

# PLASTIC, ACRYLIC AND PLEXIGLASS – WE EXPLAIN THE DIFFERENCE

What is actually the difference between acrylic and plexiglass, and what is the material most used in custom products made by Akriform? We explain the concepts and look at different materials advantages and applications.

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## PLASTIC

Plastic is a generic term for a large group of semi-synthetic or synthetic materials. Plastics consists mainly of one or more polymers mixed with additives. A polymer is a large molecule composed of many small identical molecules bound together to form a long chain. These small repeating molecules are known as monomers. By varying the additives used, the nature of the monomers and how long the polymer chain is one can obtain a variety of types of plastic with many different uses. This, as well as the fact that plastics become easier and easier to recycle, has resulted in plastics becoming an indispensable part of modern society.

Plastics are divided into two main groups; thermoplastics and thermosetting polymers. Thermoplastics are plastics that after being formed can be melted down again and re-used. Thermosetting polymers, however cannot be melted down again after curing without its chemical structure being destroyed.

## ACRYLIC

One of the most common thermoplastics is acrylic. The chemical name for it is polymethyl methacrylate (PMMA). PMMA was invented in 1933 by Otto Röhm, the founder of the plastics company Röhm and Haas. Röhm tried to create a lamination between two glass plates to increase the glass resistance, but instead he found that he had developed a completely new glass-like material. Acrylic sheets are easy to glue and are good for milling, bending and hot forming and is therefore a material suitable for many different applications. The material became available for commercial use in 1936 under the protected trademark Plexiglas®.

## PLEXIGLAS

So, what is commonly known as “Plexiglass”, is really a brand of acrylic (PMMA). Over the years, Plexiglas® has been developed to cover a wide

range of application areas. In its basic design it is completely colorless with excellent optical properties, but the material can be colored in an infinite variety of colors. Today PMMA ("plexiglass") is sold under many different brand names, including Acrylite, Lucite® and Perspex®.

## OTHER COMMON PLASTICS

**Polycarbonate (PC).** A transparent thermoplastic with exceptional durability sold under different brands including Makrolon and Lexan. Because the PC is easy to work, mold and thermoform it is used for a variety of purposes, in the construction industry and for safety glass among other things. PC looks a lot like PMMA/plexiglass, but is stronger and can be bent at room temperature.

**Polyvinyl chloride (PVC).** One of the most widely used plastics found in many different applications in our society, such as in floor materials, hoses and pipes for water supply and sewerage.

**Polyethylene terephthalate (PET / APET).** Belongs to the group polyesters and is one of the most encountered plastics in everyday life. Main applications include synthetic fibers for clothing and containers for liquids, but also for food packaging.

**PETG.** A modified kind of PET, with the significant differences that PETG contains glycol. By modifying the PET to PETG the material can withstand higher temperatures without crystallizing, becoming brittle and white. PETG is impact resistant and has very good thermoforming properties. PETG is also suitable for digital printing and is therefore a material that is suitable for product displays, signage and display materials.

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