### CATALOG

**3B PROFILES** lighting diffusers

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### LIGHT YOUR BUSINESS 77

### **COMPANY**

**Profiles** is a leading player operating in multiple international markets thanks to its innovative knowledge in the extrusion of plastic profiles. **3B Profiles** leverages more than forty years' experience in the design and production of equipment for the extrusion of plastic and thermoplastic materials.

ur products address different sectors, ranging from lighting and furniture to refrigeration, automotive and building industry.

e manufacture profiles tailored to our customer needs with high attention to details.





Our experienced staff supports our customers in every design phase leveraging top notch technologies and methods:

- Technical consultations
- Schematic design
- Material selection
- Design and production of equipment
- Testing and Prototyping
- Production

### **OUR COMPANY INCLUDES A PRODUCTION DEPARTMENT** WITH SEVERAL EXTRUSION LINES

a **technical office** dedicated to consultancy and project development using CAD/CAM technologies, a *department dedicated to* the equipment realization and test, a **warehouse** for the storage of raw materials, administrative offices and a **showroom**.



### **PROFILES** FOR LED LIGHTING



Profiles is specialized J in crafting lighting diffusers precisely tailored to meet our customers' unique requirements.



ur dedicated focus remains on delivering meticulous attention to detail, ensuring highquality finishes, and utilizing premium materials to optimize light distribution.

ur profiles can be produced with a large selection of colors, dimensions, custom shapes, surfaces and finishes. e prioritize solutions that avoid common led spotlighting issues and address concerns such as thermal conductivity and self-extinguishing properties, **alongside obtaining green certifications**.

Send us a drawing, and we will assist you in developing your diffuser!





### 

### **FINISHES**

Among our new generation products, we emphasize the ones that leverage constant research and innovation such as:



### SPECIAL LED

Profiles in Polycarbonate made up by a **special opal finish that masks the LED spot sources**, thus enabling homogeneous distribution of light across the whole surface.

### TRANSPARENT TO IR

This finish is made of a special Polycarbonate that allows IR emission, which is particularly useful in applications such as security and surveillance and mechanical automation. The infrared rays pass through the colored plastic ensuring the proper functioning of the light sensors housed inside.



### MICROPRISM

Profiles produced with a microprismatic surface in Polycarbonate or PMMA. This surface enables profiles to maintain unchanged its Transparency, Light Transmission, Haze and Clarity, while reducing glare effects and ensuring maximum visual comfort.



### GREY & WHITE (G&W) BLACK & WHITE (B&W)

These profiles are produced with a special Polycarbonate. When the LEDs sources are off, the profiles show elegant monochromatic coupling between extruded plastic and lamp body, perfectly matching dark walls and objects. When LEDs are on, the extruded profiles "magically" scatter white light as conventional opal diffusers. These profiles are available grey or black, and either smooth or matt.



### MULTICOLOR

Multicolor profiles can be manufactured with different opal tones or colors (diffusing or colored) within the same product. They can be produced with matt or glossy finishes and offer a high level of light transmission. They are exceptional for creating inneutring lighting

creating innovative lighting effects.





### SPECIAL TEXTURE

We create incision and engravings surface treatments to create designs and patterns on the surfaces of your profiles.

Multiple finishes are available, such as striped, hexagonal, rhomboid or custom patterns. There is no limit to creativity.

### **LINEAR PROFILES**

ur profiles are used to light several environments, including, houses, offices, shops, warehouses, vehicles, greenhouses and more. We produce products in Polycarbonate and PMMA using raw materials from leading suppliers to ensure high quality standards.

ur profiles are produced with a vast selection of shapes, geometries, opal tones, colours and finishes in order to satisfy our customer.





olycarbonate is a versatile material that is extensively used in the extrusion sector thanks to its mechanical properties such as hardness, impact resistance, lightness, transparency and flexibility.

olycarbonate profiles can be coextruded with UV protection to improve performance against deterioration and yellowing due to UV exposure. Yellowing improvement, due to coextrusion with UV protection, is shown in the plot above compared to standard profiles without UV protection.

### **ROLLED-UP PROFILES**

### resent a significant advantage in terms of practicality and functionality.

Crafted with different geometries and widths, they can be rolled into varying lengths of 30/50/100 meters and beyond. This feature not only economizes warehouse space and transport costs, but also allows the creation of diffusers that can extend over long distances, providing an uninterrupted illuminate line.

### **CO-EXTRUDED PROFILE**

o-extruded profiles represent an innovative technique that involves the simultaneous extrusion of multiple colors or materials.

This technology allows for the creation of dynamic and visually appealing lighting solutions utilized across various sectors, including architectural, decorative, and automotive lighting.



### **Profile crafted from 5 co-extrusions:** transparent, light opal, dark opal, white, and satin. These variations afford precise control over light diffusion, resulting in impactful lighting effects.



### **CURVED PROFILES**

ur curved profile is a custom lighting solution for LED components, suitable for those who want to combine aesthetic with high quality plastic profiles. It is an exclusive product manufactured with an innovative technology, developed by 3B Profiles, which enables the profile being extruded already curved, without requiring special treatments (chemicals or heating).

WE CAN ENSURE TOP QUALITY PROFILES WITH PERFECT SHAPES AND RESISTANCE TO BREAKAGE. THESE PROFILES ARE AVAILABLE IN POLYCARBONATE AND PMMA WITH MULTIPLE COLORS, SHAPE, FINISHES SUCH AS THE LINEAR PROFILES. THEY ARE AVAILABLE RECESSED OR PENDANT AND CAN BE ADAPTED TO EXISTING FRAMES.





These profiles can be combined between each other as well as with linear profiles, enabling the creation of exclusive and original shapes. Here are some examples:



### **CIRCLE OF LIGHT**

A perfectly circular profile in a single piece, in which the beginning perfectly matches the end. It can be produced in large diameters to illuminate vast environment.

### COMPOSITIONS WITH LINEAR AND CURVED PROFILES

By combining linear and curved profiles together, it is possible to obtain unique and exclusive shapes of light on ceilings, walls and floors.

### **CREATIVE SHAPES**

Some examples of possible shapes are 'S', 'U' and 'closed'. Lighting draws new contours capable of framing objects and silhouettes.

### OUR LAST ADDITION TO CURVED PROFILES IS THE MICROPRISMATIC SURFACES.

O ur technology also allows the production of curved profiles directly with homogenous microprismatic surfaces, obtaining a quality that cannot be achieved by other production processes (e.g., microprismatic sheets cutting). These profiles respect anti-glare standards and can be integrated in our customers' lighting solutions for e.g., offices, libraries and classrooms.





### **FLAT RINGS**

ur **Flat Ring** are strips produced in Polycarbonate or PMMA. Thanks to our technology, our flat rings are composed of a unique circular extruded piece that is manufactured directly in its final shape. Differently from other techniques in which the rings are obtained by cutting flat sheets, we avoid waste and scrap, while guaranteeing superior quality. Our customer can choose thickness, width, diameter and finishes, such as: transparent, opal, flat, matt and recently also microprismatic.



**UNIQUE FLAT CIRCULAR** EXTRUDED PIECE. NO MORE WASTE AND SCRAP DUE **TO CUTTING OF FLAT SHEETS** 





### **CLOSED SECTION PROFILES**

**In the section profiles are available in a number of shapes, including: squared, rectangular, triangular and rounded**. They are produced with polycarbonate and PMMA and their shapes allow the insertion of LED strips inside without requiring extruded aluminum.







his product line can be produced with a special **Polycarbonate capable of dissipating heat** produced by internal electronic components **due to excellent thermal conductive properties** thus avoiding the need for external aluminum or dissipating tapes.

(see chapter 2.10 Thermally Conductive Profiles)

CLOSED SECTION PROFILES AVAILABLE IN DIFFERENT SHAPES: SQUARE, RECTANGULAR, TRIANGULAR AND ROUNDED





### **LENSES AND OPTICS**

ptics and lenses play a critical role in **shaping** and controlling the light emitted from light sources. They are used to achieve specific beam patterns, control glare and improve lighting system **performance** by directing light where it is needed and minimizing losses and efficiency of light output.

ur lenses can be transparent, opal, coextruded with multiple colors and materials, and they can be used in indoor and outdoor environments.

e provide support in all design phases for custom lenses, including: optical design and simulation, cad design, prototyping and extrusion. (see chapter 5 Study of new optics and design)













### **IP LIGHTING PROFILES**

P lighting profiles are co-extruded with a soft material that acts as an integrated gasket within the diffuser providing effective ip protection against dust and water ingress. Particularly recommended for outdoor applications, including greenhouses and damp environments.

hey can be transparent, opal, co-extruded with multiple colors and UV additive to protect the profiles against deterioration and yellowing.





THESE PROFILES ENSURE An excellent seal against water and dust



### **FLEXIBLE LIGHT PROFILES**

lexiblelightprofilesareproducedwithPVC-freeflexiblematerialsthatdonotcontainvinylchloride.This product line gives designers vast freedom in thechoice of shapes and curvilinear surfaces.

hese profiles can be produced with different opal tones, colored or transparent. The material does not suffer yellowing and guarantees high light diffusion.



FLEXIBILITY HAS NO LIMITS. PVC FREE!







### **GREENHOUSE AND UV LIGHTING PROFILES**

**G** reenhouse lighting profiles play a crucial role for optimizing plant growth in indoor cultivation settings, offering the precise spectrum, intensity, and duration of light to enhance photosynthesis.

**Vlightingprofilestransmitdistinctwavelengths of ultraviolet radiation (UV-A, UV-B, UV-C), impacting living organisms and materials**. They find applications in sterilization, mechanical and medical fields.









### THERMALLY CONDUCTIVE PROFILES

hermally conductive profiles are meticulously crafted using high-performance compounds, boasting exceptional thermal conductivity to effectively disperse the heat generated by the LED strip. This eliminates the requirement for external aluminum, providing several benefits in weight, workability, environmental impact, and overall costs compared to traditional metals.







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### **ELECTRIFIED TRACKS**

ur electrified tracks are manufactured using an innovative technique in which plastic and metal components undergo a simultaneous extrusion process, ensuring a perfect adhesion of the two materials.



hey are manufactured using self-extinguishing UL94 VO polycarbonate and metal strips available in various shapes, colors, and treatments, including anti-oxidant coatings.

> hese tracks serve as electrical conductors, providing power to various components such as

LED lights or other lighting elements. Copper's excellent conductivity and durability make it a preferred material for these purposes, ensuring efficient and reliable electrical connections in lighting applications. These products are ideal for track lighting systems and furniture lighting applications.





### **STRUCTURAL PROFILES AND OTHER APPLICATIONS**

**3B PROFILES PRODUCES PROFILES** IN POLYCARBONATE. PMMA, ABS AND POLYURETHANE FOR A NUMBER OF APPLICATIONS AND AREAS, RANGING FROM ELECTRONICS. AUTOMOTIVE AND SHOPFITTING TO FOOD, PACKAGING AND CONSTRUCTIONS

ccording to our customers' needs and applications, we use materials with different properties, such as antistatic, conductive, flame retardant, food contact material, bio polymers etc.









e realize structural profiles and bars in polycarbonate, transparent or colored and UV protected, which guarante robustness against weathering and yellowing.



Polycarbonate in a wide variety of diameters, colors and finishes. **Thev** can also be produced with metallic colors (e.g., black, grey, brown) to match painted aluminums and to perfectly fit outdoor environment.





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mong these products, we emphasize attention to our sealing modules, which are produced with a method based on a patented technologies, extrusion process (application no. WO2017186883A1). the product. These modules ensure maximum protection of cables, pipes and similar elements from external agents such as fire, water, dust, etc.

ur system offers several technical and productive advantages compared to other existing while guaranteeing superior quality of







### SERVICES

Profiles supports its customers in the whole product development process, starting from technical advice on mould design to final product manufacturing and packaging.

### **1. TECHNICAL AND DESIGN CONSULTING**

e meticulously support our customers in whole product development process, the starting from the product drawing to mould design. We give advice on the most suitable materials according to the final applications and support and technical tips on accessories, e.g., aluminums and components.



### 2. STUDY OF NEW OPTICS DESIGN

e help our customers in all design phases for their lenses by studying the best solutions that strive the balance between appearance and lighting properties. We provide complete documentation for the lighting body with photometric curves.

- We design optics with **software** Zemax OpticStudio, according to best design practices

- We generate and provides

### photometric files (.ldt and .ies)

starting from the structure of the product

- We generate simulations of the light distribution



### **3. 3D PROTOTYPES PRINTING**

e provide a fast prototyping service to create 1:1 scale samples for testing in early design phases.



### **4. PRECISION CUTTING**

e provide high precision cutting for any desired length thanks to our proprietary automated cutting technology, which guarantees high precision and repeatable cutting pattern.





+ + + + + + 50 mm

The drawings below represent only a small selection of our product range and are provided for demonstration purposes to illustrate the dimensions and sections that we offer. Please contact us for more information and to request new samples.











### 5-10 mm LINEAR PROFILES

























PL B19





















10-20 mm



### 10-20 mm LINEAR PROFILES



4,2



28



22,9



9,72









9,75











# LINEAR PROFILES



























60



### 30-40 mm LINEAR PROFILES













40-50 mm LINEAR PROFILES





















PL F16

66,4

2,55

### 50-70 mm PROFILES LINEAR

















### 70-100 mm LINEAR PROFILES





100 < mm



# **CURVED PROFILES**















# **CURVED PROFILES**

## **SECTION PROFILES** CLOSED











10,08













# **CLOSED SECTION PROFILES**



























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27,87



LENSES



### LENSES

### LENSES





BN A5























### TRACKS



### MISCELLANEA

### **1. PRODUCT CARE AND CON-**SERVATION

recommend cleaning the polycarbonate and PMMA profiles with a mild soap using sponges and soft cloths. Avoid contact with alkaline or abrasive detergents, or solvents. Do not rub with brushes, steel wool or other abrasive materials.

### 2. PATENT

itle: SEALING MODULE FOR CABLES OR PIPES AS WELL AS METHOD AND APPARATUS FOR PROVIDING THE SAME Application number: W02017186883A1

### **3. TECHNICAL DATA-SHEETS** POLYCARBONATE

PROPERTIES	TYPICAL VALUES
MECHANICAL	
Tensile Stress, yield, 50 mm/min	65
Tensile Stress, break, 50 mm/min	70
Tensile Strain, yield, 50 mm/min	7
Tensile Strain, break, 50 mm/min	>70
Tensile Modulus, 1 mm/min	2350
Flexural Stress, yield, 2 mm/min	95
Flexural Modulus, 2 mm/min	2300
IMPACT	
Izod Impact, unnotched 80*10*3 +23℃	NB
Izod Impact, unnotched 80*10*3 -30℃	NB
Izod Impact, notched 80*10*3 +23℃	75
Izod Impact, notched 80*10*3 -30℃	55
Charpy 23℃, V-notch Edgew 80*10*3 sp=62mm	70
Charpy -30℃, V-notch Edgew 80*10*3 sp=62mm	50
Charpy 23℃, Unnotch Edgew 80*10*3 sp=62mm	NB
Charpy -30℃, Unnotch Edgew 80*10*3 sp=62mm	NB
THERMAL	
Thermal Conductivity	0.2
CTE, 23℃ to 80℃, flow	7.E-05
Ball Pressure Test, 125℃ +/- 2℃	PASSES
Vicat Softening Temp, Rate B/50	149
Vicat Softening Temp, Rate B/120	150
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	130
PHYSICAL	
Mold Shrinkage, flow, 3.2 mm (5)	0.5 – 0.7
Density	1.2

### UNITS

### TEST METHODS

MPa	ISO 527
MPa	ISO 527
%	ISO 527
%	ISO 527
MPa	ISO 527
MPa	ISO 178
MPa	ISO 178

kJ <i>I</i> m²	ISO 180/1U
kJ /m²	ISO 180/1U
kJ <i>I</i> m²	ISO 180/1A
kJ /m²	ISO 180/1A
kJ <i>I</i> m²	ISO 179/1eA
kJ /m²	ISO 179/1eA
kJ <i>I</i> m²	ISO 179/1eU
kJ /m²	ISO 179/1eU

W/m-℃	ISO 8302
1/°C	ISO 11359-2
-	IEC 60695-10-2
°C	ISO 306
°C	ISO 306
°C	ISO 75/Af

%	SABIC method
g/cm³	ISO 1183



PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Water Absorption, (23℃/sat)	0.35	%	ISO 62
Moisture Absorption (23℃ /50% RH)	0.15	%	ISO 62
Melt Volume Rate, MVR at 300℃/1.2 kg	3	cm³/10 min	ISO 1133
Melt Volume Rate, MVR at 300℃/2.16 kg	5	cm³/10 min	ISO 1133
OPTICAL			
Light Transmission, 2.54 mm	88 – 90	%	ASTMD 1003
FLAME CHARACTERISTICS			
Glow Wire Flammability Index 850℃, passes at	1	mm	IEC 60695-2-12
MULTIWALL SHEET EXTRUSION			
Drying Temperature	120	°C	
Drying Time	2-4	hrs	
Barrel - Zone 1 Temperature	260 – 300	°C	
Barrel - Zone 2 Temperature	260 – 290	°	
Barrel - Zone 3 Temperature	260 – 290	°	
Hopper Temperature	100 – 120	°	
Adapter Temperature	240 - 280	°	
Die Temperature	240 – 300	°C	
Melt Temperature	260 - 300	°C	
Calibrator Temperature	50 – 100	°C	

### POLYCARBONATE VO

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Taber Abrasion, CS-17, 1 kg	9	mg/1000cy	SABIC method
Tensile Stress, yield, 50 mm/min	65	MPa	ISO 527
Tensile Stress, break, 50 mm/min	70	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	7	%	ISO 527
Tensile Strain, break, 50 mm/min	>70	%	ISO 527
Flexural Modulus, 2 mm/min	2350	MPa	ISO 178
IMPACT			
Izod Impact, unnotched 80*10*3 +23°C	NB	kJ/m²	ISO 180/1U
Izod Impact, unnotched 80*10*3 -30°C			
Izod Impact, notched 80*10*3 +23°C			
Izod Impact, notched 80*10*3 -30°C	10	kJ/m²	ISO 180/1A
Charpy 23°C, V-notch Edgew 80*10*3 sp=62mm			
Charpy -30°C, V-notch Edgew 80*10*3 sp=62mm			
Charpy 23°C, Unnotch Edgew 80*10*3 sp=62mm	NB	kJ/m²	ISO 179/1eU
THERMAL			
Thermal Conductivity	0.2	W/m-°C	ISO 8302
Vicat Softening Temp, Rate B/50	155	°C	ISO 306
Vicat Softening Temp, Rate B/120	156	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	148	°C	ISO 75/Be
PHYSICAL			
Mold Shrinkage on Tensile Bar, flow			
Water Absorption, (23°C/sat)	0.32	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.13	%	ISO 62
Melt Volume Rate, MVR at 300°C/1.2 kg	3	cm³/10 min	ISO 1133
OPTICAL			
Light Transmission, 2.54 mm	88		ASTM D 1003
Haze, 2.54 mm			
ELECTRICAL			
			IEC 60093
Surface Resistivity, ROA			IEC 60093
Dielectric Strength, in oil, 3.2 mm			
Dissipation Factor, 50/60 Hz			IEC 60250
Dissipation Factor, 1 MHz			IEC 60250
Relative Permittivity 50/60 Hz			IEC 60250



### FLAME CHARACTERISTICS

FLAME CHARACTERISTICS				
UL Recognized, 94V-0 Flame Class Rating				
			ISO 4589	
MULTIWALL SHEET EXTRUSION				
Drying Temperature				
Drying Time	2 - 4	hrs		
Barrel - Zone 1 Temperature	260 – 300	°C		
Barrel - Zone 2 Temperature	260 – 290	°C		
Barrel - Zone 3 Temperature	260 – 290	°C		
Hopper Temperature	100 – 120	°C		
Adapter Temperature	240 – 280	°C		
Die Temperature	240 – 300	°C		
Melt Temperature	260 – 300	°C		

### PMMA

	Parameter	Unit
Mechanical properties		
Tensile modulus	1 mm/min	MPa
Stress at break	5 mm/min	MPa
Strain at break	5 mm/min	
Charpy impact strength	23°C	kJ/m²
Thermal properties		
Vicat softening temperature	B / 50	°C
Glass transition temperature		
Temp. of deflection under load	0.45 MPa	
Temp. of deflection under load	1.8 MPa	
Coeff. of linear therm. Expansion	0 - 50°C	
Fire rating		
Rheological properties		
Melt volume rate, MVR	230 / 3.8	cm³/10mir
Optical properties	d=3 mm	
Transmission factor	D65/10°	%
Haze		
Refractive index		
Other properties		
Density		g/cm³
Recommended processing conditions		
Predrying temperature		
Predrying time in desiccant-type drier		
Melt temperature		
Cylinder temperature		
Die temperature (extrusion)		°C

Standard	PLEXIGLAS® 7H	
ISO 527	3200	
ISO 527	76	
ISO 527	5.5	
ISO 179/1eU	20	
ISO 306	103	
IEC 10006	112	
ISO 75	100	
ISO 75	95	
ISO 11359		
DIN 4102	B2	
ISO 1133	1.4	
ISO 13468	92	
ASTM D1003	< 0.5	
ISO 489	1.49	
ISO 1183	1.19	
	max. 93	
	2 - 3	
	220 - 260	
	220 - 260	
	220 - 260	

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