T-BOXX

Status: 2018/04/12

- **small components in view at all times**
- **comfortable to carry**
- **lightweight, tough and shock-resistant**
- **flexible by the removal of individual inset boxes**

1. Dimensions

External dimensions (width x depth x height)
440 x 350 x 80 mm

Internal dimensions (w x d x h)
437 x 301 x 60 mm

2. Empty weight

1.6 kg

4. Materials*

Lid:	PC (Lexan 161R)
Bottom:	PP (Sabic DS 56M10)
Locking latch:	PP (PP+33% GF)
Carrying handle:	ABS (G. Purpose ABS Ploylac PA727)

*further detailed information can be found attached

5. Load capacity

10.4 kg

4. Temperature range

The T-BOXX is usable in a range of -30°C to +80°C.

Revision 2.0 10/2014

5. Attachement

Lid

Lexan* Resin 161R
Europe-Africa-Middle East: COMMERCIAL
LEXAN 161R is a medium viscosity multi purpose grade and contains a release agent to ensure easy processing. LEXAN 161R is available in transparent, translucent and opaque colours.

TYPICAL PROPERTIES [1] TYPICAL VALUE UNIT STANDARD
MECHANICAL
Taber Abrasion, CS-17, 1 kg 10 mg/1000cy SABIC Method
Tensile Stress, yield, 50 mm/min 63 MPa ISO 527
Tensile Stress, break, 50 mm/min 70 MPa ISO 527
Tensile Strain, yield, 50 mm/min 6 % ISO 527
Tensile Strain, break, 50 mm/min 120 % ISO 527
Tensile Modulus, 1 mm/min 2350 MPa ISO 527
Flexural Stress, yield, 2 mm/min 90 MPa ISO 178
Flexural Modulus, 2 mm/min 2300 MPa ISO 178
Hardness, H358/30 95 MPa ISO 2039-1
IMPACT
Izod Impact, unnotched 80*10*3 +23°C NB kJ/m² ISO 180/1U
Izod Impact, unnotched 80*10*3 -30°C NB kJ/m² ISO 180/1U
Izod Impact, notched 80*10*3 +23°C 70 kJ/m² ISO 180/1A
Izod Impact, notched 80*10*3 -30°C 12 kJ/m² ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm 73 kJ/m² ISO 179/1eA
Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm 14 kJ/m² ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80*10*3 sp=62mm NB kJ/m² ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80*10*3 sp=62mm NB kJ/m² ISO 179/1eU
Charpy Impact, notched, 23°C 35 kJ/m² ISO 179/2C
THERMAL
Thermal Conductivity 0.2 W/m-°C ISO 8302
CTE, 23°C to 80°C, flow 7.E-05 1/°C ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C PASSES - IEC 60695-10-2

LID

PC-Lexan 161R

TYPICAL PROPERTIES [1]	TYPICAL VALUE	UNIT	STANDARD
THERMAL			
Vicat Softening Temp, Rate B/50	143	°C	ISO 306
Vicat Softening Temp, Rate B/120	145	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	138	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	127	°C	ISO 75/Ae
Relative Temp Index, Elec	130	°C	UL 746B
Relative Temp Index, Mech w/impact	125	°C	UL 746B
Relative Temp Index, Mech w/o impact	125	°C	UL 746B
PHYSICAL			
Mold Shrinkage on Tensile Bar, flow (2)	0.5 - 0.7	%	SABIC Method
Density	1.2	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.35	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.15	%	ISO 62
Melt Volume Rate, MVR at 300°C/1.2 kg	9	cm³/10 min	ISO 1133
OPTICAL			
Light Transmission	88 - 90	%	ASTM D 1003
Haze	<0.8	%	ASTM D 1003
Refractive Index	1.586		ISO 489
ELECTRICAL			
Volume Resistivity	>1.E+15	Ohm-cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ohm	IEC 60093
Dielectric Strength, in oil, 0.8 mm	35	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 1.6 mm	27	kV/mm	IEC 60243-1
Dielectric Strength, in oil, 3.2 mm	17	kV/mm	IEC 60243-1
Relative Permittivity, 50/60 Hz	2.7		IEC 60250
Relative Permittivity, 1 MHz	2.7		IEC 60250
Dissipation Factor, 50/60 Hz	0.001		IEC 60250
Dissipation Factor, 1 MHz	0.01		IEC 60250
Comparative Tracking Index	225	V	IEC 60112
FLAME CHARACTERISTICS			
UL Recognized, 94HB Flame Class Rating (3)	1.1	mm	UL 94
UL Recognized, 94HB Flame Class Rating 2nd value (3)	3	mm	UL 94
Glow Wire Flammability Index	850	°C, passes at 1 mm	IEC 60695-2-12
Oxygen Index (LOI)	25	%	ISO 4589
Injection Molding			
Drying Temperature	120	°C	
Drying Time	2 - 4	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	280 - 310	°C	
Nozzle Temperature	270 - 290	°C	
Front - Zone 3 Temperature	280 - 310	°C	
Middle - Zone 2 Temperature	270 - 290	°C	
Rear - Zone 1 Temperature	260 - 280	°C	
Hopper Temperature	60 - 80	°C	
Mold Temperature	80 - 110	°C	

1) Typical values only. Variations within normal tolerances are possible for variose colours.All values are measured at least after 48 hours storage at 230C/50% relative humidity.
All properties, expect the melt volume rate are measured on injection moulded samples.
All samples are prepared according to ISO 294.
2) Only typical data for material selection purpose.Not to be used for part or tool design.
3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
4) Own measurement according to UL.

Locking latch

PP H GF 833
Polycompound
Polypropylene homopolymer, 33% fibre glass
Properties Unit Norm Conditions value
Density g/ml ISO 1183 23°C 1,13
Melt flow index g/10 min ISO 1133 230/2,16 7 ± 1
Processing shrinkage % ISO 294-4 lengthwise
crossways-
MECHANICAL
Tensile strength MPa ISO 527 50mm/min 86.2
Elongation at rupture % ISO 527 50mm/min 3.1
Pull-E-Module MPa ISO 527 1mm/min 6.700
CHARPY-impact resistance kJ/m² ISO
179/1eU 23°C 51,2
CHARPY-notch impact resistance kJ/m² ISO
179/1eA 23°C 10,2
THERMAL
Heat deflexion temperature.
HDT/A °C ISO 75 1,8 MPa -
ELECTRICAL
Specific
Surface resistivity Ω ISO 93 Platte 1mm -
Specific
Contact resistance Ω x cm ISO 93 Platte 1mm -
Specific
Dielectric kV/mm DIN VDE
303 T2 -

Bottom

SABIC® PP 56M10
PP block copolymer for Injection moulding
Description:
This grade has a high impact resistance, even at low temperatures, and a high stiffness. It is used in a variety of applications e.g. containers and crates & boxes. It is also used in automotive components, like for example battery cases.
Health, Safety and Food Contact regulations:
Material Safety Data Sheets (MSDS) and Product Safety declarations are available on our Internet site http://www.SABIC-europe.com
Properties Unit (Si) Values Test methods
Typical values Revision 20090604
Polymer properties
Melt flow rate (MFR) ISO 1133
at 230 °C and 2.16 kg g/10 min **6.2**
Density kg/m³ **905** ISO 1183
Mechanical properties
Tensile test ISO 527
stress at yield MPa **32**
stress at break MPa **30**
strain at break % **600**
Flexural test ASTM D 790
Flexural modulus MPa **1550**
Izod impact notched ISO 180/4A
at 23 °C kJ/m² **10**
at 0 °C kJ/m² **5.0**
at -20 °C kJ/m² **4.0**
Charpy impact notched ISO 179
at 23 °C kJ/m² **10**
at 0 °C kJ/m² **5.0**
at -20 °C kJ/m² **3.0**
Hardness Shore D - **68** ISO 868
Thermal properties
Heat deflection temperature
at 1.80 MPa (HDT/A) °C **53** ISO 75/A
at 0.45 MPa (HDT/B) °C **89** ISO 75/B
Vicat softening temperature
at 10 N (VST/A) °C **147** ISO 306/A
at 50 N (VST/B) °C **77** ISO 306/B
Quality:
SABIC Europe is fully certified in accordance with the internationally accepted quality standard ISO9001.
Storage and handling:
Avoid prolonged storage in open sunlight, high temperatures (<50 °C) and /or high humidity as this could well speed up alteration and consequently loss of quality of the material and /or its packaging. Keep material completely dry for good processing.
Disclaimer. The information contained herein may include typical properties of our products or their typical performances when used in certain typical applications. Actual properties of our products, in particular when used in conjunction with any third party material(s) or for any non-typical applications, may differ from typical properties.
It is the customer's responsibility to inspect and test our product(s) in order to satisfy itself as to the suitability of the product(s) for its and its customers particular purposes. The customer is responsible for the appropriate, safe and legal use, processing and handling of all product(s) purchased from us. Nothing herein is intended to be nor shall it constitute a warranty whatsoever, in particular, warranty of merchantability or fitness for a particular purpose.
SABIC Europe as referred to herein means any legal entity belonging to the SABIC Europe group of companies.

Carrying handle

General Purpose ABS Ploylac PA727

Typical Characteristics

Properties	Test Method	Test Condition	Unit	PA727
Tensile Strenght	ASTM D638	1/8“ 6mm/min	Kg/cm² (lb/in²)	485 (6870)
Tensile Elongation	ASTM D638	1/8“ 6mm/min	%	20
Flexural Strength	ASTM D790	1/4“ 2,8mm/min	Kg/cm² (lb/in²)	780 (11000)
Flexural Modulus	ASTM D790	1/4“ 2,8mm/min	Kg/cm² (lb/in²)	27000 (380000)
Izod Impact Strength (Notched)	ASTM D256	1/4“ 23 °C 1/8“ 23 °C	Kg/cm² (lb/in²) Kg/cm² (lb/in²)	23 (4,2) 26 (4,8)
Melt Flow Index	ASTM D1238	200°C 5Kg	g/10min.	1,8
Hardness	ASTM 785	1/2“	R Scale	110
Specigic Gravity	ASTM D792	23°C	-	1,04
Vicat Softening Temp	ASTM 1525	1/8“ 50°C / hr	°C (°F)	105 (221)
HDT Annealed (85°C)X8hr Unannwaled	ASTM D648	1/4“ 120°C / hr	°C (°F) °C (°F)	99 (210) 88 (190)
Flammability	UL 94	-	-	1/16“HB

The data are intended as a general guide only and do not necessarily represent results that may be obtained elsewhere.

Properties	Norm	Test conditions	Guide value	Unit
Density	ASTM D792	-	0.96	g/cm²
Durability	ASTM D2240	After 3 Sec.	-	ShoreA
Durability	ASTM D2240	After 15 Sec.	66	ShoreA
Tensile strength	ASTM D412-C	-	5.5	MPa
Elongation at rupture	ASTM D412-C	-	500	%
Module at 100%	ASTM D412-C	-	2.2	MPa
Module at 300%	ASTM D412-C	-	3.8	MPa
Compression set	ASTM D395-B	23°C; 72h	-	%
Compression set	ASTM D395-B	70°C; 22h	38	%
Compression set	ASTM D395-B	100°C; 22h	44	%
Tension set	ASTM D412	23°C; 100%	-	%
Tear growth resistance	ASTM D624-C	-	22	N/mm²
Abrasion resistance	DIN 53516	-	-	mm³