



DSM Niaga Technology

BUSINESS MODEL: **Resource recovery**

SITUATION

- Today's standard carpets are made from a broad variety of different materials and are glued together with latex, which makes it impossible to recycle them.
- The leading alternative to landfilling carpet is incineration, which requires a minimum temperature of 850° C and leads to high carbon emissions and potentially harmful dioxins
- In the U.S., some 4 billion lbs. (1.8 billion kg) of carpet ends its life in landfill every year, making it one of the highest single contributors to the country's landfill sites.

CHALLENGE

- Creating 100% fully recyclable carpets that are environmentally-friendly and financially-viable.

SOLUTION

- DSM-Niaga uses drastic simplification to re-design everyday products from the ground up, and is applying its technology to produce recycled and recyclable carpets. The main idea is to use the lowest possible diversity of materials, and only connect different materials in a reversible way.
- The Niaga® manufacturing technology allows for carpet designers to make carpets from only one material, or from two materials married together by a reversible glue. The glue can decouple on demand, to support full recovery of the two materials. Both the mono and duo material options can be 100% recycled back into new carpets, without losing the quality of the material.
- Due to the use of a limited variety of pure and known materials, a wide range of benefits are available: the carpet has no off-gassing (improved indoor air quality), is lighter, softer, easier to clean, easier to install, saves energy and uses zero water in production.

- The Niaga® adhesive technology allows for products to be designed and made in ways that allow them to be deconstructed and remade, again and again.

KEY BENEFITS

- While the focus is on carpets for now, the DSM-Niaga design philosophy and technology, as well as the reversible adhesive, can be applied to other product categories manufactured from polyesters and polyamides – which are also contributing to today's waste issues all over the globe.
- The approach drives the use of sustainably produced renewable resources.
- 100% fully recyclable, Niaga machines use up to 90% less energy than mainstream lamination processes, and do not use water.
- Indoor air quality (no VOCs/ new carpet smell), easy installation.

Link:

<https://www.dsm.com/corporate/science/competences/macromolecular-sciences/dsm-niaga.html>