



## Comparison between different optical materials

### Polycarbonate

#### **Pros**

Tough and can withstand severe impact  
High resistance for high temperature and good flame spread characteristics (normally UL 94 HB but can obtain V0 rated versions)

#### **Cons**

Poor optical standard  
Imperfections such as black/white specs, scratches, etc.  
On uncoated surfaces will scratch very easily even with the softest of cloths.  
Poor solvent resistance  
Surface can have ridges caused by the extrusion process  
Optical transmission lower than acrylic, ADC and glass

### Acrylic

#### **Pros**

Available in many colours and tints.  
Relatively good optical standard.  
Cast acrylic has flat surfaces.  
Better abrasion and solvent resistance than polycarbonate but not as good as a coated surface. (uncoated surfaces still need to be handled carefully)

#### **Cons**

Still requires coating if abrasion resistance is important.  
Is not as tough as polycarbonate and will break under severe impact  
Softening and forming temperature at about 100 C

### Cast Allyl Carbonate (ADC)

#### **Pros**

Very good optical standard  
Abrasion and solvent resistant in its own right and therefore does not require hard coating  
Can be cast with matt surfaces removing the requirement for coating  
can be tinted in many different colours  
High operational temperatures (over 100 C)  
Light transmission close to optical glass  
Resistant to pitting from hot metal sparks

#### **Cons**

Not as impact resistant as polycarbonate  
Does not have a UL fire rating (although if tested will pass at 94 HB as acrylic)