

PERSPEX

Distribution Ltd

PRODUCT GUIDE



PERSPEX



Distribution Ltd



PERSPEX® CAST ACRYLIC

EXTRUDED ACRYLIC

POLYCARBONATE

POLYESTER

ALUMINIUM COMPOSITE

FOAMED PVC

RIGID PVC

POLYSTYRENE

COMPOSITE PLASTICS

ROD & TUBE

LEDs

ADHESIVES

ALL ABOUT COLOUR

TECHNICAL SECTION

WHO

We are a distributor of PERSPEX® and a range of other thermoplastic sheet, rod and tube. Manufactured in the UK, PERSPEX® has been the household name for plastic since 1934 and is the market leader in acrylic sheet.

Owned by Mitsubishi Rayon, the global leader in the manufacture of acrylics, the Perspex Distribution Ltd team are well placed to deliver excellence in supplying and supporting our customers.

WHERE

Put simply, we're everywhere!

With four regional sales and service centres in the North, Midlands and South and an extensive network of sub-distributors, we can deliver anywhere in the UK.

WHAT

PERSPEX®/CASTACRYLIC/
EXTRUDEDACRYLIC/
POLYCARBONATE/
PETG/APET/ALUMINIUM
COMPOSITE/LEDS/
FOAMEDPVC/RIGIDPVC/
GPPS/HIPS/COMPOSITE
PLASTIC/ROD/TUBE/

WE OFFER

Perspex Distribution is committed to providing an industry leading service and support including:

- ▶ Large stock-holding across a range of sheet, rod and tube.
- ▶ Cut-to-size service, typically within 24 hours.
- ▶ Bespoke colour matching service.
- ▶ Full technical support backed by UK based technical services

GOING GREEN

Manufactured in the UK since 1934, PERSPEX® has enjoyed the endorsement of world leaders, royalty and the great British public. In this new century, Perspex Distribution aim to develop this classic brand by minimising the impact of our products on the environment.

Perspex Distribution's green policies are cast into the fabric of the company and remain colourfast.

Our aim is to use resources more efficiently in order to conserve energy, to source from environmentally responsible manufacturers and to place provenance over portfolio due to the impact of greenhouse gases and their contribution to climate change.

At Perspex Distribution, we recognise that it requires a long-term commitment to minimise the impact of our products and services on the environment and to this aim, we pursue a policy based upon education, self-regulation and continuous improvement.

The greening of our products starts right here at home with the original, versatile Perspex® cast acrylic, made in the UK since 1934. With an efficient production and delivery process and sustainable supply chain, Perspex® comprises far less embodied energy from its local and efficient origins.

At Perspex Distribution, we are committed to focus on what you, our customers care about, which is why you will find our environmental policy and plans have been developed in response to your needs.

A handwritten signature in black ink, appearing to read 'Keith Piggott', with a wavy line underneath.

Keith Piggott
Managing Director

Plastics that don't cost the earth



Delivering any accurate and meaningful results on the embodied energy of materials is complicated. However, as a rule of thumb, the more efficient the production process and the closer production is to the market where the product will be used, then the material will comprise of far less embodied energy.

PERSPEX[®]
CAST
ACRYLIC

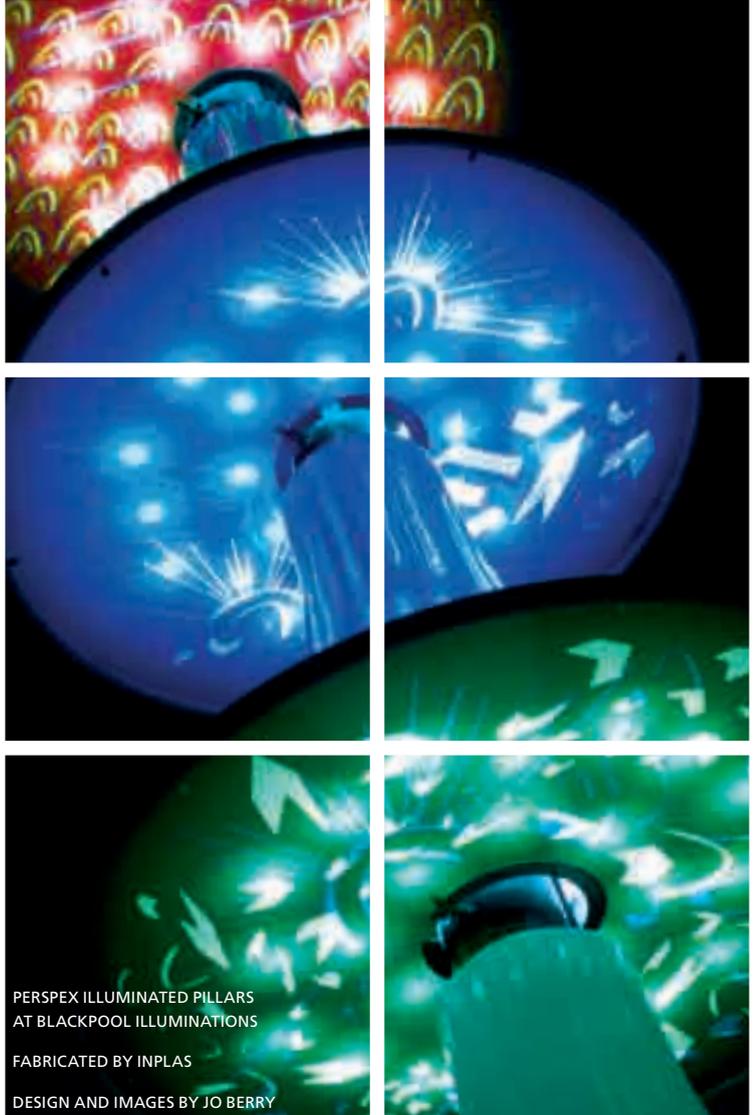
- ▶ PERSPEX® Clear
- ▶ PERSPEX® Glass-Look
- ▶ PERSPEX® Colours
- ▶ PERSPEX® Silk
- ▶ PERSPEX® Frost
- ▶ PERSPEX® Opal
- ▶ PERSPEX® Spectrum LED
- ▶ PERSPEX® Secret Sign
- ▶ PERSPEX® S-Lux & D-Lux
- ▶ PERSPEX® Fluorescent and AR
- ▶ PERSPEX® Vario
- ▶ PERSPEX® Prismex®
- ▶ PERSPEX® Impressions
- ▶ PERSPEX® Metropolitan
- ▶ PERSPEX® Coral
- ▶ PERSPEX® Pearlescent
- ▶ PERSPEX® Sparkle
- ▶ PERSPEX® VE/VA Museum Grade
- ▶ PERSPEX® Vision

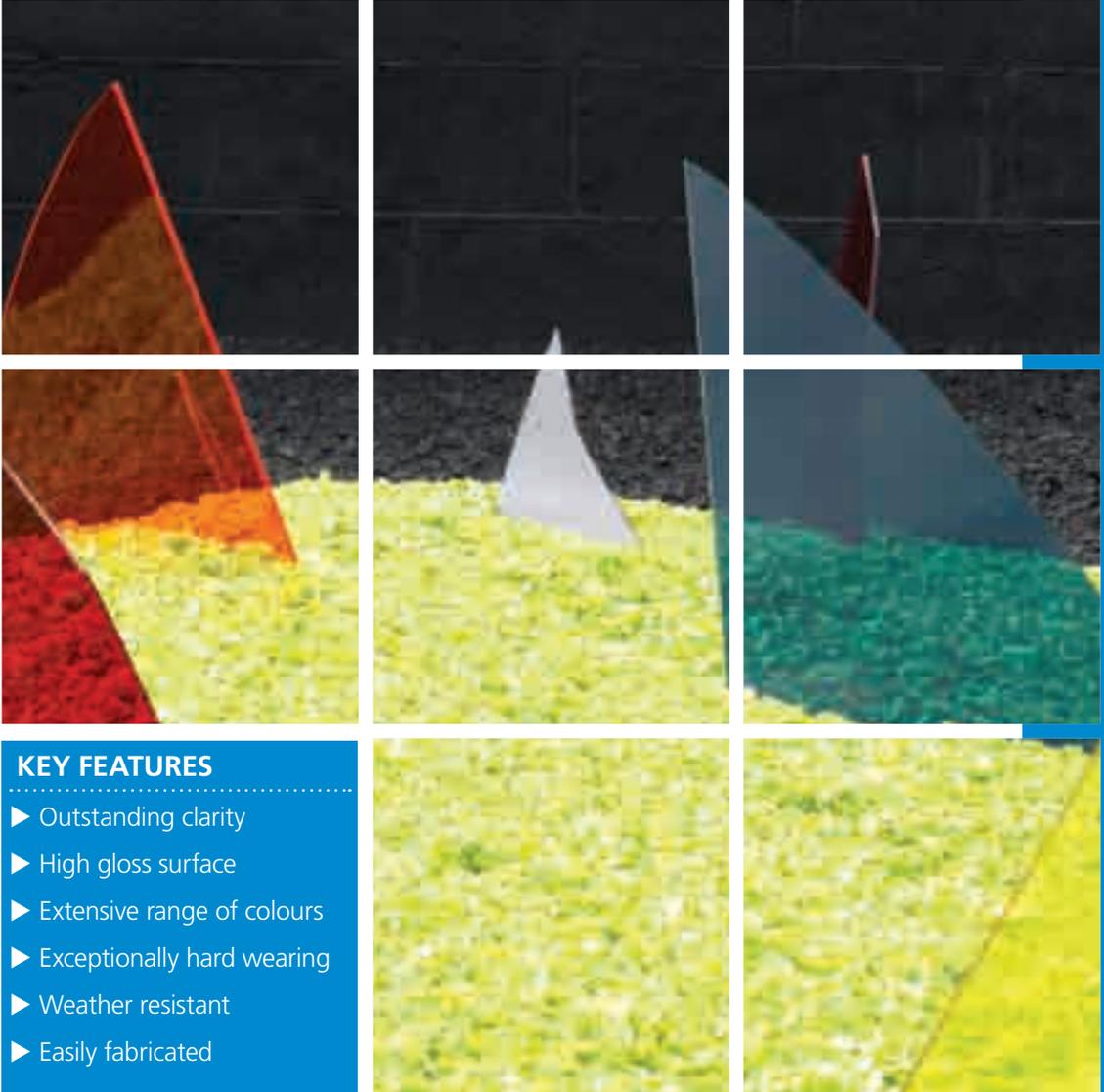
Versatile, Branded PERSPEX®

The original

PERSPEX® from Lucite® is the original thermoplastic material, manufactured in the UK since 1933 and trademarked in 1934.

Available in clear with an exceptional light transmission higher than that of glass, PERSPEX® cell cast acrylic is also available in a wide range of colours, textures and finishes.



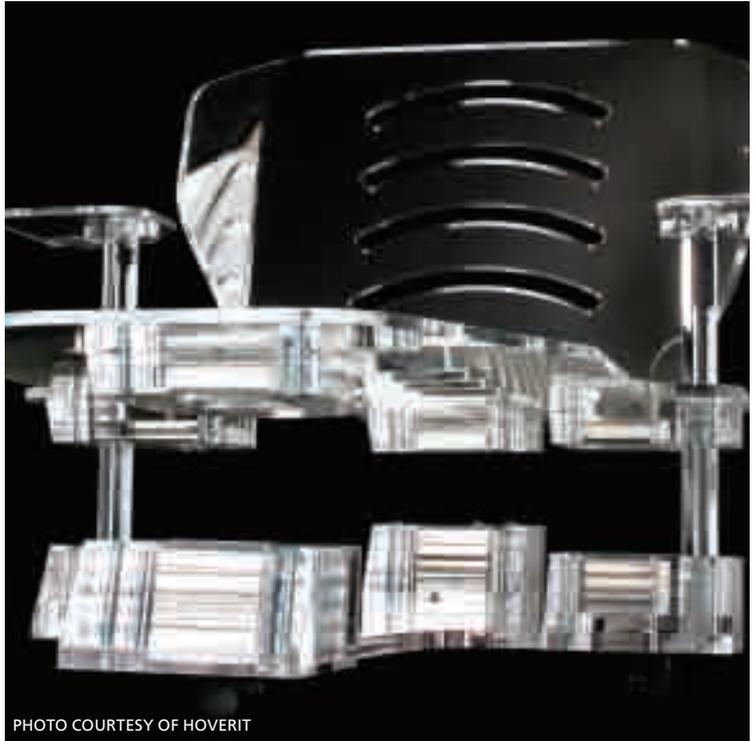


KEY FEATURES

- ▶ Outstanding clarity
- ▶ High gloss surface
- ▶ Extensive range of colours
- ▶ Exceptionally hard wearing
- ▶ Weather resistant
- ▶ Easily fabricated

AWARD WINNING CONCEPTUAL GARDEN, HAMPTON COURT 2008.

PERSPEX® Clear



PERSPEX® Clear has an exceptional light transmission in excess of 92% of visible light. It is superior to all other thermoplastic sheet and higher than that of glass with virtually no colour bias.

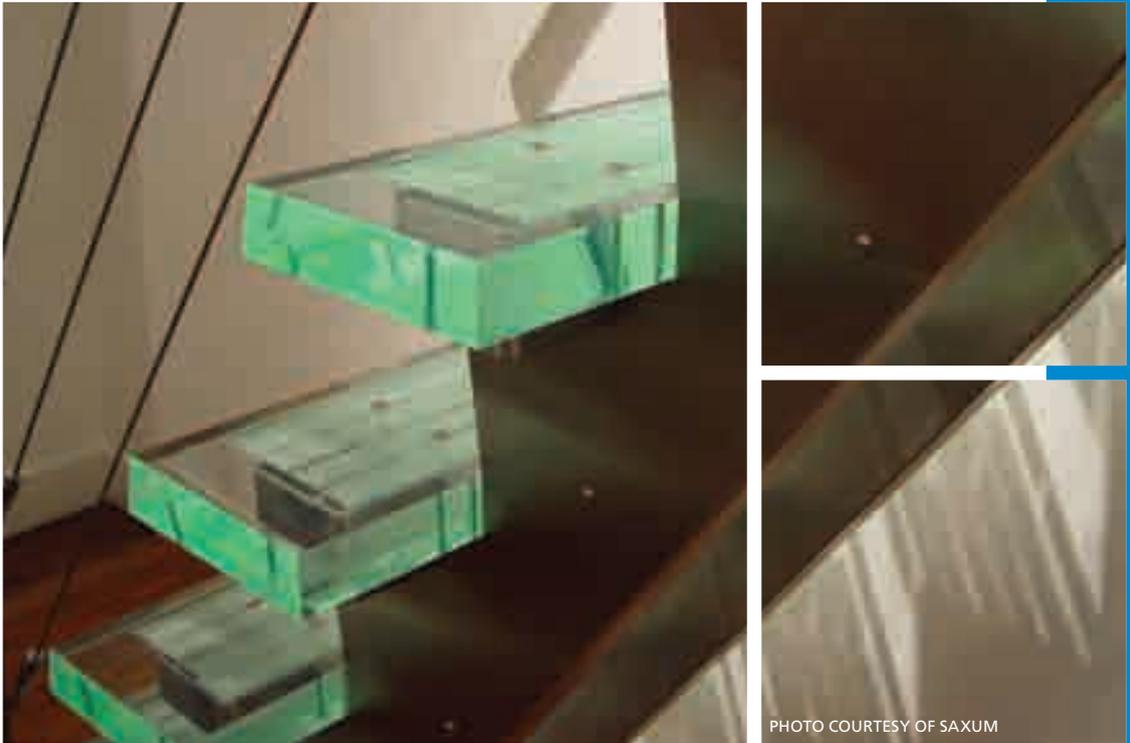
Even after 10 years of outdoor exposure, PERSPEX® Clear will continue to transmit 85% of visible light while other thermoplastic sheet will show a much greater reduction over the same period. The edges of the sheet can also be polished to achieve a totally transparent finish.

TYPICAL APPLICATIONS

- ▶ Point of Purchase
- ▶ Signage
- ▶ Furniture
- ▶ Models and display cases
- ▶ Glazing
- ▶ Forming and fabrication

PERSPEX® Glass-Look

PERSPEX® Glass-Look provides the appearance of green tint glass but at half the weight and five times its impact strength, offers the aesthetics but without the associated risk of breakages.



ABOVE: STAIR TREADS

PHOTO COURTESY OF SAXUM

PERSPEX® Colours

PERSPEX® has always been available in an extensive range of standard colours. However, if a colour has not previously been matched, then our technicians can generate the required colour from a sample or an appropriate reference.

PERSPEX® colours are available in solid or opaque, translucent and transparent options. While no light will pass through an opaque colour, light passes through a transparent colour undistorted, enabling us to clearly distinguish objects. In contrast, translucent colours are partially transparent permitting the passage of light without enabling us to distinguish the colour of objects seen through them.



PHOTO COURTESY OF CAULDER-MOORE

ABOVE: HOT PINK SHELVING UNITS TO DISPLAY ACCESSORIES IN M&S.

Colour Matching with PERSPEX®



There are three options available to achieve your desired colour of PERSPEX®:

Option 1 - Standard Colour

Standard colour from our stock.

Option 2 - Colour Library

We search our extensive colour library for a match to the sample or BS, RAL or Pantone reference you provide.

Option 3 - Colour Matching

If we have not previously matched the colour, we can undertake a colour matching service.

WHAT WE NEED FROM YOU:

- ▶ Estimated annual usage
- ▶ Thickness
- ▶ Surface finish required
- ▶ Light source if illuminated
- ▶ Light transmission if not constant
- ▶ Light diffusion required
- ▶ Product application
- ▶ Translucent, transparent or opaque colour



PERSPEX® Silk

PERSPEX® Silk has a matt texture on one side only. This surface finish is primarily to help avoid glare by reducing reflections but also works equally well to disguise finger marks from handling.

PHOTOS COURTESY OF
ALBION DESIGN & FABRICATIONS



OFFICES OF FORTIS BANK.

PERSPEX® Frost

THE ENGINE GROUP, LONDON, ENGLAND

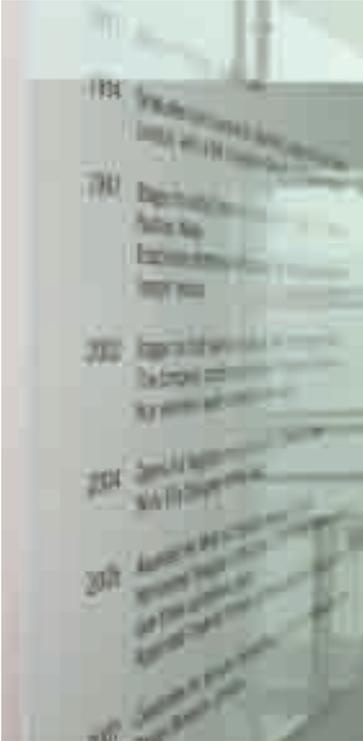


PHOTOGRAPHER: NIKHALESH HAVEL FOR ACRYLICISE

PERSPEX® Frost has a double-sided matt surface which gives an effect similar to that of sand-blasted or etched glass. PERSPEX® Frost is available in subtle shades of clear and opal to fresh pastel colours, right through the spectrum to deep, warm reds and rich greens and blues.

PERSPEX® Opal

BELOW: BIOGRAPHY BOARD AT FASHION EXHIBITION. BELOW RIGHT: SHOP WINDOW DISPLAY AT SELFRIDGES, OXFORD STREET.



PERSPEX® Opal comes in a wide range of white tones, where a white colour palette is required or more specifically, for light box applications.

The range of light transmission through the opal sheet, up to 70%, receives maximum haze and subsequently offers the maximum light diffraction. This in turn, creates the desired lighting effect for any application.

Perspex® Spectrum LED



Perspex® Spectrum colours have been specially formulated to give optimised colour performance with both transmitted and reflected light using white LEDs.

With improved diffusion of light and elimination of LED 'hotspots' the range facilitates slimmer designs.

Signs using Perspex® Spectrum LED will look bright, bold and evenly illuminated with whichever of the 11 popular corporate hues you select.

PHOTO COURTESY OF ASG



FORT DUNLOP SIGN, WINNER OF SIGN OF THE YEAR.

PERSPEX® Secret Sign



CUT OUT LETTERS.

Signage constructed from PERSPEX® Secret Sign appears black when not illuminated and red, blue, green or white, dependent upon the product used, when backlit. The surface of PERSPEX® Secret Sign has a fine matt texture as standard.

PERSPEX® S-Lux & D-Lux



LIGHT WALL FOR BOOTS FLAGSHIP STORE.



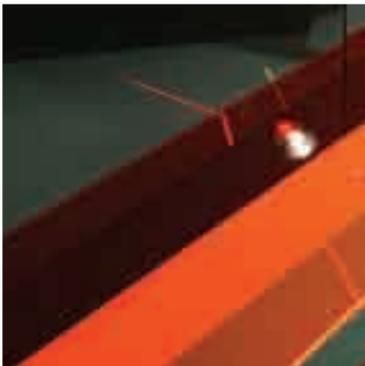
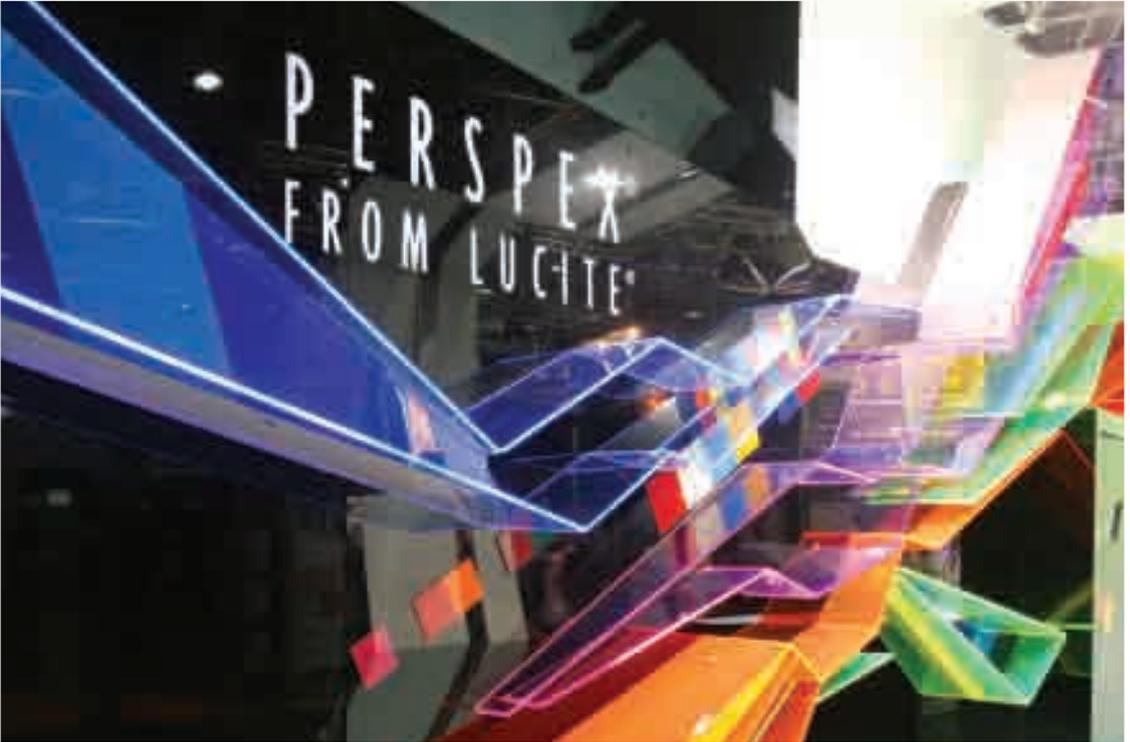
PHOTO COURTESY OF CHAOS DESIGN

The patented surface featured on PERSPEX® S-Lux and D-Lux offers excellent brightness and brilliant, even illumination for edge-lit sign applications, eliminating the banding effect that can occur in conventional backlit units.

Providing a controlled angle of reflection, signs can be created that are slim and attractive whilst graphically clear and easy to maintain.

PERSPEX® Fluorescent

PERSPEX® FROM LUCITE® EXHIBITION STAND, EUROSHOP, 2008.



PERSPEX® Fluorescent sports a vivid, fluorescent edge which appears to glow under ambient light as though having its own light source. Available in a wide range of colours, PERSPEX® Fluorescent creates a striking effect for any display.

PERSPEX® Fluorescent AR

Also available as Fluorescent AR, the AR sports the same vivid edge and is available in the same range of colours. However, the AR variant also has a matt finish on both sides to provide anti-reflective properties.

PERSPEX® Vario

PHOTO COURTESY OF SCISSAL



SCISSAL DESIGNER PET BOWLS
GB REG. DESIGN 4003376.

The six fresh colours available in the PERSPEX® Vario range are more muted than the Fluorescent, albeit the colour remains more vivid on the edge than in the mass of the sheet.

The edge of the sheet fluoresces brightly under both a UV light source and under ambient light. The surface colour also appears to change as the angle of vision shifts.

PERSPEX® Prismex®

BAR AT HEATHROW, T5.

PERSPEX® Prismex® is a speciality acrylic sheet with a patent protected dot matrix on the surface of the material. This surface reflects and refracts light across the sheet to give maximum, bright, even illumination without the banding effect that can occur in conventional backlit units.

PERSPEX® Prismex® has a controlled angle of reflection, enabling users to manage the light inside a signage panel and create ultra-slim light box structures.



ILLUMINATED WALL AT 38 FINSBURY SQUARE, LONDON

PERSPEX® Impressions



Perspex® Impressions adds an extra dimension to Perspex® sheet – texture. Perspex® Impressions 'Linear' features a contemporary pattern created exclusively with design trends in mind, with the design and texture inherent in the sheet meaning the pattern will not be rubbed off or delaminated.

PERSPEX® Metropolitan

PERSPEX® METROPOLITAN RANGE

From the front Perspex® Metropolitan is beautifully transparent, from the side it offers a striking and highly defined edge effect. Encompassing urban flavour and style, this is an eye-catching acrylic with a designer feel.

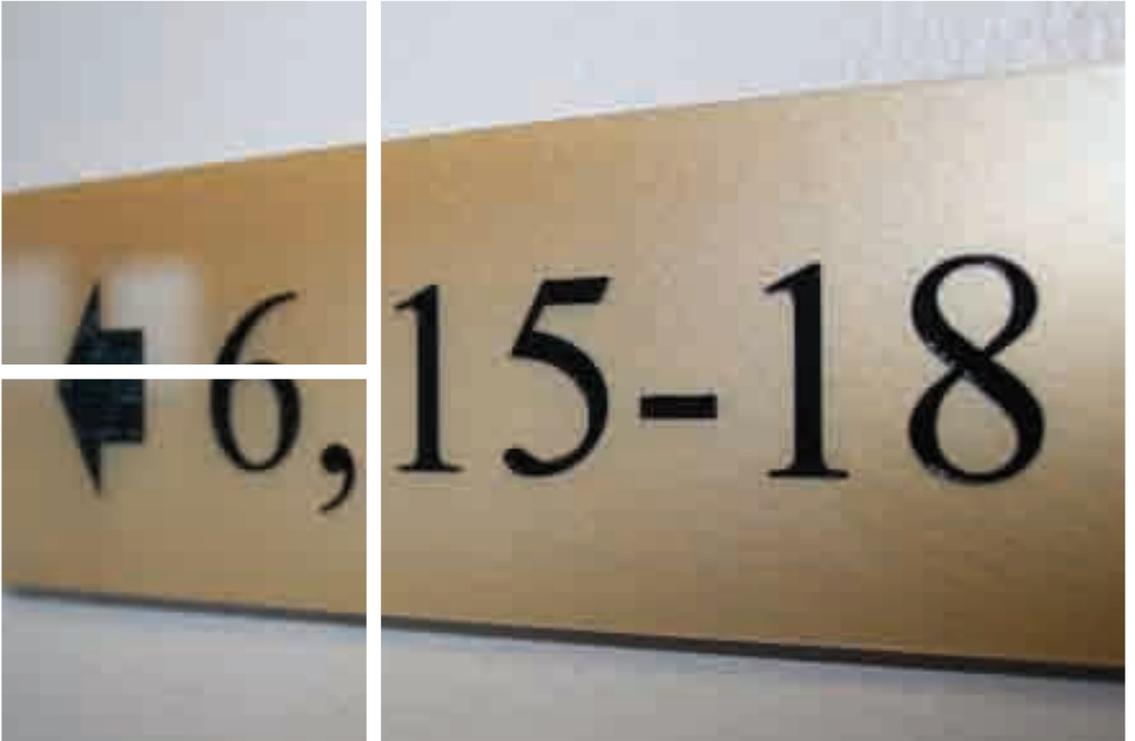


PERSPEX® Coral



Perspex® Coral echoes the dramatic textures and effects growing in tropical coral reefs. It has a deep, rich, textural 3D effect, giving it a subtle, intriguing appearance. When changing your perspective it appears to dance and ripple across the surface. This 10mm product is made to customers' personal colour specifications, our colour specialists can create individual bespoke colours.

PERSPEX® Pearlescent



PERSPEX® Pearlescent is available in a range of five colours from the natural end of the spectrum to stronger gold and platinum metallics.

PERSPEX® Pearlescent is a single-sided product that uses light and shade to good effect as the light is reflected from the surface at different angles due to the orientation of the metallic flakes.

PERSPEX® Sparkle



PERSPEX® Sparkle is available in six colours, each of which is enhanced by the addition of thousands of glitter particles, providing a sparkle or shimmer effect from the sheet surface.

Easy to shape and form offering a wide range of opportunities for unique applications.

PERSPEX® VE/VA (Museum Grade)



MUSEUM EXHIBIT IN DISPLAY CASE.



PERSPEX® VA is a colourless, cast acrylic sheet with integral UV protection and is suitable for specialist glazing applications and display cases. PERSPEX® VE is characterised by a slight yellow hue, derived from the UV inhibitor which acts to block out 99.99% of UV rays and is intended more for the protection of highly sensitive museum exhibits.

PERSPEX® Vision

PERSPEX® Vision has been designed for use as a rear projection screen. Available in transparent and opaque, PERSPEX® Vision offers clarity and brightness for the projected image.



PERSPEX® Clear Vision

PERSPEX® Clear Vision provides a wide 170° viewing angle with a bright, clear image, even during daylight hours. While maintaining its transparency during projection, the clear screen also allows an unobscured view through it when not in use.

PERSPEX® Hi Vision

PERSPEX® Hi Vision provides a superb 175° viewing angle and retains the full clarity, sharpness and contrast of the projected image. Illumination points are hidden behind the opaque sheet.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

PERSPEX® Clear

Colour	Colour ref code	Size (mm)	Thickness													
			1	1.5	2	2.5	3	4	5	6	8	10	12	15	20	25
Clear	000	3050 x 2030			●	●	●	●	●	●	●	●	●	●	●	●
		2550 x 2030				●	●	●	●	●	●	○	○	○		
		2500 x 1200		●												
		1250 x 1200	●													

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Clear (Maxi & Super Maxi)

Colour	Colour ref code	Size (mm)	Thickness							
			5	6	8	10	12	15	20	25
Clear	0000	3500 x 2540		○	○	○	○			
		3400 x 2470						○	○	
		3300 x 2500	○	○	○	○	○	○		
		3300 x 2400							○	○

PERSPEX® Clear (Block)

Colour	Colour ref code	Size (mm)	Thickness						
			30	35	40	45	50	55	60
Clear	0000	3000 x 2000	○	○					
		2800 x 1800			○	○	○	○	
		2800 x 1700							○
		2000 x 1500	●	○					
		1800 x 1400			●	○	●	○	
		1700 x 1400							●

PERSPEX® Glass-Look

Colour	Colour ref code	Size (mm)	Thickness									
			3	4	5	6	8	10	12	15	20	25
Glass-Look	6T21	3050 x 2030	●	●	●	●	●	●	●	○	○	○

Note: Half size sheets available at 2030 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

PERSPEX® Colours (Solid/Opaque, Translucent)

Colour	Colour ref code	Size (mm)	Thickness								
			3	4	5	6	8	10	12	15	20
Ivory	133	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Cream	128	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Yellow	229	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	250	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	260	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	261	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	2252	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Orange	324	3050 x 2030	○	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	363	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Red	431	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	433	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	440	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	4403	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	4415	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Colour	Colour ref code	Size (mm)	Thickness									
			3	4	5	6	8	10	12	15	20	
Red	4494	3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	4T12	3050 x 2030	○	○	○	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	4T17	3050 x 2030	○	○	○	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	4T26	3050 x 2030	○	○	○	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	4238	3050 x 2030	○	○	○	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	Brown	543	3050 x 2030	●	○	●	○	○	○	○	○	○
			2550 x 2030	○	○	○	○	○	○	○	○	○
Green	650	3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	692	3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	6205	3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	6643	3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
	Blue	727	3050 x 2030	●	○	●	○	○	○	○	○	○
			2550 x 2030	○	○	○	○	○	○	○	○	○
743		3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
744		3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	
750		3050 x 2030	●	○	●	○	○	○	○	○	○	
		2550 x 2030	○	○	○	○	○	○	○	○	○	

Colour	Colour ref code	Size (mm)	Thickness								
			3	4	5	6	8	10	12	15	20
Blue	751	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	7033	3050 x 2030	●	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	7748	3050 x 2030	○	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Violet	886	3050 x 2030	●	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Grey	9981	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Black	9T30	3050 x 2030	●	○	●	●	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	962	3050 x 2030	●	●	●	○	○	●	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
	9961	3050 x 2030	○	○	○	○	○	○	○	●	●
		2550 x 2030	○	○	○	○	○	○	○		

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Colours (Transparent)

Colour	Colour ref code	Size (mm)	Thickness								
			3	4	5	6	8	10	12	15	20
Yellow	2202	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Amber	300	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Red	4401	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		
Brown	504	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○		

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Colour	Colour ref code	Size (mm)	Thickness								
			3	4	5	6	8	10	12	15	20
Green	6T08	3050 x 2030	○	○	○	●	●	●	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	6600	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
Blue	7T22	3050 x 2030	○	○	○	○	○	●	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	7T74	3050 x 2030	○	○	○	●	●	●	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	7703	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	7704	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
Violet	8T01	3050 x 2030	○	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
Neutral	901	3050 x 2030	●	●	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	914	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	923	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	9T01	3050 x 2030	●	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	9T03	3050 x 2030	○	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	9T04	3050 x 2030	○	○	○	●	●	●	●	●	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	9T13	3050 x 2030	●	○	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○
	9T20	3050 x 2030	●	○	●	●	●	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○	○	○

Colour	Colour ref code	Size (mm)	Thickness								
			3	4	5	6	8	10	12	15	20
Neutral	9T21	3050 x 2030	○	○	○	●	●	●	●	●	○
		2550 x 2030	○	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Silk

Colour	Colour ref code	Size (mm)	Thickness							
			3	4	5	6	8	10	12	
Clear	SK 000	3050 x 2030	●	●	●	○	●	●	●	
	SK 040	3050 x 2030	●	○	○	○	○	○	○	
Opal	SK 050	3050 x 2030	●	○	●	○	○	○	○	
	SK 069	3050 x 2030	○	○	○	○	○	○	○	

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Frost

Colour	Colour ref code	Size (mm)	Thickness									
			3	4	5	6	8	10	12	15	20	
Crystal	S2 000	3050 x 2030	●	●	●	●	●	●	●	●	●	●
Polar White	S2 030	3050 x 2030	●	●	●	●	○	●	○	●	●	
Moonlight white	S2 1T41	3050 x 2030	●	○	●	○	○	○	○	○	○	
Citrus Yellow	S2 2T07	3050 x 2030	●	●	●	○	○	○	○	○	○	
Lemon Sorbet	S2 2T30	3050 x 2030	●	○	●	○	○	●	○	○	○	
Mandarin Orange	S2 3T17	3050 x 2030	●	○	●	○	○	○	○	○	○	
Blush Pink	S2 4T46	3050 x 2030	●	○	●	○	○	●	○	○	○	
Chilli Red	S2 4T50	3050 x 2030	●	○	●	○	○	○	○	○	○	
Glacier Green	S2 6T21	3050 x 2030	●	●	●	●	●	●	○	●	●	
Emerald Green	S2 6T59	3050 x 2030	●	○	●	○	○	○	○	○	○	
Sapphire Blue	S2 7T28	3050 x 2030	●	○	●	○	○	○	○	○	○	
Aurora Violet	S2 7T58	3050 x 2030	●	○	●	○	○	○	○	○	○	
Electric Blue	S2 7T69	3050 x 2030	●	○	●	○	○	●	○	○	○	
Arctic Blue	S2 7T77	3050 x 2030	●	○	●	○	○	●	○	○	○	

Note: Half size sheets available at 2030 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

PERSPEX® Opal

Colour	Colour ref code	Size (mm)	Thickness									
			3	4	5	6	8	10	12	15	20	25
Opal/White	028	3050 x 2030	●	●	●	●	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○			
Opal/White	030	3050 x 2030	●	●	●	●	○	●	○	●	○	○
		2550 x 2030	○	○	○	○	○	○	○			
Opal/White	040	3050 x 2030	●	●	●	●	○	●	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○			
Opal/White	050	3050 x 2030	●	●	●	●	●	●	○	○	○	○
		2550 x 2030	●	○	●	○	○	○	○			
Opal/White	069	3050 x 2030	●	●	●	●	●	●	○	○	●	○
		2550 x 2030	○	○	○	○	○	○	○			
Opal/White	1T04	3050 x 2030	●	○	●	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○			
Opal/White	1212	3050 x 2030	○	○	○	○	○	○	○	○	○	○
		2550 x 2030	○	○	○	○	○	○	○			

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Spectrum LED

Colour	Colour ref code	Size (mm)	Thickness									
			3	4	5	6	8	10				
Opal	1TL1	3050 x 2030	●	○	○	○	○	○				
	1TL2	3050 x 2030	●	○	○	○	○	○				
Yellow	2TL1	2550 x 2030	●	○	○	○	○	○				
	2TL2	3050 x 2030	●	○	○	○	○	○				
Orange	3TL1	3050 x 2030	●	○	○	○	○	○				
Pink	4TL1	3050 x 2030	●	○	○	○	○	○				
Red	4TL2	3050 x 2030	●	○	○	○	○	○				
	4TL3	3050 x 2030	●	○	○	○	○	○				
Green	6TL1	3050 x 2030	●	○	○	○	○	○				
	6TL2	3050 x 2030	●	○	○	○	○	○				
Blue	7TL1	3050 x 2030	●	○	○	○	○	○				

PERSPEX® Secret Sign

Colour	Colour ref code	Size (mm)	Thickness			
			3	4	5	6
Black/Red	4T25	3050 x 2030	○	○	○	○
Black/Blue	7T25	3050 x 2030	○	○	○	○
Black/Green	6T25	3050 x 2030	○	○	○	○
Black/White	9T25	3050 x 2030	●	○	●	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® S-Lux & D-Lux

Product	Colour ref code	Size (mm)	Thickness					
			4	5	6	8	10	12
S-Lux	SL000	3050 x 2030	○	○	○	●	●	●
D-Lux	DL000	3050 x 2030	○	○	○	○	○	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Prismex®

Product	Colour ref code	Size (mm)	Thickness			
			8	10	15	20
Prismex®			Perspex® Prismex® is made to order on a project basis.			

PERSPEX® Fluorescent

Colour	Colour ref code	Size (mm)	Thickness						
			3	4	5	6	8	10	12
Celestial Blue	021	3050 x 2030	●	○	●	○	○	○	○
Helios Yellow	2T51	3050 x 2030	●	○	●	○	○	○	○
Lava Orange	3T19	3050 x 2030	●	○	●	○	○	○	○
Mars Red	4T56	3050 x 2030	●	○	●	○	○	○	○
Acid Green	6T66	3050 x 2030	●	○	●	○	○	○	○
Neptune Blue	7T97	3050 x 2030	●	○	●	○	○	●	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Fluorescent AR

Colour	Colour ref code	Size (mm)	Thickness						
			3	4	5	6	8	10	12
Helios Yellow	S2 2T51	3050 x 2030	●	○	○	○	○	○	○
Lava Orange	S2 3T19	3050 x 2030	●	○	○	○	○	○	○
Mars Red	S2 4T56	3050 x 2030	●	○	○	○	○	○	○
Acid Green	S2 6T66	3050 x 2030	●	○	○	○	○	○	○
Neptune Blue	S2 7T97	3050 x 2030	●	○	○	○	○	○	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Vario

Colour	Colour ref code	Size (mm)	Thickness						
			3	4	5	6	8	10	12
Tropical Yellow	2T45	3050 x 2030	○	○	●	○	○	○	○
Caribbean Peach	3T31	3050 x 2030	○	○	●	○	○	○	○
Honolulu Pink	4T87	3050 x 2030	○	○	●	○	○	○	○
Lagoon Green	6T95	3050 x 2030	○	○	●	○	●	○	○
Cascade Blue	7T5D	3050 x 2030	○	○	●	○	●	○	○
Passion Flower Violet	8T10	3050 x 2030	○	○	●	○	○	○	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Pearlescent

Colour	Colour ref code	Size (mm)	Thickness		
			3	4	5
Pearl	1PY1	3050 x 2030	●	○	●
Candy	4PY5	3050 x 2030	●	○	●
Caramel Gold	5PY0	3050 x 2030	●	○	●
Azure	7PY3	3050 x 2030	●	○	●
Platinum	9PY2	3050 x 2030	●	○	●

Note: Half size sheets available at 2030 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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PERSPEX® Sparkle

Colour	Colour ref code	Size (mm)	Thickness					
			3	4	5	6	8	10
Scintillating Red	4SP0	3050 x 2030	○	○	○	○	○	○
Flamboyant Brown	5SP0	3050 x 2030	○	○	○	○	○	○
Entrancing Green	6SP0	3050 x 2030	○	○	○	○	○	○
Glittering Blue	7SP0	3050 x 2030	○	○	○	○	○	○
Gleaming Violet	8SP0	3050 x 2030	○	○	○	○	○	○
Shimmering Black	9SP0	3050 x 2030	○	○	●	○	○	○

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Impressions

Colour	Colour ref code	Size (mm)	Thickness						
			3	4	5	6	8	10	12
Clear	P1 000	3050 x 2030	○	○	●	○	○	○	○
Opal	P1 030	3050 x 2030	○	○	●	○	○	○	○
Red	P1 4T1B	3050 x 2030	○	○	●	○	○	○	○
Brown	P1 5T23	3050 x 2030	○	○	●	○	○	○	○
Glass Look	P1 6T21	3050 x 2030	○	○	●	○	○	○	○
Green	P1 6T5C	3050 x 2030	○	○	●	○	○	○	○
Purple	P1 8T23	3050 x 2030	○	○	●	○	○	○	○
Grey	P1 9T1D	3050 x 2030	○	○	●	○	○	○	○
Black	P1 9221	3050 x 2030	○	○	●	○	○	○	○

PERSPEX® Metropolitan

Colour	Colour ref code	Size (mm)	Thickness					
			2	3	4	5	6	8
Manhattan Black	9T4C	3050 x 2030	○	●	○	●	○	○
London Grey	9T3C	3050 x 2030	○	●	○	●	○	○
Moscow White	1T80	3050 x 2030	○	●	○	●	○	○
Tokyo Brown	5T48	3050 x 2030	○	●	○	●	○	○

PERSPEX® VE/VA

Colour	Colour ref code	Size (mm)	Thickness						
			3	4	5	6	8	10	12
Clear - VE	VE003	3050 x 2030	○	○	○	○	○	○	○
Clear - VA	VA004	3500 x 2540	○	○	●				
		3050 x 2030	●	●	●				

Note: Half size sheets available at 2030 x 1520.

PERSPEX® Vision

Colour	Colour ref code	Size (mm)	Thickness		
			3	4	5
Clear	1RP1	3050 x 2030	○	○	○
Grey - Hi	9RP1	3050 x 2030	○	○	○
Dark Grey	9RP2	3050 x 2030	○	○	○
Light Grey	9RP0	3050 x 2030	○	○	○

Note: Half size sheets available at 2030 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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TYPICAL PHYSICAL PROPERTIES

PERSPEX® cast acrylic sheet

Property	Test Method	Conditions	Units	Value
Physical				
Relative Density	ISO 1183		g/cm ³	1.19
Water Absorption	ISO 62		%	0.2
Mechanical				
Tensile Strength at yield	ISO 527	5mm/min	MPa	75
Tensile Strength at break				
Elongation at yield				
Elongation at break	ISO 527	5mm/min	%	4
Tensile Modulus of Elasticity				
Flexural Modulus	ISO 178	2mm/min	MPa	3210
Flexural Strength at yield	ISO 178	2mm/min	MPa	116
Izod Impact Strength	ISO 180/1A	notched	kJm ⁻²	N/A
Charpy Impact Strength	ISO 179	unnotched	kJm ⁻²	12
Impact Falling Weight				
Rockwell Hardness	ISO 2039-2		M Scale	102
Thermal				
Service Temperature			°C	-40 to 80
Heat Distortion Temperature				
Vicat Softening Temperature	ISO 306		°C	>110
Coefficient of Thermal Expansion	ASTM D-696		mm/m°C	0.077
Thermal Conductivity				
Specific Heat Capacity				
Optical				
Light Transmission	ASTM D-1003	3mm sheet	%	>92
Refractive Index	ISO 489/A			1.49
Yellowness Index				
Haze				
Electrical				
Dielectric Strength	IEC 243		kV/mm-1	15
Surface Resistivity	IEC 93		Ω m ⁻²	>10 ¹⁴

Other physical properties and values available on request.

Flammability

Standard	Classification
BS 476 Part 7	Class 3
UL 94	HB
NFP 92-307	M4 (without drips)

PERSPEX® is a combustible material and if ignited will continue to burn. However, unlike many other plastic materials, burning PERSPEX® produces very little smoke, an important fire safety benefit.

EXTRUDED
ACRYLIC

- ▶ Clear Extruded Acrylic
- ▶ Clear AR Extruded Acrylic
- ▶ Clear IM Extruded Acrylic
- ▶ Opal Extruded Acrylic
- ▶ Glass-Look Extruded Acrylic
- ▶ Extruded Acrylic Mirror
- ▶ Prismatic Acrylic

Extruded Acrylic Sheet

GIANT SIZE COCKTAIL GLASS



KEY FEATURES

- ▶ Outstanding clarity
- ▶ High gloss surface
- ▶ Exceptionally hard wearing
- ▶ Weather resistant
- ▶ Easily fabricated
- ▶ Good part definition

Extruded acrylic sheet offers excellent thickness tolerance and is extremely easy to vacuum form, making it ideal for applications where complex shapes are required.

Whereas PERSPEX® cast is produced in small batches, extruded sheet is made by extruding acrylic polymer over longer, more economical production runs. Consequently, extruded sheet is not available in the same extensive range of colours and finishes.

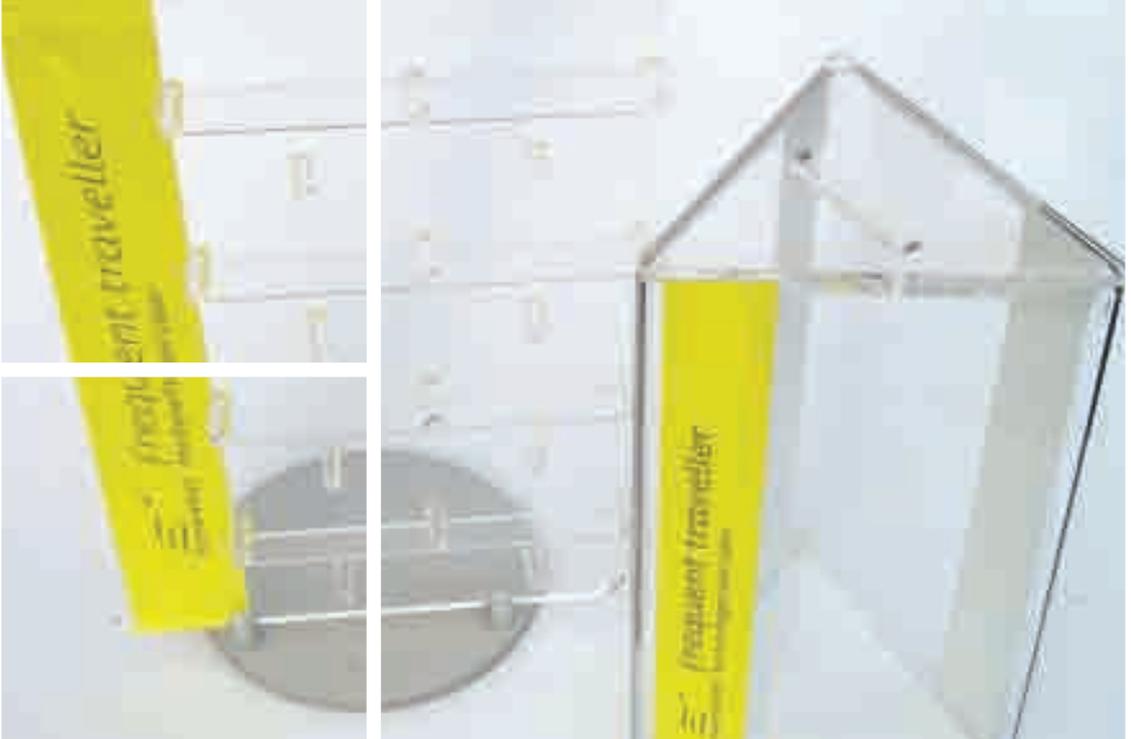


PHOTO COURTESY OF
PALRAM

CLEAR STAIRCASE PANEL

Clear Extruded Acrylic

POINT OF PURCHASE STANDS



Clear extruded acrylic has an exceptional light transmission superior to all other thermoplastic sheet, with the exception of PERSPEX® cast acrylic.

Anti Reflective Extruded Acrylic

Also available as AR with a fine, matt texture on both sides. This surface finish is primarily to help avoid glare by reducing reflections but also works equally well to disguise finger marks from handling.

TYPICAL APPLICATIONS

- ▶ Point of Purchase
- ▶ Signage
- ▶ Models and display cases
- ▶ Glazing
- ▶ Forming and fabrication

Clear IM Extruded Acrylic

IM is a modified, extruded acrylic that offers an improved impact strength. Unlike standard extruded acrylic it is less notch sensitive and therefore, its impact strength also remains after fabrication.

The impact modified grade also helps with ease of thermoforming.



DISPLAY CASE

Opal Extruded Acrylic



Opal extruded acrylic sheet can be used for lightbox applications. The light transmitted through the opal sheet receives maximum haze and subsequently offers maximum light diffraction.

BACKLIT DISPLAY CATWALK FOR MANNEQUINS

Glass-Look Extruded Acrylic

Glass-Look extruded acrylic sheet provides the appearance of green tint glass, but at half the weight and five times its impact strength, offers the aesthetics without the associated risk of breakages.



BACKLIT WALL

Extruded Acrylic Mirror

Extruded acrylic mirror, at half the weight and five times the impact strength of plate glass mirror, offers all the benefits without the associated risk of breakages.



WINDOW DISPLAY AT SELFRIDGES, OXFORD STREET, LONDON.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

Clear Extruded Acrylic

Colour	Colour ref code	Size (mm)	Thickness													
			1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
Clear	0X00	3050 x 2050	●	●	●	●	●	●	●	●	●	●	●	●	○	○
		2550 x 2050	○	●	○	●	●	●	●	○	●	○				
		2440 x 1220	○	●	○	●	●	●	●	○	●	○				

Note: Half size sheets available at 2050 x 1520.

Clear AR Extruded Acrylic

Colour	Colour ref code	Size (mm)	Thickness			
			1.5	2	3	4
Clear	AR	3050 x 2050	○	●	●	○
Clear	AR	3050 x 1250	○	●	●	○

Clear IM Extruded Acrylic

Colour	Colour ref code	Size (mm)	Thickness													
			1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
Clear	IM30	3050 x 2050	○	●	○	●	●	●	●	○	○	○	○	○	○	○
		2550 x 2050	○	●	○	●	○	●	○	○	○	○	○	○	○	○
	IM50	3050 x 2050	○	●	○	●	●	●	●	○	○	○	○	○	○	○
		2550 x 2050	○	●	○	●	○	●	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

Opal Extruded Acrylic

Colour	Colour ref code	Size (mm)	Thickness													
			1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
Opal	1X50	3050 x 2050	○	●	○	●	○	●	○	○	○	○	○	○	○	○
White	1X69	3050 x 2050	○	●	○	●	○	●	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

Glass-Look Extruded Acrylic

Colour	Colour ref code	Size (mm)	Thickness													
			1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
Glass-Look		3050 x 2050	○	○	○	●	○	●	●	●	●	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

Extruded Acrylic Colours

Colour	Colour ref code	Size (mm)	Thickness													
			1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
Black	9X61	3050 x 2050	○	○	○	●	○	●	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520. A full range of colours are available upon request.

Extruded Acrylic Mirror

Colour	Colour ref code	Size (mm)	Thickness					
			1.5	2	3	4	5	6
Silver		3050 x 2050	○	●	●	○	●	●
		2440 x 1220	○	●	●	○	●	●
Gold		3050 x 2050	○	○	●	○	○	○
		2440 x 1220	○	○	○	○	○	○

A full range of colours are available upon request.

Prismatic Acrylic

Colour	Colour ref code	Size (mm)	Thickness	
			3	4
Clear	Pyramid	2000 x 1200	●	
	K12	2500 x 1250	●	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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TYPICAL PHYSICAL PROPERTIES

Extruded Acrylic sheet

Property	Test Method	Conditions	Units	Value		
Physical				Extruded	IM50	IM60
Relative Density	ISO 1183		g/cm ³	1.2	1.17	1.16
Water Absorption	ISO 62		%	0.2	0.3	0.3
Mechanical						
Tensile Strength at yield	ISO 527	5mm/min	MPa	70	68	50
Tensile Strength at break						
Elongation at yield						
Elongation at break	ISO 527	5mm/min	%	4	18	25
Tensile Modulus of Elasticity						
Flexural Modulus	ISO 178	2mm/min	MPa	3030	2500	2000
Flexural Strength at yield	ISO 178	2mm/min	MPa	107	90	70
Izod Impact Strength	ISO 180/1A	notched	kJm ⁻²	N/A	5	7
Charpy Impact Strength	ISO 179	unnotched	kJm ⁻²	10	50	65
	ISO 179	notched	kJm ⁻²	N/A	5	7
Impact Falling Weight						
Rockwell Hardness	ISO 2039-2		M Scale	101	65	45
Thermal						
Service Temperature			°C	-40 to 80		
Heat Distortion Temperature						
Vicat Softening Temperature	ISO 306		°C	>105	>105	>105
Coefficient of Thermal Expansion	ASTM D-696		mm/m°C	0.078	N/A	N/A
Thermal Conductivity						
Specific Heat Capacity						
Optical						
Light Transmission	ASTM D-1003	3mm sheet	%	>92	90	89
Refractive Index	ISO 489/A			1.49	N/A	N/A
Yellowness Index						
Haze						
Electrical						
Dielectric Strength	IEC 243		kV/mm-1	N/A	N/A	N/A
Surface Resistivity	IEC 93		Ω m-2	>10 ¹⁴		

Other physical properties and values available on request.

Flammability

Standard	Classification
BS 476 Part 7	Class 4
UL 94	HB
NFP 92-307	M4 (without drips)

Acrylic is a combustible material and if ignited will continue to burn. Different to cast, extruded acrylic will eventually produce molten droplets which will continue to burn.

POLYCARBONATE

- ▶ PALSUN®
- ▶ PALSUN® MATTE
- ▶ PALSUN® FR
- ▶ PALSUN® Opal
- ▶ Polycarbonate Textured
- ▶ PALTUF®
- ▶ PALGARD®
- ▶ MARLON FSX
- ▶ MARLON FS HARD



Flat Polycarbonate

BUS STOP GLAZING.



Polycarbonate sheets deliver the transparency of glass at less than half the weight. Combining superior impact resistance and clarity, making it the material of choice for many demanding applications.

Polycarbonate can be fabricated and formed, making it ideal for applications such as barrel vault roofing, roof lights and glazing. Clear, translucent or opaque polycarbonate sheets are also ideal for safety glazing applications.

KEY FEATURES

- ▶ High impact resistance
- ▶ High light transmission
- ▶ Wide service temperature
- ▶ High UV protection
- ▶ Class 1 fire rating

OUT-OF-PLANE ROOFLIGHT



PHOTO COURTESY OF XTRALITE

PALSUN® UV2 polycarbonate benefits from an integral, co-extruded layer of UV protection on both sides of the sheet and can therefore be used for external as well as internal applications. Coupled with a service temperature range between -50°C and +100°C, PALSUN® is suitable for use in any environment. With a light transmission of 89%, the same as glass but at half the weight and 200 times the impact resistance, PALSUN® polycarbonate is ideal for use in areas exposed to potential damage or vandalism.



GLAZED DOME. PHOTO COURTESY OF PALRAM

PALSUN® MATTE

Also available as MATTE with a fine, matt texture on one side only. This surface finish is primarily to help avoid glare by reducing reflections.

PALSUN® FR

LIGHTBOX AT EMIRATES STADIUM



PHOTO COURTESY OF ACRYLIZI

PALSUN® FR benefits from the same co-extruded layers of UV protection as PALSUN® UV2 but also possesses a higher fire resistance rating, to UL94 V-0, which makes it ideal for use in areas where building regulations require it, such as public buildings and areas with high footfall.

TYPICAL APPLICATIONS

- ▶ Glazing
- ▶ Skylights
- ▶ Stadia roofing
- ▶ Protective shields/enclosures
- ▶ Lightboxes
- ▶ Curtain walling

PALSUN® Opal / Diffuser

ACKLIT AIRPORT SIGNAGE



PALSUN® Opal / Diffuser comes in a wide range of white tones, where a white colour palette is required or more commonly, for light box applications. The range of light transmission through the opal sheet, up to 86% depending on the sheet thickness, receives maximum haze and subsequently offers the maximum light diffraction.

The safe fire behaviour of PALSUN® Opal / Diffuser makes it ideal for use in areas where building regulations require it, such as public buildings and areas with high footfall.

Polycarbonate Textured

Polycarbonate textured sheets have a patterned finish on one side of the sheet. The surface on PALSUN® Embossed is applied primarily to offer light transmission whilst obscuring vision for privacy glazing applications.

The embossed finishes available are obscure, hair cell or prismatic.

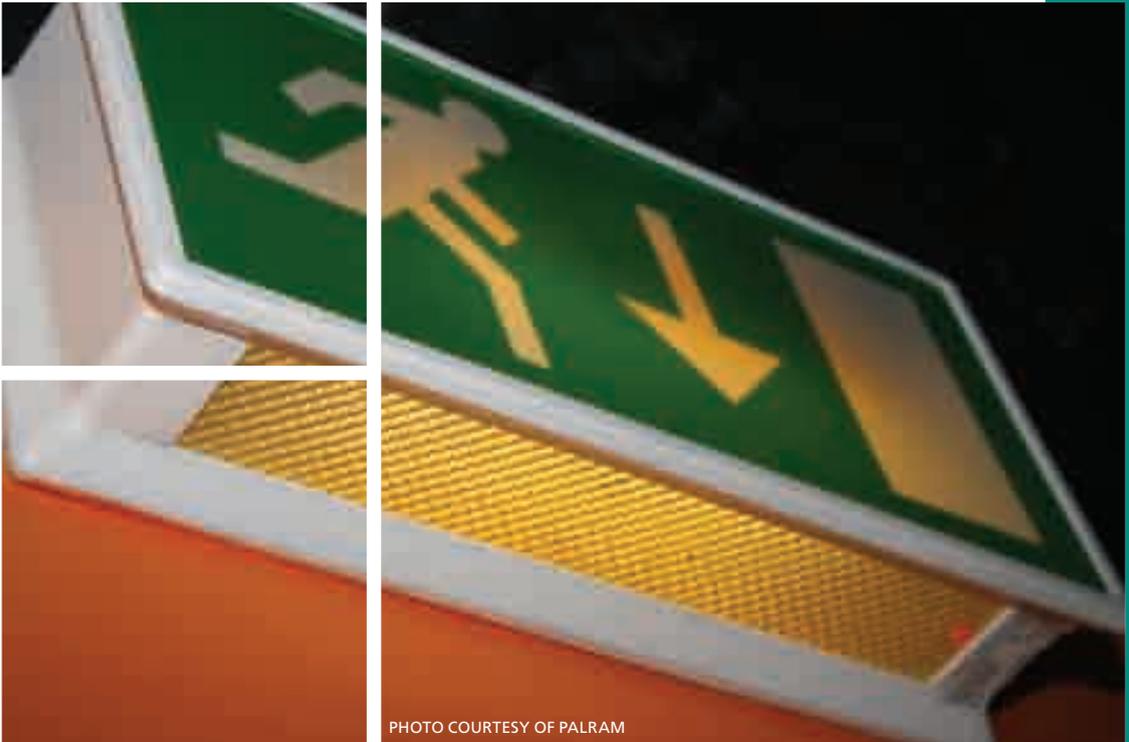
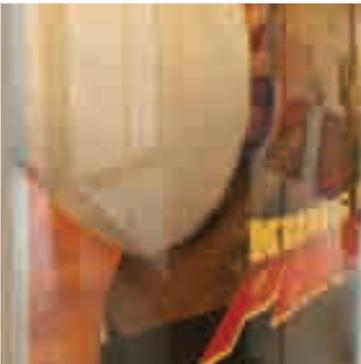


PHOTO COURTESY OF PALRAM

BACKLIT SAFETY SIGN

DISPLAY UNIT



VENDING MACHINE



PALTUF® is a general purpose, flat polycarbonate sheet best suited to indoor applications as the product has limited UV stability.

PALGARD™

PALGARD™ has all the benefits of PALSUN® polycarbonate but with an abrasion resistant coating applied post production. PALGARD™ has an increased resistance to a wider variety of chemicals and is more durable for use in high traffic areas or to resist vandalism.



PHOTO COURTESY OF
PALRAM

CURTAIN WALLING AROUND ROTATING RESTAURANT

Marlon FSX

Marlon FSX Longlife has a high performance UV absorption layer co-extruded on both surfaces which prevents damaging UV radiation from penetrating the sheet. UV protection means longer life, preventing yellowing and loss of strength. It cuts out 98% of harmful UV radiation, protecting those working or playing beneath it.

This clear transparent glazing material provides 200 times more impact resistance than glass at only half the weight.

Marlon FSX can be thermoformed, fabricated and cold curved for use in architectural rooflights, barrel vaults and specialist glazing applications. Providing high impact resistance, Marlon FSX is the preferred material for use in safety glazing, protective screening, machine guards and visors.



PHOTO COURTESY OF
BRETT MARTIN



Marlon FS Hard

An innovative protective coating provides Marlon FS Hard with enhanced resistance to marks and scratches compared to standard polycarbonate. It is suitable for use where enhanced protection against damage is needed.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

PALSUN® UV2

Colour	Colour ref code	Size (mm)	Thickness									
			1	1.5	2	3	4	5	6	8	10	12
Clear	Transparent	3050 x 2050			●	●	●	●	●	●	●	●
		3050 x 1500			○	○	○	○	○	○	○	○
		2440 x 1220	●	●	○	●	●	●	●	○	○	○
		2050 x 1250	●	●	●	●	●	●	●	●	●	○
Bronze	Transparent	3050 x 2050			●	●	●	●	●	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
		2050 x 1250			○	○	○	○	○	○	○	○
Solar Grey	Transparent	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
		2050 x 1250			○	○	○	○	○	○	○	○
Blue	Transparent	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
		2050 x 1250			○	○	○	○	○	○	○	○
Green	Transparent	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
		2050 x 1250			○	○	○	○	○	○	○	○
Brick Red	Opaque	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
Red	Opaque	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
Green	Opaque	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
Dark Green	Opaque	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○
Black	Opaque	3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220			○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520. Palsun® in thicknesses of 1 and 1.5mm are UV one-side only.

PALSUN® MATTE

Colour	Colour ref code	Size (mm)	Thickness						
			1	1.5	2	3	4	5	6
Clear		3050 x 2050			○	○	○	○	○
		2440 x 1220	○	○	○	○	○	○	○
		2050 x 1250	○	○	○	○	○	○	○
Bronze		3050 x 2050			○	○	○	○	○
		2440 x 1220			○	○	○	○	○
		2050 x 1250			○	○	○	○	○
Grey Satin		3050 x 2050			○	○	○	○	○
		2440 x 1220			○	○	○	○	○
		2050 x 1250			○	○	○	○	○
Red Satin		3050 x 2050			○	○	○	○	○
		2440 x 1220			○	○	○	○	○
		2050 x 1250			○	○	○	○	○
Mint Green		3050 x 2050			○	○	○	○	○
		2440 x 1220			○	○	○	○	○
		2050 x 1250			○	○	○	○	○
Solar Grey		3050 x 2050			○	○	○	○	○
		2440 x 1220			○	○	○	○	○
		2050 x 1250			○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

PALSUN® FR

Colour	Colour ref code	Size (mm)	Thickness									
			1.5	2	3	4	5	6	8	10	12	
Clear		3050 x 2050			○	○	○	○	○	○	○	○
		2440 x 1220	○	○	○	○	○	○	○	○	○	
		2050 x 1250	○	○	○	○	○	○	○	○	○	

Note: Half size sheets available at 2050 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

PALSUN® Opal / Diffuser

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Opal	Translucent	3050 x 2050	●	●	○	●	○	○	○	○
		2440 x 1220	○	○	○	○	○	○	○	○
		2050 x 1250	○	○	○	○	○	○	○	○
Diffuser 500	Translucent	3050 x 2050	○	○	○	○	○	○	○	○
		2440 x 1220	○	○	○	○	○	○	○	○
		2050 x 1250	○	○	○	○	○	○	○	○
Diffuser 700	Translucent	3050 x 2050	○	○	○	●	○	○	○	○
		2440 x 1220	○	○	○	○	○	○	○	○
		2050 x 1250	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

Polycarbonate Textured

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Embossed / Obscure		3050 x 2050	○	●	●	○	●	○		
		2440 x 1220	○	○	○	○	○	○		
		2050 x 1250	○	○	○	○	○	○		
Prismatic	K12	2500 x 1250	○	●	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520. Prismatic polycarbonate available in other sheet sizes and thicknesses upon request.

PALTUF®

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Clear		3050 x 2050	●	●	●	●	●	●	●	●
		3050 x 1500	○	○	○	○	○	○	○	○
		2440 x 1220	○	●	●	●	●	●	●	○
		2050 x 1250	●	●	●	●	●	●	●	○

Note: Half size sheets available at 2050 x 1520.

PALGARD™

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Clear		3000 x 2000	○	●	●	●	●	●	●	○
		2440 x 1220	○	○	○	○	○	○	○	○

Note: Other colours available upon request.

Marlon FSX

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Clear	Transparent	3050 x 2050	●	●	●	●	●	●	●	●

Marlon FSX Hard

Colour	Colour ref code	Size (mm)	Thickness							
			2	3	4	5	6	8	10	12
Clear		3000 x 2000	○	●	●	●	●	●	●	○
		2440 x 1220	○	○	○	○	○	○	○	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

TYPICAL PHYSICAL PROPERTIES

PALSUN® Polycarbonate

Property	Test Method	Conditions	Units	Value
Physical				
Relative Density	ASTM D-792		g/cm ³	1.2
Water Absorption	ASTM D-570	24 hr @ 23°C	%	0.15
Mechanical				
Tensile Strength at yield	ASTM D-638	10mm/min	MPa	65
Tensile Strength at break	ASTM D-638	10mm/min	MPa	60
Elongation at yield	ASTM D-638	10mm/min	%	6
Elongation at break	ASTM D-638	10mm/min	%	>90
Tensile Modulus of Elasticity	ASTM D-638	1mm/min	MPa	2,300
Flexural Modulus	ASTM D-790	1.3mm/min	MPa	2,600
Flexural Strength at yield	ASTM D-790	1.3mm/min	MPa	65
Izod Impact Strength	ASTM D-256	notched	J/m	800
Charpy Impact Strength	ASTM D-256	notched	J/m	800
Impact Falling Weight	ISO 6603	3mm sheet	J	158
Rockwell Hardness	ASTM D-785		R Scale	125
Thermal				
Service Temperature			°C	-50 to + 100
Heat Distortion Temperature	ASTM D-648	Load: 1.82MP	°C	130
Vicat Softening Temperature	ASTM D-1525	Load: 1kg	°C	150
Coefficient of Thermal Expansion	ASTM D-696		mm/m°C	0.065
Thermal Conductivity	C-177		W/m°K	0.21
Specific Heat Capacity	C-351		kJ/kg°K	1.26
Optical				
Light Transmission	ASTM D-1003		%	89
Refractive Index	ASTM D-542			1.586
Yellowness Index	ASTM D-1925			<1
Haze	ASTM D-1003		%	<0.5
Electrical				
Dielectric Strength	ASTM D-149	500V/s	kV/mm	>30
Surface Resistivity	ASTM D-257	Keithley	Ω	5.1x10 ⁵

Other physical properties and values available on request.

PALSUN® Flammability

Standard	Classification
EN13501	B, s1, d0
BS 476 Part 7	Class 1
UL Classified	V2 (File e221255)
NSP 92501,4	M2
DIN 4102	B1, B2
ASTM D-635	CC1

Marlon FSX

Standard	Classification
BS 476 Part 7	Class 1Y

POLYESTER

- ▶ APET
- ▶ APET AR
- ▶ PETG
- ▶ PETG UV

Flat Polyester Sheet

Polyester sheets deliver the transparency of glass at just over half the weight. Combined with good impact resistance and safe fire behaviour, polyester satisfies all safety and durability requirements. Easily formed and fabricated, polyester is ideal for applications such as point of purchase displays and street furniture. Being food approved as standard, according to FDA and EEC regulations, polyester is particularly suitable in areas where legislation would require it. With a low service temperature down to -40°C , this would also include use in refrigeration units.

POSTER GLAZING



LIGHTWEIGHT WINDOW IN MOTOR RACING CAR



KEY FEATURES

- ▶ Good impact resistance
- ▶ High light transmission resistant
- ▶ Wide service temperature
- ▶ Food approved as standard
- ▶ Easily vacuum formed

TACTYLE® BRAILLE SAFETY SIGN

TYPICAL APPLICATIONS

- ▶ Glazing
- ▶ Point of purchase
- ▶ Signage
- ▶ Protection shields / enclosures
- ▶ Street furniture
- ▶ Vending machines



PHOTO COURTESY OF
CENTURION EUROPE



Transparent APET sheet benefits from excellent processing properties and is easily screen printed with the appropriate inks.

It has the benefit of being food approved as standard, according to FDA and EEC regulations.

APET Anti-Reflective (AR)

APET AR has a fine, matt texture on one side only. This surface finish is primarily to help avoid glare by reducing reflections. However, the matt surface also works equally well to conceal scratches and finger marks from handling.

PETG

SHOPPING TROLLEY PARK



BRAILLE SIGN

Transparent PETG sheet has excellent processing properties and does not require pre-drying. With a light transmission of 90%, the same as glass, PETG is just over half the weight and has a superior impact resistance.

Coupled with an excellent fire rating, PETG is suitable for applications where more durability is required.

PETG has the benefit of being food approved as standard, according to FDA and EEC regulations.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

APET

Colour	Colour ref code	Size (mm)	Thickness									
			0.6	0.75	1	1.5	2	3	4	5	6	8
Clear		3050 x 2050			○	○	●	●	○	○	○	○
		2500 x 1250	○	○	○	○	○	○	○			
		2050 x 1250	○	○	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

APET AR

Colour	Colour ref code	Size (mm)	Thickness						
			0.6	0.75	1	1.5	2	3	4
Clear		2500 x 1250	○	○	○	○	●		
		2050 x 1250	○	○	○	○	●	○	○

PETG

Colour	Colour ref code	Size (mm)	Thickness										
			0.75	1	1.5	2	2.5	3	4	5	6	8	10
Clear		3050 x 2050			●	●	○	●	●	●	●	●	●
		2500 x 1250	●	●	●	●	○	●	●	●	○		
		2050 x 1250	●	●	●	●	○	●	●	●	○		
Opal		3050 x 2050			○	○	○	○	○	○	○	○	○
		2500 x 1250	○	○	○	○	○	○	○	○			
		2050 x 1250	○	○	○	○	○	○	○	○	○		

Note: Half size sheets available at 2050 x 1520.

PETG UV

Colour	Colour ref code	Size (mm)	Thickness										
			0.75	1	1.5	2	2.5	3	4	5	6	8	10
Clear		3050 x 2050			○	○	○	○	○	○	○	○	○
		2500 x 1250	○	○	○	○	○	○	○	○			
		2050 x 1250	○	○	○	○	○	○	○	○	○	○	○

Note: Half size sheets available at 2050 x 1520.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

TYPICAL PHYSICAL PROPERTIES

Polyester

Property	Test Method	Conditions	Units	Value	
Physical				APET	PETG
Relative Density	ISO 1183		g/cm ³	1.33	1.27
Water Absorption	ISO 62		%	0.15	0.15
Mechanical					
Tensile Strength at yield	ISO 527		MPa	53.5	51.5
Tensile Strength at break					
Elongation at yield					
Elongation at break	ISO 527		MPa	53.5	>100
Tensile Modulus of Elasticity	ISO 527			>100	+2200
Flexural Modulus			MPa	2300	2100
Flexural Strength at yield					
Izod Impact Strength	ISO 180	notched unnotched	kJ/m ²	3.9 no burst	9.0 no burst
Charpy Impact Strength					
Impact Falling Weight					
Rockwell Hardness	DIN 2039		R Scale	114	115
Thermal					
Service Temperature			°C	-20 to 60	-40 to 60
Heat Distortion Temperature	ISO 75	Load: 1.82MPa	°C	67	68
Vicat Softening Temperature	ISO 306	Load: 1kg	°C	78	82
Coefficient of Thermal Expansion			mm/m°C	0.06	0.06
Thermal Conductivity					
Specific Heat Capacity	DSC		J/gC°	1.13	1.13
Optical					
Light Transmission	ASTM D-1003	3mm sheet	%	89	90
Refractive Index				N/A	N/A
Yellowness Index				N/A	N/A
Haze	ASTM D-1003		%	1.9	>1
Electrical					
Dielectric Strength	ASTM D-149	500V/s	kV/mm	18	16
Surface Resistivity	ASTM D-257		Ωxcm	1*E15	1*E15

Other physical properties and values available on request.

APET		PETG	
Standard	Classification	Standard	Classification
BS 476 Part 7	Class 1Y	BS 476 Part 7	Class 1Y
UL 94	V2/HB	UL 94	HB
DIN 4102-1	B1	DIN 4102-1	B1
DIN 5510-2	S4/SR2/ST2	DIN 5510-2	S4/SR2/ST2
CSE RF-2-75A/ RF3-77	Class 1	CSE RF-2-75A/ RF3-77	Class 1
NF F 16-101 & 102	M2, F1	NF F 16-101 & 102	M2, F1

ALUMINIUM COMPOSITE

- ▶ ALUPANEL®
- ▶ ALUPANEL® Lite
- ▶ EUROPANEL
- ▶ ALUPANEL® Ultrawhite Digital
- ▶ ALUFOAM®
- ▶ ALUPANEL® Mirror
- ▶ ALUPANEL® XT
- ▶ ALUPANEL® XT FR

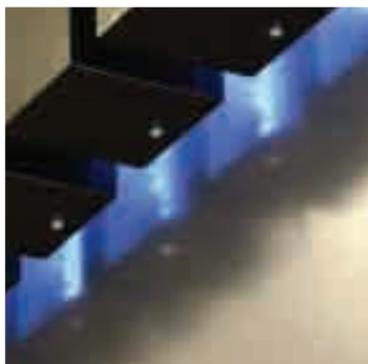
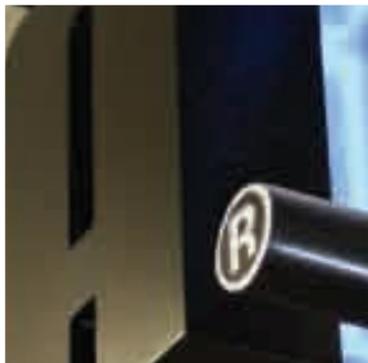
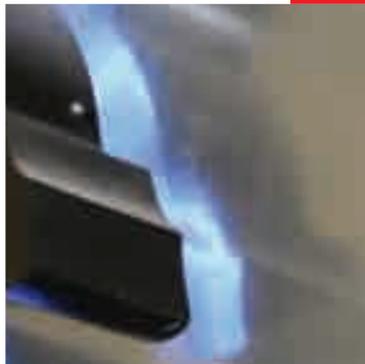
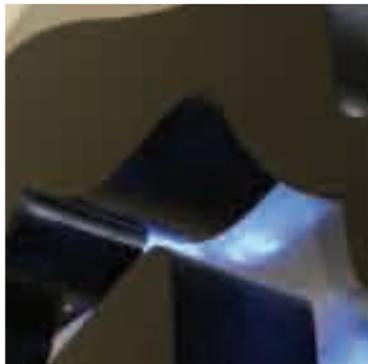
Aluminium Composite Sheet



PHOTO COURTESY OF MULTIPANEL

Aluminium composite sheet has a polyethylene core sandwiched between two aluminium skins and is a rigid, lightweight product available in a wide range of colours and finishes. The smooth and extremely flat surface of aluminium composite readily accepts screen and digital print inks as well as vinyl lamination. Coupled with dimensional stability, aluminium composite sheet is notable for its limited rate of expansion and contraction even under extremes of temperature. Subsequently, the product is equally suitable for outdoor as well as indoor applications.

PHOTO COURTESY OF JJB SPORTS



KEY FEATURES

- ▶ Excellent rigidity
- ▶ Wide range of colours
- ▶ Wide service temperature
- ▶ Dimensional stability
- ▶ Smooth flat surface
- ▶ Easily cut, folded & formed

ALUPANEL®

CORPORATE SIGNAGE

ALUPANEL® aluminium composite sheet consists of a polyethylene core sandwiched between two 0.3mm aluminium skins. With all the benefits of aluminium composite and the full range of colours and finishes, ALUPANEL® combines durability with flexibility. Particularly suited to high wear environments, this formable and dual-sided sheet has one satin finish surface and the other in 75% gloss. White sheets now come with an ultrawhite finish as standard for optimised printed colours.

All standard colours come with a 5 year external guarantee (brushed and mirror finishes hold a 5 year internal guarantee).



PHOTO COURTESY OF IMAGECO

ALUPANEL® Lite

TEMPORARY SIGNAGE



TYPICAL APPLICATIONS

- ▶ Signage
- ▶ Point of purchase
- ▶ Wall cladding
- ▶ Partitions
- ▶ Hoarding panels
- ▶ Exhibition stands

ALUPANEL® Lite is a reduced weight sheet having a 0.21mm thick aluminium surface on both sides. ALUPANEL® Lite is dual-sided with a satin and gloss finish on opposing faces.

ALUPANEL® Lite is unsuitable for applications where a high load-bearing capacity is required.

HOARDING PANELS



PHOTO COURTESY OF
MULTIPANEL

**EUROPANEL**

Europanel aluminium composite panels are a highly efficient, economical solution for all flat applications. Available in a range of colours, this 0.3mm skin sheet offers a durable, rigid sheet for countless applications.

EUROLITE

Eurolite offers a 0.2mm thick aluminium skin which reduces the sheet weight making it an ideal substrate for hoarding board or non-load bearing applications. Available in a white finish, Eurolite also provides a flat surface

ideal for print.

EURO ECONOMY

Euro economy aluminium composite is a budget solution for short-term applications where the application is flat and no load is to be placed on the panels. This is a single sided white product only.

ALUPANEL® Ultrawhite Digital

Alupanel Ultrawhite Digital has been specifically developed for the print market. It features an ultra white paint finish creating the perfect backdrop for any print job, guaranteed to make it stand out brilliantly.

With a flat, smooth, uniform surface it offers the perfect substrate for flatbed digital print and for the screen print process. Its low tack easy peel protection film leaves no residue on the panel reducing cleaning time and risk to the print.



OUTPUT FROM A FLATBED DIGITAL PRINTER



Alufoam® panels feature a virgin, white, foamed polyethylene core which has the advantage of being 30% lighter than standard aluminium composite. The ultra white surface of Alufoam displays printed colours with increased brightness and intensity and a special coating delivers vastly improved ink adhesion for colour fast prints.

Particularly suited to display applications where the side of the panel may be visible. Alufoam is a lightweight panel with a 0.15mm thick aluminium surface and a white foamed polyethylene core making it 30% lighter than standard aluminium composite.

ALUPANEL® Mirror

MIRROR SANDWICHED IN SUZUKI TOTEM



With the advantage of being almost half the weight of plate glass mirror, ALUPANEL® Mirror also benefits from being completely shatter resistant.

ALUPANEL® XT



ALUPANEL® XT sheets consist of a polyethylene core sandwiched between two 0.5mm aluminium skins, coupled with a PVDF coating to provide a long lasting, durable finish for rainscreen wall cladding applications.

ALUPANEL® XT sheets are available in a wide range of colours and finishes, including metallics, granite, marble and stone effects.

ALUPANEL® XT FR

ALUPANEL® XT FR has a mineral core based upon Aluminium Hydroxide and subsequently benefits from the same properties as ALUPANEL® XT, but with a higher fire resistance rating to A2 classification in accordance with DIN 4102.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

ALUPANEL®

Colour	Colour ref code	Size (mm)	Thickness			
			2	3	4	6
Ultrawhite		4050 x 1500	○	●	●	○
		4050 x 1000	○	○	○	○
		3050 x 2000		●	●	
		3050 x 1500	●	●	●	○
		3050 x 1220	○	●	○	○
		3050 x 1000	○	○	○	○
		2440 x 1220	●	●	○	●
		2050 x 1000	○	○	○	○
Light Ivory	RAL 1015	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Traffic Yellow	RAL 1023	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Orange	RAL 2004	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Burgundy	RAL 3004	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Traffic Red	RAL 3020	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	●	●
Ultra Marine Blue	RAL 5002	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Blue	RAL 5022	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Green	RAL 6005	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Colour	Colour ref code	Size (mm)	Thickness			
			2	3	4	6
Traffic Green	RAL 6024	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Dark Grey	RAL 7016	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Traffic Grey	RAL 7042	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	○	○	○
Chocolate	RAL 8011	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	○	○	○
Jet Black	RAL 9005	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	○	○	○
Silver	RAL 9006	3050 x 2000		○	○	
		3050 x 1500	○	●	○	○
		2440 x 1220	○	○	○	○
Bronze Metallic		3050 x 2000		○	○	
		2440 x 1220	○	●	○	○
Brushed Aluminium/ Silver		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Premium Brushed Aluminium *		3050 x 1500	○	●	○	○
		2440 x 1220	○	●	○	○
Brushed Antique Copper/Gold		2440 x 1220	●	●	○	○
Brushed Copper/Black		2440 x 1220	●	●	○	○

* Includes a special PVDF coating with a 15 year guarantee.

ALUPANEL® Lite

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
Ultrawhite		3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Traffic Red	RAL 3020	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Traffic Yellow	RAL 1023	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Traffic Grey	RAL 7042	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Jet Black	RAL 9005	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Ultra Marine Blue	RAL 5002	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Blue	RAL 5022	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Traffic Green	RAL 6024	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Green	RAL 6005	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Light Ivory	RAL 1015	3050 x 1500	○	●	○
		2440 x 1220	○	●	○
Silver	RAL 9006	3050 x 1500	○	●	○
		2440 x 1220	○	●	○

ALUPANEL® Ultrawhite Digital

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
Ultrawhite		3050 x 1500	○	●	○
		2440 x 1220	○	●	○

ALUFOAM®

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
Ultrawhite		3050 x 1500	○	●	○
		2440 x 1220	○	●	○

ALUPANEL® Mirror

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
Silver		2440 x 1220	○	●	●
Gold		2440 x 1220	○	●	○

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Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

EUROPANEL

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
White	White 9016	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
		2550 x 1250	○	●	○
Ivory	RAL 1015	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Traffic Yellow	RAL 1023	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Traffic Red	RAL 3020	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Marine Blue	RAL 5002	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Blue	RAL 6005	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Green	RAL 6005	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Silver	RAL 9006	2440 x 1220	○	●	○
		3050 x 1500	○	●	○
Black	RAL 9005	2440 x 1220	○	●	○
		3050 x 1500	○	●	○

EUROLITE ACP

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
White	White 9016	2440 x 1220	○	●	●
		3050 x 1220	○	●	○
		3050 x 1500	○	●	○

Euro Economy

Colour	Colour ref code	Size (mm)	Thickness		
			2	3	4
White		2440 x 1220		●	
		3050 x 1500		●	

ALUPANEL® XT

Colour	Colour ref code	Size (mm)	Thickness			
			3	4	5	6
Pure White	TH-117	3200 x 1500	○	○	○	○
Glittering Silver	TH-119	3200 x 1500	○	○	○	○
Champagne Silver	TH-114	3200 x 1500	○	○	○	○
Dark Silver Grey	TH-120	3200 x 1500	○	○	○	○
Dark Pearl Grey	TH-146	3200 x 1500	○	○	○	○
Moonlight Silver	TH-103	3200 x 1500	○	○	○	○
Golden	TH-125	3200 x 1500	○	○	○	○
Bronze Colour	TH-188	3200 x 1500	○	○	○	○
Golden Brass	TH-106	3200 x 1500	○	○	○	○
Jade Silver	TH-105	3200 x 1500	○	○	○	○
Pure Yellow	TH-121	3200 x 1500	○	○	○	○
Ivory White	TH-118	3200 x 1500	○	○	○	○
Sea Blue	TH-108	3200 x 1500	○	○	○	○
Telecom Blue	TH-134	3200 x 1500	○	○	○	○
Graphite Grey	TH-115	3200 x 1500	○	○	○	○
Bright Red	TH-107	3200 x 1500	○	○	○	○
Purple Red	TH-129	3200 x 1500	○	○	○	○
Post Green	TH-111	3200 x 1500	○	○	○	○

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ALUPANEL® XT FR

Colour	Colour ref code	Size (mm)	Thickness 4
Pure White	TH-117	3200 x 1500	○
Glittering Silver	TH-119	3200 x 1500	○
Champagne Silver	TH-114	3200 x 1500	○
Dark Silver Grey	TH-120	3200 x 1500	○
Dark Pearl Grey	TH-146	3200 x 1500	○
Moonlight Silver	TH-103	3200 x 1500	○
Golden	TH-125	3200 x 1500	○
Bronze Colour	TH-188	3200 x 1500	○
Golden Brass	TH-106	3200 x 1500	○
Jade Silver	TH-105	3200 x 1500	○
Pure Yellow	TH-121	3200 x 1500	○
Ivory White	TH-118	3200 x 1500	○
Sea Blue	TH-108	3200 x 1500	○
Telecom Blue	TH-134	3200 x 1500	○
Graphite Grey	TH-115	3200 x 1500	○
Bright Red	TH-107	3200 x 1500	○
Purple Red	TH-129	3200 x 1500	○
Post Green	TH-111	3200 x 1500	○

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TYPICAL PHYSICAL PROPERTIES

ALUPANEL®

Property	Conditions	Units	Value/Thickness		
			2mm	3mm	4mm
Physical					
Relative Density		g/cm ³	2.9	3.8	4.75
Water Absorption	24 hr @ 23°C	%	0.01		
Mechanical					
Pencil Hardness			>HB		
Toughness of coating			3T		
Tensile Strength at yield	10mm/min	MPa	145		
Tensile Strength at break	10mm/min	MPa	185		
Elongation at yield	10mm/min	%			
Elongation at break	10mm/min	%			
Tensile Modulus of Elasticity	1mm/min	MPa	70,000		
Izod Impact Strength	notched	J/m			
Charpy Impact Strength	notched	J/m			
Impact Falling Weight	3mm sheet	J			
Rockwell Hardness					
Peel Strength 180°		N/mm	>5		
Thermal					
Service Temperature		°C	-50 to +90		
Coefficient of Thermal Expansion		mm/m°C	0.024		
Thermal Resistance	R	m ² K/W	0.0047	0.0057	0.0072
Specific Heat Capacity		kJ/kg°K			
Electrical					
Dielectric Strength	500V/s	kV/mm			
Surface Resistivity	Keithley	Ω			
Chemical Resistance					
Boiling Water	2 Hours		No Change		
Acid	24 Hr @ 2% HCl		No Change		
Alkali	24 Hr @ 2% NaOH		No Change		
Oil	24 Hr @ 2% Engine Oil		No Change		
Solvent	100 x Dimethylbenzene		No Change		
Cleaning Resistance	>1000 times		No Change		

Other physical properties and values available on request.

Flammability

Standard	Classification
BS 476 Part 7	Class 1

FOAMED
PVC

- ▶ PALIGHT®
- ▶ PALIGHT® Colours
- ▶ PALIGHT® 2001
- ▶ PALFOAM
- ▶ Budget Foamed PVC

Foamed PVC Sheet



OUTPUT FROM A FLATBED DIGITAL PRINTER

With a surface ideal for screen and digital print, PVC foam sheets are flat, lightweight and easily fabricated and formed using conventional tools and methods. Available in a wide range of colours offering versatile applications from advertising and print to fabrication.

Our foamed PVC sheets are self extinguishing and comply with the most demanding fire standards.



KEY FEATURES

- ▶ Half the weight of solid PVC
- ▶ Smooth flat surface
- ▶ Wide range of colours
- ▶ Good fire performance
- ▶ High chemical resistance
- ▶ Easily fabricated

CNC ROUTER

OUTPUT FROM A FLATBED DIGITAL PRINTER



TYPICAL APPLICATIONS

- ▶ Signage
- ▶ Point of Purchase
- ▶ Exhibition stands
- ▶ Wall cladding



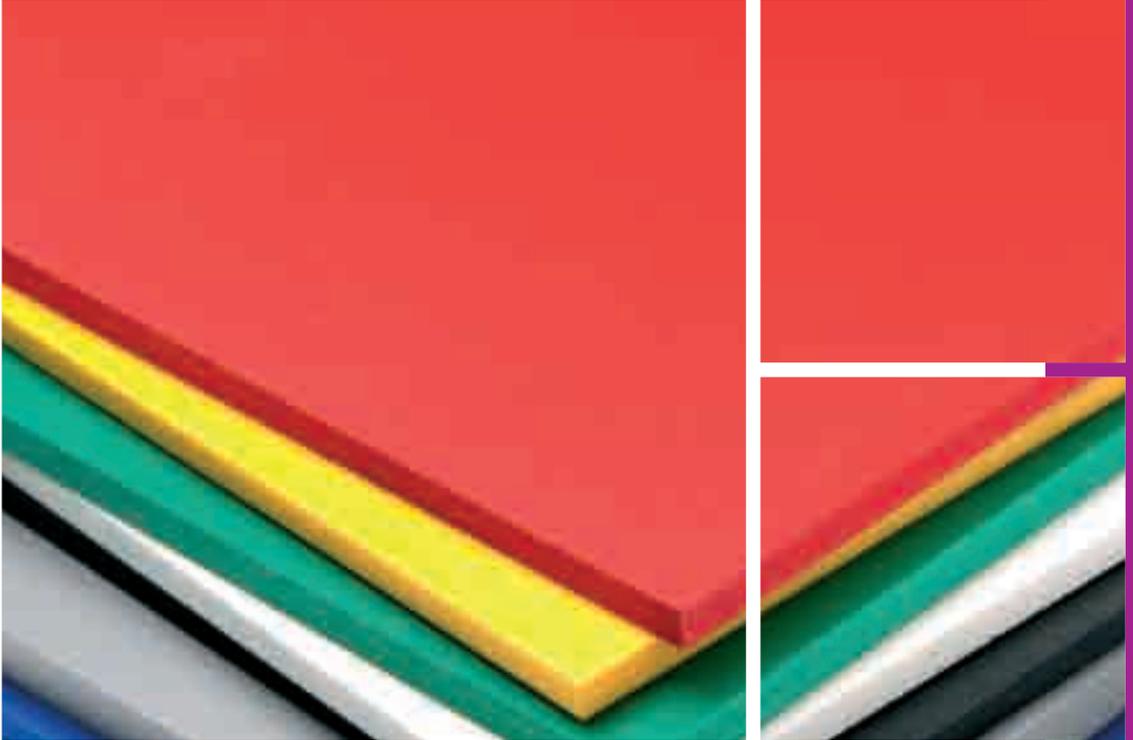
PHOTO COURTESY OF PALRAM

PALIGHT is a lightweight, versatile, flexible, and durable foamed PVC sheet that is ideal for use in advertising and construction.

Exhibiting the whitest available surface and was successfully tested by the majority of digital flatbed printer manufacturers. Printers and advertisers benefit from its constantly smooth and bright surface for producing high quality displays.

PALIGHT is easily handled, cut and fabricated using conventional tools and equipment, and can be printed, painted or laminated.

PALIGHT® Colours

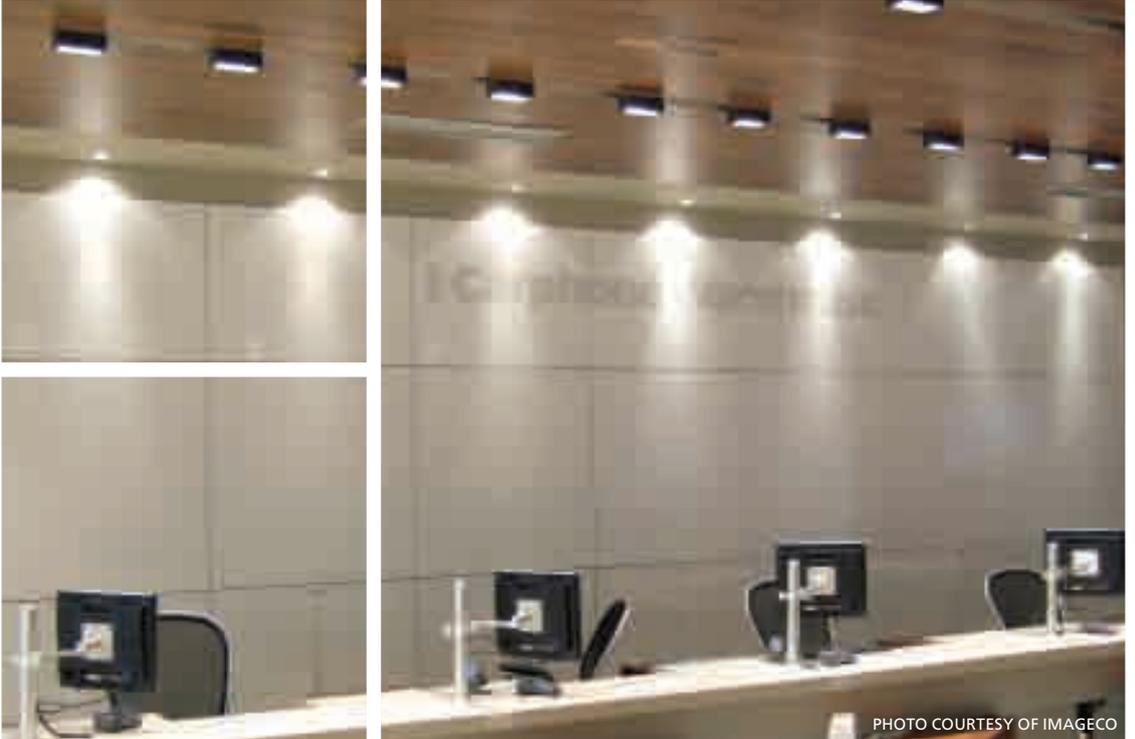


This full colour product can be used double-sided and with an exposed edge, making it particularly suitable for POP applications.

Palight® Colours can all accept vinyl providing a versatile substrate for multiple uses. Coloured sheet can also be printed direct by wide format, screen or digital printers for signage, exhibition or display applications.

PALIGHT® 2001

WALL CLADDING



PALIGHT® 2001 is a foamed PVC sheet with gloss PVC film laminated to the product on one side and a satin, foamed finish on the reverse. As with other PALIGHT® products, 2001 is suitable for both vinyl laminating and printing.

PALFOAM

PALFOAM offers easy-to-handle foamed white PVC for short term, indoor applications. Its bright, consistent and smooth surface provides a good background for high quality printing and laminating. PALFOAM is flexible, versatile and extremely convenient to work with, cut and fabricate using conventional tools and equipment. Suitable for applications such as display, signage and exhibitions.

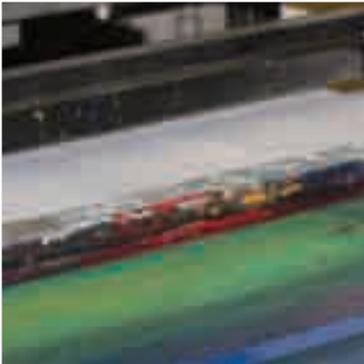
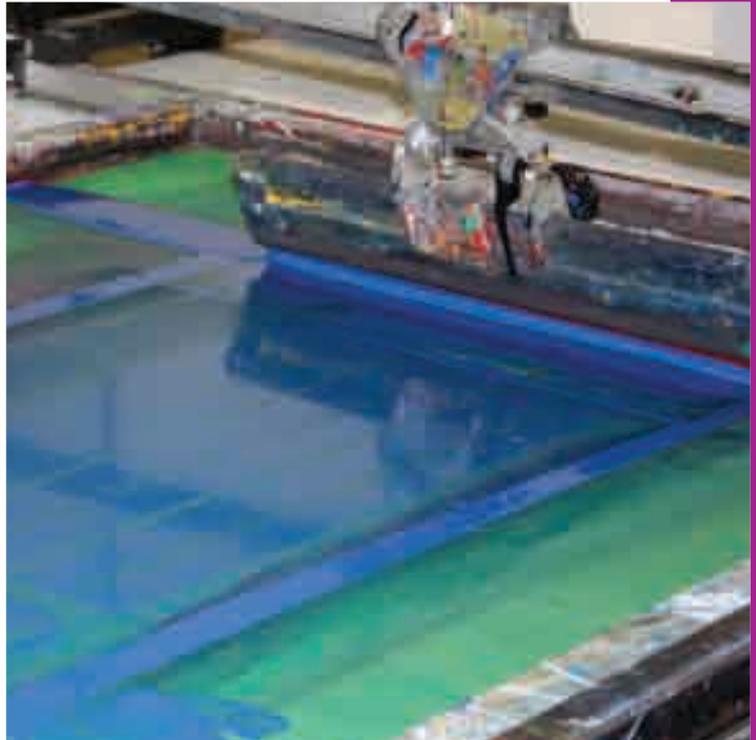
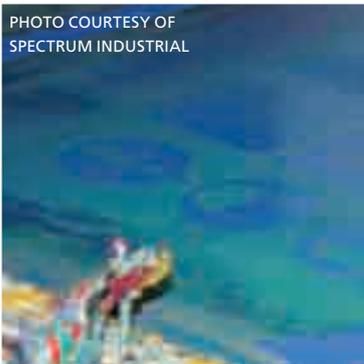


PHOTO COURTESY OF
SPECTRUM INDUSTRIAL



SCREEN-PRINT PROCESS

Budget Foamed PVC



SIMPLE SPEED LIMIT SIGN

General purpose foamed PVC is a lightweight, solution for short-term, indoor applications and is available in white and black only.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

Colour	Colour ref code	Size (mm)	Thickness											
			1	2	3	4	5	6	8	10	13	15	19	25
White	ST-10	3050 x 2030	○	●	●	●	●	●	○	●				
		3050 x 1560	○	●	●	●	●	●	●	●	○	○	●	○
		3050 x 1220	○	●	●	●	●	●	●	●	●	●	●	●
		2440 x 1220	●	●	●	●	●	●	●	●	○	○	○	●
Yellow	ST-30	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○	○	○				
		3050 x 1220	○	○	●	○	●	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				
Red	ST-50	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○	○	○				
		3050 x 1220	○	○	●	○	●	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				
Blue	ST-70	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○	○	○				
		3050 x 1220	○	○	●	○	●	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				
Green	ST-80	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○		○				
		3050 x 1220	○	○	●	○	○	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				
Black	ST-90	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○	○	○				
		3050 x 1220	○	○	●	○	●	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				
Grey	ST-100	3050 x 2030	○	○	●	○	●	○	○	○				
		3050 x 1560	○	○	○	○	○	○	○	○				
		3050 x 1220	○	○	●	○	●	○	○	○				
		2440 x 1220	○	○	●	○	●	○	○	○				

PALIGHT® 2001

Colour	Colour ref code	Size (mm)	3	4	5	8	10
White		3050 x 1220	●	○	●	○	●
		2440 x 1220	●	○	●	○	●
Black		3050 x 1220	○	○	●	○	○
		2440 x 1220	●	○	●	○	○

PALFOAM

Colour	Colour ref code	Size (mm)	Thickness							
			1	2	3	4	5	6	8	10
White		3050 x 2030	○	○	●	○	●	○	○	●
		3050 x 1560	○	○	●	○	●	○	○	●
		3050 x 1220	○	○	●	○	●	○	○	●
		2440 x 1220	○	○	●	○	●	○	○	●

Budget Foamed PVC

Colour	Colour ref code	Size (mm)	2	3	4	5	6	8	10	13	15	19
White		3050 x 1220	○	●	○	●	○	○	○	●	○	○
		2440 x 1220	○	●	○	●	●	●	●	●	○	●
Black		3050 x 1220	○	○	○	●	○	○	○	○	○	○
		2440 x 1220	○	●	○	●	○	○	○	○	○	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

TYPICAL PHYSICAL PROPERTIES

PALIGHT®

Property	Test Method	Units -SI	Value
Physical			
Relative Density *	In-house	g/cm ³	0.65-0.70
Water Absorption	ASTM D-570	%	0.5-0.8
Mechanical			
Tensile Strength at yield	ASTM D-638	MPa	16
Elongation at break	ASTM D-638	%	30
Flexural Strength at yield	ASTM D-790	MPa	28
Flexural Modulus *	ASTM D-790	MPa	900
Charpy Impact Strength	ASTM D-256	J/m	29
Shore D Hardness		value	N/A
Thermal			
Service Temperature *	In-house	°C	-10 to 55
Heat Distortion Temperature *	In-house	°C	63
Vicat Softening Temperature	ASTM D-648	°C	75
Coefficient of Thermal Expansion *	ASTM D-1525	cm/cm°C	6.70
Electrical			
Dielectric Strength	ASTM D-257	Ω	5x10 ¹
Surface Resistivity	ASTM D-257	Ω-cm	2x10 ¹

Flammability

FOAMED PVC	
Standard	Classification
EN13501	B, s1, d0
BS 476 Part 7	Class 1
UL 94	V-0
NSP 92501,5	M-1, M-2
DIN 4102	B-2

Notes: Foamed PVC has a self-extinguishing property. If ignited in air, it will die by itself. Subsequently, foamed PVC complies with the most demanding fire resistance standards as indicated by these representative results.

The above tables cannot be directly compared due to the different test methods utilised, unless where indicated *. Relative density is stated for 3mm standard products.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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RIGID
PVC

- ▶ Palopaque
- ▶ PALCLEAR®
- ▶ PALCLEAR® UV
- ▶ PALCLEAR® HI

Rigid PVC Sheet

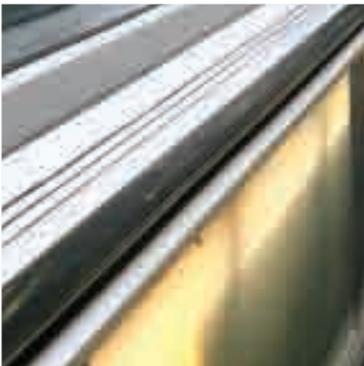




PHOTO COURTESY OF JJB SPORTS



KEY FEATURES

- ▶ High gloss and matt finish
- ▶ Good fire performance
- ▶ High chemical resistance
- ▶ Good impact strength
- ▶ Easily fabricated

Rigid, flat PVC sheet is easily fabricated and formed using conventional tools and methods. The gloss surface of rigid PVC sheet readily accepts screen and digital print inks as well as vinyl lamination.

Compliant with the most demanding international fire resistance standards, rigid PVC sheet is self-extinguishing.

Palopaque PVC Cladding

Palopaque PVC wall cladding solutions offer quick and easy installation with low on-going maintenance costs. It has an exceptional resistance to impact, chemical substances, stains and spills, which complement its aesthetic looks and easy maintenance. Easily formed and fabricated whilst retaining its physical characteristics, it can also make an excellent printing substrate.

We also supply a range of matching coloured profiles including corners and joining profiles to ensure a great looking finish to any project.



Palopaque HYG

Palopaque HYG technology sets a higher standard for hygienic cladding and facilitates high levels of sanitation with silver ion technology.

Palopaque SF (Anti Static)

Palopaque SF has a built in mechanism that prevents static electricity build up offering greater efficiency for static free areas in industry and healthcare. This feature is active throughout the sheet and is unaffected by fabrication and scratches.

TYPICAL APPLICATIONS

- ▶ Hygienic cladding
- ▶ Indoor Signage
- ▶ Air conditioning vents
- ▶ Forming and fabrication

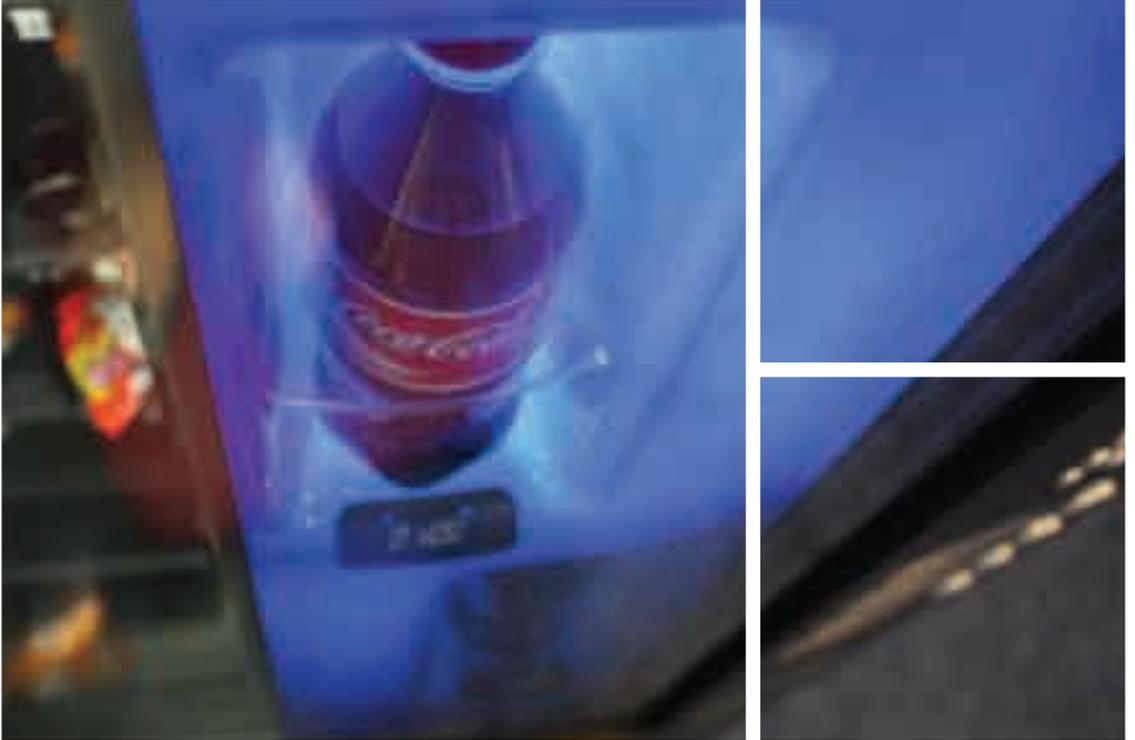
PALCLAD™



PALCLAD™ is hardwearing, easy to clean and resistant to most chemicals. It offers a cost effective and versatile wall covering for a wide variety of environments.

PALCLAD™ is suitable for any application that demands a high level of hygiene and is subject to normal levels of traffic/abuse. It is routinely installed in commercial kitchens, food preparation areas, clean rooms and storage areas.

THERMOFORMED INSERT IN VENDING MACHINE



PALCLEAR® combines excellent mechanical properties and impact strength, water-clear clarity, excellent resistance to chemicals and fire resistance. It withstands many chemical agents and can be easily formed using various fabrication techniques.

PALCLEAR® UV rigid PVC can also be used for glazing applications with a UV protected version available for external use.

PALCLEAR HI

PALCLEAR® Hi is an impact modified, clear rigid PVC. The impact modifier added to the PALCLEAR® formulation ensures the sheet has an increased impact resistance.

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

Palopaque PVC Cladding

Colour	Colour ref code	Size (mm)	Thickness								
			1	1.5	2	2.5	3	4	4.5	5	6
White		2440 x 1220	○	○	○	●	●	○	○	○	○
		3050 x 1220	○	●	○	●	●	○	○	○	○
Off White		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Light Pistachio		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Cream		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Stone		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Deep Ice		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Light Pink		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Lilac		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Red Wine		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Dark Pink		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Red		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Orange		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Crimson Pink		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Avocado		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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Colour	Colour ref code	Size (mm)	Thickness								
			1	1.5	2	2.5	3	4	4.5	5	6
Green Grape		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Light Blue		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Light Turquoise		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Ocean Blue		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Mouse Grey		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Medium Grey		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Black		2440 x 1220	○	○	○	●	○	○	○	○	○
		3050 x 1220	○	○	○	●	○	○	○	○	○
Dark Grey		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Light Grey		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Mink		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Grey Cream		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Beige Cream		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Beige		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○
Desert Sand		2440 x 1220	○	○	○	○	○	○	○	○	○
		3050 x 1220	○	○	○	○	○	○	○	○	○

PALCLEAR®

Colour	Colour ref code	Size (mm)	Thickness								
			1	1.5	2	2.5	3	4	4.5	5	6
Clear		3050 x 1220	○	○	○	○	○	○	○	○	○
		3000 x 1500	○	○	●	○	○	○	○	○	○
		2600 x 1300	○	○	○	○	○	○	○	○	○
		2440 x 1220	●	●	○	○	●	○	○	○	○
		2000 x 1000	○	●	○	○	○	○	○	○	○

PALCLEAR® UV

Colour	Colour ref code	Size (mm)	Thickness				
			1	1.5	2	2.5	3
Clear		3000 x 1500	○	○	○	○	○
		2440 x 1220	○	○	○	○	○
		2000 x 1000	○	○	○	○	○

PALCLEAR® HI

Colour	Colour ref code	Size (mm)	Thickness				
			1	1.5	2	2.5	3
Clear		3000 x 1500	○	○	○	○	○
		2440 x 1220	○	○	○	○	○
		2000 x 1000	○	○	○	○	○

PALCLAD®

Colour	Colour ref code	Size (mm)	Thickness			
			1.4	2	2.4	3
White		2440 x 1220	○	○	○	○
White		3050 x 1220	○	○	○	○

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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TYPICAL PHYSICAL PROPERTIES

Rigid PVC

Property	Test Method	Conditions	Units	Value	
				RIGID PVC	PALCLEAR
Physical					
Relative Density	ASTM D-0505		g/cm ³	1.4	1.4
Water Absorption	ASTM D-570	24 hr @ 23°C	%	0.03	0.03
Mechanical					
Tensile Strength at yield	ASTM D-638	10 ^{mm} /min	MPa	71	71
Tensile Strength at break	ASTM D-638	10 ^{mm} /min	MPa	35	35
Elongation at yield	ASTM D-638	10 ^{mm} /min	%	3	3
Elongation at break	ASTM D-638	10 ^{mm} /min	%	95	95
Tensile Modulus of Elasticity	ASTM D-638	1 ^{mm} /min	MPa	3100	3100
Flexural Modulus	ASTM D-790	1.3 ^{mm} /min	MPa	3200	3200
Flexural Strength at yield	ASTM D-790	1.3 ^{mm} /min	MPa	103	103
Izod Impact Strength	ASTM D-256	notched	J/m	35	35
Charpy Impact Strength	ISO 6603	notched	J/m	95	95
Impact Falling Weight	ISO 6603	3mm sheet	J	95	95
Rockwell Hardness	ASTM D-785		R Scale	115	115
Thermal					
Service Temperature			°C	0 to 50°C	0 to 50°C
Heat Distortion Temperature	ASTM D-648	Load: 1.82MP	°C	62-65	62-65
Vicat Softening Temperature	ASTM D-1525	Load: 1kg	°C	86	86
Coefficient of Thermal Expansion	ASTM D-696		cm/cm°C	6.7 x 10 ⁻⁵	6.7 x 10 ⁻⁵
Thermal Conductivity	C-177		W/m°K	0.15	0.15
Specific Heat Capacity	C-351		kJ/kg°K	1.26	
Optical					
Light Transmission	ASTM D-1003		%		87
Refractive Index	ASTM D-542				
Yellowness Index	ASTM D-1925				<4
Haze	ASTM D-1003		%		
Electrical					
Dielectric Strength	ASTM D-149	500V/s	kV/mm	50	50
Surface Resistivity	ASTM D-257	Keithley	Ω	3.7x10 ⁴	3.7x10 ⁴

Other physical properties and values available on request.

Palclear Flammability

Standard	Classification
EN13501	B, s2, d0
BS 476 Part 7	Class 1
UL 94	V0
NSP 92501,5	M1, M2
DIN 4102	B1
CSE RF 3/77	Class 1
IEC 695.2.1	Self Extinguish

Palopaque Flammability

Standard	Classification
EN13501	B, s3, d0
DIN 4102	B1
BS476 Part 7	Class 0
ASTM E-84	Class A

Note: Rigid PVC has a self-extinguishing property. If ignited in air, it will die by itself. Subsequently, rigid PVC complies with the most demanding fire resistance standards as indicated by these representative results.

POLYSTYRENE

- ▶ GPPS
- ▶ GPPS AR
- ▶ GPPS Embossed
- ▶ HIPS



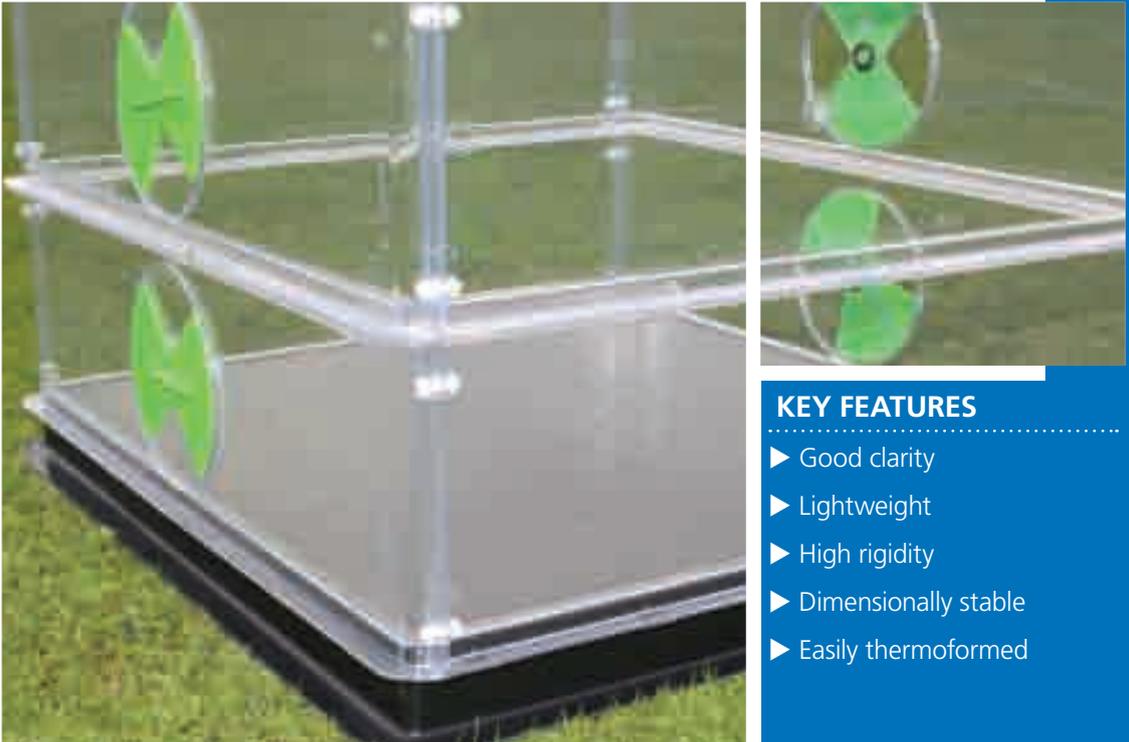
PHOTO COURTESY OF
BARKSTON PLASTICS



Polystyrene Sheet

General purpose and high impact polystyrene are rigid, lightweight thermoplastic sheets available in clear and a limited range of colours. With a wide temperature window the material can be formed into shapes with fine detail over short cycle times and with pre-drying rarely required.

Polystyrene is also resistant to solvent attack and therefore readily accepts screen print inks or solvent cements.



KEY FEATURES

- ▶ Good clarity
- ▶ Lightweight
- ▶ High rigidity
- ▶ Dimensionally stable
- ▶ Easily thermoformed

LEFT: FORMED POP DISPLAY. ABOVE: BASE OF A PROPAGATOR UNIT.

GLAZED PROMOTIONAL LECTERN

TYPICAL APPLICATIONS

- ▶ Point of purchase
- ▶ Poster glazing
- ▶ Picture framing
- ▶ Shower screens
- ▶ Forming and fabrication

General Purpose Polystyrene or GPPS is a transparent, rigid thermoplastic sheet with limited flexibility. The material is particularly suited to flat applications such as poster glazing.

**GPPS Anti-Reflective (AR)**

GPPS AR has a fine, matt texture on both sides. This surface finish is primarily to help avoid glare by reducing reflections but also works equally well to disguise finger marks from handling.

GPPS EMBOSSED

Embossed sheets have a surface finish that offers light transmission whilst obscuring vision.

HIPS

High Impact Polystyrene or HIPS is a polystyrene sheet with the added benefit of having up to seven times the impact strength of general purpose polystyrene. Due to its wide temperature window and with pre-drying rarely required, the material is ideal for thermoforming.

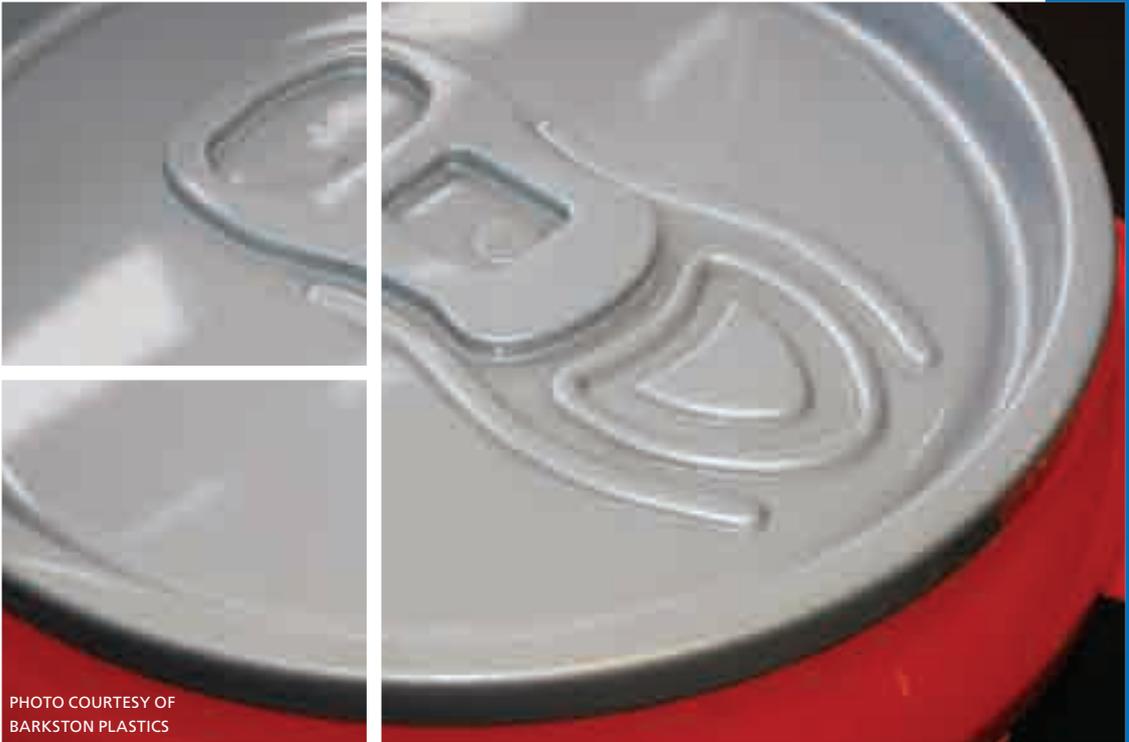


PHOTO COURTESY OF
BARKSTON PLASTICS

THERMOFORMED POP DISPLAY

WHAT WE STOCK

All sheet dimensions shown are standard manufacturing sizes. We also offer a cut-to-size service typically within 24 hours, for any other size, as required.

GPPS

Colour	Colour ref code	Size (mm)	Thickness							
			1.2	1.5	2	3	4	5	6	7
Clear		2050 x 1425	●	●	○	○	○	○	○	○

Note: Other sheet sizes and thicknesses available upon request.

GPPS AR

Colour	Colour ref code	Size (mm)	Thickness		
			1.5	2	3
Clear		2500 x 1250	○	○	○
		2050 x 1250	○	○	○

Note: Other sheet sizes and thicknesses available upon request.

GPPS Embossed

Colour	Colour ref code	Size (mm)	Thickness				
			2	3	4	5	6
Clear		2500 x 1250	○	○	○	○	○
		2050 x 1250	○	○	○	○	○

Note: Other sheet sizes and thicknesses available upon request.

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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HIPS

Colour	Colour ref code	Size (mm)	Thickness							
			1	1.2	1.5	2	3	4	5	6
White		2000 x 1000	○	○	●	●	●	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	●	●	●	○	○	○
Black		2000 x 1000	○	○	●	●	●	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	●	●	●	○	○	○
Grey		2000 x 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○
Green		2000 X 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○
Red		2000 x 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○
Yellow		2000 x 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○
Blue		2000 x 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○
Natural		2000 x 1000	○	○	○	○	○	○	○	○
		1830 x 1250	○	○	○	○	○	○	○	○
		1372 x 660	○	○	○	○	○	○	○	○

Note: Other sheet sizes and thicknesses available upon request.

HIPS Mirror

Colour	Colour ref code	Size (mm)	Thickness			
			1	1.5	2	3
Silver Mirror		2440 x 1220	●	○	●	○
		2000 x 1000	●	○	○	○
Silver Hairline		2440 x 1220	○	○	○	○
		2000 x 1000	○	○	○	○
Gold Mirror		2440 x 1220	○	○	○	○
		2000 x 1000	○	○	○	○
Pewter		2440 x 1220	○	○	○	○
		2000 x 1000	○	○	○	○

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TYPICAL PHYSICAL PROPERTIES

Polystyrene

Property	Test Method	Conditions	Units	Value	
Physical				GPPS	HIPS
Relative Density	ISO 1183		g/cm ³	1.05	1.05
Water Absorption	ISO 62	23 °C	%	<0.1	<0.1
Mechanical					
Tensile Strength at yield	ISO 527		MPa		
Tensile Strength at break	ISO 527		MPa	55	24
Elongation at yield					
Elongation at break	ISO 527		%	3	35
Tensile Modulus of Elasticity					
Flexural Modulus	ISO 178		MPa	3,300	1950
Flexural Strength at yield	ISO 790		MPa	80	22
Izod Impact Strength	ISO 180a	notched	KJ/m	1.5	10
Charpy Impact Strength	ISO 179/1eA	notched	KJ/m	3	12
Impact Falling Weight					
Rockwell Hardness	ASTM D-785		R Scale	105	65
Thermal					
Service Temperature					
Heat Distortion Temperature	ISO 75	Load: 1.82MPa	°C	76	74
Vicat Softening Temperature	ISO 306	50°C/h 50N	°C	89	90
Coefficient of Thermal Expansion	ASTM D-696		1/°C	8.00E-05	1.00E-04
Thermal Conductivity					
Specific Heat Capacity					
Optical					
Light Transmission	ASTM D-1003		%	90	
Refractive Index	ASTM D-542			1.59	
Yellowness Index					
Haze					
Electrical					
Dielectric Strength	IEC 243/1	23 °C	kV/mm	135	155
Surface Resistivity	IEC 93		Ω	1.0E+13	1.0E+14

Other physical properties and values available on request.

Flammability

Standard	Classification
UL 94	HB

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

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COMPOSITE PLASTICS

- ▶ BENCORE® Starlight
- ▶ BENCORE® Starlight Extra
- ▶ BENCORE® Starlight Plus
- ▶ BENCORE® Starlight Floor
- ▶ BENCORE® Lightben
- ▶ BENCORE® Lightben Kaos
- ▶ BENCORE® Lightben Plus
- ▶ BENCORE® Lightben Plus CC
- ▶ BENCORE® Hexaben

Composite Panels



PHOTOS COURTESY OF BENCORE

BACKLIT BAR FASCIA

BENCORE® composite panels are available in three variants, with a macro-cellular, honeycomb core or cylindrical cells. The core structure of the panels is laminated with external layers of PERSPEX®, PETG or polycarbonate dependent upon colour and characteristics.

Lightweight with high rigidity and stiffness, the BENCORE® product range offers a unique aesthetic for a wide variety of applications.

RETAIL DISPLAY UNIT



KEY FEATURES

- ▶ Unique aesthetic
- ▶ Lightweight
- ▶ Translucent
- ▶ High rigidity
- ▶ Hard wearing
- ▶ Easily fabricated

BENCORE® Starlight

BACKLIT BAR FASCIA



Starlight is a stiff, lightweight, composite panel with a translucent, honeycomb core in SAN that is laminated with two layers of transparent, coloured or silk finished PERSPEX®. Starlight is a versatile material that is easily worked and suitable for a number of interesting aesthetic applications.

Where the design incorporates an exposed edge, the Starlight panel can be closed with the same PERSPEX® as used on the surface.

TYPICAL APPLICATIONS

- ▶ Partitions
- ▶ Decorative panels
- ▶ Casement doors
- ▶ Point of Purchase
- ▶ Furniture
- ▶ Floor panels

BENCORE® Starlight Extra

Starlight Extra has all the benefits of the Starlight panel but with a stronger and more rigid core manufactured in polycarbonate. It is particularly suited to structural applications, where the panel has to support heavier loads over greater spans.



OFFICE PARTITION

BENCORE® Starlight Plus

PARTITION IN HEALTH CLUB



Starlight Plus is a structural panel with a core of polycarbonate laminated with two layers of PETG. Whilst not having the range of colours available with a PERSPEX® surface, the PETG provides the added benefit of a higher fire resistance rating.

These properties make Starlight Plus ideal for use in areas where building regulations require it, such as public buildings and areas with high footfall.

BENCORE® Starlight Floor

Starlight Floor has all the benefits of Starlight Plus derived from a polycarbonate core while also utilising a polycarbonate, anti-slip surface. Suitable for structural applications with high loads and specifically for raised floor areas.



FLOOR USED IN ARMANI CATWALK SHOW

BENCORE® Lightben

Lightben is a lighter composite panel with a polycarbonate honeycomb core constructed of tubes or cylinders and laminated with two layers of transparent, coloured or silk finished PERSPEX®.

The construction of the Lightben core structure creates a partial transparency which varies according to the visual angle and offers a different aesthetic to the Starlight panels when back-lit.

Lightben Kaos

A variation of the Lightben panel, the polycarbonate honeycomb core has cylindrical cells of variable diameter laminated with two layers of transparent, coloured or silk finished PERSPEX®. The irregular pattern creates another variation of the lighting effect.



RECEPTION DESK

BENCORE® Lightben Plus

Lightben Plus has a polycarbonate core laminated with two layers of PETG. Whilst not having the range of colours available with a PERSPEX® surface, the PETG provides the added benefit of a higher fire resistance rating.

These properties make Lightben Plus ideal for use in areas where building regulations require it, such as public buildings and areas with high footfall.

Lightben Plus CC

Lightben Plus CC has all the benefits of Lightben Plus, but with a 'Colour Core' offers a translucency which varies according to the visual angle.



MODULAR EXHIBITION STANDS

BENCORE® Hexaben

BACKLIT BAR FASCIA



Hexaben is a stiff, lightweight, composite panel with a honeycomb core in aluminium, laminated with two layers of PERSPEX®. Hexaben is a versatile material that is easily worked and suitable for a number of interesting aesthetic applications. Where the design incorporates an exposed edge, the Hexaben panel can be closed with the same PERSPEX® as used on the surface.

WHAT WE STOCK

For the full product range including availability, please contact your local branch.

- ▶ GAMMACRIL® Round Rods
- ▶ GAMMACRIL® Square Rods
- ▶ GAMMACRIL® Special Profiles
- ▶ ESACRIL
- ▶ ESACRIL Shock Resistant
- ▶ ESACRIL Satin
- ▶ ESACAST
- ▶ ESALUX



PHOTO COURTESY OF
STEVE WOOSTER



Plastic Rod and Tube

Plastic rod and tubes are available in a number of variants from acrylic with a highly polished surface to polycarbonate for improved impact resistance.

With a wide range of diameters, complemented by a number of other profiles, spheres and cubes, these products add another dimension to point of purchase applications.

KEY FEATURES

- ▶ Outstanding clarity
- ▶ Great aesthetics
- ▶ High rigidity
- ▶ Exceptionally hard wearing
- ▶ Weather resistant
- ▶ Wide range of sizes



PHOTO COURTESY OF
BIBLIOTH QUE



LEFT: CHELSEA FLOWER SHOW 2012 RHS GOLD MEDAL AND BEST IN SHOW. *GREEN WITH...* BY TONY SMITH.
ABOVE: POINT OF PURCHASE DISPLAY.

GAMMACRIL® Round Rods

PHOTOS COURTESY OF
JOHN LEWIS



Gammacril cast acrylic round rods are turned from square to produce diameters up to 200mm. Final polishing ensures that Gammacril round rods are supplied with a highly polished and brilliant surface, typical of cast acrylic.

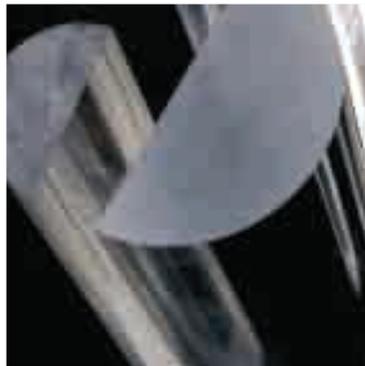
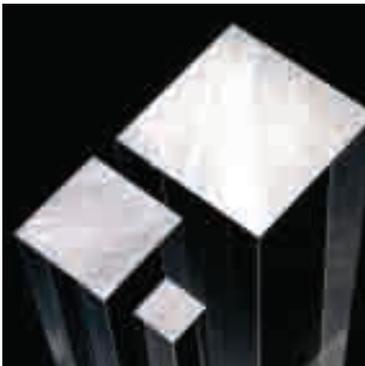
TYPICAL APPLICATIONS

- ▶ Point of Purchase
- ▶ Furniture
- ▶ Lighting
- ▶ Technical components
- ▶ Promotional products

GAMMACRIL® Profiles

Gammacril cast acrylic square rods are available up to 200mm square and are supplied with a highly polished and brilliant surface, achieved by diamond polishing and final buffing.

Gammacril rods are also available in special profiles such as half-round, triangular, rectangular, hexagonal and octagonal in addition to spheres, cubes and discs. All Gammacril products come with a highly polished surface as standard although can be sourced as a ground finish, where required.



CONCEPTUAL GARDEN, HAMPTON COURT, 2008



Esacril extruded acrylic tubes are available up to 300mm in diameter, the largest diameter that is available in the semi-finished product market, and with a wall thickness typically 1-6mm dependent upon diameter.

ESACRIL Shock Resistant

Esacril Shock-Resistant is produced using a high impact grade of acrylic. This modified grade improves the impact resistance of the tube.

ESACRIL Satin

Esacril Satin has a fine, matt texture on the outer surface. This surface finish is primarily to help create a diffused light effect when used in lighting applications. However, it also works equally well to disguise finger marks from handling.

ESACAST

Cast acrylic tubes are produced in diameters up to 500mm by the centrifugation of methylmethacrylate monomer in round moulds which are finished by polishing the external surface of each tube.

This method ensures an excellent optical appearance in addition to good mechanical, chemical and thermal characteristics.



PHOTO COURTESY OF
BIBLIOTHÈQUE

ADIDAS GALLERY DISPLAYING SHOES USED BY FAMOUS OLYMPIANS



TUBULAR LIGHTING POSTS

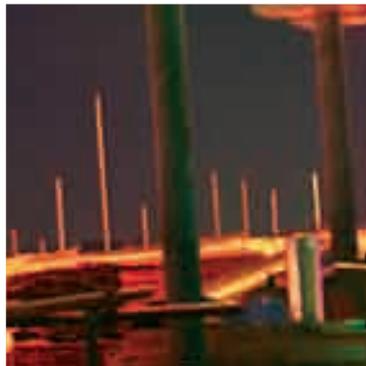
Extruded polycarbonate tubes are available up to 250mm diameter for applications that require a higher impact resistance than can be achieved from acrylic.

Esalux tubes benefit from being UV stabilised and have a wide service temperature from -50° to $+100^{\circ}\text{C}$.

LEDs

- ▶ LED Lighting
- ▶ Channel Letters
- ▶ Architectural border tubing
- ▶ Fluorescent Alternative Lighting
- ▶ Flexible LED Strips

LED Lighting



Using the full range of lighting experts SloanLED we supply dependable, quality LED systems to the sign industry. The bright vivid lights with offer consistent colour and intensity plus up to a 5 year warranty on LED modules and power supplies.

As well as offering the full range of SloanLED products, Perspex Distribution provides a free estimate and layout service. Our product experts offer support and advice to customers and produce a layout drawing to estimate product requirements for each project.

We offer a free LED quotation and layout service within each branch.

PHOTO COURTESY OF BIBLIOTH QUE



KEY FEATURES

- ▶ Bright, vivid signs
- ▶ Easy to install
- ▶ Reliable products
- ▶ Significant energy saving
- ▶ Extremely long life

Channel Letters



Great White 4

- ▶ Brightest face lit option
- ▶ Advanced high output white LED system
- ▶ Run 50 modules per SloanLED 60 W power supply



Apollo and V Series 2

- ▶ White hue alternatives for standard depth cans
- ▶ Constant current technology



V180

- ▶ Shallow face-lit options
- ▶ Illuminate can depth as shallow as 50mm
- ▶ Versatile low profile modules



VL Plus White

- ▶ Standard face lit solution
- ▶ Available in 3 sizes for versatile applications



VL Plus Red

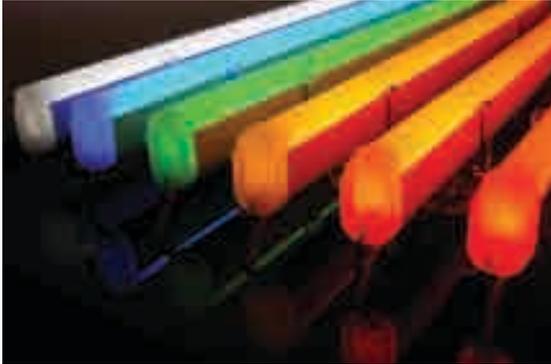
- ▶ Red hue face lit solution
- ▶ Available in long and short sizes



V Series

- ▶ Full array of colours
- ▶ Blue, Green, Orange and Red hues in the range
- ▶ Low profile modules

Architectural border tubing



ColourLINE

- ▶ Neon inspired look
- ▶ High brightness
- ▶ Easy to cut in the field
- ▶ Low power consumption



FlexiBRITE

- ▶ Flexible tubing
- ▶ Pre-assembled / sealed
- ▶ Easy to cut in the field
- ▶ Easy to cold bend in the field without heating



LEDStripe

- ▶ Ultra-bright large profile tubing
- ▶ High impact rigid tubing
- ▶ Daytime colour when non-illuminated

Fluorescent Alternative Lighting



PosterBOX Module

- ▶ For shallow or narrow cabinets
- ▶ Easily illuminated double-sided shallow cabinets
- ▶ Side mounted module



SignBOX Light

- ▶ Standard or deep cabinets
- ▶ Bright, even illumination
- ▶ Quick and easy installation with customizable flexible strips



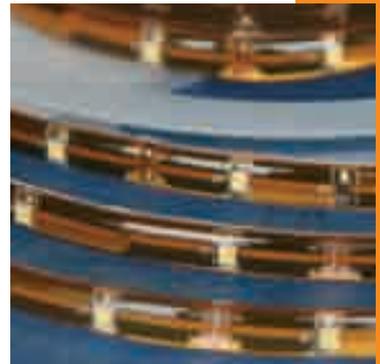
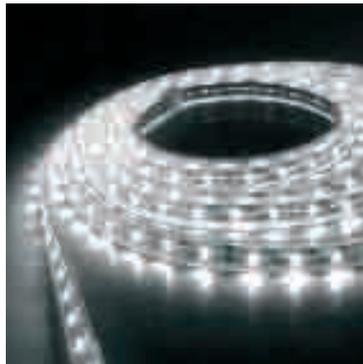
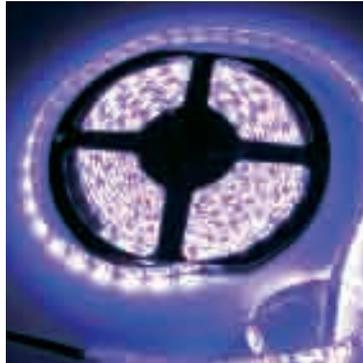
Highliner Fixture

- ▶ Soffits and wall wash
- ▶ Easy to install and lightweight
- ▶ Constant, uniform colour

Flexible LED Strips

Made in Europe from high quality components, flexible LED strip lighting is perfect for all kinds of linear lighting. Typical applications include accent lighting, shelf lighting, lightboxes, signage, POS/POP, exhibitions and much more. Expert LED chip selection ensures batches offer continuity of colour along the entire length of the strip and installation is made easy with 3M™ double-sided adhesive tape on the reverse of the strip.

These low voltage strips are available in a variety of options including a range of single colours or RGB colour changing lights. Our strips are easy to install and we also offer a range of accessories including power supplies, RGB controllers and solder-less connectors.



TYPICAL PHYSICAL PROPERTIES

White Channel Letters

Item Description	Part Number	Colour Temperature	Lumens per module	Dimensions (mm)	Modules per metre
Great White 4	701269-WL4-MB	6500 K	98lm	79 x 13 x 8	6.5
Apollo White	701269-W6-MB	500 K	50lm	90 x 16 x 10	6.5
V Series 2	701269-Wv2-MB	7200 K	50lm	60 x 12 x 9	10
V180 White	701269-WLP2-MB	6500 K	32.5lm	32 x 13 x 9	8
White Long	701269-WVLL-MB	6500 K	40lm	88 x 13 x 8	6.5
White Short	701269-WVLS-MB	6500 K	40lm	60 x 13 x 8	8
White Mini	701269-WVLM-MB	6500 K	20lm	34 x 11 x 8	13

Coloured Channel Letters

Item Description	Part Number	Colour Wavelength	Lumens per module	Dimensions (mm)	Modules per metre
VL Plus Red Long	701269-RVLL-MB	625 nm	13 lm	88 x 13 x 8	6.5
VL Plus Red Short	701269-RVLS-MB	625 nm	10 lm	60 x 13 x 8	8
V Series Red	701269_RLP-MB	625 nm	12 lm	57 x 11 x 10	10
V Series Orange	701269_OLP-MB	610 nm	18 lm	57 x 11 x 10	10
V Series Yellow/Amber	701269_YLP-MB	590 nm	8 lm	57 x 11 x 10	10
V Series Green	701269_GLPZ-MB	528 nm	23 lm	57 x 11 x 10	10

Fluorescent Alternative Lighting

Item Description	Part Number	Colour Temperature	Lumens per module	Dimensions (mm)	Modules per metre
PosterBOX White	701946-CWPBM	6500 K	550 lm	220 x 44 x 22	3
PosterBOX Soft White	701946-NWPBM	5000 K	550 lm	220 x 44 x 22	3
SignBOX Light	701946-CWSBL	6500 K	140 lm	149 x 61 x 17	6.5
HighLINER	701912	5000 K	1680 lm	1200 x 57 x 29	

Architectural Border Tubing

Item Description	Part Number	Approx Cut Increments	Factory Bends	Power per meter
LEDStripe 0.63m Tube	701189-colour-2	75mm	305mm radius	5W
LEDStripe 1.24m Tube	701189-colour-4	75mm	305mm radius	5W
LEDStripe 1.86m Tube	701189-colour-6	75mm	305mm radius	5W
LEDStripe 2.47m Tube	701189-colour-8	75mm	305mm radius	5W
FlexiBRITE Red	701499-R-Size	50mm		9.2W
FlexiBRITE Orange	701499-O-Size	50mm		9.2W
FlexiBRITE Yellow	701499-Y-Size	50mm		9.2W
FlexiBRITE Green	701499-G-Size	25mm		9.2W
FlexiBRITE Blue	701499-B-Size	25mm		9.2W
ColourLINE 0.62m Tube	701800-colour-2	60mm	245mm radius	7.5W
ColourLINE 1.23m Tube	701800-colour-4	60mm	245mm radius	7.5W
ColourLINE 1.84m Tube	701800-colour-6	60mm	245mm radius	7.5W
ColourLINE 2.45m Tube	701800-colour-8	60mm	245mm radius	7.5W

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

Blackburn 01254 272800 | Chelmsford 01245 232800 | Tamworth 01827 263900 | Weybridge 01932 356900

ADHESIVES

- ▶ Vuplex™
- ▶ Tensol 12
- ▶ Tensol 70
- ▶ Evo-Stik Extru-Fix
- ▶ Evo-Stik Mirror
- ▶ Evo-Stik Gunnable
- ▶ Simson MS Polymer Range
- ▶ Evo-Stik Anti-Static Cleaner

Application, Features & Benefits	PERSPEX®	Extruded Acrylic	Composite Plastics*	Polycarbonate	Polyester	Aluminium Composite	Foamed PVC	Rigid PVC	Polystyrene	Rod & Tube**
Tensol 12										
Single component cement.	★		★							
Easy application.	★		★							
For indoor use only.	★		★							
Max joint width 15mm	★		★							
Tensol 70										
Two part catalysed cement.	★		★							
Excellent weather resistance.	★		★							
Provide unsupported bond in gaps of up to 1mm.	★		★							
Evo-Stik Extru-Fix										
Single component cement.										
Superior bonds to solvent welding.		★		★	★				★	
Easy application.	★	★	★	★	★				★	
Reduced risk of stress crazing.	★	★	★	★	★				★	
Max joint width 15mm.	★	★	★	★	★				★	
Evo-Stik Mirror										
No adverse effect on mirrored surface.				★						
Suitable for bonding mirrored acrylics to wood, brick, plaster and other substrates.	★	★	★	★	★	★	★	★		



* Applicable only to products where PERSPEX® has been used as the surface material.

**For acrylic rod and tube refer extruded acrylic and for polycarbonate rod and tube refer polycarbonate.

Application, Features & Benefits	PERSPEX®	Extruded Acrylic	Composite Plastics	Polycarbonate	Polyester	Aluminium Composite	Foamed PVC	Rigid PVC	Polystyrene	Rod & Tube
Evo-Stik Gunnable										
Ideal for bonding rigid sheet plastics to vertical surfaces. Easy cartridge application Ideal for hygienic cladding applications.						★ ★ ★	★ ★ ★	★ ★		
Simson MS Polymer Range										
ISR 70-03, white, black or grey. ISR 70-10 transparent. Permanently elastic therefore good for bonding dissimilar substrates together.	★ ★	★ ★ ★	★ ★	★ ★	★ ★	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	
Evo-Stik Anti-static Cleaner										
Suitable for cleaning acrylic and most other plastics. Provides antistatic protection for up to one month.	★ ★	★ ★	★ ★	★ ★	★ ★		★ ★	★ ★		★ ★

● = standard | ○ = non-standard; may be available as ex-stock or secured on a made to order basis subject to minimum order quantity.

ALL
ABOUT
COLOUR

Understanding the colour of materials

Sir Isaac Newton was the pioneer of research into colour perception. By 1704 he had developed a colour spectrum which is still used today, illustrating that white light can be passed through a prism to create individual bands of colour.

The spectrum is arranged in bands of red, orange, yellow, green, blue, indigo and violet, in order according to the different wavelengths of light and as seen in nature by a rainbow.

Colour is actually a perception of the specific wavelengths of light that the eye can see, with red and violet having the longest and shortest wavelengths respectively at 780nm to 380nm.



The light reflected from an object and which we recognise as colour is a mixture of light at various wavelengths within this visible light region. However, light is different to colour. Behind the retina are three receptors for the light from an object - for blue, yellow and red. The receptors then transmit to the brain and the brain identifies the colour. The condition, colour blindness is when the receptors do not differentiate between yellow and red.

When viewing an object such as a red apple, important in another of Sir Isaac Newton's discoveries, light meets the apple which absorbs the blue, green and yellow components and reflects the red. This reflected light meets the retina in the eye, transmits to the brain and we distinguish the apple as red. Every object absorbs and reflects different portions of the spectrum and in different amounts which makes the colours of different objects different. Therefore, while light and colour are different, they cannot exist without each other. In total darkness we cannot see the apple as red.



Why we need a colour reference

Colour is a complex subject made more so by the level of subjectivity involved. Each colour will mean different things to different people so communicating colour verbally is far too complicated. Colour is also affected by many different factors including light source.

Light source and colour perception



The appearance of a surface colour is defined by the product of the spectral reflectance curve of the material; a colour's fingerprint and the spectral emittance curve of the light source. As a result, different light sources such as fluorescent, incandescent or natural daylight will make colours appear different. However, the colour of two samples can appear the same under one light but different under another. This phenomenon is referred to as metamerism.

This is one of the reasons why it is key to understand the application of a product, including whether the application will be for indoor or outdoor use and so subject to daylight or artificial light. If a light source is to be used, then further details such as its type are also required.

With this information we can then check our colour match to a sample under the same conditions that will apply to the finished product.

Background and colour perception

The colour of the background which an object is placed against can make a significant difference to colour perception. If an object is placed in front of a dark background it may appear lighter than if set against a light background. Figure a, known as “Koffka’s ring,” after a Gestalt psychologist, illustrates this contrast effect. You may need to adjust your observation distance to see the subtle difference between the figure a and b.

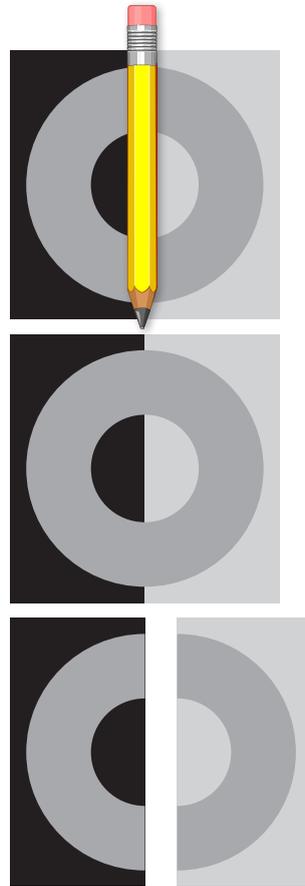
Compare the two halves of the ring - the right looks slightly darker than the left. However, when the pencil is removed as in figure b, it is clear that the ring is actually the same colour all round.

The third ring shown, figure c, is the very same figure and looks at this perceptual colour difference in another way. However, when split, the half rings appear different again.

Whereas figures a, b and c show where a division can make the same colour appear different, figure d can also be shown to make colours appear the same.

The same sequence of colour blocks are shown on the figures both top and bottom. When a pencil is placed over the dividing line between two colours then the colours appear the same.

Try it yourself by placing a pencil over the join of two colours:



TOP TO BOTTOM: FIGURES A, B, C

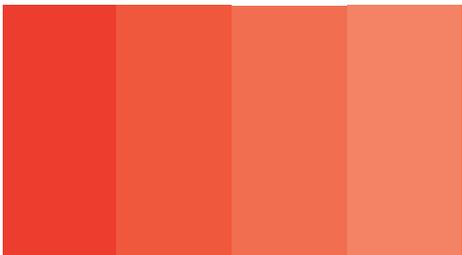


FIGURE D

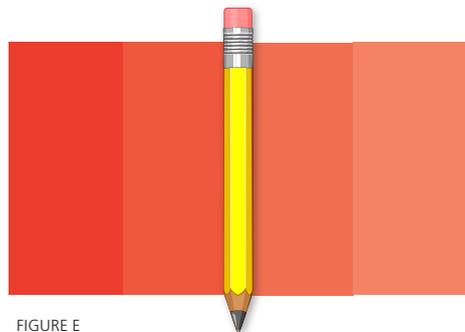


FIGURE E

Surface and colour perception

Even for objects of the same material a difference in colour can be seen due to the gloss level of the surface. When light reflects off an object an element of the light reflects at an equal but opposite angle. This is known as specularly reflected light and is reflected as if by a mirror. The light that is not specularly reflected but is reflected in many different directions is known as diffuse reflectance.

For objects with glossy surfaces, the specularly reflected light is relatively strong and the diffused light is weaker. On matt surfaces, the specular component is weak and the diffused light is stronger.

People only view the diffused light and ignore the spectral reflectance. However, when looking at a glossy object, the colour appears different because the mirror-like reflectance from the light source is added to the colour of the object.

Colour perception can also be affected by the 'grain' of a product. If a product is set side-by-side with the very same product but with the grain running in opposite directions, then the colour may appear different. The colour of this product would be directional.

Colour matching by Perspex Distribution

Initially, when a colour is requested, we will check our standard range of stock products, followed by our made-to-order range and then any development colours. Should neither yield the required colour, then a colour match could be processed. As before, a number of factors may affect how a coloured product will appear. For this reason and to provide a closer match to our customers' requirement, information, samples or a relevant reference is required:

Information

Generally, some of the information that will help to forecast the performance of a colour in application would include:

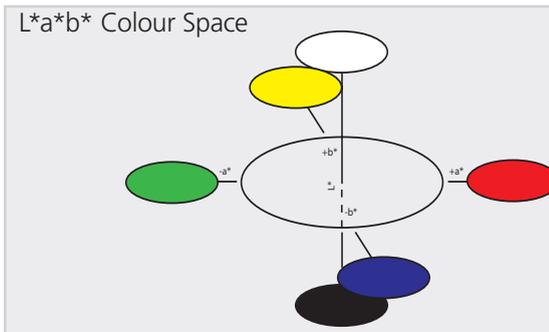
- ▶ **Product application**
including whether to be used indoors or outdoors.
- ▶ **Light source**
if illuminated e.g. fluorescent or natural daylight.
- ▶ **Surface finish**
what is required e.g. gloss or matt.
- ▶ **Any processing involving heat**
if laser cut, flame polished or thermoformed, the temperature may affect certain pigments and/or dyes locally where heated.
- ▶ **Thickness**
- ▶ **Light Transmission**
a constant light transmission through different thicknesses would be produced unless specified otherwise.

Sample

Due to the complexities of colour, we need to use methods that accurately identify the colour to be produced. A three-dimensional measurement system known as the $L^*a^*b^*$ colour space or CIELAB, developed by the Commission Internationale de l'Eclairage (CIE) enables colour to be identified numerically and then, communicated accurately.

The balanced structure of the $L^*a^*b^*$ colour space is based on the theory that a colour cannot be both green and red at the same time, nor blue and yellow at the same time. When a colour is expressed in $L^*a^*b^*$, the L^* in this measurement system represents lightness while a^* represents the red to green axis and b^* the yellow to blue axis (refer diagram, previous page).

Using a spectrophotometer, a sample can be measured and its $L^*a^*b^*$ values identified. From this a colour match may be processed. However, it is always better for our colour lab to have a physical sample to match.



Reference Value

Alternatively, a Pantone or RAL reference can be supplied. These references are based on a predefined formulation and are used in a variety of industries including plastics.

Pantone and RAL colours are described by their allocated number, typically referred to as, for example, PMS 187C or RAL 3001.

As no light transmission is available with such a reference, again a physical sample would be the preferred method to process a colour match.

THE TECHNICAL SECTION:

WORKING WITH ...

- ▶ Working with: Thermoplastics
- ▶ Working with: Aluminium Composite

Working with thermoplastics

Preparation

The surface protection film can be left in place during fabrication and all marking-out drawn on the film. However, it must be removed before thermoforming where relevant.

Cleaning

Cleaning is not generally required until after fabrication. However, if a product is to be printed, it may sometimes be advisable to wash the surfaces to be printed with clean, fresh water using a chamois leather or soft cloth.

This has the benefit of removing all traces of static charge from the sheet after removal of the film which might otherwise attract dust.

For all general purpose cleaning, plastic materials can be washed with clean, cold water to which a little detergent has been added. The ideal procedure is to polish every one to two weeks using a 100% cotton cloth. The use of any solvents such as methylated spirits, turpentine, or any proprietary window cleaning products is not recommended.

Material	Saw Type					
	Circular Saw			Band Saw		
	Blade Speed m/min	Sheet Thick- ness mm	Saw Pitch Teeth/cm	Blade Speed m/min	Sheet Thick- ness mm	Saw Pitch Teeth/cm
PERSPEX®	3000	All	0.8-1.6	1500	< 3	6-8
					3-13	4-5
					> 13	1.5-2
Extruded acrylic	as for PERSPEX®					
BENCORE®	as for PERSPEX®					
Polycarbonate	1800-2400	All	2-5	600-1000	All	1.5-2.5
Polyester	2500-6000	All	3-11	1200-2000	All	2-3
PVC	2000-2500	All	0.8-1.6	1000-1200	< 3	6-8
					3-13	4-5
					> 13	1.5-2
Polystyrene	1700-1900	All	5-6	1200-1500	< 3	8-10
				1000-1200	3-10	3-6
				750-1000	> 10	2
Rod and Tube	as for PERSPEX®					

Sawing

Powered saws with blades having alternate teeth bevelled, as for aluminium, are particularly suitable for plastics. Band saws, jig saws and fret saws may also be used. The recommended conditions for sawing plastics are shown in the table, overleaf:

Machining

It is usually necessary for only light machining cuts to be taken and feed rates kept slow. Many materials will soften if heated and heat build-up can cause stress. Therefore, the use of coolants, including water and compressed air in particular is recommended during machining operations.

Material	Will soften if heated above
PERSPEX®	80°C
Extruded acrylic	80°C
BENCORE®	80°C
Polycarbonate	130°C
Polyester	63°C
Foamed PVC	75°C
Rigid PVC	75°C
Polystyrene	80°C
Rod and Tube	80°C

Some plastic materials can also be turned on a conventional metalworking centre lathe with cutting speeds to be reduced for an improved quality finish.

When machining BENCORE® it is particularly important to firmly anchor the panels under processing in order to avoid vibrations which could cause panel delamination.

When machining PERSPEX® sheet to very close tolerances, it may be necessary to normalise the sheet in order to remove any stresses from the products manufacture, which would ordinarily have no effect on the behaviour of the product. By heating the material above its glass transition, the stress is relaxed giving rise to uniform shrinkage of around 2%. Normalised PERSPEX® would therefore, be fully stress-relieved.

Stress generated by machining can lead to stress-cracking or crazing either immediately or some time after machining. However, stress can usually be reduced, else eliminated in some materials by the gentle heat conditioning process of annealing.

Routing

Routing can usually be performed dry but all swarf must be cleared and the cutter kept cool. Compressed air directed onto the cutter and the workpiece would be preferred.

Cutting Tools

To achieve a good finish when cutting any material, all tools must be kept sharp. Most conventional tools for use with wood or soft metals are suitable for use with plastics. Most power tools can also be used and HSS tool bits are suitable to achieve a good finish.

For longer-life, tungsten carbide tipped blades and tool bits would be beneficial, while for accurate work where a high degree of finish is required, diamond tipped tools can be particularly suitable.

For turning, HSS tool bits are once again preferred, kept sharp and ground to zero rake at the top and with 15-20° front rake.

For routing, HSS double-edged cutters would be preferred, ground and honed with a back clearance angle of about 12° or greater.

Screwing and tapping

Standard taps and dies may be used for cutting screw threads in plastic materials. It may be necessary to sometimes use lubricants but not when working with polycarbonate. Wherever possible, coarse threads are preferred as they are less liable to damage. If frequently dismantling, threaded metal inserts would be recommended.

Engraving

Plastic materials are generally easy to engrave using pantographs, CNC engraving machines or laser engravers for fine detail. Mechanical engraving can actually be performed dry but all swarf must be cleared and the cutter head kept cool. Compressed air directed onto the cutter and workpiece would be preferred.

Finishing

Machining marks can be removed from plastics by scraping with a sharp blade set at 90° or by sanding and then polishing. Bench mounted, portable or belt sanders may be used dry with only light pressure. After sanding it may also be necessary to anneal the work if subsequent bonding or surface decoration is to be applied.

BENCORE® products, being a composite sheet with a honeycomb structure may also be finished on the edges by applying the same PERSPEX® colour and/or finish as on the surface. Best results can be achieved by edging, chamfering and polishing these edges.

Polishing

Polishing plastic materials including edge polishing for aesthetics would typically be for acrylic only. For in-use polishing, refer cleaning.

Power buffing of PERSPEX® surfaces with rotating calico mops may be used on the sanded surface with a mild, abrasive buffing soap. Moderate speeds and only light pressure should be applied to prevent overheating.

Flame polishing can be used for thin edges of PERSPEX® and is fast and effective. Flame polishing can also be used for thin edges of PETG although a glass clear edge will rarely be achieved.

Care must be taken not to ignite the surface of the material and it should be noted that flame polishing can produce highly stressed edges. After flame polishing it will be necessary to anneal the work if bonding or any surface decoration is to be applied.

Diamond polishing PERSPEX® does not produce the rounded edges typical with flame polishing and creates very little stress.

Thermoforming

To thermoform plastic materials correctly they must be heated uniformly. Some materials will also require slightly more heating than others.

Optimum heating times and temperatures will depend upon a number of factors, including the type of material, thickness of the sheet, the type of mould being used and the degree of stretching required.

Pre-drying

Before thermoforming some plastics they must be pre-dried. These materials would typically include extruded acrylic and polycarbonate which are hygroscopic and will therefore, absorb moisture. Pre-drying at around 85°C and 125°C respectively should subsequently eliminate the possibility of bubbles or moisture blisters forming on the finished article.

The duration of pre-drying will be dependent upon the amount of humidity absorbed by the sheet and by its thickness.

Material	Becomes Flexible	Preferred Thermoforming Temperature	Retains Shape when cooled
PERSPEX®	140-185°C	170°C	below 85°C
Extruded acrylic	140-185°C	170°C	below 85°C
BENCORE®	N/A	N/A	N/A
Polycarbonate	170-190°C	180°C	below 60°C
APET	120-140°C	130°C	55°C
PETG	120-160°C	140°C	55°C
Foamed PVC	100-130°C	120°C	below 40°C
Rigid PVC	120-140°C	130°C	below 40°C
HIPS	100-140°C	120°C	below 75°C
Rod and Tube	N/A	N/A	N/A

The best method to determine an appropriate pre-drying time for a material would be as follows:

- ▶ Cut 2-3 small pieces from a sheet in a sample batch.
- ▶ Place these pieces in an oven at the pre-drying temperature.
- ▶ At pre-determined intervals of 2-3 hours, take a piece out and heat it to the material forming temperature.
- ▶ Check for appearance of bubbles – if no bubbles appear after 10 minutes the sheet is dry and it is OK to proceed with production.
- ▶ If bubbles do appear, additional pre-drying time is necessary.
- ▶ Repeat the test in order to determine the appropriate pre-drying time required.

Heating

When plastic materials are heated they become flexible and can be formed into complex shapes by the application of force such as air pressure or mechanical press clamping. If held to that shape and cooled it will retain the shape and if re-heated will return to its original flat condition.

As a general rule the preferred thermoforming temperature for the different plastic materials are shown in the table above.

Except when local bending, it would be recommended to uniformly heat the entire area of the sheet within an air circulating oven having accurate temperature control. Both clear and coloured sheets may be laid on clean horizontal shelves but when optical quality is paramount, vertical hanging would be the preferred method with suitable hanging clamps to suspend the sheets along their longest dimension.

As an alternative to air oven heating, some infra-red heaters can be used such as those with quartz or ceramic elements. However, these heat the surface very quickly, so heaters and heated platens must be designed to give uniform heating under controlled conditions to prevent overheating and degradation of the sheet.

Shrinkage

Typically, when plastics are free-heated they shrink and on cooling will be smaller in both length and breadth with an imperceptible increase in thickness. No further shrinkage will occur on reheating but this initial shrinkage should be considered when cutting sheets into blanks prior to thermoforming.

In a vacuum forming machine, parts will be clamped and subsequently, held to the original size. However, users should still be aware of thermal contraction and expansions issues.

When extruded plastics are heated, they will generally exhibit more shrinkage along the direction of extrusion and very little across the direction of extrusion. It is difficult to give precise figures for shrinkage which will depend on the thickness and heating time.

Cooling

After thermoforming, plastic materials should be kept on the mould until the temperature has reduced, refer table below. Uniformity of cooling is important to prevent warpage and stress but mouldings should not be left on the mould too long otherwise they may contract tightly on to the mould and damage when lifted off.

Material	Kept on the mould until
PERSPEX®	80°C
Extruded acrylic	80°C
BENCORE®	N/A
Polycarbonate	90°C
APET	70°C
PETG	70°C
Foamed PVC	30°C
Rigid PVC	30°C
HIPS	80°C
Rod and Tube	N/A

Thermoforming of Colours

When thermoforming coloured plastics the colour can change slightly during the heating process, especially if the sheet is overheated. It is important to ensure that the first surface is always the showface; that which is covered by the printed surface protection film, as the second surface can be slightly duller after heating. As the sheet is stretched during thermoforming there will be an inevitable thinning of the sheet and in those areas it may also give rise to a reduction in opacity.

Drape Forming

Uniaxial bent parts can be achieved by drape forming or simple bending over moulds made out of wood or aluminium and covered with felt. Plastic sheets should be heated to temperature, refer table below, with only slight pressure necessary to drape the sheet over the positive mould. The sheet should be placed over the mould immediately after heating and left to cool down at room temperature.

Material	Shaping Temperature
PERSPEX®	140°C
Extruded acrylic	140°C
BENCORE®	N/A
Polycarbonate	150°C
APET	130°C
PETG	130°C
Foamed PVC	N/A
Rigid PVC	140°C
HIPS	150°C
Rod and Tube	N/A

Hot Line Bending

Some plastic materials may be bent either hot or cold. Hot line bending requires that sheets are softened along a narrow line by a strip heater, usually a hot wire. When the shaping temperature is reached; when the sheet sags freely under its own weight, the sheet can be bent to an angle several degrees larger than that desired, dependent upon the degree and rate of cooling. Trials should be performed on small samples to determine the appropriate value before proceeding to full production. For thicker sheets, double-sided heating is recommended.

Hot line bending can sometimes be performed with the film on the sheet but advice should be taken on whether this is suitable. For thicker sheets the heating time and temperature on the surface of the sheet will be too high causing the film to melt locally. However, it is possible to remove the film along the bend line before forming so that most of the sheet is protected.

Stress generated by local line bending can lead to stress-cracking or crazing especially if the sheet is then bonded or decorated. However, stress in some materials can usually be reduced, else eliminated by the process of annealing. After parts have been cooled, they can be checked for impact resistance by hitting the bend line with a heavy hammer. Breakage of the part would indicate a bending temperature that was too low.

Cold Line Bending

Some plastic materials, particularly polycarbonate and PETG, may be formed by cold line bending, albeit a specific procedure should be followed.

First of all, the sheet should be cut to its pre-bending size and the edges finished so that they are smooth with no saw marks or roughness that may initiate a crack along the bend line. The sheet should then be bent at a relatively high speed with the surface protection film in place.

To achieve the desired angle, the sheet should be bent larger than the desired angle. Again, trials would be recommended on small samples to determine the appropriate value before proceeding to production.

It is also recommended to use the appropriate tools designed for use with plastic sheets and to have a knife and anvil that has a good polished surface with no projections or splinters. The knife should have a straight parallel profile with a rounded tip having a radius of 4-6mm - the thicker the sheet, the larger the radius required. It is also important that care is taken not to squeeze the sheet between the knife and anvil when bending. Squeezing of the sheet will cause a bend that may induce high stresses and subsequently, reduce the impact resistance of the product.

Cold Curving

Some plastic sheets may also be installed with a stressed curve to create an arch or dome as long as the curve and resulting stress is within a specified limit. The curve would typically be dependent on whether the application is indoor or outdoor, refer table below:

Material	x Thickness = Desired Radius (mm)
PERSPEX®	150/250
Extruded acrylic	225/300
BENCORE®	N/A
Polycarbonate	200
APET	150
PETG	150
Foamed PVC	N/A
Rigid PVC	200
Polystyrene	130
Rod and Tube	N/A

For further information on the processing of individual products, please contact your local branch.

Working with Aluminium Composites (ALUPANEL®)

Preparation

The surface protection film can often be left in place during fabrication and all marking-out drawn on the film.

Cleaning

Cleaning of ALUPANEL® sheets should not generally be required until after fabrication. However, if the product is to be printed, it may be advisable to wash or degrease the surfaces to be printed with a mixture of 50% isopropyl alcohol (IPA) and water. After sufficient rinsing the sheets should be left for a short time prior to printing to allow the alcohol to evaporate. This cleaning has the benefit of removing all traces of static charge from the sheet after removal of the film which might otherwise attract dust.

ALUPANEL® is an extremely durable material that is unlikely to be compromised by any cleaning process that could be used. However, for all general purpose cleaning, ALUPANEL® should be washed with products of a pH of 10 or less and which do not contain bleaches, ammonia or caustic ingredients. It is also recommended that users avoid abrasive materials or products so as not to compromise the finish of the material.

Sawing

Powered saws with blades having alternate teeth bevelled, as for aluminium, are particularly suitable for ALUPANEL® as are band saws and jig saws.

Machining

ALUPANEL® is easy to machine. However, it is important that only light machining cuts are taken and if high speeds are used to achieve good surface quality, it may be necessary to stop the machine periodically to allow the part to cool. ALUPANEL® has low thermal conductivity and cannot be cooled easily with compressed air or by any other means, although this would be recommended during machining to keep the resulting heat lower.

Routing

Fixed head, moving head or standard, portable woodworking routers are suitable for ALUPANEL® using the same cutter speeds as for aluminium. Routing can actually be performed dry but all swarf must be cleared and the cutter kept cool. Compressed air directed onto the cutter and workpiece would be preferred.

ALUPANEL® can be easily folded by hand if a v-shaped groove is first milled on the rear of the panel. A minimum thickness of 0.3mm of the polyethylene must be left on the back of the decorative face.

Cutting Tools

To achieve a good finish when cutting, all tools must be kept sharp. Most conventional tools for use with aluminium are suitable for use with ALUPANEL®. Most power tools can also be used and HSS tool bits are suitable to achieve a good finish. For longer-life, tungsten carbide tipped blades would be beneficial.

For routing, HSS double-edged cutters are preferred, ground and honed with a back clearance angle of about 12° or greater.

Guillotining

Shear cutting using a guillotine is possible with ALUPANEL® but not recommended for thicknesses of more than 3mm as the cut edge may become rough and distorted. The sheets must be well clamped and should be sheared at room temperature, but not lower than 15°C.

Die Cutting

ALUPANEL® can be die cut with steel rule dies. The steel rules must be kept sharp and the cut should be completely through the sheet with a stroke that will prevent damaging the cutting rule. Trials are recommended prior to full production to achieve the optimum setting.

For die cutting of printed sheets, the printed side should be facing upwards towards the cutting knives.

Drilling

Conventional twist drills for use with aluminium are suitable for use with ALUPANEL® and hole-saws or drill bits with a locating point may be used for larger holes greater than 12mm diameter. A small pilot hole should be drilled first to locate the drill and where possible, the work should be supported by a back stop made from either scrap ALUPANEL® or wood to prevent splintering the exit hole.

Line Bending

Bending can be performed with a panel folder when bending with a minimum inside radius of 15 times the panel thickness or a 3 roller panel bender which is preferable for bending large internal diameters.

Cold Curving

ALUPANEL® may also be installed with a stressed curve to create an arch as long as the curve and resulting stress is within a specified limit, typically 15 times the thickness of the panel. ALUPANEL® can be cold formed in a pyramid roller, a press brake or over a clamped pipe. The process is similar to the forming of aluminium although due to the sensitive surface, care should be taken to ensure rollers are clean, smooth and free of defects.

Pyramid Rollers

ALUPANEL® should be rolled 3° to 5° tighter than that required to allow for a small amount of spring back. As an extra precaution, a film should be used between the panel and rollers.

Press Brake

When forming with a press brake, the top tubular die should have a radius, equivalent to the finished inside radius that is desired and the bottom die or jaws should be wider than the top die by approximately two times the thickness of the panel. The bottom die should always have a protective pad to prevent damage to the surface of the panel.

Over a Clamped Pipe

ALUPANEL® may be formed over a pipe of the appropriate diameter that is securely clamped to the work table. A hinged leaf attached to the table will bend the panel easily.

Fixing

Through Bolts

Bolts provide an excellent way to join ALUPANEL® to itself or to other materials. Galvanised, stainless steel or aluminium bolts, nuts and washers should be used to avoid dissimilar metal contact.

Caution is also recommended in tightening the nut onto the bolt as the polyurethane core of the panel will compress and over-tightening will cause deformation of the aluminium skins. Lock nuts or double nuts with washers will prevent the nut from loosening over time.

Rivets

Rivets can be used to join ALUPANEL® to itself or other materials. For outdoor applications, aluminium blind rivets should be used to prevent corrosion and clearance holes should be used to account for thermal expansion.

For further information on the processing of ALUPANEL® please contact your local branch.

THE TECHNICAL SECTION:

WHAT DOES IT MEAN?

- ▶ Glossary
- ▶ Material abbreviations
- ▶ Typical test standards

Glossary

Aa

AR

Anti Reflective, a pattern applied to the surface of a sheet usually during the extrusion process with a patterned/embossed roller. It is however possible for a sheet surface to be co-extruded or coated which can also be used to create the anti reflective properties.

Abrasion-resistance

A measure of the ability of a sheet surface to resist damage by mechanical actions such as rubbing or scraping.

Ageing

The effects of environmental conditions such as heat and light. Often accelerated ageing tests are performed to provide an indication of the performance of the material over a given life span.

Annealing

This is a gentle heat conditioning process that removes internal stresses from a sheet usually after fabrication. Annealing involves gradually increasing the temperature of the item to a recommended level, holding the item at that temperature for a stated period of time and then slowly cooling to room temperature.

Bb

Beam Saw cutting

Perspex Distribution lead the industry with state of the art beam saw cutting facilities. The method involves clamping the material under pressure and cutting takes place within a high vacuum extraction chamber producing accurately cut panels that are virtually swarf free.

Bonding

The sticking of plastic materials.

Cc

Calendering

Conversion process through which a compound of resin and additives is transformed into sheet by heating and compression in roll mills.

Cast sheet

When sheet is made by casting into a mould or typically, as with PERSPEX®, between two plates of glass.

Cements

Term used to describe plastics adhesives.

Chemical Resistance

The capability of a plastic to resist deterioration due to chemical attack.

Coefficient of Thermal Expansion

A sample of known dimensions has its temperature slowly increased. Having reached the higher temperature, it is then stabilised and the sample is measured. The coefficient of thermal expansion is the relationship between the sample temperature change and the expansion of the sample over that temperature change.

Cold Impact

A test designed to determine the brittleness of a compound by subjecting it to impact at low temperatures.

Compressive Strength

The load needed to compress sheet usually measured and recorded as lb ins.

Concentricity

A comparison of the thinnest wall thickness to the thickest wall thickness when referring to tube.

Copolymer

A compound formed from the polymerisation of two different monomers.

Crazing

The most common phenomenon resulting from stress is crazing. This takes the form of small cracks which appear on the surface in a random manner. These cracks should be treated as notch points and a potential cause of failure.

Crazing is accelerated by the action of solvents and alcohols. Aerosol products may contain ingredients that can initiate crazing in areas of high stress and their use should be avoided.

Dd

Dielectric

Any insulating material between two conductors which permits electrostatic attraction and repulsion to take place across it.

Dielectric Strength

Dielectric Strength is a measure of the electrical strength of a material as an insulator. Dielectric strength is defined as the maximum voltage required to produce a dielectric breakdown through the material and is expressed as Volts per unit thickness. The higher the dielectric strength of a material the better its quality as an insulator

Drape Forming

Usually a single curvature forming technique which involves heating a flat sheet in an oven, then when a recommended forming temperature is reached, draping the sheet over a mould, lined with mould cloth and clamping in place until cooled.

Ee

Elastic Memory

The ability of a polymer to be altered to a predetermined shape, to hold that shape for a period of time and then return to its original shape upon the application of heat.

Elongation

Elongation at break is a measure of how ductile or elastic a material is. A brittle material will have a low elongation at break whereas a rubbery material will have a high elongation at break.

Extrusion

In the extrusion process a plastic material in the form of powder or granules is heated until molten and then forced or extruded through a shaped opening called a die. The material is sized to ensure accuracy and then cooled to retain its shape.

Extruder

The job of the extruder is to melt, mix and pump the plastic material to the die at a steady rate and constant temperature. In practice this is achieved through the use of a screw.

Ff

Flame Retardant

An additive that is included in compounds to improve resistance to burning.

Flammability

The measure of a material's ability to support combustion.

Typically assessed according to BS 476 Part 7, the British Standard. Part of the BS 476 series which specifies a test method for the measurement and classification of the lateral spread of flame along the surface of a sample, orientated in the vertical position. The resulting classification is based on the rate and extent of the spread of flame.

The standard provides data to understand and benchmark the relative performance of materials in application when used primarily as the exposed surfaces of walls and ceilings.

Flexural Strength

A small rectangular sample of material is placed under a force, applied to its centre to deform the sample by way of a three-point bend. The flexural strength is the applied force required for the sample to break. A high flexural strength denotes a product suitable for load bearing applications. Similarly, a product with a high flexural modulus will be seen as a rigid material which does not bend easily.

Gg

Glass Transition (T_g)

The transition from the glass-like state to the rubber-like state or the temperature at which mechanical properties decline sharply.

Hh

Hardness

A measurement of resistance to compression, indentation and scratching that correlates well with mechanical strength, rigidity and resistance to abrasion. Usually measured using Shore scales.

Haze

The level of translucency in a clear material. Simply, the lower the haze, the more clear the material.

Heat Distortion Temperature

Refer Vicat Softening Temperature.

Heat Shock

A test used to determine the stability of a material after sudden exposure to high temperature over a short period of time.

li

ID

The inside diameter of a tube.

Impact Strength

Two main small-scale impact tests exist referred to as Izod and Charpy with both tests following similar principles. In both cases, a small sample of material is subjected to an impact of known energy. The energy required to break the sample is measured and recorded.

Ll

Light Transmission

Light transmission figures identify the percentage of incident visible light that passes through an object.

Line Bending

Involves heating a material locally using a strip heater or hot wire. This creates a softening of the material along a narrow area which then allows the material to be bent along that line.

Mm

Melting Point

This is the temperature at which a material will physically melt.

Master Batch

A concentration of substance such as an additive, pigment or filler in a base polymer.

Metamerism

Refer "All About Colour" section.

Moisture Absorption

A number of plastics are hygroscopic and will therefore absorb moisture. The moisture content can alter with changes in ambient temperature and humidity. The effect of changes in moisture content should be assessed depending on the fabrication technique to be used or the intended application.

Monomer

A monomer is a relatively simple compound of low molecular weight, usually containing carbon, which can react to form a polymer by combination with itself or with other molecules or compounds.

MW

Molecular Weight or the total atomic mass of all atoms within a molecule.

Nn

Normalising

A process of relieving stress, sometimes applied to PERSPEX® when it will be machined to fine tolerances. Normalising is intended to remove any residual production stress and create uniform shrinkage prior to the material being worked.

Notch Sensitive

Used when referring to a plastic that is sensitive to cracking or stress problems originating from a chipped edge or notch in the material.

Pp

Plasticiser

A chemical additive that is included in PVC compounds that softens and provides flexibility to the polymer.

Polishing

Usually refers to polishing the edge or surface of a plastic, typically acrylic, after machining or fabrication.

Polymer

A natural or synthetic compound consisting of large molecules made of chemically bonded monomers. If two or more monomers are involved then a copolymer is obtained.

Polymerisation

A chemical reaction linking the molecules of a simple substance (monomer) together to form large molecules whose molecular weight is a multiple of the monomer.

Polyolefin

A generic term for cross-linkable thermoset polymers such as ethylene or polypropylene.

Pre Drying

As some plastics are hygroscopic and will therefore absorb moisture, it is advisable to pre dry sheets before heat forming, thus preventing any excess moisture creating bubbles or blisters on the finished product.

Press Moulding

When used in the context of sheet manufacture, press moulding would involve heating the sheet and then placing in or over a mould before being pressed into shape.

Rr

Recycling

The reprocessing of materials into new products. Recycling prevents valuable resources being wasted, reduces the consumption of raw materials, energy and consequently, reduces greenhouse gas emissions when compared to virgin production. Recycling is a key concept of modern waste management.

Relative Density

The ratio of the density (mass per unit volume) of a material to the density of water at a specified temperature, also referred to as specific gravity.

Resin

The base material in a plastic compound.

Rockwell Hardness

Typically, surface hardness for plastics is measured using the Rockwell hardness test, where a small hard ball is pressed into a sample of the material. The degree of distortion to the surface of the material is measured and converted into a Rockwell hardness number.

Ss

Shelf (Storage) Life

The period of time after production during which a product that is stored under specified conditions retains its dimensional characteristics and performance capabilities.

Shear Strength

Sometimes described as the tear test, shear strength is a measure of the force needed to tear or puncture a material.

Shore Hardness

A series of scales used to indicate hardness with a higher number indicating a harder material. Also refer Hardness.

Stress

Stress in materials is often ignored because it cannot be seen. Stress is induced by strain that is any action which deforms the material's structure. Stress is one of the major causes of failure in plastics. Every material has a threshold limit of stress. When this limit is exceeded the mechanical strength of the material will be impaired.

Service Temperature

The temperature range over which the characteristics of a material are retained in application.

Specific Gravity

The ratio of the density (mass per unit volume) of a material to the density of water at a specified temperature. In order to calculate the weight of a thermoplastic panel, its specific gravity along with the panel dimensions are required.

The formula, length x width x thickness x specific gravity is used. For example, PERSPEX® has a specific gravity of 1.19. Therefore, a standard sheet of 3mm, 3050 x 2030 would be calculated by the formula:

$$3.05 \times 2.03 \times 3 \times 1.19 = 22.103 \text{ Kg}$$

Some other useful specific gravity measurements are:

Material	Specific Gravity
PERSPEX®	1.19
Extruded acrylic	1.19
Extruded acrylic IM	1.19
Polycarbonate	1.20
APET	1.33
PETG	1.27
Foamed PVC	0.55-0.72
Rigid PVC	1.40
Polystyrene	1.05

Specific Heat Capacity

The energy required to heat up a material. The higher the figure, the more energy required to heat that material.

Strain Relief

The reduction of the stress or strain on an object.

Surface Resistivity

Surface resistivity is a measure of the resistance to the flow of electrical current over a material's surface. Low surface resistivity is important in applications where static electricity dissipation is required. Plastics are inherently very good insulators with surface resistance values typically in the range of 1014 to 1018 ohm.

Tt

Temperature Rating

The minimum and maximum temperatures in which a material can be used in continuous operation without deterioration of its physical properties.

Tensile Strength

A small dumbbell shaped sample of material of known size is placed under an increasing force, causing the material to stretch. The force is increased until the material fails and this is converted into a force per unit area (MPa). The higher the tensile strength, the stronger the product is under load.

Thermoplastic

A polymer that can be repeatedly melted and hardened with only minimal degradation of the properties during each cycle.

Thermoset

A polymer which hardens or sets when heat is applied and once set, cannot be re-softened through heating. Thermoset materials are usually liquid, powder or malleable in some way prior to curing and are designed to be moulded into their final form or used as adhesives.

Thermal Conductivity

The rate of heat transfer across a sample of material is measured together with the heat differential between both surfaces of the sample. From it the measure of thermal conductivity is taken. Typically, plastic materials would have a low thermal conductivity as opposed to metals with a high thermal conductivity.

Thermoforming

Most thermoplastic sheets may be thermoformed to differing degrees to produce three dimensional shapes.

Tolerances

All plastics material are subject to dimensional tolerances, for example thickness, size, squareness etc.

Uu

Ultraviolet (UV) Stabiliser

A compound additive that retards the deterioration in strength and colour caused by sunlight and other UV light sources.

UV

Electromagnetic waves of light are called ultra violet rays which are outside of the visible spectrum at its short-wavelength violet end (300-380nm). Ultra violet rays are found in everyday sunlight and can cause the fading of plastic materials.

U Value

U value or heat transfer coefficient measures the thermal insulation properties of a material or how well a sheet prevents heat flow passing through it. A lower U value shows greater resistance to heat flow and therefore, a better insulation rating. Practically, a material's U value is measured by testing the heat flow through a standard sheet area at a standard temperature difference and is usually expressed as watts per square metre per 1 degree of temperature difference, $W/m^2/^\circ C$.

Vv

Vacuum Forming

A method of producing moulded shapes on a custom designed vacuum forming machine. The vacuum forming process involves the clamping and heating of a flat sheet until it reaches its recommended forming temperature. The sheet is then pulled by vacuum onto a mould, held in position and cooled until set to the desired shape determined by the inverse of the mould.

Vicat Softening Temperature

A small sample of material is placed under a point load. The sample is then slowly heated and the temperature at which the point begins to penetrate the sheet is measured and recorded. Typically, this figure is close to the glass transition (T_g) of the the material. A similar test is also referred to as the heat distortion temperature.

Ww

Wall Thickness

The difference between the outside diameter and the inside diameter of a tube wall.

Water Absorption

The percentage weight of water that a material will absorb after a period of immersion, typically 24 hours. Important for vacuum forming and if a material requires pre drying.

Weatherability

Materials can be subject to accelerated weather tests in UV chambers that replicate weather conditions. A combination of tests and actual samples exposed to the weather over a long period of time allows manufacturers to give accurate projections as to how their materials will perform over time.

Material Abbreviations

ABS

Acrylonitrile Butadiene Styrene

APET

Amorphous Polyethylene Terephthalate

ASA

Acrylate Styrene Acrylonitrile

HDPE

High-Density Polyethylene

HIPS

High Impact Polystyrene

LDPE

Low Density Polyethylene

MDPE

Medium Density Polyethylene

PC

Polycarbonate

PE

Polyethylene

PETG

Polyethylene Terephthalate Glycol

PMMA

Polymethyl Methacrylate

PP

Polypropylene

PS

Polystyrene

PTFE

Polytetrafluoroethylene

PVC

Polyvinylchloride

PVDF

Polyvinylidene Fluoride

SAN

Styrene Acrylonitrile

SHIPS

Super High Impact Polystyrene

Typical test standards

ASTM

American Society for Testing and Materials. The US industry wide organisation that publishes standards, testing methods, the recommended practices, definitions, and other materials.

BSI

British Standards Institute

Certificate of Compliance

A Quality Control Department certificate stating that the product being shipped conforms to test specifications.

DIN

Deutsches Institut für Normung e.V. the German Institute for Standardisation develops norms and standards as a service to industry, the state and society as a whole. A registered non-profit association, DIN has been based in Berlin since 1917.

FDA

Food and Drug Administration.

Pantone

Pantone Inc. is a corporation with its headquarters in Carlstadt, New Jersey, USA. The company is best known for its Pantone Matching System (PMS), a proprietary colour space used in a variety of industries, primarily printing, though sometimes in the manufacture of coloured paint, fabric and plastics.

Pantone colours are described by their allocated number (typically referred to as for example 'PMS 130').

RAL

RAL is a colour space system developed in 1927 the Deutsches Institut für Gütesicherung und Kennzeichnung e.V. The RAL colour space started with only 40 colours, but has since expanded to cover over 1,900. That colour system is mainly used to describe paint colours.

UL Certification

Underwriters Laboratories grants the UL mark for products that are tested and found compliant to a specific established set of standard tests.

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