Amari Plastics presents the Acrycast® and Acryglas XT® Product Manual

Acrycast®

Acryglas XT®

AMARI
PLASTICS

Contents

Acrycast® Acryglas XT®

1. Acrycast® and Acryglas XT®
Product Information

	Acrycast®	Acryglas XT®
Manufacturing Process	Cast	Extruded
	Both are inherently clear unless pigments are added.	
Weatherability	10 year exterior warranty on UV performance. Unsurpassed product performance against weathering.	10 year exterior warranty on UV performance. Unsurpassed product performance against weathering.
Surface Quality	Premium quality - consistent and smooth. Gloss levels - high Satin surface available - Acrycast ˚ Cool	Premium quality - consistent and smooth. Gloss levels - high.
Product Range	Solid sheet. Blocks.	Solid sheets.
Thicknesses	2mm to 50mm solid thickness as a standard.	2mm to 30mm solid thickness as a standard.
Sheet sizes	1220mm x 1830mm through to 3050mm x 2030mm.	Standard sizes up to 3050mm x 2050mm. Imperial sizes available. Longer length sheets available up to 2050 x 5050.
Colours	30 Standard colours ex Amari Plastics stock. Any other colour made to order.	Limited range of tints plus Black and Opals.
Chemical Resistance	Good resistance to dilute acids and alkalis. Limited resistance to organic solvents	
Thermoforming	Easy to thermoform or drape mould over a wide range of conditions.	Easy to thermoform, however users must first test their equipment to ensure it performs at optimal settings to produce the required results.
Handling	Easy to handle and work with for cutting, drilling, glueing, routing, lasering and digital printing	Easy to handle and work with for cutting, drilling and glueing. Processes like routing, creating heat, are also possible, however more attention needs to be paid to keeping the process cooled.
Adhesives	Bonding is easy and gives a high performance with Tensol 12 and 70.	Bonding is easy and gives a high performance with Tensol Extrufix.
Service Temperatures	Max. service temperature approx. 80°C and min -40°C	Max. service temperature approx. 70°C

Acrycast®

2.1 Acrycast® Clear
Product Range

Acrycast Clear is a premium quality cast acrylic sheet manufactured with the most modern casting equipment in the world. Established for over 40 years the Acrycast brand represents high quality product at a competitive price – offering you the best value for money.

Clear – Product Code A000.

Light Transmission rate – 92%.

Available from 2mm to 50mm in thickness.

Up to 10 Sheet sizes available – ranging from 1220 x 1830mm to 3050 x 2030mm.

UK market – included in the sheet sizes are traditional UK Imperial sizes such as 8 x 4′ and 8 x 6′ sheets (2440 x 1220mm and 1830 x 2440mm) from stock.

Clear is also available as a single sided satin product (see Acrycast Satin section for details) – product code A000ST.

Acrycast Clear Sheet sizes and Thicknesses

TG size	1220 x 1830	1220 x 2440	1270 x 2490	1530 x 2440	1830 x 2440	2050 x 1525	2050 x 3050	1270 x 3050
Thickness	4″ x 6″	4′ x 8′	4′ 2″ x 8′ 2″	5′ x 8′	6′ x 8′	6′ 8″ x 5′	6′ 8″ x 10′	4′ x 10′
2.0	●	●	●					
3.0	●	●	●	●	●	●	●	●
4.0	●	●	●	●	●	●	●	●
5.0	●	●	●	●	●	●	●	●
6.0	●	●	●	●	●	●	●	●
8.0	●	●	●	●	●	●	●	●
10.0	●	●	●	●	●	●	●	●
12.0	●	●	●	●	●	●	●	●
	1220 x 1830	1220 x 2440	1270 x 2490				2000 x 3000	1220 x 3000
15.0	●	●	●				●	●
18.0	●	●	●				●	●
20.0	●	●	●				●	●
25.0	●	●	●				●	●
30.0		●						
40.0		●						
50.0		●						

These are some of the sheet sizes and thicknesses available from the manufacturer. Not all will be available from Amari Plastics stock – please check availability with your local branch.

For other speciality grades of clear acrylic such as UV grade, food grade and marine grades please ontact your local Amari Plastics sales office or visit our website:-

www.amariplastics.com

2.2 Acrycast White and Opal
Product Range

Acrycast White and Opal sheets are a premium quality range of cast acrylic sheets manufactured with the most modern casting equipment in the world. Established for over 40 years the Acrycast brand represents high quality product at a competitive price – offering you the best value for mone y.

Super-Dense White – Product Code A001 SD.

Light Transmission rate – 8%.

Standard Opal Range Product Codes and light transmission rates:

	3mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	20mm	25mm	30mm
A001 - White	8%	6%	4%			1.5%		2.9%	2.9%	2.8%	0.6%
A001 SD - White	0.2%		0.10%			0.05%					
A002 - Opal	27%		20%			10%					
A003 Opal	78%		59%			30%		18%			
A004 Opal	64%		49%			26%					
A005 Opal	43%		33%			23%		8%			

Available from 3mm to 25mm in thickness.

Up to 12 sheet sizes available – ranging from 1220 x 1830mm to 3050 x 2050mm.

UK market – included in the sheet sizes are traditional UK Imperial sizes such as 8′ x 4′ and 8′ x 6′ sheets (2440 x 1220mm and 1830 x 2440m) from stock.

White is also available as a single sided satin product (see Acrycast Satin section for details) – product code A001ST.

Acrycast White and Opal Product Ranges A001, A002, A003, A004 and A005

TG size (mm/ft-in)	1220 x 1830	1220 x 2440	1270 x 2490	1830 x 2440	1880 x 3050	1270 x 3050	2050 x 1525	2050 x 3050
Thickness (mm)	4ft x 6ft	4ft x 8ft	4ft 2in x 8ft 2in	6ft x 8ft	6ft 2in x 10ft	4ft 2in x 10ft	6ft 8in x 5ft	6ft 8in x 10ft
3.0	●	●	●	●	●		●	●
4.0	●	●	●	●	●		●	●
5.0	●	●	●	●	●		●	●
6.0	●	●	●	●	●		●	●
8.0	●	●	●	●	●		●	●
10.0	●	●	●	●	●		●	●
12.0	●	●	●	●	●		●	●
15.0		●						
18.0		●						
20.0		●						
25.0		●						

These are the sheet sizes and thicknesses available from the manufacturer. Not all will be available from Amari Plastics stock – please check availability with your local branch.

For other non standard opals, different thicknesses or opals with a satin finish on one side please contact your local Amari Plastics sales office or visit our website - www.amariplastics.com

2.3 Acrycast® Colours
Product Range

Acrycast Coloured sheets are a premium quality range of cast acrylic sheets manufactured with the most modern casting equipment in the world. Established for over 40 years the Acrycast brand represents high quality product at a competitive price – offering you the best value for money.

Available from 3mm to 12mm in thickness as a standard.

Up to 8 sheet sizes available – ranging from 1220 x 1830mm to 3050 x 2030mm.

UK market – included in the sheet sizes are traditional UK Imperial sizes such as 8' x 4' and 8' x 6' sheets (2440 x 1220mm and 1830 x 2440mm) from stock.

Black is also available as a single sided satin product (see Acrycast Satin section for details) –product code A001ST.

Colour matching.
Acrycast can be purchased in colour matched sheets. To obtain a colour match we first need another manufacturer's colour code, a pantone number, a physical sample or a RAL reference. This will be given to the manufacturer and dependent on the complexity of the colour you will receive a sample to approve within 2 to 4 weeks. Once signed off you will be given a delivery date.

TG size (mm/ft-in)	1220 x 1830	1220 x 2440	1270 x 2490	1830 x 2440	1880 x 3050	1270 x 3050	2050 x 1525	2050 x 3050
Thickness (mm)	4ft x 6ft	4ft x 8ft	4ft 2in x 8ft 2in	6ft x 8ft	6ft 2in x 10ft	4ft 2in x 10ft	6ft 8in x 5ft	6ft 8in x 10ft
3.0	●	●	●	●	●		●	●
4.0	●	●	●	●	●		●	●
5.0	●	●	●	●	●		●	●
6.0	●	●	●	●	●		●	●
8.0	●	●	●	●	●		●	●
10.0	●	●	●	●	●		●	●
12.0	●	●	●	●	●		●	●
15.0		●						
18.0		●						
20.0		●						
25.0		●						

These are the sheet sizes and thicknesses available from the manufacturer. Not all will be available from Amari Plastics stock – please check availability with your local branch.

For other secondary colours, different thicknesses or colours with a satin finish on one side please contact your local Amari Plastics sales office or visit our website:-

www.amariplastics.com

Acrycast®

2.3 Acrycast® Colours
Standard Stock Range
Light Transmissions

Code	Description	Visual	LT% at 3mm
A100	Ivory		32
A200	Yellow		16
A201	Yellow		25
A300	Orange		5
A400	Red		3
A401	Red		5
A402	Red		4
A450	Red		74
A600	Green		3
A671	Green		23
A700	Blue		5
A701	Blue		3
A702	Blue		1
A703	Blue		4
A762	Blue		49
A800	Bronze		67
A900	Black		<1
A920	Grey		19
A950	Neutral		61
A951	Neutral		35
A952	Neutral		40

Acrycast®

2.4 Acrycast® Fluorescents

Acrycast Fluorescents are stocked in a standard range of 6 colours:-

A005F – Fluorescent Orange
A198F – Fluorescent Green
A228F – Fluorescent Blue
A333F – Fluorescent Red
A687F – Fluorescent Amber
A267 - Fluorescent Neon Red

Acrycast Fluorescent sheets are a premium quality range of cast acrylic sheets manufactured with the most modern casting equipment in the world. Established for over 40 years the Acrycast brand represents high quality product at a competitive price – offering you the best value for money.

Available in 3mm, 5mm and 10mm thicknesses.

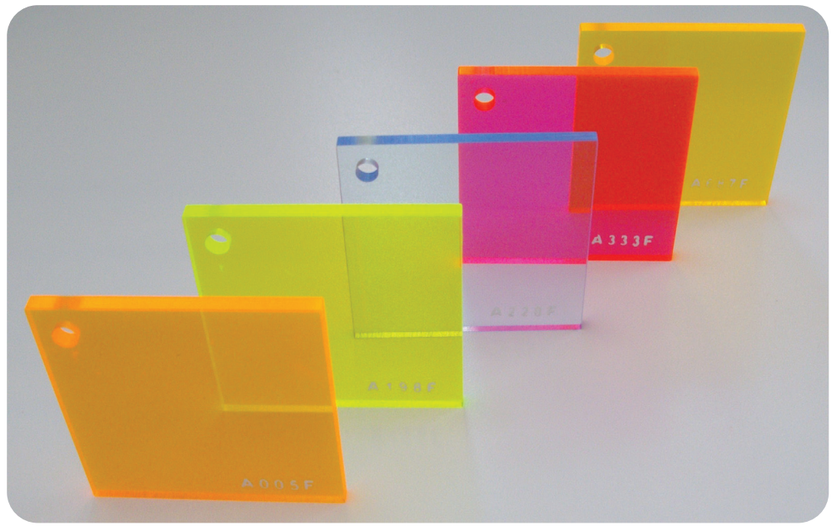
2 sheet sizes available ex stock – 3050 x 2050mm and 2030 x 1525mm.

Other sheet sizes and thicknesses are available upon request but will be subject to minimum order quantities and manufacturer lead times.

Acrycast Fluorescent sheets are not UV stabilised and therefore are recommended for internal use only.

For more information please contact your local Amari Plastics sales office or visit:-

www.amariplastics.com



2.5 Acrycast® Satin Range

Acrycast Cool is a satin range of products available in single-sided and double-sided sheets from 3mm to 15mm as standard.

It is available in two sheet sizes, 2440 x 1220 and 3050 x 2050.

Products currently available as standard are:

Colour	Single-sided	Double-sided	Colour	Single-sided	Double-sided
Clear	A000S	A000DS	Pastel pink	A104S	A104DS
White	A001S	A001DS	Lime green	A213S	A213DS
Black	A900S	A900DS	Cobalt blue	A3024S	A3024DS
Glass green	A3041S	A3041DS	Stone grey	A2332S	A2332DS
Marine blue	A229S	A229DS	Sepia bronze	A2370S	A2370DS
Autumn orange	A2023S	A2023DS			

Acrycast Satin sheets are a premium quality range of cast acrylic sheets manufactured with the most modern casting equipment in the world. Established for over 40 years the Acrycast brand represents high quality product at a competitive price – offering you the best value for money.

The satin finish is a very high-quality matt/satin surface that gives no reflection from light sources. Light transmission rates on the clear are reduced and if you are unsure of the suitability, please ask for a sample for testing purposes prior to production.

The film on the Acrycast Cool product is a PP film rather than PE. Please note the side with the Acrycast branding on the PP film is the standard gloss sheet side – the satin surface has the plain PP film on it.

Satin surface product is available in 2050 x 2030mm sheets and one other sheet size 2440 x 1220 up to a thickness of 12mm. All colours can be made as a single sided satin sheet but they will be subject to minimum order quantities and manufacturer lead times.

For more information please contact your local Amari Plastics sales office or visit:-
www.amariplastics.com

2.6 Acrycast® Technical Information
Light Transmission & Tolerances

Light Transmission rates

Clear A000 – 92%	Ivory A100 – 32%	Red A402 – 4%	Black A900 – <1%
Opal A001 – 8%	Yellow A200 – 16%	Green A600 – 3%	Neutral A950 – 61%
Opal A002 – 2 3%	Yellow A201 – 25%	Blue A700 – 5%	Neutral A951 – 35%
Opal A003 – 7 8%	Orange A300 – 5%	Blue A701 – 3%	Neutral A952 – 40%
Opal A004 – 51%	Red A400 – 3%	Blue A702 – 1%	
Opal A005 – 43%	Red A401 – 5%	Blue A703 – 4%	

Please note: light transmissions may var y from batch to batch by up to 5% , based on 3mm thickness.

Tolerances

Thickness Tolerances

Thickness (mm)	3.0	4.0	5.0	6.0	8.0	10.0	12.0	15.0	18.0	20.0	25.0	30.0	40.0	50.0
Tolerance (+/-) (mm) For max. size up to 1220 x 2440mm	0.4	0.4	0.5	0.6	0.8	1.0	1.2	1.5	1.6	1.7	1.8	2.1	2.6	3.0
Tolerance (+/-) mm For max. size up to 2050 x 3050mm	0.6	0.6	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.1		

Length and width tolerance: +5/ -0 mm
Difference in length between 2 diagon al sides: 5mm

2.6 Acrycast® Technical Information
Light Transmission & Tolerances (contd)

Tolerances on length and widths

Items	Tolerances (mm)
Length	plus 5 minus zero
Width	plus 5 minus zero
Difference in length between 2 diagonal sides	plus 5 minus zero

The quality standard for warpage, scratching, contamination and workmanship are all tested according to the ASTM (American Standard of Test Method). Specifically D4802– 94. Category A-1.Finish 3. Type UVA.

Tolerance on shrinkage in width and length post thermoforming is 2 – 2.5%

Production facilities are all subject to ISO 9001.2008 – certificate available upon request.

Acrycast complies with ULS (underwriter's laboratories Standard) UL 94 – HB.

2.6 Acrycast® Technical Information
Pallet Specification

Size : 2050 x 3050mm

Thickness	Size	Quantity per pallet		
3	2.05 x 3.05	40		
4	2.05 x 3.05	30		
5	2.05 x 3.05	24		
6	2.05 x 3.05	20		
8	2.05 x 3.05	15		
10	2.05 x 3.05	12		
12	2.05 x 3.05	10		
15	2.00 x 3.00	8		
20	2.00 x 3.00	6		
25	2.00 x 3.00	5		

Size : 1220 x 2440 mm

Thickness	Size	Quantity per pallet
2	1.22 x 2.44	125
3	1.22 x 2.44	85
4	1.22 x 2.44	65
5	1.22 x 2.44	51
6	1.22 x 2.44	42
8	1.22 x 2.44	32
10	1.22 x 2.44	25
12	1.22 x 2.44	21
15	1.22 x 2.44	17
20	1.22 x 2.44	13
25	1.22 x 2.44	10
30	1.22 x 2.44	8
40	1.22 x 2.44	6
50	1.22 x 2.44	5

2.6 Acrycast® Technical Information
Ten Year Limited Warranty

Amari Plastics hereby warrants that for a period of ten years Acrycast clear acrylic sheet will comply in service with the performance specifications as follows:

Light Transmission
The light transmission for clear Acrycast sheet will not be less than 85%. The light transmission is measured by standard method of ASTM D 1003 on cleaned, unscratched and polished flat sample taken from the exposed sheet.

Modulus of Elasticity
The modulus of elasticity of Acrycast sheet will not be less than 2500 MPa as delivered and for ten years after delivery. The testing method is in accordance with ISO 178 measured on specimens removed from the exposed installation.

Tensile Strength
The tensile strength of Acrycast sheet will not be less than 50 MPa as delivered and for ten years after delivery. The testing method is in accordance with ISO R 527 measured on specimens removed from the exposed installation.

CONDITIONS OF WARRANTY

1. The warranty period is ten years from the original date of purchase of Acrycast clear acrylic sheet.

2. The warranty covers the quality of the sheets as delivered and in accordance with the following conditions:

   2.1 The sheets should be stored, handled, transported, used, cleaned, machined and installed in accordance with the manufacturer's instructions.

   2.2 The warranty does not cover any failure attributable to causes not usually associated with the normal use of Acrycast acrylic sheet and in particular does not apply to harm caused by chemical agent, cleaning fluids, unsuitable sealants or decorative material.

   2.3 The warranty does not cover the sheets that have been exposed to corrosive materials and environments.

   2.4 This warranty does not cover the sheets that have been exposed to artificial light sources emitting intense amounts of UVB or higher energy radiation.

3. Amari Plastics shall have no liability under any circumstances for the cost of removal of defective sheets, or the installation of the replacement sheets, or for any consequential or incidental damage, loss or expenses of any kind whatsoever, including but not limited to injury to persons or property, loss of the use of the products, loss of profits, loss of good will, claims by clients of the customer (initial purchaser).

4. This warranty does not cover damage or failure by misuse, abuse or negligence, nor does it apply to sheets upon which repairs or alterations have been made other than by an authorised representative of Amari Plastics.

5. In order to make claim under this warranty, the customer shall produce a written notice accompanied by the original invoice from a seller showing the name and address, date of purchase, full product type and quantity to Amari Plastics within thirty days of discovery such defect or failure. Amari Plastics must be permitted without delay to inspect the defect and its potential causes on site or to have another party to do so on Amari Plastics' behalf.

6. In case all term and other conditions hereof are fulfilled in such that the customer has a valid claim, Amari Plastics will replace the defective sheets product ex work (plant). If the equivalent replacement material is no longer manufactured or supplied, the customer will receive a refund of the original purchase price. No other or further rights or claims of any kind shall be available hereunder.

Amari Plastics plc
Holmes House, 24-30 Baker St, Weybridge, Surrey KT13 8AU
Tel: 01932 835000 **Fax:** 01932 835002

2.6 Acrycast® Technical Information
Material Safety

General Information	
Trade Name	Acrycast
Chemical Name	Acrylic Polymer based on Methyl Methacrylate
Company Name	Amari Plastics plc
Emergency Telephone No	01932 835015
Telephone No. for Information	01932 835000
Date MSDS prepared	March 2007
MSDS review date	March 2010

1 Composition information on ingredients	
Product Description	A high molecular weight acrylic sheet used in a wide range of applications. Polymethyl methacrylate : greater than 90%
CAS No:	009011-14-7
Hazardous ingredient(s)	Not classified as hazardous ingredient(s)

2 Hazards Identification	
Under normal conditions of handling and use, this product is not expected to create any unusual industrial hazards. Care should be taken when thermoforming to ensure that the product is not exposed to temperature exceeding 200°C.	
Primary Route Exposure	
Eye contact	No hazard expected in normal use. Possible slight mechanical irritation by fine particles when machining product.
Skin contact	Material can cause cuts when using cut sheets.
Inhalation	No hazard expected in normal use. Possible slight mechanical irritation by fine particles when machining product.
Ingestion	No hazard expected in normal use

2.6 Acrycast® Technical Information
Material Safety (contd)

7 Exposure controls/personal protection	
Provide adequate ventilation, including appropriate local extraction if dusts, fumes or vapors are likely to be evolved. Consideration should be given to the work procedures involved and the potential extent of exposure as they may determine whether a higher level of protection is required. Local extraction close to the cutting head must be used when laser cutting. Where suitable engineering controls are not fitted or are inadequate, wear suitable protective equipment. The following information is given as general guidance.	
Respiratory protection	In case of dust formation when machining wear dust mask
Engineering control (ventilation)	Local exhaust should be used when machining. If use operations generate dust, use adequate ventilation.
Eye protection	Wear eye/face protection. Safety spectacles/goggles/full face shield.
Hand protection	Sharp edgesmay cause cuts. Wear suitable gloves against mechanical risks.
Other protective equipment	Wear suitable protective clothing.

8 Physical and chemical properties	
Form	sheet
Appearance	clear colorless sheet
Odour	odourless
pH (value)	Not applicable
Boiling point (°C)	Not applicable
Auto ignition temperature (°C)	above 400°C
Explosive properties	Not explosive
Oxidising properties	Not Oxidising
Vapour pressure (mm Hg)	Not applicable
Vapour density (air = 1)	Not applicable
Specific gravity (water = 1)	1.19
Solubility in water	insoluble
Partition coefficient	Not applicable
Decomposition temperature (°C)	Will not decompose below 200°C.
Freezing point (°C)	Not applicable
Softening point (°C)	above 100°C
Viscosity (dynamic)	not applicable

2.6 Acrycast® Technical Information
Material Safety (contd)

9 Stability and reactivity	
Stability	No decomposition if stored and applied as directed
Incompatibility with other materials	None reasonably foreseeable
Hazardous Polymerisation	No hazardous reactions known
Hazardous decomposition products	In case of thermal decomposition, combustible vapors are formed, which are irritating to eyes and respiratory system, mainly consisting of: methylmethacrylate
Condition to avoid	This product is chemically stable

10 Toxicological information

The product has not been tested toxicological ly. When handled and used as directed the product will not cause hazardous effects to health according to studies on similar products and practical experience.

11 Ecological information

This environmental hazards assessment is based on information available on similar products.

Environmental Fate and Distribution	Medium tonnage material used in partially contained systems. Solid with low volatility. The product is essentially insoluble in water. The product has low potential for bioaccumulation. The product has low mobility in soil. Heavy metal based pigments will not leach from waste material.
Persistence and Degradation	The product is non-biodegradable in soil. There is no evidence of degradation in soil and water.
Effect on Effluent Treatment	Unlike to have an effect on effluent treatment systems. The material is essentially insoluble in water and can therefore be separated from aqueous medium by sedimentation and filtration processes at an effluent treatment plant.

12 Disposal considerations

Disposal should be in accordance with local, state or nation legislation. Incineration may be used to recover energy value. Bury on an authorised landfill site or incinerate under approved controlled conditions, using incinerators suitable for the disposal of noxious chemical waste. Large quantities of waste may be recoverable. Contact supplier for specialised advice. Acrycast ® can be recycled using the Amari Recycling Initiative.

2.6 Acrycast® Technical Information
Material Safety (contd)

13 Transport information

Not classified as dangerous for transport.

14 Regulatory information

Not classified as dangerous for Supply/Use.

EC Classification: Under the classification, Packaging and Labelling of Dangerous Substances Regs, 1984, this material is not dangerous for supply or conveyance.

15 Other information

This data sheet was prepared in accordance with Directive 2001/581EC.

For other technical information, contact the address in Section 1.

Amari Plastics plc does not recommend this product for use in applications involving long-term contact with body tissues.

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge, accurate and reliable as to the date complied. However, no guarantee or warranty is made as to its accuracy, reliability and/or completeness. It is the user's responsibility to satisfy him as to the fitness or suitability of the product for the intended particular purpose or us. All risks of the use of the product are therefore assumed by the user. Appropriate warnings and safe handling procedures should be provided to handlers and users. Amari Plastics plc accepts no liability for loss or damage resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

2.6 Acrycast® Technical Information
Mechanical Properties

Overview. Tests conducted at 23°C and a RH of 55%

Mechanical properties	Acrycast®	Unit	Test Standard
Density p	1.19	g/cm2	ISO R1183
Impact strength acU (Charpy)	15	kl/m2	ISO 179/1 fu
Notched impact strength aIN (Izod)	1.4	kl/m2	ISO R180/1A
Tensile strength 23°C	69	MPa	ISO R527-2/1B/5 DIN 53 455
Elongation at break eB	4.2	%	ISO R527-2/1B/5
Nominal elongation at break e1B	4	%	ISO R527-2/1B/50 DIN 53 455
Flexural strength obB, Standard test specimen (80 x 10 x 4 mm3)	120	N/mm2	DIN 53 452
Modulus of elasticity E_t (short-term value)	3300	MPa	ISO R527-2/1B/1
Min. cold bending radius	330 x thickness	_	_
Dynamic shear modulus G at approx. 10 Hz	1700	MPa	ISO 537
Indentation hardness H961/30	175	N/MM2	ISO 2039-1 DIN 53 456
Abrasion resistance in Taber abrader test (100 rev; 5.4 N; CS-10F)	20...30	% Haze	ISO 9352
Coefficient of friction u a) plastic/plastic b) plastic/steel c) steel/plastic	0.8 0.5 0.45	-	_
Transmittance tD65	92	%	DIN 5036, Part 3
Total energy transmittance g	85	%	DIN EN 410
Absorption in the visible range	< 0.05	%	-
Refractive index n20	1.491	-	ISO 489
Compression strength	124	MPa	D695
Impact strength	0.4	Feet lbs/inch	D256
Barcol hardness	49	-	D2583

2.6 Acrycast® Technical Information
Electrical Properties

Electrical properties	Acrycast®	Unit	Test Standard
Volume resistivity r_D	$>10^{15}$	ohm - cm	DIN VDE 0303, Part 3
Surface resisitivity R_{OA}	$5 . 10^{13}$	ohm	DIN VDE 0303, Part 3
Dielectric strength E_d (1mm specimen thickness)	~30	kV/mm	DIN VDE 0303, Part 2
Dielectric constant e at 50 Hz at 0.1 MHz	3.6 2.7	- -	DIN VDE 3030, Part 4
Dissipation factor tan d at 50 Hz at 0.1 MHz	0.06 0.02	- -	DIN VDE 0303, Part 4
Tracking CTI-Value	600	-	DIN VDE 0303, Part 1
Behaviour towards water			
Water absorption (24 hrs, 23°C) from dry state; Specimen 60 x 60 x 2mm³	41	mg	ISO 62, Method 1
Max. weight gain during immersion	2.1	%	ISO 62, Method 1
Permeability to water vapour N_2 O_2 CO_2 air	$2.3 \cdot 10^{-10}$ $4.5 \cdot 10^{-15}$ $2.0 \cdot 10^{-14}$ $1.1 \cdot 10^{-13}$ $8.3 \cdot 10^{-15}$	$\frac{g\ cm}{cm^2\ h\ Pa}$	-

2.6 Acrycast® Technical Information
Thermal Properties

Thermal properties	Acrycast®	Unit	Test Standard
Coefficient of linear thermal expansion a for 0....50°C	$7 \cdot 10^{-5}$ (=0.07)	1/K (mm/m°C)	DIN 53752-A
Possible expansion due to heat and moisture	5	mm/m	-
Thermal conductivity λ	0.19	W/mK	DIN 52612
U-value for thickness 1mm 3mm 5mm 10mm	 5.8 5.6 5.3 4.4	W/m^2K	DIN 4701
Specific heat c	1.47	J/g K	-
Forming temperature	170-190	1°C	-
Max surface temperature (IR radiator)	200	°C	-
Max permanent service temperature	80	°C	-
Reverse forming temperature	>80;>80;>90	°C	-
Ignition temperature	425	°C	DIN 51794
Smoke gas volume	very little	-	DIN 4102
Smoke gas toxicity	non	-	DIN 53436
Smoke gas corrosiveness	non	-	-
Class	B 2, normally flammable Class 3 TP (b) M4	- - - -	DIN 4102 BS 476, Part 7 + 6 BS 2782, Method 508A NF P 92 501 + 92 505
Vicat softening temperature	115	°C	ISO 306, Method B 50
Heat deflection temperature	99	°C	ISO 75
Flammability	30.5	mm per min.	D635

2.6 Acrycast® Technical Information
Chemical Resistance

Acrycast generally has a good resistance to water, alkaline agents, aqueous solutions of inorganic matter and even some diluted acids. Acrycast will absorb small amounts of water – this is not an issue unless you are then heating or forming the product as the quick release of the moisture can cause blistering. It is important that you store Acrycast according to the specified conditions (see general information section).

Please find below a table showing a list of chemicals that Acrycast has been tested against – clearly these tests have been done in the laboratory in controlled conditions and any minor variation can cause a change in the results. Therefore to ensure compatibility please test the products prior to production.

Chemical	Performance	Chemical	Performance
Acetone	0	Ammonia Liquid	0
Acetic Acid 10%	10	Ammonia Solution	5
Acetic Acid 100%	0	Ammonia Chloride	10
Water	10	Benzene	0
Hydrogen Peroxide 10%	10	Diesel	10
Aluminium Sulphate	10	Nitric Acid 10%	10
Chloroform	0	Nitric Acid 100%	0
Chromic Acid 10%	5	Lubricating Oil	5
Citric Acid 10%	10	Liquid Parafin	10
Hydrochloric Acid	10	Ozone	10
Sodium Hydroxide	10	Phosphoric Acid 10%	10
Formaldehyde - 40% in water	10	Chlorine in water 2%	5
Ethyl Alcohol 10%	10	Sodium Hypochlorite 10%	10
Ethyl Alcohol 100%	0	Potassium Chlorate (saturated)	10
Cellulose Diluted	0	Sulphuric Acid 10%	10
Formic Acid	5	Sulphuric Acid 100%	0
Glycerol	10	Methanol	0
Petroleum Ether	10	Isopropanol	5
Lactic Acid 10%	10	Xylene	0

Key
0 = Not resistant – it dissolves, attacks, damages the Acrycast so it loses its strength, clarity etc.

5 = Partial Resistance – there might be some slight staining, crazing or some swelling of the Acrycast. It will however retain its integral strength.

10 = Resistant – after sustained contact there may be a minimal amount of staining on the surface of the Acrycast.

2.7 Acrycast® Conversion

Acrycast® is a general purpose material that can be worked with and converted by many different processes. Detailed below is some information on the different processes and some recommendations for use – however all equipment performs differently and we would strongly recommend that you test the suitability of the products with a sample piece – available from your local Amari Plastics branch – before entering production.

Sawing
Acrycast® can be sawn with wall saws, band saws, jig saws and CNC saws. For best results the flat bed computerised CNC saw is recommended. The blade technology is also a key component of the result and we would recommend blades with medium size teeth that are alternately bevelled. Your local Amari branch will happily discuss with you the optimum blade speed settings and feed speeds should you need guidance.

All cutting of Acrycast® should be done with well maintained and clean blades – anything that causes a notch in the material imparts a weakness and can cause breakage when under stress. Most conventional woodwork tools will work with Acrycast, however the better the equipment used the better the results; therefore diamond tipped blades are recommended to give the best possible edge for all cutting.

Routing
Acrycast® can be routed in much the same way that wood is; using either fixed head, moving heads or portable routers, Acrycast can be worked at the same speeds as wood. For best results and reductions in swarf the routing is best done with a little moisture present and you must ensure that the router head is kept burr free.

We would recommend that you use a specific acrylic router head of approximately 5mm diameter with a spiral upcut – this should give a longer lasting super fine finish.

Laser Cutting
Acrycast® can be converted using a laser cutter. For large POS / POP displays that are technically complex this is the best way to produce shapes / designs etc. All thicknesses of acrylic sheets can be cut in this manner but we recommend that above 15mm you test the product and fine tune the laser to achieve the best results. Please be aware that glueing or fixing with double sided tapes directly on to a laser cut edge may cause stress in the sheet and the product may have to be annealed first.

Fixing
Acrycast® can be drilled, screwed or tapped. Drilling should be done with wood twist drills – not masonry. Take care to drill the hole as centrally as possible and ensure that the Acrycast is supported as much as possible with a piece of timber to prevent cracking. If drilling a deep hole in to thick Acrycast sheets ensure that the swarf build up is regularly cleared from the drill heads.

Acrycast® can have standard taps and dies used on it to cut screw threads.

2.7 Acrycast® Conversion (contd)

Bending
Acrycast® can easily be bent in straight lines using the traditional hot wire method. A current is passed thr ough a piece of wire and then brought in to contac t with the acrylic. Once it has reached its softening point the acrylic can be folded in to the des ired shape – for best results it sh ould be held in a jig until it has cooled and set. This process can be used for sheets up to 6mm thick: for 8mm upwards we recommend double sided hea ting.

Thermoforming
Acrycast® is suitable for thermoforming, however you should always check with your local Amari Plastics s ervice ce ntre, that the PE film on the sheets is a thermoformable grade. Please ensure that the Ac rycast® sheets are heated evenly across the whole sheet and that the service temperature of 165°c to 17 0-190°C is reac hed. Acry ca st® will form well under most conditions, however the cycle times will vary depending on thickness, the surrounding temperature a nd also the type of mou ld used. For best results with Acrycast ® please heat to service temperatures and then mould using a mechanical form. Once moulded please allow to cool below 70°c before moving and then the sheet will retain its moulded form.

Presentation
To achieve the best results for your clients, Acry cast® fabricated items should be cleaned and finished to remove saw marks, scratching and dirt. Polishe d edges can be achieved by many different methods – the most common are the use of wet a nd dry sandpape r, alternating and cleaning until the desired effect is ac hieved or flame po lishing. Flame poli shing is a very quick and highly effective way of achieving a high gloss edge – however it can be very stressful on the Acrycast and therefore should only be done by experienced fabricators who can achieve the desired effect within the correct time constraints, so as to not ignite the acrylic or craze the material.

Mechanical polishing is also possible with either buffing or diamond polishing machines. With both processes care must be taken to get the right c ombination of speed and quality so that overheating does not take place. Both these proc esses induce less stress than those discussed abo ve.

2.8 Acrycast® General Information

Masking Films

Product	Type	Grade	Prime surface		Second surface	
			Thickness	Markings	Thickness	Markings
Acrycast						
Less than 10mm	PE	NG	70um	White with purple print	70um	White plain
10mm to 25mm	PE	NG	130um	White with purple print	130um	White plain
Blocks	PE	NG	130um	White with purple print	130um	White plain
Single sided satin	PP	ST	70um	White Plain	70um	White with purple print
Polar Range	PP	ST	70um	White - Acrycast labels	70um	White - Acrycast labels

Acrycast® is protected on both surfaces by a masking film. This film is designed to protect the sheets during transportation, handling, conversion and against minor physical damage. The masking film should be left in place until the sign or fabricated items are completed and installed as it offers excellent protection against damage during the various processing methods you may employ.

Acrycast® uses different types of masking for different products but they primarily fall in to two types – PE film – low density Polyethylene or - PP film – low density Polypropylene. Both these films can be fully recycled providing they are carefully separated and stored away from other plastics.

Acrycast® take care to select the best combination of films, thicknesses and adhesion to suit the products and the applications. Commonly the products will be supplied with an SK film on both sides – (self adhesive film) which has a low adhesive coat weight on it to allow it to be reused after initially being removed.

Please note masking films will not protect the product from any significant physical attack or accidental damage.

If you are looking to screen print or Flat Bed UV digitally print Acrycast ® sheets please use the second surface (Plain masking film) as the prime surface. This will ensure that no 'ghosting issues' occur when printing the sheets. If you are doing double sided work please ensure that the sheets you use are freshly purchased, not stacked under any heavy weights and the sheets are wiped down before usage – this does not guarantee that 'ghosting' will not occur but it will minimise any risk.

2.8 Acrycast® General Information (contd)

Storage

The masking films used on Acrycast ® are not UV stabilised and when subjected to UV light they degrade quite quickly – rapidly becoming brittle and only able to be removed in small pieces. To avoid this issue please do not store Acrycast ® sheets outside and when stored internally please avoid strong, direct sunlight. The Acrycast ® sheets themselves are not affected by the light (see warranty statement). When storing inside please ensure that you store the Acrycast ® sheets in the optimum manner so that the masking film provides protection for the maximum amount of time whilst still allowing for easy removal when your work is completed.

We would recommend the following storage conditions as being optimal:-

Storage Temperature	No extremes of temperature Optimal Temperature 15 - 20°C	59 – 68°F
Environment	Dry, No dampness, low humidity. Store Indoors	No direct moisture
Light	No direct Sunlight. No UV lamps light. Preferably subdued lighting.	
Resistance	Avoid contact with chemicals, grease, Oils and solvents.	

If possible we recommend that you store the Acrycast ® sheets flat on pallets wherever possible. If the sheets are stored in this manner and according to the conditions described above the product will remain flat. Please ensure that you do not stock the pallets more than 4 high, stack on an even surface and keep them indoors.
If sheets are stored on their side in racks or leaning against a wall it cannot be guaranteed that the sheets will remain flat.

Cleaning

To clean Acrycast ® sheets wash with plenty of non abrasive soap or detergent and water. A soft, abrasive free cloth, sponge or chamois should be used to gently massage dirty areas of the sheet until stain / dirt is removed. Then dry with a clean damp chamois or lint free cloth. Grease and Oil stains may be removed with Kerosene or aliphatic naphtha. Do not use solvents such as acetone, benzene, carbon tetrachloride, dry cleaning fluid or thinners as they will attack the Acrycast ® surface causing crazing and stress. Furthermore do not use window cleaning products or kitchen / bathroom scouring products as they will scratch the surface.
Note – cleaning does not need to be done until after fabrication has taken place.
If you wish you can wax the product to enhance the gloss level. If no scratches are visible on the Acrycast ® sheet coat the surface with a good grade commercial wax. The wax should be applied in a thin, even coat and brought to a shine by rubbing lightly with a dry, soft cloth such as cotton flannel or flannelette. Not only will this improve the gloss level but it helps fill any minor scratches.

Polishing

Minor scratches on Acrycast ® sheet can be removed or reduced by applying a plastic polish. To apply, simply use a small pad of soft cotton flannel dampened with water. Rub the sheet along the length of the scratches with a constant back and forth motion or a circular motion if this is easier. Avoid excess rubbing on any one spot. Several applications may be necessary, but most minor scratches can be reduced and clarity improved in a very short period of time.

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