



Reduce, Reuse, Recycle for Furniture Industries with Rebonded PU Foam

PROJECT DESCRIPTION

Federal Eco Foam's sustainability mission began in 1972, with the start-up of a polyurethane and latex mechanical recycling plant in Lommel, Belgium.

The company recycles both post-industrial (production cut-offs) and end-of-life (from e.g. old mattresses or seats) foams, in a process as detailed below:

1 PURCHASING

Polyurethane trim foam is purchased, baled by the supplier and shipped to a manufacturing facility.

2 SHREDDING

Large pieces of trim foam are crushed into smaller pieces. The pieces of shredded irregular foam are then converted to homogeneous particles.

3 PRODUCTION

Particles are weighed for the desired density. Once the desired density is achieved, the particles are mixed and become dispersed, a binder and additives will be added, then finally they will be compressed to form a foam block structure.

4 BLOCK TO SHEET PROCESSING

The blocks are dried and undergo a curing process. They can remain in raw state or be clean cut at a specific size in length and width. Furthermore, they can be split into sheets in a thickness requested by the customer. The blocks or sheets are packed and prepped for outbound transport by truck or container to the customer's location.

In addition to keeping waste out of landfills, mechanical recycling mitigates environmental pollution while supporting the principles of the circular economy. This cost-effective approach not only reduces energy consumption and greenhouse gas emissions while extending the product's lifecycle, but also reduces air and water pollution.

PROJECT IMPACT

Federal Eco Foam purchases more than 20,000 tonnes of polyurethane and latex trim every year and transforms it by means of a mechanical recycling process into everyday products ranging from construction to packaging and sports mats, to name a few.

Rebonded foam can also be used as a cushioning layer in comfort applications, such as in mattresses and upholstered furniture. Their usage will further increase in the future following latest policy developments.

This is already evident in the upcoming [Ecodesign for Sustainable Products Regulation](#) (ESPR), the cornerstone of the Commission's approach to more environmentally sustainable and circular products. In view of this, Federal Eco Foam is partnering up with several furniture manufacturers to source - and secure - the right rebond foams for their new product lines. Through collaborative approach, from concept design and material composition, Federal Eco Foam has tools to ensure that rebond foam has the right properties (e.g. comfort feeling, rigidity and firmness) for different foam parts in today's furniture applications.

Federal Eco Foam is also reviewing closed-loop processes, for example for leased furniture, so that at the end of the products' life cycle, another iteration of mechanical recycling can be ensured. In this way Federal Eco Foam's mission extends to the third generation, providing continuous and sustainability-oriented products.

By ensuring that the chemical structure of the material remains unchanged, the aim is to achieve multiple uses of the same foam product while contributing to a more sustainable waste management system.

ABOUT FEDERAL ECO FOAM

Federal Eco Foam traces its origins back to the establishment of United States-based company Federal International as a pioneer in paper recycling in 1914. Federal International expanded its recycling reach to Europe to purchase PU trim foams for the U.S. carpet underlay industry. As its purchasing power and supplier relationships grew, Federal International created the company Agglorex, later known as F.E.F., in 1972 in Belgium to manufacture its excess trim foam into a recycled rebond foam product that had numerous desirable properties and new application possibilities.

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