

Plastics the material for the 21st century

Since the first plastic was invented a century or more ago, plastics have revolutionised the way we live. Whether we're communicating, travelling, playing, caring for each other's health or protecting the environment, there's no sphere of human activity that hasn't been significantly advanced by the use of this remarkable material. And today, scientists and technologists are continuously working at the forefront of knowledge, in fields as diverse as space exploration, nanotechnology and medicine, to find new ways plastics can benefit people. Their research means that many solutions, for most of us as yet unimaginable, will soon enter our everyday lives - all thanks to amazing plastics. No wonder plastics are set to be the material for the 21st century.



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Healthcare



Plastics
The Material for the 21st Century



Plastics are amazing

Plastics play a vital part in our lives: at home, at work, in schools and hospitals. We play with them, we travel with them, we wear them. And sometimes, if parts of our body don't work, doctors can even replace them with new ones - made of plastic. Plastics keep us safe, they make life more comfortable and fun, and they're surprisingly good for the environment. They come in many different forms: harder than steel, softer than silk, any colour or shape... It's why designers and inventors love them. Plastics are amazing. We often take them for granted, but life wouldn't be the same without them.



Plastics and healthcare

In recent years, the evolution of plastic materials has progressed hand-in-hand with healthcare developments. Researchers have developed new devices, including **syringes, blisters, catheters and fluid bags**.

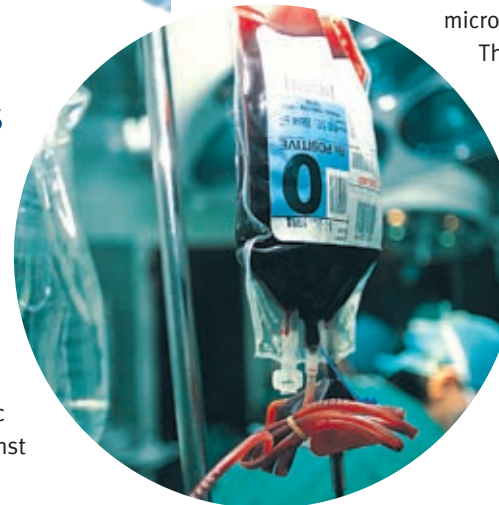
They have also developed new body parts to restore the functionality of hearts, joints, kidneys, ears, teeth and eyes. And it is in this context that plastics have proven themselves to be the ideal material, guaranteeing safety, hygiene and **biocompatibility with the human body**.

Indeed, thanks to polymeric biocompatible solutions, it is now possible to apply reconstructive techniques to tendons and perform micro-probes. Plastics are also a crucial component in the hi-tech equipment and machinery used in hospitals, **medical research**, animal care and the **veterinary sciences**.



Plastics as medical materials

Plastics are **easy to clean and sterilise**, and contain intrinsic barrier properties against fluids, gases and pollutants. This explains why plastic applications are so widely used in **hospital** and healthcare facilities. For example, resilient flooring made of plastic allows for effective hygiene maintenance, polymeric fibres are used for **surgical dressings**, and plastic elements are also often used to insulate areas against infectious diseases.



Plastics as new medicine drivers

In his 1966 short story *Fantastic Voyage*, scientist and science-fiction writer Isaac Asimov imagined miniaturised men injected into the human bloodstream to combat a blood clot. Today, **laboratories** all over the world have taken up Asimov's challenge and are exploring the potential of plastics-based micro-systems and **nanotechnologies** in medicine. This research includes the possibility of nano-polymers being used as carriers for drugs that directly target damaged cells, and of plastic **micro-spirals being used to combat coronary diseases**.

Another use of plastics in this context is in micro-electromechanical systems.

These are very **small plastic devices** being developed for biological applications.

For example, simply placed on a **small patch** of the skin, they can give instantaneous readings of glucose or lactate levels. Future applications could include the detection of cancerous cells.

