



Chemical Recycling of Plastics

Your preferred partner on the journey
towards a cleaner tomorrow

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LAMOR

Global plastics challenge - from waste to raw material

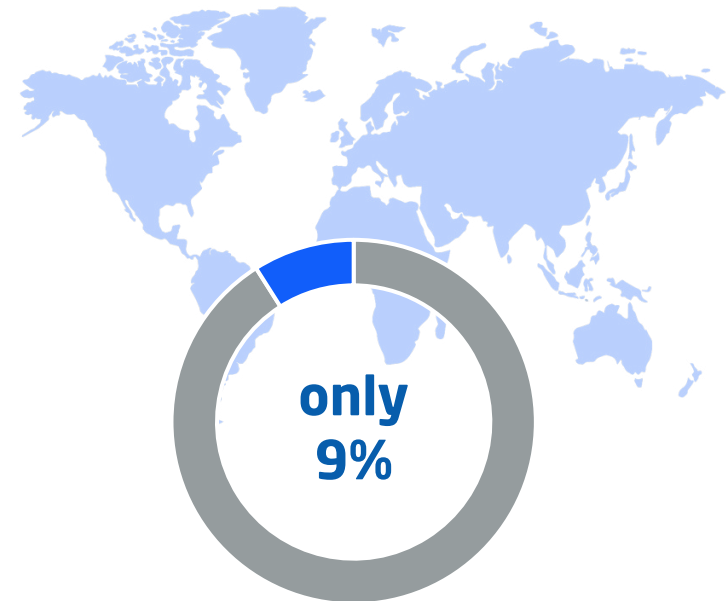
The magnitude of the global plastic challenge is huge. Finding a solution is crucial for tackling climate change and transitioning towards a circular economy.

The plastics industry, and more specifically plastics manufacturing, accounts for more than three percent of global emissions, and the volume of plastic waste has doubled worldwide in the last twenty years.



Only less than one tenth of all plastic waste is currently recycled appropriately.

Of the 8.3 billion tons of plastic waste,



has ever been recycled.

Plastics Recycling Challenge and Drivers

- Plastic based materials are developing towards ever-higher recycling rates.
- EU directive for plastic recycling clearly drives for an increased recycling volume by 2030. This would mean a recycling rate of approximately 60%.
- Current plastics recycling activity – approx 30 Mton of plastic waste generated in the EU in 2020, with a recycling volume of 10 Mton. Residual plastic waste material being sent to landfill or incineration.
- “Virgin” plastic material producers will be required by legislation to increase the recycled use in total mix.

Market drivers

- Plastics-based material recycling
- Post-consumer packaging
- Electronic/car components
- Construction materials

Product drivers

- Recycled content acceptance
- Recycled material available
- Alternative material properties
- Incentives & energy efficiency

Technology drivers

- In: Use of wider material quality
- Production process technology “Sorting - Separating - Sensing”
- Out: Regranulate - Wax - Liquid

With plastic recycling, plastic waste becomes a valuable raw material



Our steps towards solving the global plastics challenge

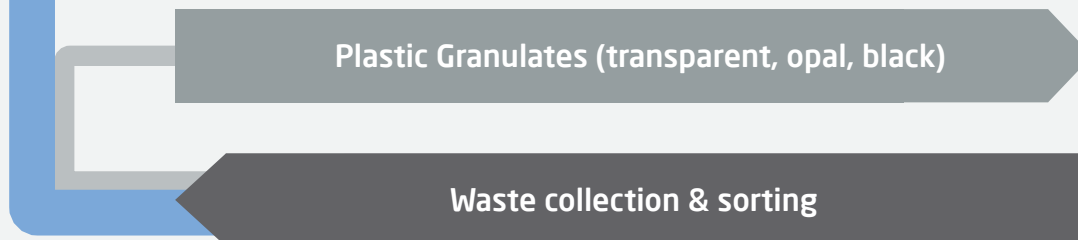
Plastic recycling has become an essential part of Lamor's efforts to reduce environmental impact and enhance sustainability. To meet these goals, it's crucial to understand the various recycling processes, from mechanical to chemical, and how they contribute to addressing the global plastic waste challenge.

Lamor's integrated process combines mechanical recycling to sort and prepare the plastic waste and thermochemical recycling to break down plastics into valuable resources such as oil. It offers a comprehensive approach to tackling the global plastic waste challenge by diverting plastics from landfills and incineration while producing useful materials and reducing environmental impact.

Thermochemical recycling



Mechanical recycling





Waste collection & sorting: Plastic waste is collected from various sources and sorted to remove contaminants and separate different types of plastics. In a **mechanical recycling** process, plastic waste is collected, sorted by type (transparent, opal, black), and then mechanically shredded into small pieces. These shredded plastic pieces, called plastic granulates, can be melted and reshaped into new plastic products of the same type and colour.



Input plastic waste: The sorted plastic waste is introduced into the recycling process.



Shredding: The plastic waste is mechanically shredded into smaller pieces, which increases the surface area for subsequent processing.



Optical sorting: After shredding, optical sorting machines are used to further refine the plastic waste, ensuring that any remaining contaminants are removed and that the plastics are sorted by type.



Drying: The shredded and sorted plastics are dried to remove any moisture, which is important for efficient processing in subsequent steps.



Buffer storage: Dried plastic waste is temporarily stored in a buffer before entering the next phase to maintain a steady and consistent supply of feedstock.



Intake feed (no o2): In this step, the dried plastic waste is introduced into an environment with no oxygen, which is typically achieved in a controlled chamber.



Thermolysis: Thermochemical recycling takes place in this phase. The plastic waste is heated at high temperatures in the absence of oxygen through a process called thermolysis or pyrolysis. This breaks down the plastic into simpler molecules, producing gases, liquids, and solid residues.



Condensation: The gases produced during thermolysis, which may include hydrocarbons and other volatile compounds, are cooled and condensed into a liquid form. These liquids can be further processed.



Filtering: In this step, any remaining impurities or solid particles are filtered out from the liquid products, leaving a cleaner material for further processing.



Oil storage & logistics: The refined liquid products are stored and prepared for transportation. These products may include liquid hydrocarbons that can be used for various purposes.



Recycled oil for plastics production: The recycled liquid products, which are often in the form of oil, can be used as a feedstock for the production of new plastics or other chemicals, effectively closing the loop in the recycling process.



Our plastic recycling solution produces oil for plastics production.

Chemical recycling of plastics - one step towards a solution for the plastics challenge



Participating in solving the global plastics challenge, Lamor is targeting a 100,000 metric tons portfolio for chemical recycling of waste plastics by the end of 2026, and the Finnish Kilpilahti facility will be a pilot and blueprint for the future.

Lamor is building a 10,000 metric ton plastic recycling facility in Porvoo, Finland. The facility will make it possible to reuse the plastics that are difficult to recycle, instead of using incineration as a disposal route.

Pre-treatment and thermochemical process technologies will be installed in spring 2024 while the commissioning is estimated to take place in summer 2024. First drops of our end product, oil produced from recycled plastics, will be delivered during the latter part of 2024.

The liquid produced from plastic waste works like virgin oil in the production of new plastic. It is suitable for many purposes for which mechanically recycled plastic granules are not suitable: these are, for example, food packaging that requires perfect hygiene.

2023-2024



2024-2026



Globally local for your specific needs

Lamor provides global environmental protection, remediation and restoration, and material recycling solutions through a unique “globally local” approach. This approach emphasizes a strong local presence to better understand and address specific needs in each region.

Lamor establishes enduring partnerships with local organizations to enhance knowledge and capabilities while delivering impactful services. The success of our approach lies in a leading partner network that customizes technological solutions for local requirements and offering global growth opportunities. Our unified team and culture drive efficient, collaborative, and positive impact through a comprehensive global offering.

“We are targeting a 100,000 metric tons portfolio for chemical recycling of waste plastics by the end of 2026, and the Kilpilahti facility will be our pilot and blueprint for the future”, says Johan Grön, CEO of Lamor.



LAMOR

Let's clean the world

Lamor in brief

Lamor is one of the world's leading providers of environmental solutions. For four decades, we have worked to clean up and prevent environmental incidents on land and at sea.

Environmental protection, soil remediation and material recycling: Our innovative technologies, services and tailored solutions, ranging from oil spill response, waste management and water treatment to soil remediation and plastic recycling, benefit customers and environments all over the world.

We are capable of vast and fast operations thanks to our connected ecosystem of local partners, steered by our experts. Lamor's share is listed on the Nasdaq Helsinki (ticker: LAMOR). Further information: www.lamor.com