics) and marginal environmental impacts.

References

See Fact Sheet List of References and suggested reading material.

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