ACRYLIC vs POLYCARBONATE

How are Polycarbonate and Acrylic different ?

Strength
Acrylic and Polycarbonate are both half the weight of glass and yet both of these plastics are much stronger than glass. Acrylic has 17 times the impact resistance of glass. Polycarbonate has 250 times the impact resistance of glass. Acrylic is very rigid whereas polycarbonate is more flexible. Acrylic cracks more easily than polycarbonate under stress.

Light & Clarity
Acrylic also has better clarity than glass, with a light transmittance of 92 percent. Polycarbonate has a light transmittance of 88 percent. Acrylic can be polished to restore its clarity, while polycarbonate cannot.

Temperature Range / Chemical resistance
Acrylic can be used at temperatures ranging from -30 degrees to 90 degrees Celsius. It will expand and contract with changes in temperature although it won't permanently shrink over time. Polycarbonate can handle temperatures up to 115 degrees. Polycarbonate is also highly resistant to chemicals such as gasoline and acids.

Cutting
Both acrylic and polycarbonate can be cut with conventional tools such as saws or routers, though acrylic cuts easier than polycarbonate. Polycarbonate fights the initial push of a saw or router at the start of a cut.

Drilling
Acrylic will crack if it is drilled near an edge or with a drill bit not designed for plastic. Polycarbonate typically does not crack when being drilled even if drilled close to the edge with a standard drill bit.

Polishing
The edges of acrylic can be polished smooth if necessary; polycarbonate cannot be polished.

Heat bending
Heat bending works better with acrylic than polycarbonate. Polycarbonate can be cold formed or bent without heating.

Gluing
Gluing with cements designed for acrylic and polycarbonate, acrylic gives a cleaner glue joint than polycarbonate.

Cleaning
Both acrylic and polycarbonate are easy to clean. The best choice for cleaning is a microfibre or 100-percent cotton cloths. Acrylic has a low chemical resistance and needs more specific cleaners. When cleaning acrylic, it is best to use only mild soap and water or a plastic cleaner. Polycarbonate has a higher chemical resistance than acrylic; it can be cleaned by harsher cleaners containing chemicals such as ammonia. Neither plastic should be cleaned with solvents.

Durability
Both acrylic and polycarbonate are weather resistant and expand and contract with temperature changes without long-term or permanent shrinkage. Both acrylic and polycarbonate can scratch, so wool rags and paper towels, which are made from abrasive binding agents, should be avoided. Acrylic is more likely to chip than polycarbonate because it is less impact-resistant. It does not scratch easily, however, and will not yellow over time. Polycarbonate has low flammability, while acrylic will burn slowly and is not recommended in areas where flames may be present.

Cost
Polycarbonate is more expensive than acrylic. It tends to cost about twice the price of acrylic.