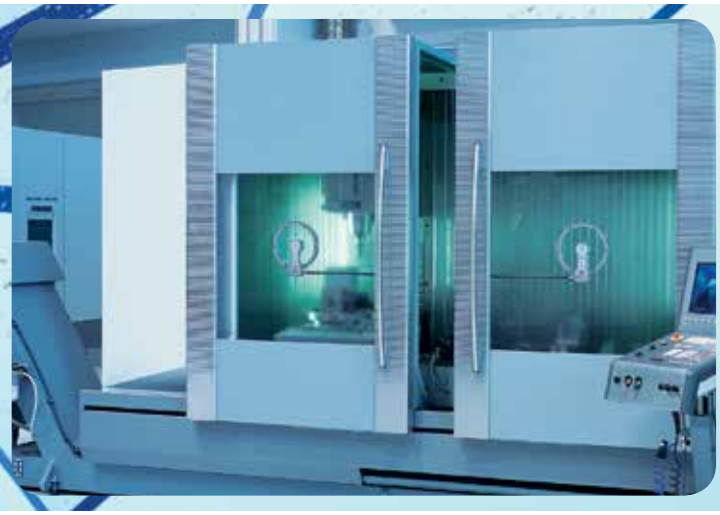
DOTMAR

ENGINEERING PLASTIC PRODUCTS

Makrolon® Polycarbonate (PC)



PREMIUM QUALITY POLYCARBONATE

BAYER makrolon®

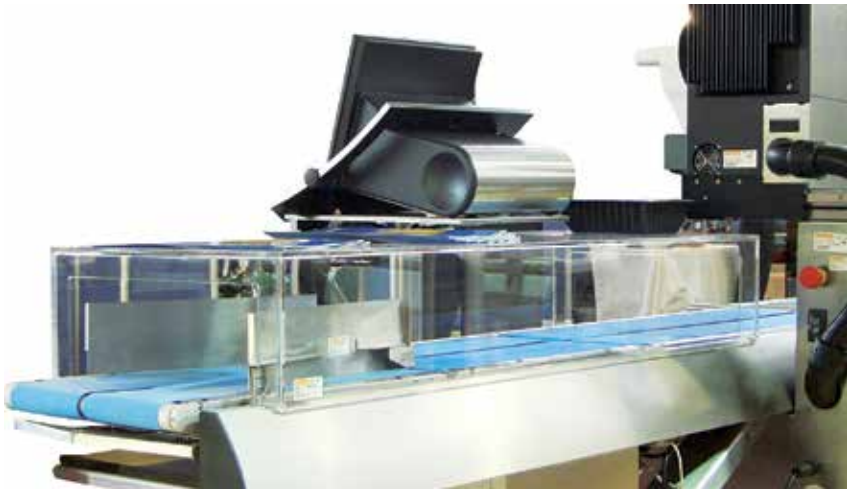
DOTMAR
ENGINEERING PLASTIC PRODUCTS

Makrolon® Polycarbonate
Versatile Transparent Plastic Sheet.

POLYCARBONATE - Premium Quality Polycarbonate Rod, Sheet and Tube is an engineering **SEE THROUGH** material. Tough, easy to handle and easily fabricated to almost any shape. **Polycarbonate** is unique for its impact strength and shock load resistance.

Polycarbonate is light weight and well proven in situations that require a see through product in Precision Engineering, Process Machine Guarding, Architectural Glazing, General Manufacturing and Industrial applications.

- Extreme impact strength
- Excellent resistance to high & low temperatures
- OH&S compliant
- Excellent transparency
- Light weight & easy to process
- Local stock / Warranties



The Makrolon® trademark stands for a comprehensive range of first-class polycarbonate sheets of constant high quality, based on the use of superior raw materials, an extensive quality management system and production processes certified to EN ISO 9001.

Makrolon® solid sheets are a product range of polycarbonate sheets with high transparency and extremely high impact strength that are suitable for many different industrial applications.

Makrolon® is a registered trademark of Bayer AG

DELIVERY PROGRAMS

Makrolon® Polycarbonate (PC) Sheet Product Range

Makrolon ® Series	Sheet Width	Thickness - mm	Colour	Applications
Makrolon® GP	1220 x 2440	1 - 12mm	Clear	General purpose, interior applications, machine guards
	1830 x 2440	2 - 12mm		
Makrolon® UV2	1220 x 2440	1 - 12mm	Clear	Two sided UV coat, signage, covered walkways, bus shelters, sky lights & exterior applications
	1830 x 2440	2 - 12mm		
	2050 x 3050	2 - 9.5mm		
Makrolon® AR	1220 x 2440	4.5, 6, 9.5 & 12mm	Clear	Two sided abrasion resistant - High traffic areas, security applications and mass transport
	1525 x 2440	6mm		
	1830 x 3050	4.5, 6, 9.5 &12mm		

Gauges, sizes & colours available subject to conditions.
Please refer to your local Dotmar office for conditions and stock availability.

PRODUCT RANGE

Makrolon® Polycarbonate GP

General purpose polycarbonate sheet, rod and tube for high performance engineering applications that require clarity and high impact resistance.

Makrolon® Polycarbonate UV2

Manufactured with two sided UV protective coatings, Polycarbonate UV2 offers excellent weathering properties, whilst maintaining high clarity and impact resistance.

Makrolon® Polycarbonate AR

Polycarbonate Abrasion Resistant (AR) is an impact resistant polycarbonate sheet manufactured with a unique hard coat surface which is applied to both sides, Polycarbonate AR Sheets provide excellent scratch, chemical and graffiti resistant properties.

Polycarbonate Sheet can be cold formed using standard metal folding equipment.

Sheet Thicknes	Bend Radius	Max Degree of Bend
1 to 2 mm	2 mm	90^0
3 to 4 mm	3 mm	90^0
5 to 6 mm	4 mm	60^0

Sound Reduction - Polycarbonate products display exceptional sound reduction properties and even performs better than glass

Panel Thickness mm	STC Rating	
	Polycarbonate Sheet	Float Glass
3.0	25	23
4.5	29	26
6.0	31	27
9.5	34	30

Built To Perform

- Machine guards
- Safety & vandal resistant glazing
- Sight glasses
- Safety visors
- Roof structures
- Correctional facilities
- Security applications
- Electrical components

PHYSICAL PROPERTIES OF POLYCARBONATE

(INDICATIVE VALUES°)

Note: 1 g/cm³ = 1,000 kg/m³; 1N/mm² = 1 Mpa; 1 kV/mm = 1 MV/m.

PROPERTIES			TEST METHODS DIN/*VDE	TEST METHODS ASTM *UL	UNITS	POLYCARBONATE	APPLICATIONS
DENSITY			53479	D 792	g/cm³	1.20	**SAFETY**
Water absorption (1):							• Safety Barriers
• after 24/96 h immersion in water of 23°C			53495	D 570	mg	13/23	• Machine Guards
• at saturation in air 23°C / 50% RH			-	-	%	0.15	• Machine Enclosures
• at saturation in water of 23°C			-	-	%	0.35	
THERMAL PROPERTIES							**VIEWING PANELS**
Melting Point			-	-	°C	150	• Noise Control Enclosures
Glass transition temperature							
Thermal Conductivity at 23°C			-	-	°C	-	• Switch gear Cabinets
Coefficient of linear thermal expansion:							• Scientific Instrumentation
• average value between 23° and 60°C			-	-	m/(m.K)	$65x10^{-6}$	
• average value between 23° and 100°C			-	-	m/(m.K)	$65x10^{-6}$	• Fork Lifts
Deflection temperature under flexural load:							• Duct Work Sight Panels
• method A: 1.8 N/mm²			53461	D 648	°C	135	• Earth Moving Machinery
Maximum allowable service temperature in air:							
• for short periods (3)			-	-	°C	135	
• continuously: for 5,000/20,000 h (4)			-	-	°C	125/115	
Minimum service temperature (5)			-	-	°C	-60	
Flammability (6)							
• according to ASTM ("Oxygen Index")			-	D 2863	%	26	
• according to UL 94 (3mm thickness)			-	*94	-	V-2	
MECHANICAL PROPERTIES at 23°C (1) (7)							**GLAZING**
Tensile test (8):							• Bus Shelters
• tensile stress at yield/tensile strength at break (9)		+	53455	D 638M	N/mm²	} 65/-	• Sports Stadiums
		++	53455	D 638M	N/mm²	}	• Vandal Protection
• elongation at break (9)		+	53455	D 638M	%	} >50	• Signage
		++	53455	D 638M	%	}	
• modulus of elasticity (10)		+	53457	D 638M	N/mm²	} 2300	
		++	53457	D 638M	N/mm²	}	
Compression test (11):							
• 1%-offset yield strength (10)		+	53454	D695	N/mm2	68	
Tensile creep test (8):							
• stress to produce 1% elongation in 1,000 h (1/1,000)		+	53444	D 2990	N/mm²	} 17	
		++	53444	D 2990	N/mm²	}	
Impact strength	- Charpy (12)	+	53453	-	kJ/m²	no break	
Notched impact strength:	- Charpy	+	53453	-	kJ/m²	} 20	
		++	53453	-	kJ/m²	}	
	- Izod	+	-	D 256	kJ/m² ; J/m	} 9;90	
		++	-	D 256	kJ/m²; J/m	}	
Ball indentation hardness H 358/30 or H 961/30 (13)		+	53456	-	N/mm²	120	
Rockwell hardness (13)		+	-	D 785	-	M75	
ELECTRICAL PROPERTIES at 23°C (7)							**MACHINED PARTS**
Dielectric strength (14)		+	53481	D 149	kV/mm	} 28	• Precision Engineering Components
		++	*0303 T2	D 149	kV/mm	}	
Volume resistivity		+	53482/	D 257	Ohm.cm	} 10^{17}	• Insulating Parts for Electrical Engineering
		++	*0303 T3	D 257	Ohm.cm	}	
Surface resistivity		+	53482/	D 257	Ohm	} 10^{18}	• Level Indicators
		++	*0303 T3	D 257	Ohm	}	• Medical and Pharmaceutical Devices
Dielectric constant:	- at 50Hz	+	53483/	D 150	-	} 3	
		++	*0303 T4	D 150	-	}	
	- at 1 Mhz	+	53483/	D 150	-	} 3	• Components in Contact With Food
		++	*0303 T4	D 150	-	}	
Dissipation factor tan δ:	- at 50 Hz	+	53483/	D 150	-	} 0.001	
		++	*0303 T4	D 150	-	}	
	- at 1 Mhz	+	53483/	D 150	-	} 0.008	
		++	*0303 T4	D 150	-	}	
Resistance to tracking		+	IEC 112/	D 150	-	} CTI 350	
		++	*0303 T1	D 150	-	}	

The suggestions and data presented here are based on information we believe to be accurate and reliable. They are given in good faith, but without guarantee, as the conditions and methods of use of our products are beyond our control. Each user should make his own tests to determine the suitability of our materials and suggestions before adopting them on a commercial scale. This publication is not to be taken as a license to operate under, or recommendation to infringe upon, any patents. Detailed technical support information is available to assist in all aspects to engineer better applications and correct usage.