

## Popular Materials & Applications – Issue 3

In this issue we will focus on popular material and applications. Please contact us if you would like assistance sourcing any of the below materials.



### HIPS (High Impact PolyStyrene)

**Typical uses:** display, packaging & light weight internal applications

**Strength:** Moderate

**Specific gravity:** 1.06

**Brand names:** not well known by brand names from stockists

**Formability:** Easy

**Colours:** Black, white & stocked in up to ten different colours in UK

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 150 – 175C (302 – 347F)

**Conclusion:** an entry level plastic, easy to form & not expensive



### ABS (Acrylonitrile Butadiene Styrene)

**Typical uses:** enclosures, outdoor applications, marine pods

**Strength:** impact resistant

**Specific gravity:** 1.08

**Brand names:** not well known by brand names from stockists

**Formability:** Easy but needs drying

**Colours:** Black, white, grey from stockists in UK

**Hygroscopic (needs drying):** Yes – 90 minutes per mm

**Vac forming temp range:** 150 – 180C (302 – 356F)

**Conclusion:** stronger than HIPS, +/- 35% more expensive



### PETG (Polyethylene terephthalate glycol-modified)



### PET (Polyethylene terephthalate)

**Typical uses:** Clear covers & reverse printed signage

**Strength:** impact resistant

**Specific gravity:** 1.27

**Brand names:** Vivak, Spectar

**Formability:** Easy

**Colours:** Generally clear

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 120 – 160C (248 – 320F)

**Conclusion:** Easy to form and stronger than HIPS, +/- 50% more expensive

**Typical uses:** Blister Packaging, tray inserts (RPET or APET)

**Strength:** impact resistant

**Specific gravity:** 1.38

**Brand names:** not well known by brand names from stockists

**Formability:** Narrow heating band – will crystallise if over heated

**Colours:** Generally clear

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 120 – 160C (248 – 320F)

**Conclusion:** Good clarity, but will blunt cutters quickly – similar price to thin PVC



## PVC (PolyVinylChloride)

**Typical uses:** Outdoor enclosures, marine pods, blister packaging & tray inserts

**Strength:** impact resistant

**Specific gravity:** 1.37

**Brand names:** Simona, Palram (for thick sheet over 0.75mm)

**Formability:** Fairly easy although if burnt gives off hydrochloric acid

**Colours:** various in thicker sheets

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 140 – 190C ( 284 – 374F)

**Conclusion:** Not as popular in every market – similar price to thin APET



## HDPE (High Density PolyEthylene)

**Typical uses:** Outdoor play equipment, pond liners

**Strength:** very impact resistant

**Specific gravity:** 0.96

**Brand names:** not well known by brand names from stockists

**Formability:** webs easily due to stretching and will seek out any gaps in tooling & lose vacuum

**Colours:** Limited from stock – generally black

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 150 – 180C (302 – 356F)

**Conclusion:** Very good impact resistance, tricky to get good results – similar price to PP



## PP (PolyPropylene)



## PC (Polycarbonate)

**Typical uses:** Outdoor furniture and packaging applications

**Strength:** Rugged and chemical resistant  
Specific gravity: 0.91

**Brand names:** not well known by brand names from stockists

**Formability:** webs easily due to stretching and will seek out any gaps in tooling & lose vacuum

**Colours:** Limited from stock – generally black, white and natural

**Hygroscopic (needs drying):** No

**Vac forming temp range:** 150 – 180C (302 – 356F)

**Conclusion:** Very good impact resistance, tricky to get good results – similar price to HDPE

**Typical uses:** R/C car bodies, riot shields, machine guards and skylights

**Strength:** Rigid and high impact resistance  
Specific gravity: 1.2

**Brand names:** Lexan, Makrolon and Palsun

**Formability:** Challenging to get optical clarity

**Colours:** usually clear or tinted from stockists

**Hygroscopic (needs drying):** Yes

**Vac forming temp range:** 170 - 205C (338 - 401F)

**Conclusion:** Very good impact resistance, tricky to get good clear results – +/- 35% more than PETG



## Extruded PMMA Poly(methyl methacrylate)

**Typical uses:** Display & signage

**Strength:** Can be brittle, but weather resistant

**Specific gravity:** 1.19

**Brand names:** Acryglas XT, Quinn XT

**Formability:** Good

**Colours:** Clear and a range of colours

**Hygroscopic (needs drying):** Yes

**Vac forming temp range:** 150 - 175C (302 - 347F)

**Conclusion:** Brittle – low impact resistance, good weather resistance for outdoors



## Cast PMMA Poly(methyl methacrylate)

**Typical uses:** Display, signage and window applications

**Strength:** Can be brittle, but weather resistant

**Specific gravity:** 1.19

**Brand names:** Acrycast, Perspex, Plexiglas & Lucite

**Formability:** Poor. Will only form into gentle cavities unless assisted by plug assist

**Colours:** Clear and a large range of colours

**Hygroscopic (needs drying):** Yes

**Vac forming temp range:** 150 - 175C (302 - 347F)

**Conclusion:** Brittle – low impact resistance, good weather resistance for outdoors, very good optical clarity

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