Base material

The base material which we use consists of highly shock-resistant polystyrol (PS) with a butadiene finish, in different thicknesses. This high-grade material is particularly suited to out milling and bending technology and has the following electrical, chemical and thermal characteristics. It is important to note that polystyrol is fully recyclable.

Substances	**25 °C**	**50 °C**
Alcohols	R	R
Beer	R	R
Fats	R	R
Beverages	R	R
Spices	R	R
Glycosides (poly-glycosides)	R	R
Halogens (dry)	R	PR
Ketones	X	X
Fuels	PR	X
Alkalis	R	R
Comestibles	R	R
Inorganic salt solutions	R	R
Medication	R	R
Mineral oil	R	R
Oil essences	X	X
Vegetable oils	B	B
Salts	B	B
Acids/organic (weak)	B	B
Acids/organic (strong)	B	B
Acids/inorganic (weak)	B	B
Acids/inorganic (strong)	B	PR
Acids/inorganic (oxidising)	X	X
Water	B	B
R=Resistant PR=Partially resistant X=Non-resistant		

Pure white RW-2-9010		similar to : RAL 9010
Light grey GH-2-1710		similar to : RAL 7035
Grey white GW-2-0150		similar to : RAL 9002
Ergo grey GE-2-1690		similar to : RAL 7044
Dark grey GD-2-1661		similar to : RAL 7000
Gelb GB-2-1524		similar to : RAL 1018
Blue BL-2-5427		similar to : RAL 5002
Turquoise TK-2-6466		similar to : RAL 5018
Red RT-2-0681		similar to : RAL 3020
Charcoal AT-1-1050		similar to : RAL 7016
Black SW-1-2170		similar to : RAL 9004
Granito GR-2-8082		
White aliminium		similar to : RAL 9006

Material thicknesses	2-10 mm (depending on colour)
Heat resistance & stability	up to 80° C
Shock resistance	50 KV/cm
Surface stability	$>10^{13}$ ohms
Volume resistance	$> 10^{16}$ ohms
Heating wire testing	960° C
Shore hardness D (at 20°C)	80
Moisture absorption	0.06%

Material specifications of semi-finished goods which we use:

						SB			
		Testing guideline				Owl	Emp	Enl	2710
	℃	DIN	ASTM	ISO	Unit	825 E	622	R 450 E	matt
Density		53,479-A		1183	g/cm²	1.03	1.03	1.04	1.05
Mechanical characteristics									
Yield stress (v=50mm/min)		53455	D-638-M	527-2	Mpa	20	26	23	21
Elongation at tear		53455	D-638-M	527	%			70	
Elongation at rupture (v=5mm/min)		53455		527	%				>15
Modulus of elasticity (1mm/min)		53457	D-638-M	527-2	Mpa	1500	1800	1500	1500
Flectional modulus (v=2mm/min)				178	Mpa			1550	
Flectional resistance (v=1 or 5mm/min)		53452	D-790-M	178	Mpa		42	27	32
Indentation hardness		53456		2039	Mpa		80	70	65
Viscosity									
Charpy impact resistance	+23			179/1eU	kJ/m²		140		
Charpy impact resistance	-30			179/1eU	kJ/m²		90		>60
Charpy notched bar impact value	+23			179/1eA	kJ/m²		10		5.5
Charpy notched bar impact value	-30			179/1eA	kJ/m²				
Izod impact resistance	+23			180/1U	kJ/m²		90		100
Izod impact resistance	-30			180/1U	kJ/m²				60
Izod notched bar impact value	+23		D-258	180/1A	kJ/m²	9	10	8.5	9
Izod notched bar impact value	-30			180/1A	kJ/m²			6	7
Thermal characteristics									
Vicat distortion temperature VST/B/50		53460	D-1525-B	306	℃			92	89
Vicat A/50		53460	D-1525-B	306	℃	97		100	85
Thermal coefficient of expansion	23-55	53752			10²/K				1
Flectional temperature under strain (1.8 Mpa)				75-2	℃				
Heat resistance & stability temp. (1.8 Mpa)		53461	D-648	75-2	℃		80	86	78

max. operating temperature		Experimental values			℃			70
Characteristic values of behaviour in fire								
at 1.6 mm thickness		UL-94-Standard			Level		HB	HB	HB
at 2.5 mm thickness		UL-94-Standard			Level		HB		HB
Heating wire test at 3.0 mm thickness		IKC 695			℃				
Sheen								
at 60° angle		internal methods			%			40	22

Base material: Polystyrol (polystyrol "PS" with butadiene)	**(SI unit)**	**TYPE A Standard**	**TYPE B highly inflammable/ self-extinguishing, for black only**	**Type C highly inflammable/ self-extinguishing, dyeable**
Mechanical characteristics (ASTM)	gr/cm³	PS (highly shock resistant)	SDR 101	HSF - 13N
Gross density (DIN 53 479)	%	1.04	1.06	1.21
Moisture absorption (after 24 hours)	%	0.06	0.10	0.15
Shrinkage (after processing temperature)	N/mm²	0.50	0.50	0.40
Tensile strength at 6.3 mm/min (DIN 53/453)	%	25	36	25
Elongation at tear at 6.3 mm/min (DIN 53/455)	--	50	40	26
Shore hardness D (at 20℃)	--	80	78	74
Rockwell hardness R (ASTM D785/A)		R 100	R 108	R 100
Thermal characteristics				
Melt-flow index (DIN 53 735)	gr/10 min	< 10 (MFI 200/5)	< 16 (MFI 200/5)	< 8 (MFI 200/5)
Heat conductance	W/mK	0.16	0.18	0.18
Processing temperature (drilling, milling etc.)	℃	-10/+60	-10/+60	-10/+60
Vicat fusion point, plast.B (DIN 53 460)	℃	81	88	92
Flame resistant characteristics				
as per ASTM D 635	cm/min		self-ext.	self-ext.
as per UL 94 (1.6 / 3.0 mm)	--	HB	RU94-V2	RU94-V0
Heating wire test (thickness of 1.6 and	℃	960℃	960℃	960℃

above)				
Limiting Oxygen Index (ASTM D 2863)	--	25	24	25.25
permitted ambient temperature	℃	-30/+100	-30/+100	-30/+110
Electrical characteristics				
Volume resistance (DIN 53 481)	KV/cm	50	44	42
Surface stability (DIN 53 482)	ohms	$> 10^{13}$	5×10^{13}	5×10^{13}
Special volume resistance (DIN 53 482)	ohms/cm	$> 10^{16}$	5 x 1015	5 x 1015