

## Physical Properties Of Acrylic

Acrylic is a polymer which has been derived from the monomer methyl methacrylate (MMA). It was first developed more than sixty years ago. From then formulations have extended the material's performance range thus resulting in varying levels of melt flow, impact resistance, color ability, gamma recovery and other controlled characteristics? Acrylic grades contain a co monomer which is added during the polymerization process, to facilitate flow during injection molding and extrusion. The specialty grades are formulated to perform in applications requiring high impact strength and heat resistance. Ultra violet light transmitting formulations are also available, and are specified for certain critical diagnostic equipment in which even slight UV absorption or variation in material flow could be detrimental. These days easily processed and assembled, acrylic has been used in medical and health-care applications since its introduction. First use of acrylic sheet was for making of incubators. The very first intraocular acrylic prosthesis was implanted in 1955, and ever since acrylic has been used in contact with human tissue. The biocompatibility led to the adoption of acrylic for aircraft canopies during World War II.

Pilots suffered fewer infections from shards of acrylic than they had from glass. These days the leading applications of acrylic in the medical industry today are for currettes and tubing connectors, but it is also used to produce test kits, syringes, lures, blood filters, and drainage wands as well as flow meters, blood-pump housings, fluid silos, surgical-blade dispensers, incubators, and surgical trays. Polymers of acrylic are resistant to many biological and chemical agents. Acrylic has passed medical grades Class VI biological testing procedures and it complies with FDA regulation. Usage of acrylic polymers in the medical industry has been steadily increasing over the past several years. It is especially noticeable in the area of diagnostics, due to the fact that acrylic is an inert material that does not react with the reagents used in testing. When used for medical devices, special impact-modified grades formulated to resist breaking and cracking are employed more often than standard grades. Physical properties of acrylic offer light transmittance of about ninety two percent. Theoretically it is the maximum obtainable with particular clarity at lower wavelengths of 270 to 350 nm. Like acrylic is the material of choice for disposable currettes which is used to contain blood and other fluids, through which a spectrum of ultra violet light is passed for analysis. Quartz glass can also be used for the most demanding applications, as it transmits light as low as 220 nm and is not cost-effective in an application that increasingly favors disposable plastics. Other main physical properties of acrylic include good mechanical strength and dimensional stability, along with high tensile and flexural strength

## About the Author

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