

# Vivak® GP B

## Opaque Copolyester Sheet



### Benefits:

- excellent thermoforming properties
- predrying not necessary
- good impact strength

**Vivak® GP B** is an opaque coloured sheet made of thermo-plastic polyester. It has been specifically developed for thermoforming applications. Due to its properties, the material is suitable for a large range of industrial applications. **Vivak® GP B** can be rapidly thermoformed at low energy consumption, short production cycles, extreme degrees of stretching and accurate mold surface reproduction, without predrying. **Vivak® GP B** is available in several colours and with several textures.

**Vivak® GP B** is particularly suited for vacuum formed parts in a broad range of applications, such as:

- material handling (pallets, trays, containers ...)
- machine housings and shields

### Applications:

	Test Conditions	Typical Values	Unit	Test Method
<b>PHYSICAL</b> Density Moisture absorption	saturated at 23°C/50% RF saturated in water of 23°C	1.27 0.2 0.6	g/cm <sup>3</sup> % %	ISO 1183-1 ISO 62-4 ISO 62-1
<b>MECHANICAL</b> Tensile stress Elongation Tensile strength Elongation Elastic modulus Limiting flexural stress Impact strength	at yield at yield at break  Charpy, unnotched Charpy, notched Izod, notched	> 45 4 > 45 > 35 2,020 approx. 80 no break approx. 7 approx. 6	MPa % MPa % MPa MPa kJ/m <sup>2</sup> kJ/m <sup>2</sup>	ISO 527-2/1B/50 ISO 527-2/1B/50 ISO 527-2/1B/50 ISO 527-2/1B/50 ISO 527-2/1B/1 ISO 178 ISO 179/1fU ISO 179/1 eA ISO 180/1A
<b>THERMAL</b> Vicat softening temperature Thermal conductivity Coeff. of linear thermal expansion Heat deflection temperature under load	Method B50  Method A: 1.81 MPa Method B: 0.45 MPa	80 0.2 0.05 63 70	°C W/m °C mm/m°C °C °C	ISO 306 DIN 52612 DIN 53752-A ISO 75-2 ISO 75-2
<b>ELECTRICAL</b> Dielectric strength Volume resistivity Surface resistivity Dielectric constant  Dissipation factor	at 10 <sup>3</sup> Hz at 10 <sup>6</sup> Hz at 10 <sup>3</sup> Hz at 10 <sup>6</sup> Hz	16.1 > 10 <sup>15</sup> > 10 <sup>16</sup> 2.6 2.4 0.005 0.02	kV/mm Ohm·cm Ohm	IEC 60243-1 IEC 60093 IEC 60093 IEC 60250 IEC 60250 IEC 60250 IEC 60250

The mechanical properties were measured on sheets of 4 mm thickness.

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Exolon Group S-Line, the standard product line, represents a range of certified quality products which offer the reliable solution for most applications.

**Availability: Vivak® GP B** is available with 4 different surface finishings and in following sizes:

	surfacing finishing	extrusion width	thickness
Vivak® GP B	glossy/glossy	1,250, 2,050 mm	1 – 12 mm
Vivak® GP B C	patterned/glossy	1,250 mm	2 – 6 mm
Vivak® UV B	glossy/glossy, UV-protected	1250, 2,050 mm	2-12 mm

### Permanent service temperature:

Max. service temperature in air: 65 °C

Min. service temperature: -40 °C

### Colours:

On request

### Fire Rating <sup>(\*)</sup>:

Country	Standard	Rating	thickness	Colour
Europe	EN13501-1	B-S1, d0	2 – 4 mm	grey 704
Europe	EN13501-1	B-S2, d0	2 – 6 mm	all colours

### Glow wire flammability test <sup>(\*)</sup>:

	Test method	1 mm	3 mm
GWFI (flammability index)	IEC 60695-2-12	850 °C	850 °C
GWIT (ignition temperature)	IEC 60695-2-13	875 °C	725 °C

(\*)Fire certificates are limited in time, always check if the mentioned certificate is still valid.

### Machining

Due to its excellent properties **Vivak® GP B** sheet is easy to machine with usual tools. Sawing, drilling, routing, shearing and punching can be applied. Always use sharp tools that are suited for machining plastics.

### Thermoforming

Owing to their excellent flow and mold surface reproduction, **Vivak® GP B** sheets can be thermoformed at low temperatures without predrying. Due to its low specific heat capacity, **Vivak® GP B** requires little energy for thermoforming. Predrying is not required. **Vivak® GP B** sheet can be vacuum formed at the temperatures of 130 – 165°C. Use temperature controlled aluminium or steel moulds for excellent formings. Small series or prototypes can be formed on moulds without temperature control. A good release of the moulding can be obtained by providing a draft angle of 4 to 6°.

### Assembling

Parts made of **Vivak® GP B** can be assembled with other plastics, metals and other materials by means of glueing, welding and several mechanical fastening techniques.

### Painting and printing

**Vivak® GP B** sheets can be painted or printed with several standard techniques. Except for cleaning, no preliminary surface treatment is necessary. To avoid influence on the impact strength of **Vivak® GP B** sheets, paints must be suitable for use on thermoplastic polyester. Suitable products are available from several manufactures of inks and paints, whose instructions must be carefully followed.

### Chemical resistance

**Vivak® GP B** sheets have good resistance against mineral acids up to high concentrations, many organic acids, oxidising and reducing agents, mineral and animal greases and oil, neutral and acid salt solutions, saturated aliphatic and cycloaliphatic hydrocarbons and alcohols (except methyl alcohol). They are partially soluble in aromatic hydrocarbons and soluble in many halogenated hydrocarbons (methylene chloride and ethylene di-chloride are good solvents). Strong alkaline substances such as ammonia and amines decompose it. **Vivak® GP B** sheets have good resistance against most detergent based household cleaners.



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