



Product data sheet, June 2010

# Vivak®

## Solid copolyester sheet



### Your benefits:

- excellent thermoformability
- good impact strength
- suitable for food-contact applications
- good fire rating

Solid **Vivak®** sheets are made of thermoplastic copolyester. They offer high impact strength, a good fire rating, are suitable for food-contact applications and fully recyclable.

**Vivak® clear 099** is a clear transparent sheet with extremely high light transmission and high gloss.

**Vivak® bronze 850** sheets are bronze-colored and transparent.

**Vivak® fluo** is a luminous transparent sheet with high gloss and extremely bright edges.

### Applications:

Ideal fields of application for **Vivak®** are: P.O.S. (displays, price tag holders, shelf partitions), direction signs, promotional symbols, food containers and trays, pharmaceutical applications, flat and formed machine coverings, partitions.

**Vivak®** can be rapidly thermoformed at low energy consumption, short production cycles, extreme degrees of stretching and accurate mold surface reproduction, without predrying. The sheets are easy to screen print, 3D-print and machine.

Test Conditions		Typical Values	Unit	Test Method
<b>PHYSICAL</b>				
Density		1.27	g/cm <sup>3</sup>	ISO 1183-1
Moisture absorption	after storage in standard climate 23 °C/50 % r. F.	0.2	%	ISO 62-4
	after storage in water at 23 °C until saturation	0.6	%	ISO 62-1
Refractive index	20 °C	1.567	–	ISO 489
<b>MECHANICAL</b>				
Tensile stress at yield		> 45	MPa	ISO 527-2/1B/50
Elongation at yield		4	%	ISO 527-2/1B/50
Tensile strength		> 45	MPa	ISO 527-2/1B/50
Elongation at break		> 35	%	ISO 527-2/1B/50
Elastic modulus		2,020	MPa	ISO 527-2/1B/1
Limiting flexural stress		ca. 80	MPa	ISO 178
Impact strength	Charpy, unnotched	no break	kJ/m <sup>2</sup>	ISO 179/1fU
	Charpy, notched	ca. 7	kJ/m <sup>2</sup>	ISO 179/1eA
	Izod notched	ca. 6	kJ/m <sup>2</sup>	ISO 180/1A
<b>THERMAL</b>				
Vicat softening temperature	Method B50	80	°C	ISO 306
Thermal conductivity		0.2	W/m K	DIN 52612
Coeff. of linear thermal expansion		0.05	mm/m K	DIN 53752-A
Heat deflection temperature under load	Method A: 1.80 MPa	63	°C	ISO 75-2
	Method B: 0.45 MPa	70	°C	ISO 75-2
<b>ELECTRICAL</b>				
Dielectric strength		16.1	kV/mm	IEC 60243-1
Volume resistivity		10 <sup>15</sup>	Ohm-cm	IEC 60093
Surface resistivity		10 <sup>16</sup>	Ohm	IEC 60093
Dielectric constant	at 10 <sup>3</sup> Hz	2.6		IEC 60250
	at 10 <sup>6</sup> Hz	2.4		IEC 60250
Dissipation factor	at 10 <sup>3</sup> Hz	0.005		IEC 60250
	at 10 <sup>6</sup> Hz	0.02		IEC 60250

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

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**S-line** Bayer Sheet Europe S-line, the standard product line, represents a range of certified quality products which offer the reliable solution for most applications.

### Light Transmission:

Test method according to DIN 5036. The stated thicknesses are not all available as standard. Please ask us for more information. The stated values are typical values only.

Light transmission in %	0,5	0,75	1	1,5	2	2,5	3	4	5	6	8	10	12	15
Vivak® clear 099	90	90	90	90	89	89	88	88	87	86	85	84	80	80
Vivak® bronze 850			80	72	68		60	50	45	36	27		15	
Vivak® fluo green 680							80							
Vivak® fluo red 330							28							
Vivak® fluo orange 250							52							

### Available sizes:

**Vivak® clear 099** is available in thicknesses of 0.5-15 mm.  
Our standard sizes are the dimensions:  
2,050 x 1,250 mm and 3,050 x 2,050 mm.

Other colors are on request, as for example:

Vivak® bronze 850  
Vivak® fluo green 680  
Vivak® fluo red 330  
Vivak® fluo orange 250

### Thermoforming:

Owing to their excellent flow and mold surface reproduction, **Vivak®** sheets can be thermoformed at low temperatures without predrying. Because of its low specific heat capacity, **Vivak®** requires little energy for thermoforming.

### Permanent Service Temperature:

The maximum permanent service temperature without load is approx. 65 °C.

Please contact us, if you need other dimensions.

**Fire Rating (\*):** Oxygen index (LOI) 26 % ISO 4589

Country	Standard	Rating	Thickness	Color
Europe	EN13501-1	B-s1, d0 B-s2, d0	2-8 mm 2-6 mm	clear 099 all colors
UK	BS 476 Part 7	Class 1Y	2 & 15 mm	clear 099
Germany	DIN 4102 DIN 54837/5510-2	B1 (indoors) S4 / SR2 / ST2	0.5-12 mm 2-6 mm	all colors clear 099
Italy	CSE RF 2/75/A CSE RF 3/77	Classe 1 (wall)	2-8 mm	all colors
France	NFP 92-501 & 505 NFP 16-101 & 102	M2 F1	2-5 mm 0.5-15 mm	clear 099 clear 099

**Glow wire flammability index, IEC 60695-2-12, in °C (\*)**

	0.5	0.75	1	1.5	2	2.5	3	4
Vivak® clear 099	960	960	900	960	960	960	960	960
Vivak® bronze 850					960		960	

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

Bayer Sheet Europe also produces multiwall sheets in polycarbonate (Makrolon® multi UV), and solid sheets in polycarbonate (Makrolon® GP) and in polyester (Vivak® and Axpert®). For more information, take a look at [www.bayersheeteurope.com](http://www.bayersheeteurope.com).

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