

Polycarbonate sustainability

Polycarbonate is a high performance plastic contributing substantially to the eco-efficient manufacture and sustainable use of numerous valuable products. These products include lightweight safety components in cars and construction materials, mobile communications, insulation materials in buildings and professional greenhouses, medical devices, multiple use packaging and modern optical data storage, to name just a few. Our modern lifestyle would not be possible without plastics. In fact, polycarbonate plays a significant role across the environmental, societal and economic dimensions of sustainable development.

Climate change

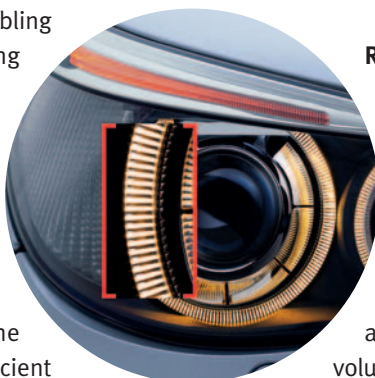


Transport: The use of polycarbonate in automotive headlamps and panorama roof applications save 14-22 kg CO₂ emissions/kg PC over the life cycle of the vehicle when compared with glass and steel. In addition, use of lightweight polycarbonate in panorama roof applications lowers the centre of gravity and, therefore, increases the stability of the vehicle.

Lighting: The exceptional light transmission of polycarbonate allows for architectural and interior LED lighting as well as LED vehicle headlamps. These excellent properties are also used to improve the back-lighting efficiency of flat screen televisions, thus contributing to energy and CO₂ emissions savings.

Photovoltaic: Polycarbonate replaces glass in thin film and flexible photovoltaic applications, reducing the production and maintenance costs as well as contributing to freedom of design. This helps promote the growth in this important and innovative market.

Construction: Polycarbonate is a very durable plastic with long life cycles needed for construction and automotive materials. Multi-wall sheets made of polycarbonate have a lower unit weight than glass, enabling savings in transport and supporting structures in large construction projects such as sports arenas. Additionally, polycarbonate sheets let in light, but insulate better against heat, allowing energy savings of up to 25% in certain products. Due to its transparency and light weight, polycarbonate is the material of choice for resource efficient free-formed roofs, like those used for sports arenas.



Resource efficiency

Performance improvement: The introduction of the compact disc revolutionised data storage and enabled enormous improvements in resource efficiency. Subsequent technological improvements have dramatically increased the storage capacity of the new generation of HD DVD and Blu-ray discs by a factor of 35-40. This has enabled further resource savings.

Reuse: Articles made from polycarbonate have a long life and can be used many times if appropriate. Polycarbonate 5 gallon reusable water bottles can be refilled over 100 times before being mechanically recycled. In addition, polycarbonate is lighter and stronger than glass. This allows for energy and CO₂ savings as well as reduced product loss due to breakage in the distribution and use phases.

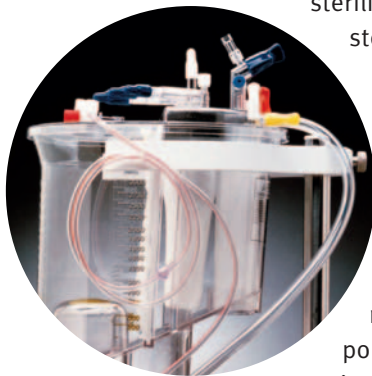
Design for recycling: The high mechanical strength of polycarbonate enables modular design with integrated snap fittings for electrical and electronic equipment. This facilitates upgrading and maintenance of equipment in the use phase, and eases disassembly for recycling and recovery.

Recovery: Polycarbonate scrap from the polymerisation and compounding steps is generally efficiently recovered directly on-site. Post-production waste material leaving the plants is recovered to the extent of about 90% in all European countries. The majority is mechanically recycled to special polycarbonate and polycarbonate blend "recycling grades". Presently, post-consumer recycling for polycarbonate applications is common for applications where high volumes are available and no sorting is necessary. This is the case for the 5 gallon reusable water bottles. For all post-consumer polycarbonate waste, for which mechanical recycling has not proven to be economically feasible due to complex collection and/or dismantling steps, energy recovery is the option of choice.



Healthy living

Medical: With unique mechanical properties and high thermostability, polycarbonate is eminently suited to medical applications, where reusable equipment and devices are subject to demanding hygiene requirements. Equipment and devices can be sterilised between 20 (gamma ray sterilisation) and 100 times (steam sterilisation) before going on to recycling or energy recovery.



Shatter resistant beakers: Polycarbonate beakers are virtually unbreakable. They are therefore often used at major events to avoid injury and to significantly reduce material losses and waste. As with polycarbonate bottles and medical equipment, the beakers can be used numerous times before finally going on to recycling or recovery.

Safety equipment: Through its high impact resistance, polycarbonate provides for increased safety and comfort for applications where high performance and reliability are essential, such as equipment and infrastructure for crowd control. Furthermore, polycarbonate is used in protective equipment for athletes including fencing masks and cycle helmets.

Fire safety: Flame-protected polycarbonate and blends enable designers to construct electrical and electronic equipment that comply with both stringent requirements on flame retardancy and the criteria of major Environmental Labels such as the EU Flower, the German Blue Angel, the Nordic Swan and the Swedish TCO.



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