

# PALRAMUK



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# DISTRIBUTION

57. Century Plastics

View the full products range on our website **www.palram.com** 



#### **INTRODUCTION**



Palsun©

For over 50 years Palram has been a global leader in manufacturing thermoplastic sheets. Extruding P.V.C Polycarbonate and Acrylic of all finishes in two UK plants.

This production and application experience is expressed in an extensive product offering that includes architectural panel systems and finished consumer products.

The sheets, manufactured mainly from Polycarbonate, PVC and Acrylic are designed to suit a diverse range of applications in various markets: DIY, construction, architectural projects, sign and display, agricultural, glazing, and fabrication. Palram panel systems are offered as part of the company's advanced products and services bundle for the construction and architectural markets. A variety of finished-products are marketed/ stocked through DIY/merchant

stores across the globe.
Palram was formed in 1963 and has quickly become the market leader in global manufacturing and continues to progress with state of the art R and D department, keeping ourselves and our customers one step in front.

#### MISSION STATEMENT

Strive to meet our customers' needs while maintaining our agility, flexibility and global vision.

Provide our customers with market leading products that deliver quality and value.

Develop global operations and resources to meet our strategic goals.

Foster and encourage innovation and creativity in our products, and in our day-to-day operations among employees.

Deliver excellence to a global marketplace, while offering professional support and service on a regional and national level.

Act with honesty and integrity in all our dealings.

Encourage commitment and accountability by all staff, at all levels.

Maintain our unique corporate culture: always having the courage to think outside the box, and to have a "can-do" attitude to simply make things happen.

#### **OPERATIONS**

Palram's focus on production technology and product innovation has created a continual product and plant development culture.

As Palram grows larger it continues to respond to the specific requirements of our worldwide customers, which have helped achieve many advancements in the past thanks to our close working relationships with them.

## CONTACT

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PALRUF corrugated PVC sheet is an all-round durable roofing solution, combining excellent resistance to chemicals, fire and impact.

PALRUF endures harsh chemical environments where other roofing materials will quickly corrode, making it ideal for roofing, side paneling and cladding applications in industry, agriculture and construction.

PALRUF is available in a variety of clear and opaque colours and many profiles. It can be easily installed in DIY/trade applications.



#### MAIN BENEFITS

Excellent chemical resistance

Weather and UV resistant

High fire resistance

PALRUF® HYG: Active hygiene

Will not rust or corrode

Ideal for arched roofs & curved walls

**High impact -** Resists breakage Easily handled, quickly installed

Requires minimum maintenance

#### **TYPICAL APPLICATIONS**

#### Construction

Coastal construction, public buildings, parks, sports and recreation facilities.

#### Industry

Chemical and pharmaceutical plants, ports, pulp and paper plants, power stations, mines, metal processing facilities.

# Agriculture

Greenhouses, cow sheds, hen houses, pigpens, barns and machinery sheds.

#### Do-It-Yourself

Sun houses, skylights, garages (carports), porches, patio enclosures, verandas, pool enclosures, awnings, partitions and gazebos (pergolas).

## Food Industry

Food manufacturing plants, storage and refrigeration rooms, sorting halls.





#### **COLORS**

Opaque White, Light Grey, Beige, Light Green Light Blue

Transparent Clear, Bronze

Translucent White Opal, White Diffuser, Blue

#### **STANDARD DIMENSIONS\***

Profile	Designation	Drawing	Thickness (mm)	Width (mm)	Length (mm)
Mini	207/35	~~~~~	0.8	660, 750, 1040	1.5 - 6.0
Iron/Sinus 76	76/18	~~~	0.8 - 1.5	660, 860, 900, 1150	1.5 - 11.6
Greca/Trapeze	76/18 <i>,</i>	~~~	0.8 - 1.3	1045, 1060, 1140, 1145, 1190	1.5 - 11.6
Greca/Trapeze	75/19	~~~	0.75 - 1.0	1135	1.5 - 11.6
Greca/Trapeze	70/18	~~~	0.8 - 1.5	550, 765, 1090, 1103	1.5 - 11.6
5,6 Waves	177/51	~~~	0.8 - 2.0	920, 1100, 1170	1.5 - 6.0
3"Standard	72/20	~~~~	0.8, 1.0, 1.3	755	1.5 -11.6
American 2.6"	67.8/20	~~~~~	2.0	1020	1.5 - 6.0
American 4.2"	107/27	~~~~	1.8 - 4.5	1070	1.5 - 11.6
Big 6"	146/48	~~~	1.1, 1.3, 2.0	1086	1.5 - 6.0
Astoria	305/38		2.2	1015	1.5 - 6.0
Industrial 0100	250/40 <b>*</b>	~~~	1.8 - 3.0	1066	1.5 - 6.0
7.2"	183/38	~~~	2.0 - 3.0	967, 1150, 1217	1.5 - 11.6

 $<sup>\</sup>hbox{*Custom designed profiles are available upon request, subject to minimum order.}$ 

# PALRUF® PRODUCT RANGE

Product	Description
AG-TUF®	Liner panel for indoor applications
PALRUF® Opaque	Opaque sheet inherently UV resistant, suitable for all applications.
PALRUF® Clear	Clear UV stabilized sheet, ideal for DIY applications
PALRUF® Opal	UV stabilized sheet, reduced light transmission (~35%)
PALRUF® HI	With increased impact resistance and durability.
PALRUF® HYG	With active antimicrobial action, ideal for livestock applications.

#### TYPICAL PHYSICAL PROPERTIES

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1.4
Heat deflection temperature (H.D	D.T) D-648	Load: 1.82 MP	°C	61 - 67
Service Temperature Range			°C	-20 to +50
Thermal conductivity	C-177		W/m K	0.16
Coefficient of linear thermal expa	nsion D-696		cm/cm°C	6.3 × 10 <sup>-5</sup>
Impact strength	ISO 6603/1	2 mm sheet	J	45 - 60
Tensile strength at yield	D-638	10 mm/min	MPa	50 - 66
Tensile strength at break	D-638	10 mm/min	MPa	39 - 53
Elongation at yield	D-638	10 mm/min	%	3
Elongation at break	D-638	10 mm/min	%	>80
Tensile modulus of elasticity	D-638	1 mm/min	MPa	2,900
Flexural strength	D-790	1.3 mm/min	MPa	90 - 100
Flexural modulus	D-790	1.3 mm/min	MPa	2,700
Rockwell hardness	D-785		R Scale	105 - 115

 $<sup>^{</sup>st}$  ASTM method except where noted otherwise.

# **FLAMMABILITY**

PALRUF is self-extinguishing and complies with the most demanding international fire resistance standards defined in the field of plastics, as demonstrated the in the attached table.

Classification*
B-1
Class 1
M-1
Class 1

<sup>\*</sup> For additional information please contact your Palram distributor.

#### WEATHER AND UV RESISTANCE

PALRUF maintains its physical properties and attractive appearance despite exposure to all types of climatic conditions. These include harmful UV radiation, humidity, rain and snow. PALRUF also provides weather protection over a large tem - perature range, from -20°C to 50°C. PALRUF should not be used in the vicinity of chimneys where soot may fall on the sheets.



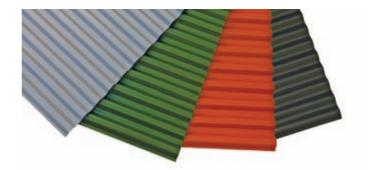






PALTOP offers a cost-efficient solution for lightweight exterior roofing applications. It has a built- in ability to withstand all weather conditions.

PALTOP also has a smooth and attractive appearance, and offered in black or a range of vivid, non-fading colours. Its good impact resistance and low weight makes PALTOP easy to handle and ideal for a variety of roofing applications DIY/trade.



#### **MAIN BENEFITS**

Ideal for lightweight roofing

Good impact resistance

Suitable for all weather conditions

Suitable for curved roofing

Colors will not fade

Provides thermal insulation

**Environmentally friendly -**Does not contain any heavy metals

5 year warranty

User friendly - Easy to install

#### **TYPICAL APPLICATIONS**

Lightweight roofing

Awnings

Pergolas

Private parking

Sheds

# HEAVY METAL FREE

PALTOP is lead free and does not contain any other heavy metals.





### STANDARD PROFILES & DIMENSIONS\*

Туре	Color	Range	Profile		Thickness	Width mm	Length m
PALTOP™ Premuim		Grey, Green, Red	70/18 (Greca/Trapeze)	~~~	1.2	900	2 - 6
		Plant	76/18 (Iron/Sinus)	~~~	1.2	900	2 - 6
PALTOPIM .	PALTOP <sup>TM</sup> Black		177/51 (5, 6 Waves)	$\sim\sim$	1.2	900, 1100	2 - 6

<sup>\*</sup> Other profiles and dimensions are available upon special request and are subject to a minimum quantity.

#### TYPICAL PHYSICAL PROPERTIES

Property (ASTM	Method)	Conditions	Units	Value
Specific gravity	(D-1505)		g/cm <sup>3</sup>	0.9
HBU* (Heat buildup)			°C	<33
Tensile strength at yield	(D-638)	10 mm/min	MPa	25
Tensile strength at break	(D-638)	10 mm/min	MPa	20
Elongation at yield	(D-638)	10 mm/min	%	1.4
Elongation at break	(D-638)	10 mm/min	%	7.0
Modulus of elasticity	(D-638)	1 mm/min	MPa	1480
Water absorption	(D-570)	24hr @ 23°C	%	<0.2

<sup>\*</sup> Heat Buildup = The increase of temperature that the product is able to withstand on top of the environment's temperature. In the test, 12x12cm samples of PALTOP were exposed to IR2 250W lamp at a 30cm distance.

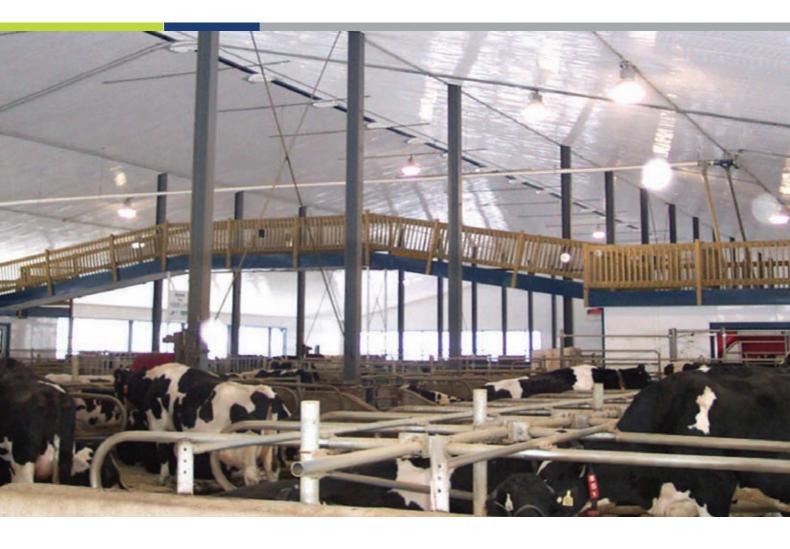
### WARRANTY

PALTOP sheets are guaranteed to resist breakage for 5 years in accordance with DIN EN 1013-3. PALTOP will also retain its fire resistance and weatherability for a long period. This warranty will only be valid if PALTOP is handled, stored, cleaned, installed and maintained in accordance with Palrams guidelines.

### WEATHERABILITY

Improved weatherability makes PALTOP suitable for exterior applications in all climates.









 $AG-TUF\ has\ remarkable\ durability,\ ease\ of\ installation,\ and\ outstanding\ versatility.\ It\ is\ often\ used\ for\ agricultural\ and\ light\ industrial\ buildings.$ 

AG-TUF is extremely easy to handle and require no special equipment to install. The panels can be cut with basic woodworking tools and clean with conventional spray equipment.



### **MAIN BENEFITS**

Attractive high-gloss white finish

Excellent chemical resistance

Non-flammable

Easy cleaning & maintenance

Great economical alternative to

metal

Excellent light reflectance

Impact resistant

Rust-proof

Resists marking and scratching

## **TYPICAL APPLICATIONS**

Hygienic cladding

Hog barns

Dairy farms

Food processing, meat packing

Salt and fertilizer storage

Loafing sheds

Poultry farms

Fish farms

Kennels

Car and truck washes

Factories and industrial buildings







#### PRODUCT AVAILABILITY

Specification	Availability
Width (mm)	660, 965
Length (mm)	2500, 3100, 3710, 4930, 6150
Thickness(mm)	0.8
Color	Bright White
Profile	Greca 76

#### **ALSO AVAILABLE\***

Specification	Availability				
Width (mm)	Up to 1217				
Length (mm)	Up to 6150				
Thickness(mm)	Up to 1.3				
Color	Light Grey, Beige (Other colors are available upon request)				
Profile**	Iron 76	Greca 75	Greca 70		
FIOIILE	3"Standard	American 2.6"	American 4.2"		

<sup>\*</sup> Available Upon Request, subject to a minimum quantity.

#### **FLAMMABILITY**

AG-TUF is self extinguishing and complies with the most demanding international fire resistance standards defined in the field of plastics.

Standard	Classification*
ASTM D635-74	CC1

#### **HYG TECHNOLOGY - ACTIVE HYGIENE**

Innovative HYG technology has set a new standard in hygienic cladding by offering active antimicrobial cladding with low maintenance requirements. HYG products has either killed or inhibited growth of all pathogens tested to date. Overall maintenance demands and costs can be reduced even further since HYG products requires less concentrated and more economical cleaning agents in comparison with standard cladding. Since silver ions are uniformly distributed throughout the sheets, scratched or damaged surfaces will be equally effective.

For product availability please contact your Palram distributor.

<sup>\*\*</sup>Other profiles are available upon request.









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

PALIGHT exhibits 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.



#### **MAIN BENEFITS**

# Tested and approved for digital printing

Bright white, smooth and uniform surface

Available in a wide range of standard and special designer colours

Standard matte or gloss finishes

Good insulation, lower heat transmission

Non-toxic

Good flammability: self extinguishing

Half the weight of solid PVC sheets

Same thickness at lower cost

Good mechanical properties

Easily worked with conventional tools, prints and paints

Can be easily bonded, machined, shaped and fabricated

Low water absorption

High chemical resistance

#### **TYPICAL APPLICATIONS**

#### Advertising

Signs, displays, interior decoration, exhibition graphics, cladding etc.

#### Construction

Models, partitions, wall cladding, interior decoration, air conditioning ducts, etc..

#### Industry

Control cabinets and panels, structures for corrosive environments, ducts, etc.

## Screen Printing

PALIGHT's flat, consistent surface makes it ideal for screen printing. It is suitable for use with aqueous and solvent-based inks. PALIGHT's sheet surface has low absorption giving excellent ink yield, 1-25mm thickness

#### **Digital Printing**

PALIGHT was approved by major digital flatbed printer manufacturers, and is suitable for use with digital inks and UV curing. All 3-10mm white PALIGHT sheets have a bright and smooth surface for true colour interpretation.







#### **STANDARD DIMENSIONS\***

	Color		Thickness Availability / Dimensions (mm)			
	Color		1220x2440	1560x3050	2030x3050	
<b>@</b> ⊢	White	ST-10	1-13, 15, 19, 25	All	All	
PALIGHT®	Yellow	ST-30	3, 5			
Ĭ	Red	ST-50	3, 5		3, 5	
₽ A	Black	ST-90	3, 5, 10	3, 5	3, 5, 6, 8, 10	
	Blue	ST-70	3, 5		3,5	
	Green	ST-80	3			
	Grey	ST-100	3, 5	3, 5	3, 5	

01	Color	Thickness Availability /	Dimensions (mm)
2001	COIOI	1220x2440	1220x3050
@  -	White	3, 5, 6, 10	3, 5, 6, 10
PALIGHT	Yellow, Red, Black, Blue, Green, Grey	3, 5	3, 5

 $<sup>\</sup>ensuremath{^*}$  Special dimensions are available upon request.

## PRODUCT RANGE

Product	Description
PALIGHT®	Flat foamed PVC sheet with matte finish, available in a wide range of standard and special designer colors.
PALFOAM™	Low-weight flat foamed PVC sheet with matte finish. Avail able in white only. $ \\$
PALIGHT® 2001	Flat foamed PVC sheet with glossy hard surface on one side, available in white and standard colors.

### TYPICAL PHYSICAL PROPERTIES

Property	ASTM Method	Conditions	Units	Value
Density	(D-792)		g/cm³	0.55-0.7*
Water Absorption	(D-570)	24 hr. @ 23 °C	%	0.5-0.8**
Flexural Strength at Yield	(D-790)	1mm/min.	MPa	28*
VICAT Softening Temp	(D-1525)	Load 1kg	°C	75
Coefficient of Linear Therm	al Expansion (D-696)		cm/cm°C	6.7×10 <sup>-5</sup>
Thermal Conductivity	(C-177)		W/mK	0.06-0.07**
Surface Resistance	(D-257)		Ohm	5X10 <sup>15</sup>
Volume Resistance	(D-257)		Ohm-cm	2X10 <sup>16</sup>

<sup>\*</sup> Results refer to 3mm sheet \*\* Depending on thickness (3-10mm)

## FLAMMABILITY

 ${\sf PALIGHT} \ is \ self extinguishing$ and complies with the most demanding international fire resistance standards defined in the field of plastics, as indicated by representative results in the  $\,$ attached table.

Standard	Classification*
EN 13501	B, s1, d0
DIN 4102	B-1
BS 476/7	Class 1
NSP 92501,5	M-1, M-2
UL 94	V-0

<sup>\*</sup>Depends on thickness, type and color.

#### **COLOR CHART**

Standard Colors	Code	PANTONE®	RAL
White*	ST-10		
Red	ST-50	1807U	-
Yellow	ST-30	108U	-
Blue	ST-70	288C	-
Green	ST-80	3415C	-
Black	ST-90	4C	9011
Grey	ST-100	430C	7037

* Whites are divided by thickness: 1	-10mm: ST-10	12-25mm: Classic Wh	ite
Designer Colors	Code	PANTONE®	RAL
Digital White	DE-11		
Cream	ST-20	-	9001
Antique Cream	DE-21	Warm Grey 2C	1013
Smoke Grey	DE-141	428C	7047
Dim Grey	DE-151	408C	-
Dark Grey	DE-131	431C	7012
Burgundy	DE-71	187C	3002
Cardinal Red	DE-211	193C	3031
Firebrick Red	DE-61	485C	-
Orchid Pink	DE-221	204C	4003
Orange	DE-51	21C	2004
Blaze Orange	DE-41	158C	2011
Bright Yellow	ST-40	1235C	-
Lemon	DE-31	102C	-
Lime green	DE-181	390C	-
Sea Green	DE-171	361C	6018
Mint Green	DE-111	340C	6024
Olive Green	DE-161	378C	-
Dark Green	DE-121	3308C	6005
Turquoise	DE-101	337C	-
Steel Blue	DE-81	2707C	-
Sky Blue	DE-201	7401C	-
Light Blue	ST-60	2935C	-
Royal Blue	DE-191	287C	-
Sapphire Blue	DE-91	2757C	5002









PALFOAM<sub>TM</sub> AS Digital is an ideal high-quality, light weight PVC board, made specifically to cost-effectively meet the stringent requirements of large format digital print imaging industry. PALFOAM<sub>TM</sub> AS Digital smooth, uniform surface and bright white base enable print providers to get the most out of their digital printers in terms of image quality and colour accuracy. PALFOAM<sub>TM</sub> AS Digital is a great choice for the various fabrications needed to suit end applications of POP/POS, exhibition stands and booths, and other signage and graphics solutions.

Next time you're facing a wide format digital print project start off with an excellent media for superior results. Go with PALFOAM $_{\text{TM}}$  AS Digital.



#### **MAIN BENEFITS**

# Whiter for accurate colour reproduction

The ability of a print substrate to accurately reproduce colours, especially on the skin tone/pastel color scale, is determined to a large extent by its whiteness.

PALFOAM™ AS Digital offers a true neutral white base that results in excellent colour reproduction and precise image quality throughout the colour spectrum.

# Smoother for superior print quality

PALFOAM™ AS Digital has a smooth uniform surface that results in better print quality and higher definition of small texts, graphics and fine images. A consistent sheet thickness enables smooth graduations and homogeneous ink adhesion resulting in improved image quality and increased service life.

# Blank PE masking to avoid ghost images

PALFOAM™ AS Digital is supplied with a specialised anti-static, blank green PE masking, to eliminate the chance of ghost images which can be possible on printed films.

The PALRAM green PE masking, used only with PALFOAM™ AS Digital, is easily recognized, and differentiates this quality product within the market.

#### **EASY TO USE**

PALFOAM™ AS Digital rigid and lightweight physical properties make it easy to use even for the most creative and unique sign & graphics applications.

# **DURABLE & SAFE**

PALFOAM™ AS Digital is the ideal solution for indoor advertising applications, due to its high resistance to chemicals and low water absorption.

PALFOAM™ AS Digital complies with the highest safety requirements, and meets US & EU recycling requirements.





#### HIGH IMAGE QUALITY

- PALFOAM™ AS Digital unique anti-static PALFOAM™ AS Digital rigid and formula enables crisp details, well defined graphics and small size text.
- PALFOAM™ AS Digital smooth and uniform surface serves as an ideal substrate for digital print inks enabling smooth gradations, and homogenous area cover.
- Uniform sheet thickness promotes better ink adhesion resulting in improved image quality and increased service time.
- Bright white colour yields wider colour gamut and accurate colour imaging.

#### **EASY TO USE**

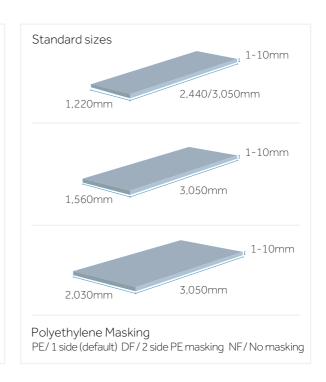
lightweight physical properties make it easy to use even for the most creative and unique sign & graphics applications.

#### **DURABLE & SAFE**

- PALFOAM™ AS Digital is a great solution for indoor advertising applications, due to its high resistance to chemicals and low water absorption.
- PALFOAM™ AS Digital complies with the highest safety requirements.
- PALFOAM™ AS Digital meets US & EU recycling requirements.

#### **KEY PROPERTIES**

- Smooth, uniform surface quality
- High white index
- Static free
- Hard surface quality, high rigidity and low deflection
- Lightweight and easy to fabricate
- Complies with the following FR (Fire Resistance) standards:
  - B,s1,d0 (EN 13501) 1mm
  - B,s2,d0 (EN 13501) 2-3mm
  - M-1(nsp 92501,5) 1-10mm
  - V-0 (ul 94)











PALFOAM offers easy-to-handle foamed PVC in a cost-efficient version. Its bright, consistent and smooth surface provides a good background for printing and laminating in high quality stands and displays.

PALFOAM is flexible, versatile and extremely convenient to work with, cut and fabricate using conventional tools and equipment.



#### **MAIN BENEFITS**

Cost-efficient

Lighter than PALIGHT

Utilizing30-yearproduction experience

Bright, smooth and uniform surface

High insulation

Easily worked with conventional tools, prints and paints

Can be easily bonded, vacuum formed, nailed and bolted

High chemical resistance

Low water absorption

Non-toxic

### **TYPICAL APPLICATIONS**

Portable displays

Point-Of-Purchase displays

Signs

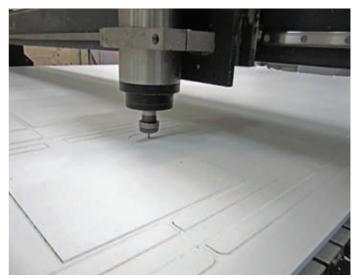
Displays

Interior decoration

Exhibition boards

Display cladding







### STANDARD DIMENSIONS

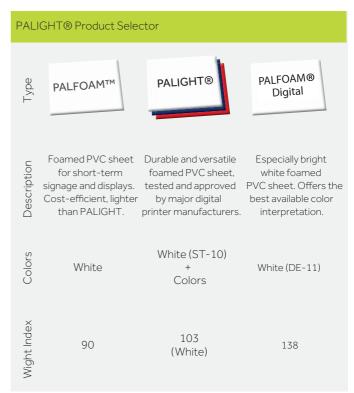
Specification	Value
Thickness	3, 4, 5, 6, 8, 10mm
Dimensions*	2030×3050 1560×3050 1220×3050
Color	White

<sup>\*</sup> Special dimensions are available upon request.

### TYPICAL PHYSICAL PROPERTIES\*

(Method)	Conditions	Units	Value
(D-792)		g/cm³	0.47-0 50
(D-570)	24hr. @ 23°C	%	0.28
(D-790)	1mm/min.	MPa	700-1100
(Shore D)			78-84
(D-265)		J/m	30-66
		°C	-10 to 55
T) (D-648)	Load: 1.82MPa	°C	58-61
(D-1525)	Load 1:kg	°C	75-77
n (D-696)		cm/cm°C	6.7×10 <sup>-5</sup>
(C-177)		W/mK	0.07
(D-792)		WI	90
(D-257)		Ohm	5X10 <sup>15</sup>
(D-257)		Ohm-cm	2X10 <sup>16</sup>
	(D-792) (D-570) (D-790) (Shore D) (D-265) (D-1525) (D-1525) (C-177) (D-792) (D-257)	(D-792) (D-570) 24hr. (a) 23°C (D-790) 1mm/min. (Shore D) (D-265) (D-1525) Load 1:kg (D-1525) Load 1:kg (D-696) (C-177) (D-792) (D-257)	(D-792)

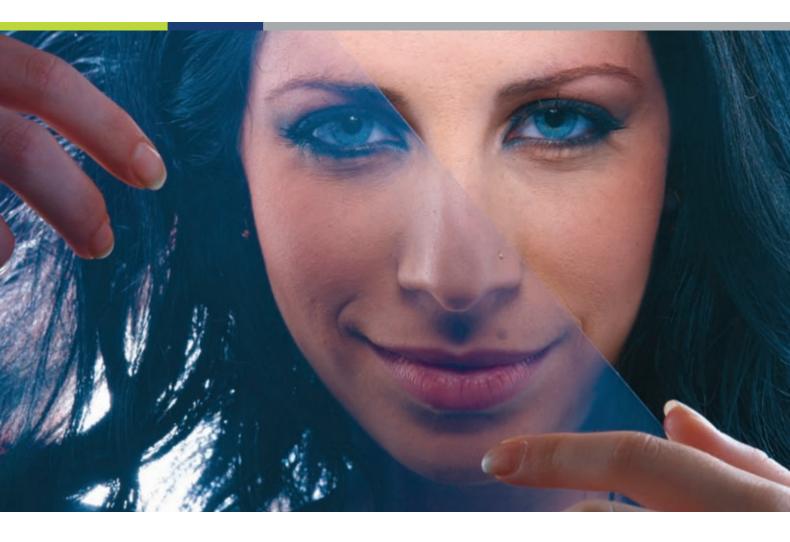
<sup>\*</sup>Information applies to 3-10mm sheets.



#### PALIGHT® PRODUCT RANGE

Product	Description
PALFOAM™	Low-weight flat foamed PVC sheet with matte finish. Available in white only.
PALIGHT®	Flat foamed PVC sheet with matte finish, available in a wide range of standard and special designer colors.
PALIGHT® 2001	Flat foamed PVC sheet with glossy hard surface on one side, available in white and standard colors.









PALCLEAR transparent sheets provide solutions to various applications in populated indoor areas.

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.

Optional characteristics range from high clarity and anti-glare surface to increased impact resistance.



#### **MAIN BENEFITS**

Excellent resistance to chemicals

**High fire rating:** for populated areas

High light transmission

Water Clear Clarity

Optional high-impact and UV resistance

Formable: can be thermoformed, vacuum formed, bent hot or cold, fabricated

PALCLEAR® Matte: Anti-glare finish on one side to eliminate reflection

#### **TYPICAL APPLICATIONS**

Transparent advertising items

Indoor signage in populated areas

High impact glazing

Machine guards

Chemically resistant safety glazing

Fabrication and forming applications

Anti-glare glazing and frame covers







#### **COLORS**

Transparent	Water-Clear, Bronze, Bluish
Translucent	White Opal, White Diffuser

#### STANDARD DIMENSIONS

Thickness (mm)	Dimensions (mm)	PALCLEAR®	PALCLEAR® UV	PALCLEAR® HI
	1000x2000			<b>~</b>
	1220x2440			<b>✓</b>
1-2	1300x2500			<b>✓</b>
	1500x3000			<b>✓</b>
	2000x3050			<b>✓</b>
	1000x2000	<b>✓</b>	<b>✓</b>	
	1220x2440	~	<b>✓</b>	
3-4	1300x2500	~	<b>✓</b>	
	1500x3000	~	<b>✓</b>	
	2000x3050	~	<b>✓</b>	
	1000x2000	~	<b>✓</b>	
5-6	1220x2440	~	<b>✓</b>	
5-6	1300x2500	~	<b>✓</b>	
	1300x2500	~	<b>✓</b>	
8-15	1000x2000	~		
	1220x2440	~		
	1300x2500	~		

<sup>\*</sup>Other dimensions are available, subject to minimum quantity.

# PALCLEAR® PRODUCT RANGE

Product	Description
PALCLEAR® Water Clear	*Clear UV stabilized PVC sheet
PALCLEAR® Bluish	Traditional bluish tint
PALCLEAR® UV	UV protected on one side
PALCLEAR® HI	High Impact: Increased impact resistance
PALCLEAR® Embossed	Prismatic embossed finish on one side
PALCLEAR® Matte	Matte finish on one side
PALCLEAR® Difffuser	For indoor light box applications

<sup>\*</sup> Water-Clear is PALCLEAR's standard color. Bluish tint is available upon request.

#### **FLAMMABILITY**

PALCLEAR sheets are self extinguishing and comply with the most demanding international fire resistance standards as indicated in the attached table.

Standard	Classification*
EN 13501	B, s2, d0
DIN 4102	B-1
BS 476/7	Class 1
NSP 92501,5	M-1, M-2
IEC 695.2.1	Self-extinguishing
CSE RF 3/77	Class 1
UL 94	V-0

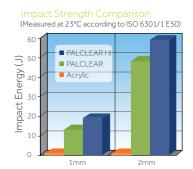
<sup>\*</sup> Depends on thickness, color and type.

# TYPICAL PHYSICAL PROPERTIES

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1.4
Water absorption		24 hr. at 23°C	%	0.03
Heat deflection temperature	D-648	Load: 1.82MPa	°C	62 - 65
Service temperature range			°C	-10 to +50
Thermal conductivity	C-177		W/m K	0.15
Coefficient of linear thermal ex	pansion D-696		cm/cm°C	6.7 × 10 <sup>5</sup>
Tensile strength at yield	D-638	10 mm/min.	MPa	71
Tensile strength at break	D-638	10 mm/min.	MPa	35
Elongation at yield	D-638	10 mm/min.	%	3
Elongation at break	D-638	10 mm/min.	%	60
Tensile modulus of elasticity	D-638	10 mm/min.	MPa	3,600
Flexural strength	D-790	1.3 mm/min.	MPa	103
Flexural modulus	D-790	1.3 mm/min.	MPa	3,400
Impact behavior - Falling dart	ISO 6603/1 E50	1.3 mm/min.	J	95
Light transmission	D-1003	3mm sheet	%	85

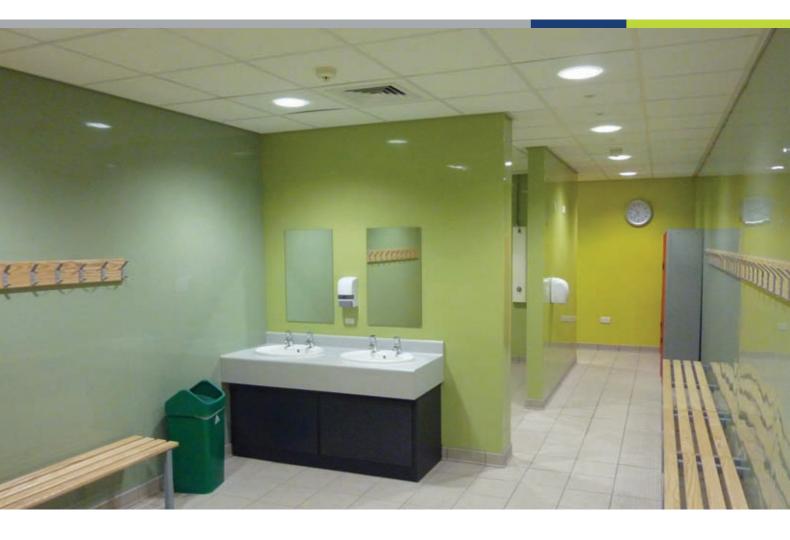
# IMPACT RESISTANCE

PALCLEAR HI and PALCLEAR offer a wider choice to designers and fabricators for point of sale and general fabricated items, particularly when compared to the impact properties of acrylic and polystyrene sheets.



<sup>\*</sup> ASTM except where noted otherwise \*\* PALCLEAR becomes brittle below 0°C, although it will not be damaged if no impact









PALOPAQUE is a flat UV-stabilized PVC sheet, with over 40 years of manufacturing experience that is reflected in its high quality. Easily formed and fabricated, PALOPAQUE is ideal for a wide variety of applications.

PALOPAQUE makes an excellent printing substrate for the advertising and signage industries and is suitable for digital or traditional printing.

With its high chemical resistance, PALOPAQUE is highly suitable for industrial applications. Breakthrough HYG technology adds active sanitation action for hospitals, clinics and laboratories.



Excellent chemical resistance

High impact strength

Easily fabricated and formed

Highest fire rating, self-extinguishing

Numerous finishes available

High electrical and thermal insulation

Easy fabrication

Non toxic

### **TYPICAL APPLICATIONS**

Wall cladding

Signs, displays and point of purchase

Chemical process industries

Chemically resistant signs

Sterile surfaces in laboratories

Clinics and hospitals

Food industry

Air vents









#### **COLORS**

STD White	OffWhite	Light Pistachio	Cream	Stone
		Deep Ice	Light Pink	Lilac
Red Wine	Dark Pink	Red	Orange	Crimson Pink
Avocado	Green Grape	Light Blue	Light Turquoise	Ocean Blue
Mouse Grey	Medium Grey	Black	Dark Grey	Light Grey
Mink	Grey Cream	Beige Cream	Beige 1015	Desert Sand

<sup>\*</sup> Color may vary slightly with different surface finishes.

#### **SURFACE FINISHES**

PALOPAQUE is offered with the following finishes. Gloss, Matt, Embossed, Anti Microbial (HYG, Active Hygiene), Anti Static and Low Smoke.

#### STANDARD DIMENSIONS

Thickness(mm)
1 to 15
1 to 10
1 to 6
1 to 4

st Custom dimensions are available, subject to minimum quantity.

#### PALOPAQUE™ PRODUCT RANGE

Туре	Description			
PALOPAQUE™	Standard UV stabilized sheet for general purpose and thermoforming applications.  *Increased UV resistance is available upon special request			
PALOPAQUE™ HYG	Hygienic panels with active antimicrobial action, effectively eliminating a wide range of harmful microbes.			

#### TYPICAL PHYSICAL PROPERTIES

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1.4
Heat deflection temperature (H	.D.T) D-648	Load: 1.82MPa	°C	65 - 68
Service Temperature			°C	-10to+50
Thermal conductivity	C-177		W/m K	0.15
Coefficient of linear thermal expa	ansion D-696		cm/cm°C	6.7 × 10 <sup>5</sup>
Rockwell hardness	D-785		R Scale	97R
Tensile strength at yield	D-638	10 mm/min	MPa	50
Tensile strength at break	D-638	10 mm/min	MPa	45
Elongation at yield	D-638	10 mm/min	%	3
Elongation at break	D-638	10 mm/min	%	>80
Tensile modulus of elasticity	D-638	1 mm/min	MPa	2,900
Flexural strength	D-790	1.3 mm/min	MPa	80
Flexural modulus	D-790	1.3 mm/min	MPa	2,700
Impact falling weight	6O 6603/1 E 50	3 mm sheet	J	95

<sup>\*</sup> ASTM except where noted otherwise

#### **RESISTANCE TO CHEMICALS**

Excellent resistance to...Mineral acids, alkalis, plating solutions, paper making chemicals, pickling solutions, other inorganic solutions and fumes thereof.

Good resistance to...Alcohols, aliphatic hydrocarbons, glycols, amines, phenols.

Not recommended to contact...ketones, chlorinated solvents, aromatic hydrocarbons, some esters and ethers.

#### FLAMMABILITY

PALOPAQUE is self-extinguishing and complies with the most demanding international fire resistance standards defined in the field of plastics, as shown in the attached table.

Product	Standard	Classification
	EN 13501	B, s3, d0
PALOPAQUE TM	BS 476/7	Class 0
	ASTM E 84	Class A
PALOPAQUE TM LS (Low Smoke)	EN 13501	B, s2, d0

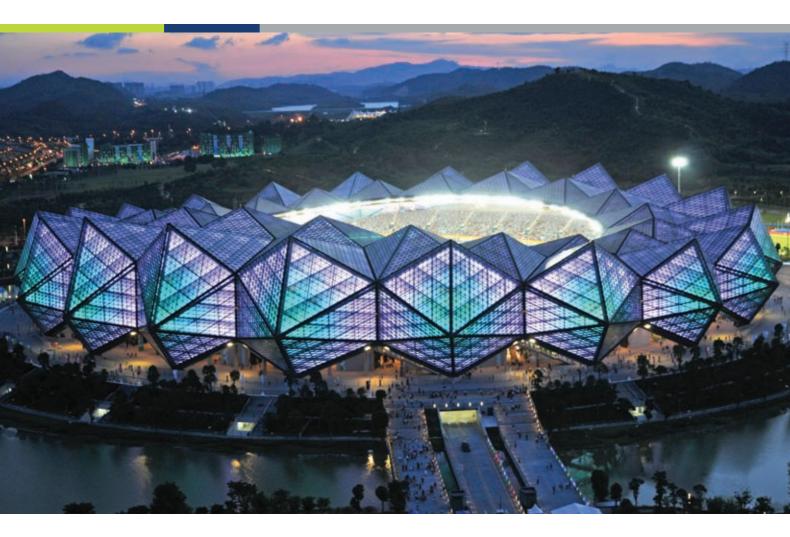
#### **FABRICATION TIPS**

PALOPAQUE can be easily fabricated using various techniques. Below are general recommendations for some of them.

Sawing	Machining	Thermoforming	Drilling	Bonding	Welding
For both band and circular saws use blades with a minimum tooth set, and about 8 to 10 teeth per inch. Prevent overheating by feeding slowly.	Use low machining speeds for turning and shaping, and assure free removal of machining chips.	Between 130°C and 170°C PALOPAQUE sheets become formable and can then be formed, press molded or blow formed.	Use conventional drills, but be certain to remove free drill chips in order to avoid overheating of the sheet. Also, use slow rate of penetration.	PALOPAQUE sheets can be bonded with conventional solvent based PVC adhesives.	PALOPAQUE extruded PVC sheets can be welded by hot-air welding process conventionally used for PVC.

<sup>\*</sup>For more information please refer to "Chemical Resistance of PVC Products" available at www.palram.com or with your PALRAM distributor.





# Did you know?

Palsun flat sheet polycarbonate used in the Shenzhen Stadium covered an area of 45000sqm or 6 football pitches

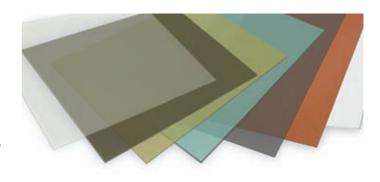




PALSUN powerfully combines superior impact resistance and clarity, making it the material of choice for many demanding applications.

PALSUN is virtually unbreakable, yet it is transparent as glass at less than half its weight. PALSUN can be cold bent and easily fabricated and formed, making it ideal for barrel vault roofing, skylights, architectural roofing and glazing.

Clear, translucent and opaque PALSUN sheets are also ideal as machine guards, sound barriers, anti-vandal and safety glazing. PALSUN Diffuser and LB sheets are extensively used in durable light boxes.



#### MAIN BENEFITS

**High impact resistance -** Virtually unbreakable

High clarity and light transmission

Weather and UV resistant

Wide service temperature range

Blocks harmful UV radiation

Good acoustical insulation

Lightweight

Easy to handle and install

Versatile, formable, and machinable

# **TYPICAL APPLICATIONS**

#### Safety and Security Glazing

Safety glazing Machine guards

Bus stops and telephone booth

Shields for police and security forces

Glazing in public transportation Safety windshields for cars Eye protection visors for helmets

# Construction

Transparent acoustic barriers
Architectural roofing
Skylights
Hall and shopping center ceilings

Covered walkways

Sun rooms and conservatories Pergolas and covered patios Attic windows

#### Advertising

Signboards and illuminated signage

Light Fixtures (white opal, diffused, or embossed sheets)

# Other Applications

Thermoformed, vacuum formed, bent, and fabricated items







### **STANDARD DIMENSIONS\***

			Sur	face Finis	sh	
Thickness (mm)	Width x Length (mm)	Smooth Both sides	Embossed Both sides	Matte One side	Hair Cell One side	Prismatic One side
1	1220 x 2440	~		~		
1.5	1250 x 2440	~	~	~		~
2	1000 0110	~	~	~		~
2.5 - 6	1220 x 2440	~	~	~	~	~
8	1250 x 2440 2050 x 3050	~	~		~	~
9 - 12	2030 X 3050	~			V	~

 $<sup>\</sup>mbox{\ensuremath{^{*}}}\mbox{\ensuremath{O}}\mbox{\ensuremath{the}}\mbox{\ensuremath{a}}\mbox{\ensuremath{e}}\mbox{\ensuremath{a}}\mbox{\ensuremath{e}}\m$ 

#### COLORS\*

# TRANSPARENT Clear Solar Grey Bronze Red Blue Green Breeze TRANSLUCENT Yellow Red Mint Opal Green Diffuser Olympic Olympic Control

### **OPAQUE**

ı									
	Dark Green	Red Brick	Black	Dark Blue	Cream RAL 9001	Light Grey RAL 7035	Dark Grey	Brown	OffWhite

<sup>\*</sup>Custom colors and solar transmissions are available upon request, subject to a minimum order

#### PALSUN® PRODUCT RANGE

Product	Description
PALTUF™	General purpose flat solid polycarbonate sheet for interior use
PALSUN®	Flat solid polycarbonate sheet, UV protected on one side
PALSUN® UV2	UV protection on both sides
PALSUN® Embossed*	Embossed surface (E102, prismatic, hair cell)
PALSUN® FR*	Fire retardant, better flammability ratings
PALSUN® Matte*	Matte finish on one side
PALSUN® LB*	Diffused sheet for light box applications
PALSUN® Solar Control*	Efficient heat-blocking with metallic appearance
PALSUN® Breeze*	Advanced heat-blocking, low haze - clear
PALSUN® Foam	Flat foamed polycarbonate sheet, UV protected on one side
PALGARD <sup>TM*</sup>	Abrasion resistance on one or both sides

<sup>\*</sup> Available with UV protection on one or both sides.

# TYPICAL PHYSICAL PROPERTIES

Property	(Method*)	Conditions	Units	Value
Density	(D-792)		g/cm³	1.2
Heat Deflection Temperature	e (D-648)	Load: 1.82 MP	°C	130
Service Temperature - Short	Term		°C	-50 to +120
Service Temperature - Long 7	Геrm		°C	-50 to +100
Coefficient of Linear Thermal E	Expansion (D-696)		mm/m°C	0.065
Thermal Conductivity	(C-177)		W/m K	0.21
Tensile Strength at Yield	(D-638)	10 mm/min.	MPa	65
Tensile Strength at Break	(D-638)	10 mm/min.	MPa	60
Elongation at Yield	(D-638)	10 mm/min.	%	6
Elongation at Break	(D-638)	10 mm/min.	%	>90
Tensile Modulus of Elasticity	(D-638)	1 mm/min.	MPa	2,300
Flexural Strength	(D-790)	1.3 mm/min.	MPa	100
Flexural Modulus	(D-790)	1.3 mm/min.	MPa	2,600
Impact Falling Weight	(ISO 6603/1 E50)	3mm sheet	J	158
Rockwell Hardness	(D-785)		R Scale	125R
Light Transmission	(D-1003)	3mm clear shee	t %	90
Haze	(D-1003)	3mm clear shee	t %	<0.5
Yellowness Index	(D-313)	3mm clear shee	t YI	<1

<sup>\*</sup> ASTM except where noted.

#### **FLAMMABILITY**

Product	Standard	Classification*
	EN13501	B, s1, d0
@	BS 476/7	Class 1
PALSUN®	NSP 92501, 4	M2
AL.9	DIN 4102	B1, B2
₾.	UL Classified	V2 (File e221255)
	ASTM D-635	CC1
	Standard	Classification*
~	UL 94	VO
E @	ASTM D-2863-87	L.O.I. = 30
PALSUN® FR		Ignitability Index = 9
LSI	ALL1570 7 1000	Spread of Flame Index = 8
A A	AU 1530.3-1982	Heat Evolved Index = 10
		Smoke Developed Index= 8

 $<sup>\ ^*</sup>$  Depends on thickness. For additional information please contact your PALRAM distributor.

#### **INSTALLATION**

Product masking (protective film) must be removed from both sides immediately after installation. Installation instructions are available from your PALRAM distributor upon request.





# Did you know?

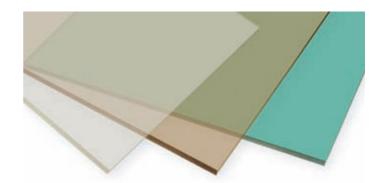
Palsun 12mm Solar Olympic flat solid polycarbonate used approximately 288 tons on the Olympic Stadium in Athens.





PALGARD is a flat UV and abrasion resistant solid polycarbonate sheet, delivering a winning combination of physical properties. PALGARD excels in resisting vandalism, graffiti spraying and physical attack.

The sheet is also more resistant to a wider variety of chemicals and the increased wear and tear of high traffic areas. PALGARD can also be glass-laminated for ballistic application purposes.



#### **MAIN BENEFITS**

High abrasion resistance on one or both sides

Impact resistant

Up to 90% light transmission

Excellent acoustical insulation

Blocks UV radiation better than sunscreen lotions

Resistant to acts of vandalism

Improved chemical resistance

Easy to mount and install

Lightweight

### TYPICAL APPLICATIONS

Safety glazing

Security and ballistic resistant glazing

Industrial protective shielding

Anti-vandal glazing

Prison windows

Sound barriers

Transportation shelters

Protective shields and visors







#### **PRODUCT AVAILABILITY**

Width x Length (mm)	Thicknesses (mm)	Colors
2000 x 3000		
1220 x 2440	3 to 12	Clear, Bronze
1830 x 2440		

<sup>\*</sup> Special dimensions and colors are available, subject to minimum order.

#### MOUNTING AND CLEANING

PALGARD can be mounted into most existing frames made of PVC, aluminum or other metals. It is recommended to use neoprene or EPDM packing (never use soft PVC) in order to secure the sheet in its frame, rather than fixing with screws. Butyl rubber sealing strip or silicone sealant are also permissible. Any of the above materials, chemical substances or cleaning agents must explicitly receive the manufacturers approval before their use with or on PALGARD. PALGARD can easily be cleaned with a soft cloth made from 100% cotton using mild soap solution and rinsing with cold water. It is best to use mild dish cleaning preparations. Commercial spray cleaners are available. Please consult with your local Palram agent or representative for recommended commercial preparations available locally.

Installation instructions and a list of compatible materials are available upon request.

#### CHEMICAL AND ABRASION RESISTANCE

The unique coating on PALGARD's surface is the source for its chemical and abrasion resistance. This coating provides PALGARD with a chemical resistance durable to various materials ranging from corrosive elements and solvents to cleaning agents. Graffiti spray can easily be removed and the sheet is ideal for industrial environments where volatile chemicals are present.

In addition, high abrasion resistance, when matched with me chanically superb polycarbonate, allows PALGARD's designation to a variety of specialty applications.

#### **TYPICAL PHYSICAL PROPERTIES\***

Property	Method*	Conditions	Units	Value
Density	(ISO 1183)		g/cm³	1.2
Water absorption	(ISO 62)	24h @ 23°C	mg/kg	<8
Tensile strength	(ISO 527)		MPa	60
Elongation at break	(ISO 527)		%	90
Tensile modulus of elasticity	(ISO 527)		MPa	2,200
Abrasion (Taber process)	(ISO 9352)	100 rotations, CS-10F, 500g	% Haze	<1.5
Layer thickness			μm	7 - 15
Adhesive properties		0.5/1.0/2.0 h boiled@100°C		GT 0/0/0
VICAT diluting temperature	(ISO 306)	VST/B 50	°C	150
Constancy temperature HDT/A	(ISO 75)	Load: 1.8 MP	°C	135
Permanent use temperature	(DIN 53446)		°C	115
Service temperature range			°C -5	50 to +100
Coefficient of linear thermal expans	sion(DIN 53752)		cm/cm°C	6.5 × 10 <sup>5</sup>
Thermal conductivity	(DIN 52612)	0- 50 °C	W/m K	0.21
Specific heat			J/g K	1.3
Light transmission (380-780 nm	) (DIN 5036)		%	>86
Chamfer angle	(DIN 52305)	3mm sheet	Bg'	<5
Refractive power	(DIN 52305)		dpt	<0.1
Specific volume resistivity	(DIN VDE0303)		Ωcm	1015
Dielectric strength	(DIN EN 60243)		kv/mm	>30

 $<sup>^{</sup>st}$  Aside from abrasion parameters, tests and results apply to the carrier material only.

#### **FLAMMABILITY**

Classification*		
B, s1, d0		
Class 1		
M2		
B1, B2		
V2 (File e221255)		
CC1		

<sup>\*</sup> Depends on thickness. Please contact your Palram distributor for additional information.









The PALSHIELD product line offers various levels of ballistics and forced entry protection.

Due to its layered structure, the laminate withstands both physical attack and multi-shot assault, absorbing the entire impact energy without shattering or spalling.

PALSHIELD features an abrasion resistant coating, which ensures long-term clarity for applications in accessible areas.



#### **MAIN BENEFITS**

No spall design

Abrasion resistant surface

Complies with various ballistic and forced entry standards (see table on reverse side)

Low weight: nearly half the weight of glass-equivalent

Clear - good optical quality

Colours: clear, bronze, grey

#### **TYPICAL APPLICATIONS**

Security glazing in banks and government facilities

**Public institutions** 

Gas stations and convenience stores

Drive-up windows

Ticket booths and kiosks

Prisons and detention centers







# A Growing Line of Products

PALSHIELD is engineered to meet a variety of forced entry and ballistic test standards. Palram's Palshield line of products is destined to expand over time. The information listed below represents the Palram products that meet or exceed the various testing standards at the time of this printing.

#### Regulatory Code Compliance Certification

Organization	Standard	Classification
ANSI	Z97.1-09	Approved Impact and Weathering
CPSC	16 CFR 1201	Category I or II

#### Manufacturer's Limited Warranty

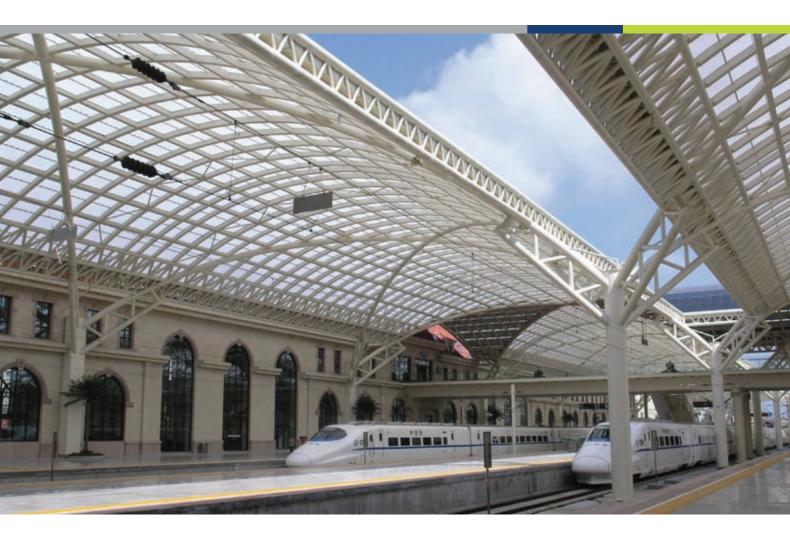
PALSHIELD offers a 7-Year manufacturer's limited warranty against coating failure, structural delamination, yellowing, and loss of light transmittance.

Forced Entry Products	Protection Level	Thickness (inches, mm)	Plies	Lbs./ft²(Kg/m²)	Light Transmission
PALSHIELD FE 375	ASTM F1915-05 - Security Grade Level 2	.375" (9.5mm)	2	2.4 (11.7)	86%
PALSHIELD FE 500	ASTM F1915-05 - Security Grade Level 2 HPW 0500.03 Level A ballistics (.38 special)	.500" (12.7mm)	3	3.3 (16.1)	83%
PALSHIELD FE 750	ASTM F1915-05 - Security Grade Level 1 HTW 0500.03 Level B Balllistics (9mm)	.750" (19mm)	3	4.9 (23.9)	77%
Ballistic Products	Protection Level	Thickness (inches, mm)	Plies	Lbs./ft²(Kg/m²)	Light Transmission
Ballistic Products PALSHIELD UL1-750*	Protection Level UL 752 Level 1 <sup>†</sup> –9mm 3 shots	Thickness (inches, mm) .750" (19mm)	Plies 3	Lbs./ft²(Kg/m²) 4.9 (23.9)	Light Transmission 88%
		(inches, mm)			3
PALSHIELD UL1-750*	UL 752 Level 1 <sup>†</sup> – 9mm 3 shots	(inches, mm) .750" (19mm)	3	4.9 (23.9)	88%

<sup>\*</sup> Contains Acrylic † Tested by an acredited independent lab according to UL specs.

Testing Std. Reference	Standard and Year	Title / Description
ASTM	F1233-08	Standard Test Method for Security Glazing Materials and Systems
ASTM	F1915-05	Standard Test Method for Glazing for Detention Facilities
HP White	TP-050003	Transparent Material for Use in Forced Entry or Containment Barriers
UL	752	Bullet Resistant Equipment





# Did you know?

Pre-drilling holes will help material keep its shape during sheet expansion in higher temperature changes.





SUNLITE's cellular polycarbonate structure yields a lightweight sheet with high impact strength and superior thermal insulation. High light transmission makes SUNLITE ideal for varied roofing, wall cladding, and glazing applications.

SUNLITE has a wide product range: from anti-condensation treatment for greenhouses and garden centres to SolarSmartTM sheets that create cool climatic conditions.

Interior designers and advertisers take advantage of SUNLITE's special appearance and add a unique touch to their designs.

#### MAIN BENEFITS

High thermal insulation
Lightweight and impact resistant
High light transmission
Excellent structural durability
Weather and UV resistance
Blocks virtually all UV radiation
Easy to handle and install

High fire performance rating

#### **TYPICAL APPLICATIONS**

Architectural roofing and glazing

Skylights and sidelights

Conservatories

Covered walkways

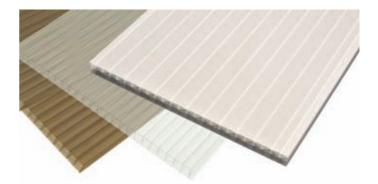
Displays, signage and decorations

Industrial roofing and glazing

Residential roofing and glazing

Covered swimming pools

Agricultural greenhouses









# COLORS

Structure	Standard Colors				Multi-Layered			Solar Smart LT = Light Transmis Selective Solar Control Technology					
	Clear	Bronze	White Opal	White Diffuser	Green**	Blue**	Bronze/Opal	Solar Guard (Solar Control/Opal)	Solar Ice	Solar Control*		SLT	Smart Green
Twin wall 4mm	82%	35%	30%		35%	30%				30%			
Twin wall 4.5mm	82%	35%	30%		35%	30%				30%			
Twin wall 6mm	80%	35%	20%		35%	30%				30%			
Twin wall 8mm	80%	35%	35%		35%	30%				25%	45%/34%	60%/55%	
Twin wall 10mm	79%	35%	30%		35%	30%				25%		60%/55%	
Triple wall 8mm	76%	35%	48%		35%	30%				25%			
Triple wall 10mm	76%	35%	48%		35%	30%				25%			
Triple wall 16mm	76%	35%		48%	35%	30%							
X-Lite 16mm	60%	25%		38%	35%						30%/25%		
V-Structure 20mm	63%												
X-Lite 25mm	60%	25%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 32mm	58%	20%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 35mm	57%	20%	15%				10%	5%	20%		20%/16%		42%/35%
X-Lite 40mm	57%	20%	15%										

<sup>\*</sup>ASTM D-1003 \*\*Blue, Green and Solar Control sheets are made to order only. \*\*For BBA product specifications, please contact your UK agent or refer to BBA website.

#### **DIMENSIONS**

Structure	Thickness (mm)	Area Weight (Kg/m²)	U-Value (W/m² °K)	980	1050	1200	1220*	Width	(mm) 1600	(*USA	(Only)	2085	2090	2095	2100
	4	0.8	3.8	<i>v</i>	<b>1</b> 050	1200	1220 V	1230	1000	1000	<i>✓</i>	2003	2030	2093	Z100
	4.5	1.0	3.7	~	~	~					~				~
Twin Wall	6	1.3	3.5	~	~	~	~				~				~
	8	1.5	3.3	~	~	~	~				~				~
	10	1.7	2.9	~	~	~	~				~				~
Triple Wall	8	1.7	3.0								~				~
Triple Wall	10	2.0	2.7								~				~
	16	2.7	2.3	~	~	~	~	~	~	~	~				~
	16	2.5	2.1	~	~		~	~	~	~					~
	25	3.4	1.7	~	~		~	~	~	~					~
X-Lite	32	3.7	1.6	~	~		~	~	~	~					~
	35	3.9	1.5	~	~			~	~	~					~
	40	4.1	1.4						~	~					~
	20	2.8	1.85									~			
	25	3.4	1.6										~		
V-Structure	32	3.6	1.5											~	
	35	3.8	1.45											~	
	40	4.0	1.35						~	~					~

# SUNLITE® PRODUCT RANGE

Product	Description
SUNLITE®	Standard sheet with UV protection on one side.
SUNLITE® UV2	UV protection on both sides.
SUNLITE® ML	Multi-layered color combinations for special designs.
SUNLITE® Plus	With anti-condensation, for greenhouses.
SUNLITE® Solar Control	Solar metallic reflective heat blocking sheet.
SUNLITE® SLT	Heat blocking and anti-condensation for garden centers.
SUNLITE® CL	Heat blocking sheet for architectural applications
SUNLITE® Smart	See-through sheet with advanced heat-blocking.

# TYPICAL PHYSICAL PROPERTIES

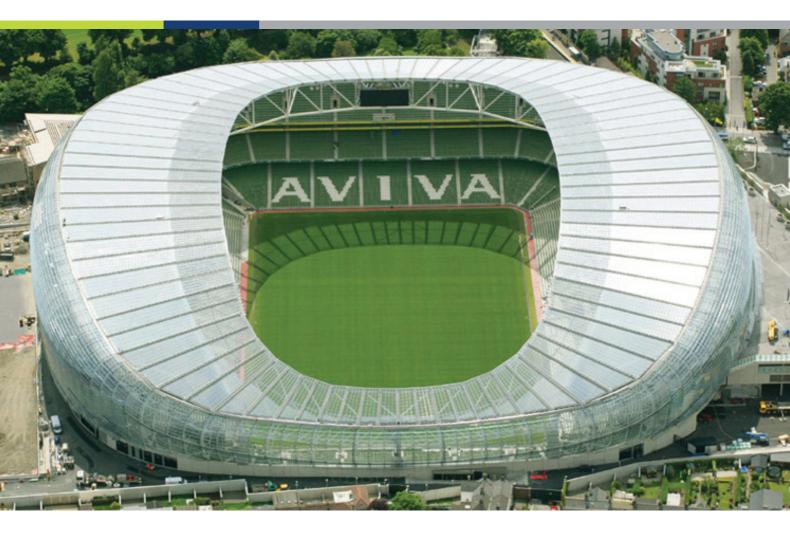
Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1.2
Heat deflection temperature (HD	Γ) D-648	Load: 1.82 MP	°C	135
Service Temperature - Short term	1		°C	-50 to +120
Service Temperature - Long term			°C	-50 to +100
Coefficient of linear thermal eaxpa	ansion D-696		mm/mm°C	6.5×10 <sup>-5</sup>
Tensile strength at yield	D-638	10 mm/min	MPa	62
Elongation at break	D-638	10 mm/min	%	>90
Impact falling dart	ISO 6603/1		J	40-400
Practical thermal expansion/contr	action		mm/m	3
* ASTM except where noted other	wise.			

# FLAMMABILITY

Method	Classification*	Method	Classification*	Method	Classification*	Method	Classification*
BS 476/7	Class 1	ASTM D-635	CC-1 (SUNLITE® SL)	DIN 4102	B-1 (10&16mm Triple Wall)	ASTM E-84	Class A
NICD 02E01	M_1 M_2	ENI 13501	P c1 d0				

<sup>\*</sup> Depends on sheet type. For more information please contact your Palram distributor.





# Did you know?

Suntuf corrugated sheet for the Aviva Stadium in Dublin covered an area of 20000sqm or the area of 2 football pitches

Build On.



SUNTUF corrugated polycarbonate sheet is an outstanding roofing material that offers superior physical properties.

SUNTUF is favored by professionals for noncorrosive industrial structural roofing and siding, and by DIY/trade home owners for a multitude of DIY applications, due to its high impact strength and wide service temperature range.

SUNTUF's high light transmission and unlimited range of profiles allow it to integrate as a high quality rooflight into any roofing profile.

SUNTUF is also available in a wide variety of colours.



**Impact resistant:** virtually unbreakable

**Transparent -** up to 90% light transmission

Weather and UV resistant

Wide service temperature range

**UV screening -** better than sunscreens

Lightweight

**Good flammability rating -** does not emit toxic gasses when burning

Warranted against yellowing, loss of light transmission and hail penetration

Easy to work with and install

# **TYPICAL APPLICATIONS**

#### Agriculture

Commercial greenhouses

Garden centres

Construction and Industry

Rooflights and skylights

Architectural structures, industrial facilities, public buildings etc.

Canopies and shelters (garages, swimming pools, etc.)

Partitions

Covered walkways and sidewalks

### DO-IT-YOURSELF (DIY)

Skylights

Canopies and awnings

Porches and verandas Carports or garages (parking shelters)

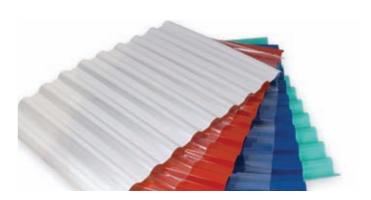
Domestic swimming pools

Gazebos or pergolas

Sunrooms

Outdoor play or family areas

Hobby greenhouses









#### COLORS

Transparent	Clear, Solar Grey, Bronze, Sky Blue, Trans. Green, Smart Grey
Translucent	White Opal, White Diffuser, Solar Control, Solar Ice, Mist Green, Smooth Cream
Opaque	White, Green, Blue, Red Brick

 $<sup>\</sup>hbox{*Custom colors are available upon request and subject to a minimum order.}$ 

# SURFACE FINISHES

SUNTUF is offered with smooth finish on both sides as standard. Embossed and Hair-Cell finishes on one side are optional.

# PROFILE AVAILABILITY

SUNTUF can be matched into any exiting or specially tailored corrugation profile on demand using Palram's proprietary profile matching technology.

SUNTUF is currently available in over 200 profiles. For an updated list of existing profiles, please refer to the SUN - TUF® Rooflights Profile Catalog, which is available on the SUN - TUF® Rooflights mini website at www.palram.com

# SUNTUF® PRODUCT RANGE

CONTROL OF REDUCE 18 MILES						
Product	Description					
SUNTUF®	Corrugated polycarbonate sheet with UV protection on one side					
SUNTUF® UV2	With UV protection on both sides					
SUNTUF® Embossed	Embossed or Hair Cell finish on one sides					
SUNTUF® Plus	For greenhouse covering, with anti-condensation treatment					
SUNTUF® Solar Control	With effective heat blocking					
SUNTUF® Smart	Advanced heat blocking with high clarity					

# TYPICAL PHYSICAL PROPERTIES

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1,2
Heat deflection temperature	e (H.D.T) D-648	Load: 1.82 MPa	°C	135
Service Temperature Range	(Short term)		°C	-50 to +120
Service Temperature Range	(Long term)		°C	-50 to +100
Coefficient of linear thermal	expansionD-696		cm/cm°C	6.5 x 10 <sup>-5</sup>
Thermal conductivity	C-177		W/m K	0.21
Tensile strength at yield	D-638	10 mm/min	MPa	62
Tensile strength at break	D-638	1 mm/min	MPa	65
Elongation at yield	D-638	10 mm/min	%	6
Elongation at break	D-638	10 mm/min	%	>70
Tensile modulus of elasticity	D-638	1 mm/min	MPa	2,300
Flexural strength mechanica	al D-790	1 mm/min	MPa	93
Flexural modulus	D-790	1.3 mm/min	MPa	1,890
Impact falling weight	(ISO 6603/1 E50)	0.8 mm sheet	J	50
Rockwell hardness	D-785		R Scale	118
Light transmission	D-1003	Clear sheet	%	90%
Haze	D-1003	Clear sheet	%	<0.5
Yellowness index	D-1003	Clear sheet	ΥI	<1

 $<sup>^{</sup>st}$  ASTM method except where noted otherwise

# **FLAMMABILITY**

SUNTUF has a low flammability rating and does not emit toxic gasses when burning.

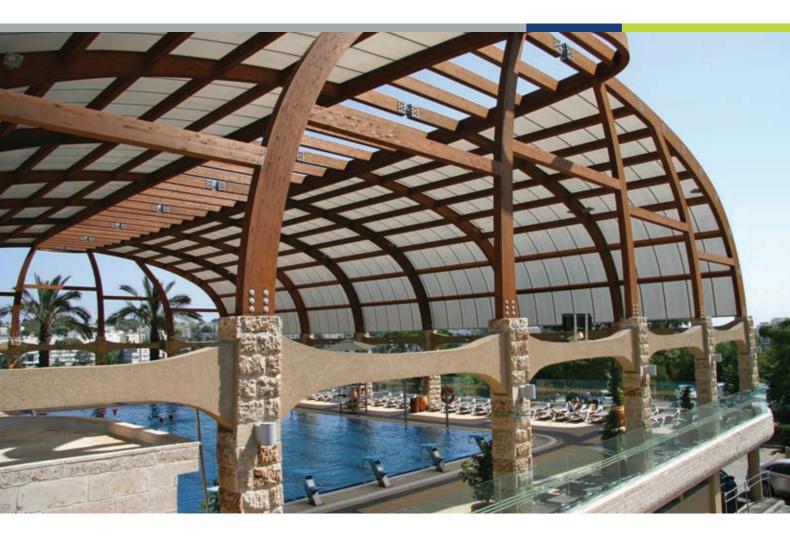
Standard	Classification*
EN13501	B, s1, d0
NFP 92501, 4, 5	M-1
DIN 4102	B-1
UL 723	4.7, 47.0
Los Angeles Building Code	CC2 (Section 2603)
UNI 9177, 9176	Class 2

 $<sup>\</sup>ensuremath{^*}$  For additional information please contact your PALRAM distributor.

# UV BLOCKING AND RESISTANCE

SUNTUF transmits radiation selectively. It shield against harmful ultraviolet rays completely. In addition, SUNTUF withstands the detrimental effects of UV radiation.





# Did you know?

Palram sheeting can be cut using a jig saw or circular saw with a fine blade.





SUNPAL is an advanced multi-wall polycarbonate panel system that combines proven design, light transmission, thermal insulation and strength. It offers a lightweight, leak-proof design that withstands very high loads and accommodates expansion and contraction. The system's distinct advantages make it ideal for long-term application on many types of projects. As with any true architectural glazing system, SUNPAL is appropriate for a variety of roofing and cladding designs, flat or curved.

SUNPAL is a self-fastening system, based on multi-wall panels, and is available in a range of thicknesses.



Withstands very high loads

Accommodates expansion & contraction

Simple & fast installation

Leak-proof

High thermal insulation

Ideal for curved designs

Double sided UV protection

SolarSmartTM cool light colours

#### TYPICAL APPLICATIONS

Architectural roofing & glazing

Commercial and retail roofing

**Sport facilities** - translucent roofing

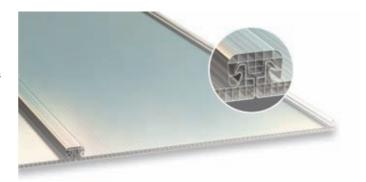
Covered walkways, awnings & entrances

Open markets - light roofing

**Service stations** - translucent roofing

Parking structure covering

Swimming pool covers









# **Typical Physical Properties**

Property	Method*	Conditions	Units	Value
Density	D-792		g/cm³	1.2
Heat deflection temperature (HDT)	D-648	Load: 1.82 MP	°C	130
Service Temperature - Short term			°C	-50 to +120
Service Temperature - Long term			°C	-50 to +100
Coefficient of linear thermal expansion	D-696		cm/cm°C	6.5 x 10 <sup>-5</sup>
Tensile strength at yield	D-638	10 mm/min	MPa	62
Elongation at break	D-638	10 mm/min	%	>80
Impact falling dart	ISO 6603/1		J	40-400
Practical Thermal expansion/contraction rate			mm/m	3

<sup>\*</sup>ASTM method except where noted otherwise

# Thermal Insulation

Туре	U-Value [Watts/m².ºC]	R-Value [m².ºC/Watt]
SUNPAL Lite 8 mm	2.45	0.41
SUNPAL 8 mm	2.45	0.41
SUNPAL 10 mm	2.10	0.47
SUNPAL 18/20 mm	1.50	0.67

# Flammability

SUNPAL flammability classification appears in the attached table, based on a test performed by certified independent laboratories. The quoted certificate represents the flammability performance of the entire system.

Method Classification\*
EN 13501 B, s1, d0

<sup>\*</sup>Depends on panel thickness.

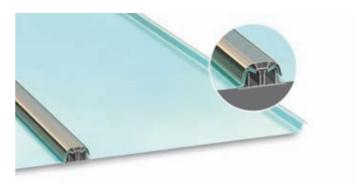








SUNGLAZE is an architectural system that offers smart design, elegant appearance, versatility, low maintenance and sustainable performance to various architectural challenges. SUNGLAZE incorporates proprietary standing-seam profiling and glazing that enable wide spans and high loading capacity. It can be specified in various lengths to match different structures, including flat and curved designs. SUNGLAZE is easy to fasten; the panels are simply joined by an aluminum profile set that is enclosed at the ends by end-closures. Screws lock the system and fix it to the structure without any penetration through the panels. The Capplug completes the assembly, covering the screw head and provides a smooth appearance from above.



#### **MAIN BENEFITS**

Glass-like clear appearance

Standing seam leak-proof performance

Free thermal expansion

Caulking and silicone free

Withstanding high loads

Easy, fast and safe installation

Minimal maintenance

#### **TYPICAL APPLICATIONS**

Architectural projects

Commercial and retail

Sports venues roofing

Covered walkways

Open markets

Service stations

Entrances

Pool covers







#### Thermal Insulation

The attached table compares "U" values of glass and SUNGLAZE panels of equivalent thickness. For any given thickness, the "U" value of SUNGLAZE is lower than that of glass. This can result in a significant 6.5-9% reduction in energy expenditure both for heating in winter and air-conditioning during the summer time. Note that the use of SolarSmart  $^{\text{TM}}$  panels will partially block heat generating infrared solar energy, which will further assist in reducing the air-conditioning costs during summer time.

Thickness (mm)	SUNGLAZE™ U Value (W•m2•K)	GlassU Value (W•m2•K)
3	5.43	5.79
4	5.29	5.76

#### Flammability

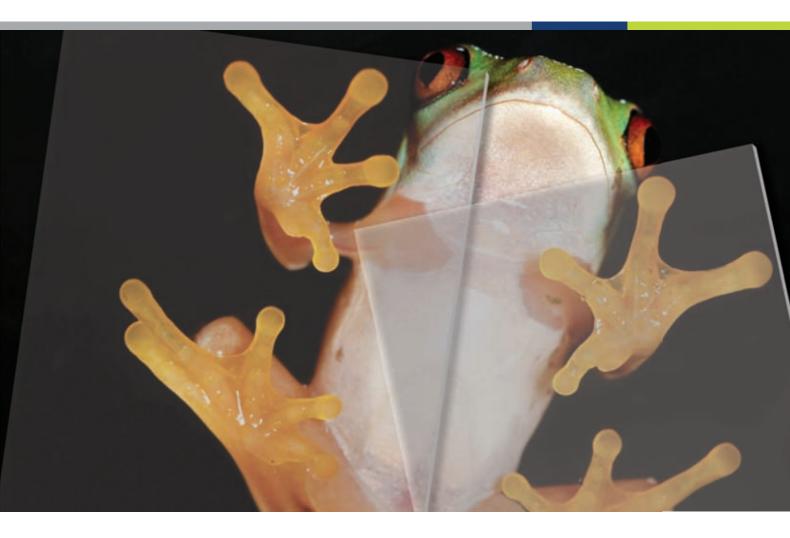
All flammability results for SUNGLAZE have been verified through 3rd party accredited testing agencies.

· ·					
Test	ASTM Standard	Classification	Test	ASTM Standard	Classification
Flammability	EN-13501	B, s1, d0	Smoke density	D-2843	<75%
Self ignition	D-1929	628°C	Burn extent	D-635	CC1
Flame spread / smoke	E-84	Class B			
a o op. odd / or norto	_ 0 1				

# Typical Physical Properties

Property	Method**	Conditions	Units	Value
Mechanical				
Density	D-792		g/cm³	1.2
Tensile modulus of elasticity	D-638	1 mm/min	Мра	2,300
Flexural strength	D-790	1 mm/min	Мра	93
Flexural modulus	D-790	1.3 mm/min	Мра	2,600
Notched impact strength Izod	D-256	23°C	J/m	800
Impact falling dart	ISO 6603/1d	3mm	J	158
Impact - fall through	E-695		m/kg	336
Charpy Impact after Xenon Arc Exposure (D-	6110) D-2565-08	3000 hrs	% Loss of Impact Strength	<10
Thermal				
HDT (Heat Deflection Temperature)	D-648	Load: 1.82Mpa	°C	135
Vicat softening temperature	D-1525	Load: 1kg	°C	150
Service temperature - Short term			°C	-50 to 120
Service temperature - Long term			°C	-50 to 100
Coefficient of linear thermal expansion	D-696		cm/cm°C	6.5 x 10 <sup>-5</sup>
Thermal conductivity	C-177		W/m°K	0.21
Specific heat capacity	C-351		kJ/kg°K	1.3
Weathering				
Colour change	D-2244	60 months	ΔΕ	<3
Yellowing index	E-313	60 months	$\Delta$ Yellowness Index	<10
Light transmission	D-1003	10 years	%	<6
Leakage / Structural				





# Did you know?

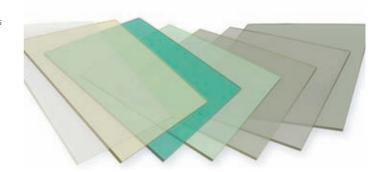
Palglas extruded acrylic has a light transmission of up to 92%





PALGLAS offers unsurpassed light transmission, matching that of glass while weighing half. Inherently UV resistant, PALGLAS is the ultimate choice in high traffic acoustic barriers, resisting gasses emitted from vehicles.

PALGLAS has high clarity and form ability that opens a world of design options for designers, from small fabricated items to transparent furniture.



#### **MAIN BENEFITS**

**Clear -** up to 92% light transmission

Inherently UV resistant

Stronger than glass and less than half its weight

High gloss appearance

Can be formed and fabricated

Easy to mount

Good chemical resistance

Good thermal insulation

#### TYPICAL APPLICATIONS

High traffic acoustic barriers

Lightweight high clarity glazing

Attractive fabricated items

Transparent furniture

Light fixtures

Illuminated and 3D signage







#### **PRODUCT AVAILABILITY**

Colors	Transparent:Clear Translucent:White Opal
Thickness - Standard (mm)	2 - 10
Thickness - Special (mm)	1.5, 1.8, 12 - 20
Width x Length (mm)	1250 x 2050 mm 1220 x 2440 mm 2050 x 3050 mm

<sup>\*</sup> Other colors and dimensions are available upon request, subject to minimum quantity. Please contact your PALRAM distributor for more information.

#### **ACOUSTIC BARRIER RELATED CERTIFICATION\***

Standard	Definition	Classification
EN 1794	Road traffic noise reducing devices: Non-acoustic performances	Compliance
EN 1793	Road traffic noise reducing devices: Acoustic performance	Compliance

<sup>\*</sup> Applies to PALGLAS 15mm &20mm sheets.

#### TYPICAL PHYSICAL PROPERTIES

Property	ASTM M	ethod	Conditions	Units	Value
Density		(D-792)		g/cm³	1.19
HDT (Heat deflection te	emperature)	(D-648)	Load: 1.82MP	°C	91
Service temperature ra	nge			°C	-40 to +80
Coefficient of linear ther	mal expansio	n (D-696)		cm/cm°C	7.0 × 10 <sup>-5</sup>
Thermal conductivity		(C-177)		W/m K	0.19
Tensile strength at brea	ık	(D-638)	1 mm/min.	MPa	70
Elongation at break		(D-638)	10 mm/min.	%	4
Tensile modulus of alsti	city	(D-638)	1 mm/min.	%	3,200
Flexural strength		(D-790)	1 mm/min.	MPa	110
Flexural modulus		(D-790)	1 mm/min.	MPa	3,200
Izod impact strength no	oched	(D-256)	23°C	J	16
Rockwell hardness		(D-785)		R scale	123R
Light transmission		(D-1003)	Clear sheet	%	92
Haze		(D-1003)	Clear sheet	%	<1
Yellowness index		(D-1003)	Clear sheet		<1.5

#### WEATHER AND UV RESISTANCE

PALGLAS is inherently resistant to UV radiation. Coupled with its wide service temperature range (-40°C to 80°C), it becomes suitable for outdoor applications. A limited warranty against yellowing is available.

#### **RESISTANCE TO CHEMICALS**

PALGLAS is resistant to a wide range of chemicals at room temperature. Detailed information is available upon request.

#### FORMING AND FABRICATION

PALGLAS can be fabricated, machined and thermoformed. Please note: predrying is strongly recommended for best results when thermoforming. PALGLAS is easily hot line bent and shaped into a wide variety of forms. PALGLAS can be bonded to itself and other materials. Additional details on how to work with PALGLAS is available upon request.

# INSTALLATION AND MAINTENANCE

Large PALGLAS sheets should always be installed using a framing system. PALGLAS thermal expansion is eight times that of glass and three times that of metal, this important factor must be taken into account when glazing. The polyethylene protective masking must be removed immediately after installation. PALGLAS can easily be cleaned with a soft cloth or sponge, using a mild soap or detergent. Rinse and dry with a soft 100% cotton cloth or moist cellulose sponge to prevent water spotting. Ask your Palram representative to assist you in selecting PALGLAS sheet with dimensions that are suitable for your applications.

# CARPORTS & CANOPIES



# Did you know?

Palram celebrated its 50th anniversary in 2013.







The Vitoria 5000 is a modern and elegant carport, designed to be set up easily! Can be perfect shelter for your car, with its open design, it provides a great and comfortable wide access, yet offers protection from severe weather conditions. Vitoria 5000 combines with modern design and its simple effortlessly into your existing environment. Due to minimum parts, you can find it easy DIY assembly for only 2 persons and no special tools needed. In addition, with its stable aluminium frame it provides long-term pleasure without any extra effort or maintenance.

# PRODUCT HIGHLIGHTS

Curved upscale designs

Sturdy, durable frame

Multi-purpose use as a carport, patio cover or temporary pavilion

Integrated gutter controls rainwater runoff

Low maintenance powder coated finish

# **EASY ASSEMBLY**

Can be set up with two people and doesn't require special tools. Ready to assemble with predrilled holes, pre-cut panels and hardware. Anchors to concrete pad or footings and includes step-by-step instructions.

### STURDY AND DURABLE

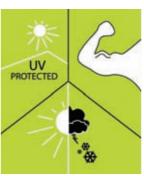
Virtually unbreakable polycarbonate panels and sturdy frame made from aluminium and galvanised steel.

#### MAINTENANCE FREE

Rust resistant powder coated frame is easy to clean with your garden hose.

#### **MULTI-PURPOSE**

Can be used as a carport or patio cover. Re-assembly option allows for use as a temporary structure and can be moved with you.



Heavy duty weather resistance



Fastening roof panel system



Sturdy & durable design



Integrated gutter





The Feria Patio Covers are designed to meet DIY needs, anyone can enjoy an aesthetic roofing solution, protection from rain, snow, hail, sun, heat or falling leaves

- Simple self assembly Click N Lock roofing panels' installation
- No roof climbing is needed
- · Light weight parts
- Low volume, only 1 package
- All included kit

#### STYLE AND STABILITY

- Clear roofing brings sunlight to your patio and home
- Virtually unbreakable 8mm
- Multi-wall polycarbonate panels
- Panels are UV resistant and protect from harmful UV rays
- Maintenance free powder coated aluminum frame - no rust, rot or peel
- Durable powder coated galvanised steel connectors
- Built-in gutter

# ADDED VALUE

- Adjustable and flexible
- Position adjustment options location of poles
- Front and back height flexibility



Position adjustment of poles





Click N Lock roof system



Built-in gutter



Anchoring kit included





#### $\label{lem:covering} \textbf{Decorate your entryway with an elegant covering solution for}$ doors and windows

- Upscale design high-end materials
- Strong & durable protection from hazardous weather through out the year
- Front anodized gutter and back hidden gasket direct rainwater sidewards
- Easy assembly no special tools required
- $\bullet \ \mathsf{Compact} \ \mathsf{packaging} \mathsf{easy} \ \mathsf{handling} \ \mathsf{and} \ \mathsf{merchandising}$

#### **SELF ASSEMBLY**

- Anodized aluminum front and
- Designed laser cut support arms
- Engineered Acrylic panel

# STRONG AND DURABLE

- Powder coated galvanized steel support arms
- 100% UV protected does not yellow
- Central arm assure high snow loading

# **COMPLETE DO-IT-YOURSELF**

- Packaging fit car's back seat
- Smart and fast locking system assembly
- Cleaning with hose or rain
- Maintenance free

# TYPICAL APPLICATIONS

- Doors
- Windows
- Air conditions
- Smoking designated areas
- Bicycle parking areas
- Mail boxes
- Air vents



Heavy duty weather resistance



Complete wall mounting kit included



Back sealing gasket



Anodized front gutter





# Decorate your entryway with an elegant covering solution for doors and windows

- Upscale design high-end materials
- $\bullet$  Strong & durable protection from hazardous weather through out the year
- Front anodized gutter and back hidden gasket direct rainwater sidewards
- Easy assembly no special tools required
- Compact packaging easy handling and merchandising

#### **HIGH PERFORMANCE**

- Anodized aluminum front and back trims
- Designed laser cut support arms
- Engineered Acrylic panel

# STRONG AND DURABLE

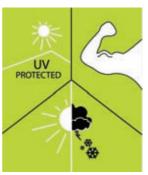
- Powder coated galvanized steel support arms
- 100% UV protected does not yellow

# COMPLETE DO-IT-YOURSELF

- Packaging fit car's back seat
- Smart and fast locking system assembly
- Cleaning with hose or rain
- Maintenance free

# TYPICAL APPLICATIONS

- Doors
- Windows
- Air conditions
- Smoking designated areas
- Bicycle parking areas
- Mail boxes
- Air vents



Heavy duty weather resistance



Complete wall mounting kit included



Back sealing gasket



Anodized front gutter





#### Nice & easy protective door cover from hazardous weather

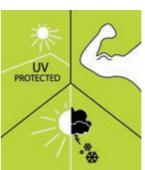
- Transmits over 90% sunlight but blocks harmful UV rays to avoid door damage
- Strong & durable advanced materials
- Clean lines design crystal clear panel
- Built-in gutter
- Easy assembly no special tools required
- Compact packaging easy handling and merchandising

#### STRONG AND DURABLE

- Powder coated galvanized steel support arms
- Unbreakable polycarbonate panel
- 100% UV protected does not yellow
- Protects entryway from rain, hail, snow and sun damage

# TYPICAL APPLICATIONS

- Doors
- Windows
- Air conditions
- Smoking designated areas
- Bicycle parking areas
- Mail boxes
- Air vents



Heavy duty weather resistance



Complete wall mounting kit included



Built-in gutter



Excellent light transmission

# COMPLETE DO-IT-YOURSELF

- Packaging fit car's back seat
- Easy self assembly
- Cleaning with hose or rain
- Maintenance free



# PROFESSIONALS IN DISTRIBUTION



# **Distributor of ALL Palram Products**

#### Polycarbonate;

Flat, Embossed, Multiwall & Corrugated sheeting

#### PVC:

Solid Cladding PVC – White and Coloured, All accessories & Adhesives available Foam PVC – Various Colours Corrugated PVC – Standard profiles

#### Extruded Acrylic;

Clear, Colours & Cast available

#### Alupanel / Hoarding Board;

Various colours available





- Trade and distribution arm for Palram Industries since 1992
- 100% of stock material is manufactured here in the UK
- Hold over 1.3 million pounds worth of stock
- UK Based technical support team
- Regional sales people to offer further product support to you and your team!
- In house processing facilities with a FREE Cut to size service on Solid PVC, Solid Polycarbonate & Multiwall (Shapes)
- Friendly advice on the phone or through the trade counter
- Delivery Nationwide\*
   \*(Terms and conditions apply)



# Century Plastics Ltd

Unit G, Vector 31 Industrial Estate, Waleswood Way, Sheffield, South Yorkshire, \$26 5NU

Tel: 01909 773037

Email: sales@centuryplastics.co.uk





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Tel: +44 1302 380738 Fax: +44 1302 380739

sales.uk@palram.com www.palram.com

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