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PlasticsEurope
Association of Plastics Manufacturers

Packaging – the best protection with less and less material

Plastics
The Material for the 21st Century

Plastics are magical packaging materials

More than 50 % of all products manufactured in Europe are packaged with plastics. According to weight however, plastics account for only 17 % of the total of packaging materials used, which means that less material is required to package more and the products reach the consumer undamaged, sealed for freshness and chilled to the suitable temperature.

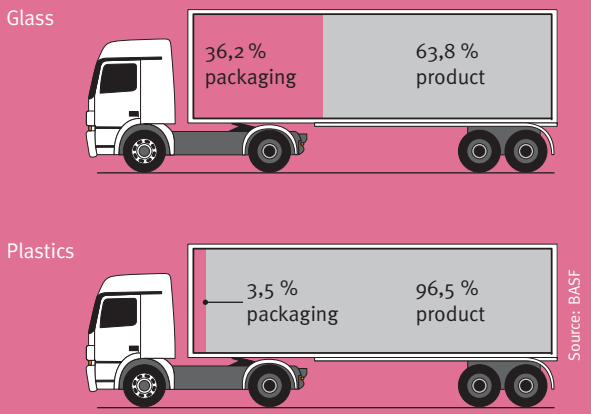
Inexhaustible variety

The potential of plastics packaging is far from exhausted. Packaging is improving all the time: ten years ago, the average packaging weight was 28 % higher than today. An amount of 1.8 million tonnes of weight saved per year and another 1.5 million tonnes of plastics packaging suitable for recycling are an active contribution to an efficient deployment of resources. The most substantial contributor to saving energy, however, is the protective function of the packaging material. In the total product energy balance, the content takes the lion's share, while packaging accounts for only a few per cent. More stringent requirements as regards protective function, flexibility, hygiene and durability as well as aroma protection are perfectly compatible with environmental aspects – thanks to packaging solutions made from plastics.

Less packaging weight and volume

The German association for research into the packaging market, "Gesellschaft für Verpackungsmarktforschung" (GVM), conducted research into what would happen if there was no more plastics packaging. The study assumed that plastic cups, film packaging, barrels, canisters, buckets and pails, bottles and foam packaging as well as caps and closures were replaced by practical alternatives made from paper, board, cardboard, glass, tin plate and steel, aluminium or wood. The result: the weight of packaging would be four times higher, the amount of energy used for production would increase by a factor of 1.5 and the production cost would almost double.

Amount of packaging used for transporting yogurt



Thanks to modern packaging solutions made from plastics more products can be transported. Transport space can be used efficiently and ecological balance sheet is improved.

Source: BASF

Used PET bottles are a choice raw material which can replace virgin material at a ratio of 1:1. According to Petcore, nowadays already 15 % of used PET bottles are added to new bottles. The remainder is used for other material applications.

The plastic bottle – also ecologically top-notch

In Europe, PET bottles come in all sizes. A PET bottle with a capacity of 1.5 litres of water contains double the amount of liquid of a 0.7 litre glass bottle. An empty 1.5 litre bottle weighs forty grammes, less than one tenth of the smaller glass bottle, which translates into a clearly more beneficial weight ratio of packaging to product. And the consumer is happy to carry home less weight but more content.

But plastic bottles have other advantages: they are safe and cost-efficient. Above all, they are ecologically efficient, as they contribute to saving energy and cutting CO_2 emission during production and transport. Plastic bottles are distinguished by their low energy consumption during their entire life cycle. They are 100 % recyclable and return as a material to the economic cycle. Used plastic bottles are a choice raw material for textile fibres, film and sheet, bottles and much more.

Plastic packaging can protect from the cold and keep food warm.

Perfect refrigeration chain thanks to polymer materials

Over the past years, the amount of so-called temperature controlled lorries in Europe has been on the increase. At present, one out of ten transport vehicles on Germany's roads is a refrigerated lorry. Refrigerated transports have special requirements that product packaging must meet. Be it food or medicaments, packaging must ensure the specified temperatures are sustained and the content is protected from influences such as mechanical damage, UV light, desiccation and moisture. Plastics are all-rounders!

Source: IK

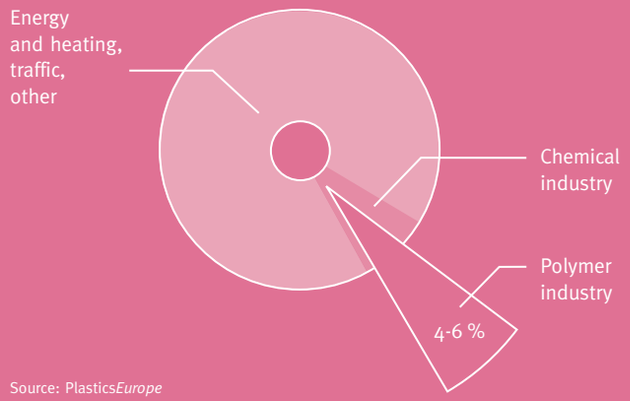
Plastic packaging keeps fish ice cooled for a long time.

An end-to-end refrigeration chain can be provided with the help of packaging made from rigid plastic foam. The material can be formed as required. The tare weight of these plastic containers is substantially lower than that of wooden crates of identical size – a fact that has a positive effect on transport weight and fuel consumption. Plastic containers have ideal heat insulating properties and reduce the required energy-intensive refrigeration to a minimum, saving a significant amount of electricity. Naturally, high-performance plastic packaging can be used over and over again, which is another contribution to active environmental protection.

Plastics save energy.
Plastics protect the climate!

- Plastics production consumes only a small amount of raw material. As they use up only between 4 % and 6 % of the total amount of crude oil and natural gas consumed, plastics have a relatively low demand.
- Plastic products have a long service life, high wear resistance and the energy consumed for their development is fairly low.
- The production of plastics is straightforward and cost-efficient.
- Plastics are lightweight: compared with many other materials such as glass, metal or ceramics, they save a significant amount of weight.
- Plastics are stored energy. The energy used for heating, for example, is irretrievably lost: the energy stored in the plastic product can be re-used for generating heat power in combined heat and power stations as well as for many other industrial processes.
- In many applications, plastics contribute to saving energy.

Crude oil and natural gas consumption in Western Europe



Source: Plastics*Europe*

Use little energy for the production of plastics.
Save a lot of energy by using them!

The high amount of goods that are transported across Europe and all over the world must be perfectly protected and stored at optimum temperatures before they reach their final destination. Goods transports have been on the increase for years and the number is expected to rise further. In the wake of this development, there is a need for solutions that save energy and keep CO_2 emissions low.

The transport of refrigerated goods with intelligent packaging concepts also protects resources such as electricity. Already, plastics are a major contributor to ecological efficiency, as they

- require the deployment of very little material. The less material deployed, the more energy saved during production and the more efficiently valuable resources can be applied.

- have a low tare weight. The lighter the packaging, the less CO_2 emission per unit of.

Because a little plastic is sufficient for a lot of packaging, polymer materials help save a lost of oil – with almost every food delivery, every refrigerated transport. Only about 4 % to 6 % of Europe's total consumption of crude oil and natural gas is used for the production of plastics. These plastics, however, help save energy and substantially reduce the amount of material used for packaging.

Use a little energy for the production of plastics.
Save a lot of energy by using them!

Plastics – think differently about energy

Saving energy, protecting resources, securing the future

The leaflet *Packaging – the best protection with less and less material* is part of a series of information brochures and leaflets on energy published by Plastics*Europe*.

Also available:

Brochure
Plastics – think differently about energy
Leaflet
Mobility – how to make travelling easier on the environment
Renewable Energy – the power of the elements
Construction and Housing – perfect climate protection for houses and apartments
At Home – making people's lives easier. And Nature's, too.