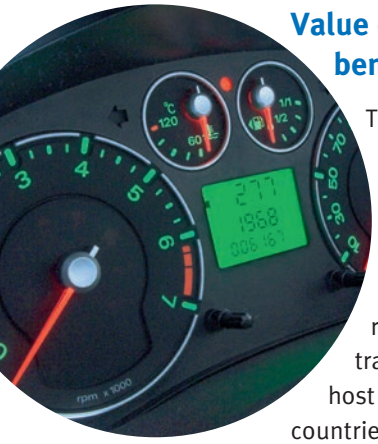
# Polycarbonate: A major contributor to Europe's economy and quality of life

Polycarbonate plastic is a lightweight, highly versatile, durable, heat and shatter resistant, formable and transparent thermoplastic. It is the material of choice for a wide range of end-user applications as diverse as DVDs, computers and home appliances, spectacles and optical lenses, reusable water bottles, and medical devices or construction materials.

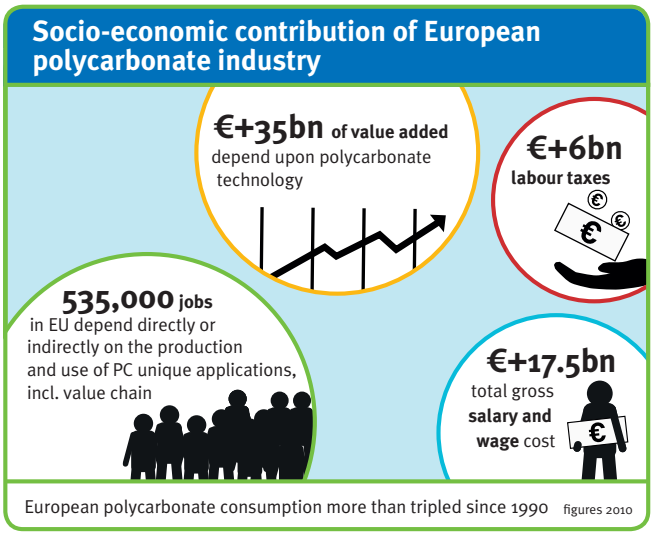
Throughout large parts of the EU's manufacturing base, the properties of polycarbonate provide processors and end-users with a platform for innovation. These properties allow them to develop new products and markets, improve performance of existing products, meet new technical and environmental needs, enhance productivity and reduce costs.

Across the whole value chain polycarbonate generates extensive socio-economic gains for the European Union (EU). It creates and supports jobs and wealth, safeguards the competitiveness of important EU-based industries and provides public benefits that satisfy wide social concerns and needs.



## Value chain: employment and societal benefit

The polycarbonate value chain consists of the polycarbonate manufacturers, converters/processors, manufacturers of articles, wholesalers and retailers. It is a major multiplier. Far more than 90% of the socio-economic value added is generated in the processing, manufacturing and trading sectors. Irrespective of whether they host a national production site, most European countries need polycarbonate as an essential raw material for their processing and manufacturing industries. In total, more than 535,000 jobs* in the EU depend, either directly and indirectly, on the production and use of polycarbonate. The total gross salary and wage cost of the polycarbonate value chain was ca. € 17.5 billion in 2010, resulting in over € 6 billion in labour taxes. On that basis, in 2010, more than € 35 billion of value added in the EU depended on polycarbonate technology.




## Contribution to European competitiveness and public benefits

As a major enabling technology, polycarbonate production and use contributes substantially to the strengthening of Europe's economy and growth. Polycarbonate underpins the competitiveness of major industrial sectors in Europe, such as the medical devices, automotive, IT-hardware, electro/electronic and building and construction sectors. The innovative power and efficiency of polycarbonate allows Europe to hold top global positions in these sectors.

Polycarbonate applications benefit the public through increased safety, by reducing the risk of death, injury or illness. They also reduce environmental impact by improving resource efficiency, reducing energy consumption, and therefore, limiting $CO_2$ emissions – a key goal for the EU. Polycarbonate provides increased personal choice and convenience for European consumers.

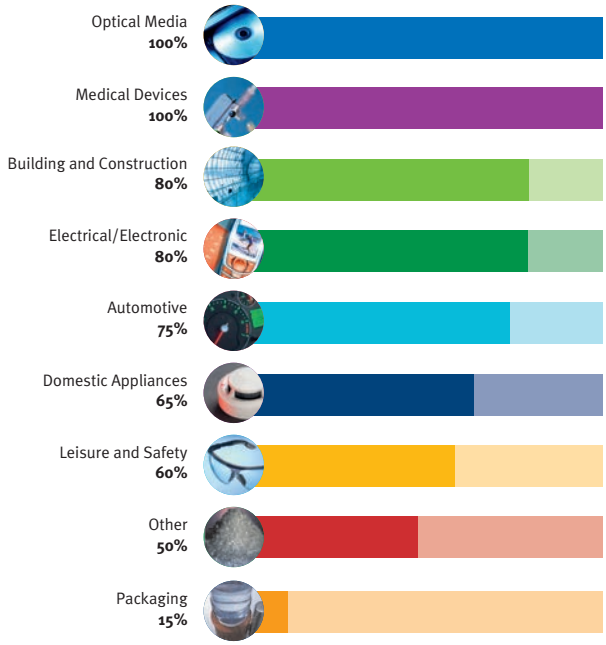
* If not noted differently, all figures in this document are based on the year 2010. The figures have been determined in a conservative approach ensuring that only the jobs and value added that could be uniquely attributed to polycarbonate should be counted in this value chain.

## Unique applications

In more than 80% of applications, polycarbonate is critical to the performance of the component or material. This applies to both the converting and manufacturing industry, and also to the functional performance of the actual end product. Such unique applications are found widely in the building and construction and the automotive sectors. For these industries, the low weight, virtual unbreakability and glass-like transparency of polycarbonate make it unique for its respective uses, such as in large free-formed transparent roofs, or headlamps in cars.

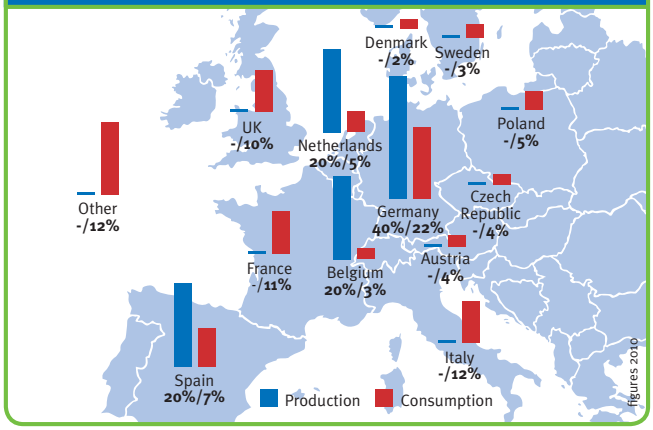
For modern optical media, like DVDs, CDs and Blu-ray disks, the combination of cost, quality and data storage capabilities make polycarbonate the unique material for basic modern digital electronic entertainment and computer-based business.

### Unique applications in the polycarbonate value chain

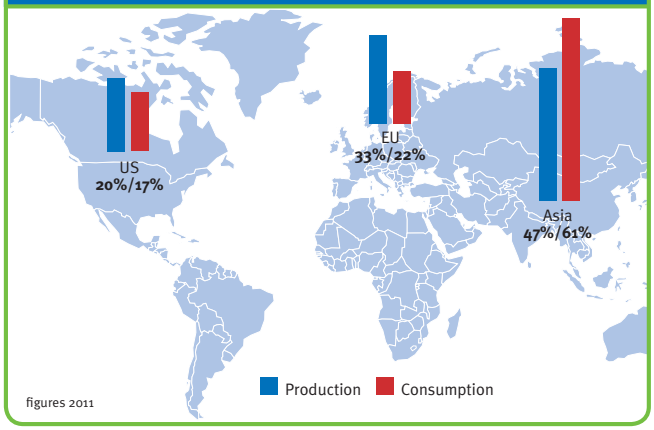



figures 2010

### European production and consumption of polycarbonate by countries

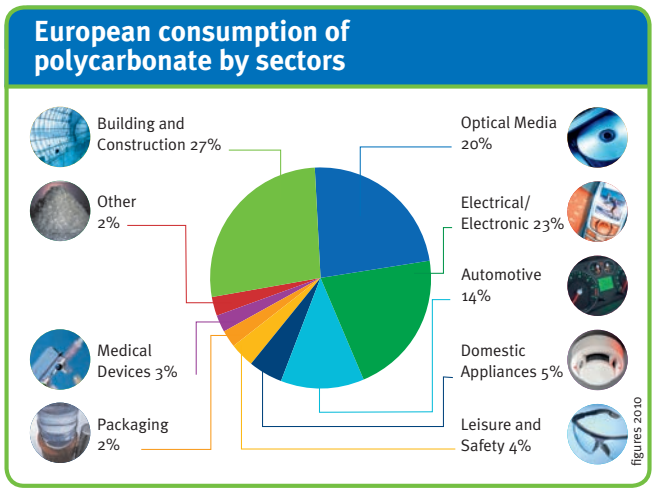



### Global production and consumption of polycarbonate by regions




figures 2011

Applications in the medical devices sector are 100% unique: Only polycarbonate provides the required safety characteristics, combining biocompatibility, light weight, contact safety, ease of sterilisation, transparency and virtual unbreakability. For example, more than 700,000 people suffer from chronic kidney failure. Their lives depend on dialysis machines. Almost all renal dialysis machines use polycarbonate technology. The same applies to open heart surgery. Polycarbonate components in blood oxygenation equipment are critical to the functionality of this advanced technology. Without these devices, over 500,000 open heart operations in Europe could not be performed each year.

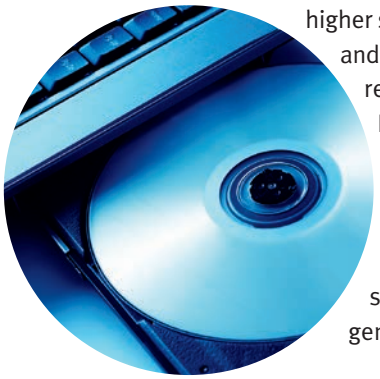



## Key role in innovative value added

The performance characteristics and uniqueness of polycarbonate boosts European innovation competitiveness. The EU is a world leader in the development and supply of innovative medical devices. Over 50% of all renal dialysis machines are produced in the EU. Overall production by the medical devices industry in Europe supports 4.5 million direct jobs and generates value added of € 24 billion.

In the European automotive industry, polycarbonate technology is used in a wide range of structural, safety and aesthetic applications. It continues to provide engineers with the basis for innovation, such as in new glazing for weight reduction and safety features. The automotive sector supports 10 million jobs and generates value added of € 36 billion.

In the Electrical and Electronics (E&E) sector, the flame retardance, impact resistance and durability of polycarbonate helps manufacturers meet the need for continuously higher standards of appearance, sustainability and safety. This also satisfies emerging regulatory or eco-design standards. Products include large flat screens and monitors, consumer electronics equipment and fuse boxes as well as the large market of optical data storage. Altogether, the European E&E sector supports 26 million jobs and generates value added of € 139 billion.



Building and construction is one of the EU's largest industry sectors, employing over 147 million people and creating more than € 512 billion of value added. 80% of polycarbonate use in this sector is for unique applications, for example in improving insulation and lighting. The combination of fire resistance, light weight, durability, impact resistance and transparency provide architects and users with tailored creative solutions. This helps develop new structures, reduce costs, improve energy efficiency and minimise the environmental impact of buildings.

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