

HEADLAMPS

Polycarbonate in daily life

Plastics play a big role in everyday life. However, not all plastics are the same, nor are they used for the same products. The choice depends on the specific characteristics of each plastic and also on the price.

Far from being a cheap and commodity-like plastic, polycarbonate is a high-performance engineering plastic used in particular applications for its durability, robustness, transparency, lightweight and heat resistance.

As a result, it can be found where needed in specific indoor and outdoor applications: from the small LEDs in mobile phones to substantial transparent roofs to critical medical applications such as dialysers.



Polycarbonate deflects debris and stones whilst driving

Together with braking systems and tyre conditions, headlamps are a basic and critical aspect of road safety. They of course become especially important at night or in challenging weather conditions: Adequate lighting provides drivers enough time to react to objects and are also essential for cars to be identified by other road users.

Besides providing bright light, vehicle headlamps need to be robust in order to be able to withstand common and unavoidable impacts on the road, such as from debris and stones. The light distribution from the headlamp must not change even after the smallest stone chips, to avoid glaring oncoming traffic. For front headlamps it is especially important that they do not splitter or break in case of an accident, as that could further compromise the safety of pedestrians.

Polycarbonate is the sole material that matches all these requirements. It has become an industry standard over the past 20 years for headlamps, being used in all kind of vehicles such as in passenger cars, buses, trucks and motorcycles.

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Why is polycarbonate used in mobility safety?

Polycarbonate is used for vehicle headlamps because it has an outstanding impact resistance, it can withstand easily road debris or stones without breaking or shattering, even at extremely low temperatures.

It is used in headlamps as the outer shell and housing to the light source. The latter can be LEDs, Xenon lamps or halogen bulbs. Polycarbonate is suitable to host all these light sources given its heat resistance. Evidently, in this context, polycarbonate's transparency is key to ensure the brightness of the lighting and thus contribute to road safety.

The material is also light weight, responding perfectly to nowadays' needs in terms of fuel-saving efforts. Although being extraordinarily robust, polycarbonate is actually easily malleable in different shapes and forms. This allows for freedom of recycling-friendly design by vehicle manufacturers and opens the door to integrate rapidly evolving technologies for electric vehicles and sensors for automated driving functions aiming to improve road safety.



**IMPACT &
BREAK RESISTANCE**



TRANSPARENT



LIGHT WEIGHT



FORMABLE

