

**NEW**  
INTRODUCTORY  
**RANGE**

# marpet-afs

## aPET FLAT SHEET

Marpet-a FS aPET is the new range of high optical grade amorphous polyester sheets from Brett Martin. Combining exceptional quality, excellent transparency, impact strength, chemical resistance and fire performance, Marpet-a FS is ideal for applications which require its high performance characteristics and processability. Its ability to cost effectively machine, cold bend and print lends Marpet-a FS particularly well to fabrication of items for the visual communications sector including point of purchase display stands, poster glazing and illuminated signage. Marpet-a may be thermoformed and hot line bent within a controlled temperature range to avoid crystallisation. Due to its superior strength and resistance to breakage Marpet-a FS is also equally suitable for safety equipment such as machine guards and visors.

**IDEAL**  
FOR FLAT & COLD  
BENDING APPLICATIONS

### OPTIONS

- **Thicknesses:** 2, 3 & 4mm
- **Tints:** Clear

### MAIN BENEFITS

- High optical grade material with 90% transparency
- Superior chemical resistance against cleaning agents, mineral oils and solvents
- High impact strength and resistance to breakage even at sub-zero temperatures
- Good scratch and scuff resistance
- Temperature range -20°C to + 60°C
- Suitable for cold bending
- Can be thermoformed and hot line bent
- Good printability
- Excellent fire performance
- Environmentally friendly
- 100% recyclable

### APPLICATIONS

#### Print & Display

- Point of Purchase Displays
- Shop Fittings
- Poster Covers
- Cold Food Storage

#### Fabrication

- Machine Guards
- Protective Screens
- Visors



# marpet-a<sup>fs</sup>

## TYPICAL PROPERTIES OF Marpet-a aPET (AMORPHOUS POLYETHYLENE TEREPHTHALATE) RESIN

PROPERTY		TEST METHOD	VALUE
Physical Properties	Density	ISO 1133	1.33g/cm <sup>3</sup>
	Moisture absorption (24 hrs @ 23°C)	ISO 62-4	<0.2%
	Water solubility	DIN 53122	Insoluble
Mechanical Properties	Tensile Strength at Yield	ISO 527	56MPa
	Flexural Strength	ISO 527	82MPa
	Elastic Modulus	ISO 527	2420MPa
	Impact Resistance (Charpy test, un-notched)	ISO 179	No breakage
	Rockwell Hardness (R-Scale)	-	111
Optical Properties	Refractive Index	ASTM D542	1.578%
Thermal Properties	Vicat Softening Temperature @ 1kg load	ISO 306(B)	75°C
	Thermal expansion coefficient	ISO 75-2	0.06mm/m°C
	Service Temperature Range	-	-20 to +60°C
Electrical Properties	Dielectric Strength	IEC 60243-1	60kV/mm
	Surface Resistivity	IEC 60093	10 <sup>16</sup> Ω



### PRODUCT RANGE

SHEET THICKNESS (mm)	SHEET WIDTHS (mm)
2, 3 & 4mm	1220 & 2050

### CHEMICAL RESISTANCE

Marpet-a FS aPET sheets are resistant to most acids, alcohols, salts, plastifying agents and hydro carbons (aliphatic compounds limited). The material also resists chemical attack of acid rain, diesel engine fumes and air with some salinity. Aromatic compounds can cause reactions.

### WEATHERING

Marpet-a FS aPET sheets are not UV protected. However the material does possess a limited resistance to weathering and it is possible to use in exterior applications where there is limited exposure to direct sunlight or where sunlight is of a low intensity.

### CUTTING/SAWING

Sheets up to 3mm may be cut by guillotine. For thicknesses over 3mm standard hand saws may be used to cut Marpet-a FS sheets although circular saws with a carbide tipped blade produce the cleanest cuts. To avoid melting and cracking the sheet the blade should be sharp and the material clamped and the guide close to prevent vibration.

### DIE STAMPING

Marpet-a FS can be die-cut with a sharpened steel blade up to 2 mm. The blade must completely traverse the sheet to avoid notches. Ensure adequate allowance for thermal expansion.

### CLEANING

Marpet-a FS sheets may be cleaned with a solution of warm water with a little neutral soap and rinsed with water using a soft cloth or sponge.

### EDGE FINISHING

Following cutting, a good edge finish can be obtained using a suitable polishing paste in conjunction with a medium density Reiter wheel, followed by a soft fabric polishing wheel without paste. Flame polishing the edge is also possible with a standard butane torch or a hot nitrogen welding torch. Ensure the torch is not too close to the edge to avoid crystallised-whitening or over softening the material. Minor scratches to the sheet surface may be successfully removed by careful application of a butane torch or hot nitrogen welding torch.

### ADHESIVES

Recommended adhesives include cyanoacrylates, and, two part component polyurethanes and epoxies. Refer to the adhesive manufacturers' guidelines for suitability of the adhesive to both the application and environment in which it will be used. For the surfaces to be joined adequately they must fit and be smooth and unpolished. Make allowance for adhesives which contact whilst drying. It is not possible to use adhesives with solvents due to chemical resistance.

### DRILLING

When drilling Marpet-a FS it is recommended to use drill bits designed for plastics. To avoid overheating, it's best to use compressed air or wide and highly polished flutes. To prevent vibration, which may result in cracking, it's recommended to clamp the part securely.

### THERMOFORMING

Marpet-a FS may be thermoformed at temperatures between 100°C and 160°C. At these temperatures the sheets may crystallise resulting in whitening. Short

heating times and rapid cooling of the moulded part is recommended to preserve the transparency of the material. Where possible sheets should be heated from both sides to minimise heating time and help prevent crystallisation. Very high temperatures can reduce the impact strength of the material. Mould temperature must not exceed 60°C. Pre drying is not required.

### BENDING

#### Cold Bending

Marpet-a FS sheets of less than 3mm can be cold bent using presses or bending machines. Excessive speed during the process may cause the sheet to stress and break.

#### Hot Bending

Marpet-a FS sheets may be heat bent using heating elements in a linear manner such as incandescent wire bending equipment. The sheet requires local heating to 100°C. Once the ideal temperature is reached the sheet is removed from the heating element placed in a mould or clamped into position until the material rigidifies. Excessive temperatures may cause crystallised whitening in the heated area.

### PRINTING

Marpet-a FS can be printed with standard screen and digital printers in conjunction with inks that are suitable for use with thermoplastic co-polyesters. The recommendations of the printing ink manufacturers should be followed closely. Application temperature should not exceed 60°C. It's recommended to protect the ink from scratches by applying a light coat of clear lacquer. Prior to printing ALWAYS clean the surface with a soft cloth and use ionized air to clear dust.



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