



EXTRUDED PROFILES
FOR ELECTROMAGNETIC SHIELDING
AND TECHNICAL SEALING

YOUR PARTNER FOR OVER 50 YEARS

Getelec an independant French company with unique expertise, has become a world-class specialist in elastomer formulations and a trusted partner of high profile customers in many industrial sectors.

Collaboration between our design office and our methods department means that you can benefit from our expertise to define your profile and design your tool. Our flow simulation software will guarantee an optimal result that perfectly matches your requirements. Our production department benefits from an area dedicated to extrusion, with the latest generation of equipment to produce high-precision products in large production runs.

Our multi-material co-extrusion lines are dedicated to extruding a product made of two different materials and are mainly used to produce our range of bi-material solutions.

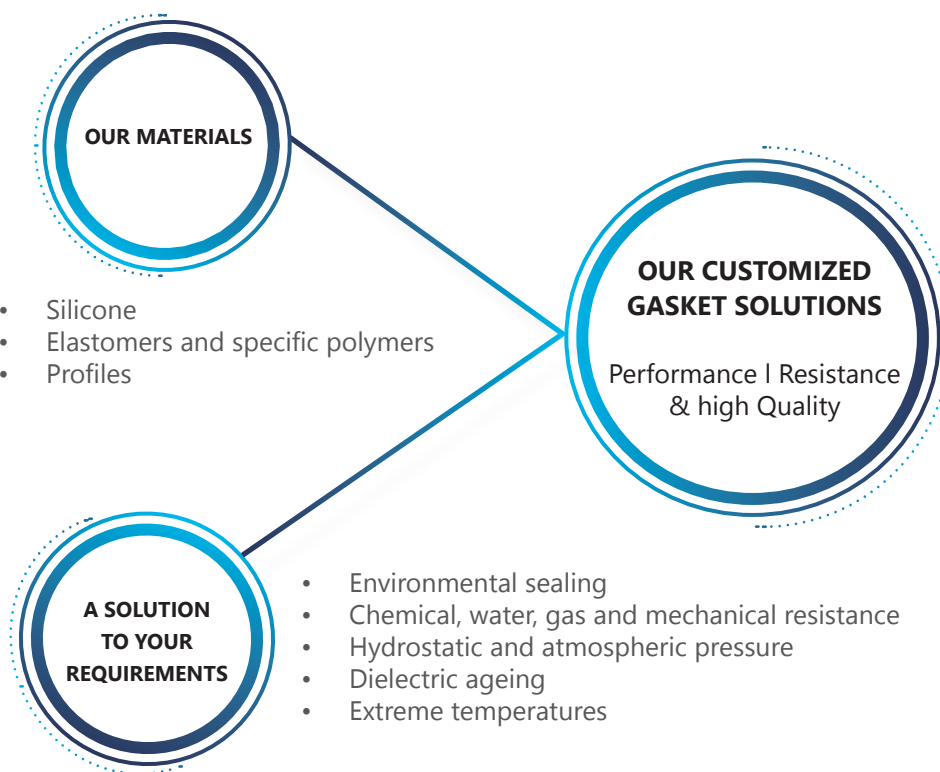
We can also produce high-precision extrusions using our micro-profile line, enabling us to extrude diameters between 0.2 and 20 mm. Our continuous laser inspection system provides access to SPC (Statistical Process Control) analysis, ensuring that stable products are produced in compliance with specifications.

With a production rate of 200 kg per hour and continuous filtering and degassing facilities, our salt bath extrusion line can produce high volumes of products within short lead times.

Fields of application

- Aeronautical
- Automotive
- Defense
- Industrial Electronics
- Energy
- Railways
- Medical
- Space industry
- Telecommunication

GETELEC offers a unique selection of gaskets



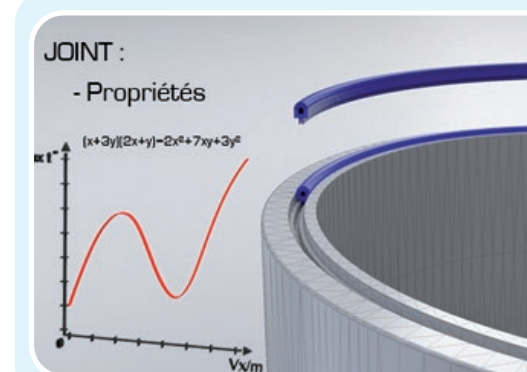
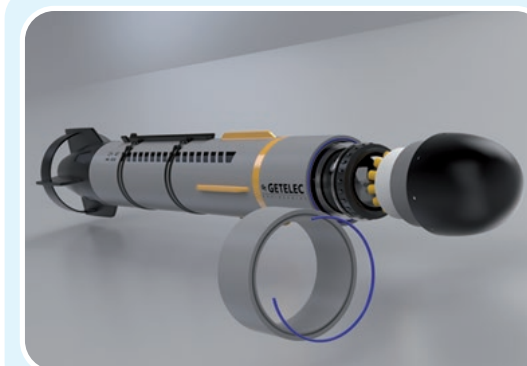
Technical sealing expertise

Our design office will provide support and assistance throughout your project, from selecting the material to designing your product. Our engineers will guide you to ensure that your product is innovative and complies with your specifications.

EXPERTISE IN FORMULATION AND DESIGN

Our R&D laboratory formulates all our materials. Thanks to our in-house expertise, we can deliver truly unique solutions.

Our production department is kitted out with the latest generation of equipment, so we can produce all your products on request, from prototypes to large-scale production.



The advantages of extrusion

- Complex profiles can be achieved
- Flexible gaskets with a high degree of deformability can be obtained
- Hollow profiles can be produced
- Continuous production capacity
- Reduced weight
- Cost-effective solution through raw material optimization
- Finished products can be produced in specific extended lengths
- Applicable tolerances from ± 0.07 to 0.3 mm depending on the diameter



OUR MATERIALS

We offer a wide range of materials that can be adapted to suit all your technical and environmental constraints that are compatible with extrusion technology:

- Electrically conductive elastomers
- Aeronautical grade elastomers
- Environmental sealing elastomers
- Bi-material elastomers
- EPDM

Our laboratory and our design office will provide support and assistance from selecting the material to determining the processing method



>> The unique properties of silicone

Heat resistance

The thermo-oxidative stability of silicones is far superior to that of conventional organic molecules. As an example, in the absence of stress, the continuous resistance temperatures can be estimated as follows: EVC silicone elastomers : 180 – 250°C

Chemical resistance

In the absence of acid or base catalysts, the hydrolysis stability of silicones is excellent. This is why they are used for medical and paramedical purposes in physiological environments, as well as in the manufacture of packaging for certain food and cosmetic products.

Resistance to natural ageing, light and ozone

The lightfastness of EVCs in the absence of stress can be estimated as follows, on a scale of 1 (low strength) to 5 (high strength): EVC silicone elastomers : 4-5

Low property degradation with temperature

Viscosity, dielectric properties, heat capacity etc. vary less with temperature than for many other polymers.

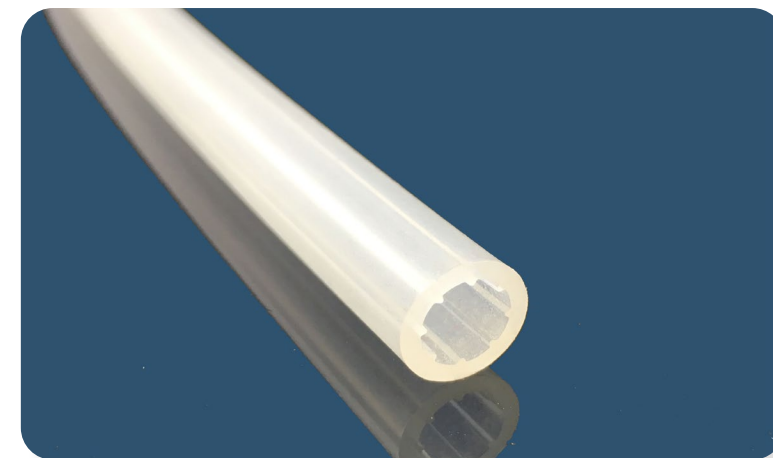
Gas permeability and absorption : The gas permeability of elastomers and the gas absorption of silicone fluids are relatively high.

Dielectric properties : Silicones are naturally good insulators, although it is possible to make them conductive by incorporating conductive fillers. On average, the electrical properties are in the following ranges :

Volume resistivity..... 10^{12} à 10^{16} Ohms/cm
Dielectric constant..... 1 à 4
Loss factor..... 2 à $200 \cdot 10^{-4}$
Dielectric strength 10 à 30 kV/mm

Fire resistance : Silicones have a better natural fire resistance than polyolefins. Silicones have the added benefit of producing a silicone backbone that can act as a natural barrier to fire propagation and maintain electrical insulation, for example, in cable coatings.

Physiological safety : The carefully selected silicone grades comply with the European and American standards required for medical, pharmaceutical, paramedical and food applications.



>> OUR ELECTRICALLY CONDUCTIVE ELASTOMERS

Most GT conductive materials can be extruded in different cross-sections and profile shapes. By vulcanizing the ends of the extruded gasket, customized O-rings can be produced without tooling costs and within very short lead times.

SILICONE ELASTOMER			
MATERIAL	MIL TYPE	CONDUCTIVE FILLER	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1000	K	Silver-plated Copper	15
GT 1015	A	Silver-plated Copper	15
GT 2020	E	Silver	10
GT 2024		Silver	10
GT 3000	L	Silver-plated Nickel	15
GT 3100		Nickel Graphite	100
GT 3300		Nickel Aluminum	< 0.5
GT 4000	M	Silver plated glass bead	< 0.015 Ω-cm
GT 5000	B	Silver-plated aluminum	8
BL 10000		Carbon	< 6 Ω-cm

>> OUR AERONAUTICAL GRADE ELASTOMERS

Silicone elastomer blends, hardness 70 shore A, developed for applications requiring excellent fire resistance



- Advantages of our blends**
- ▶ Low flame spread rate
 - ▶ Low smoke emissions
 - ▶ Low emissions of toxic gases

- Application examples**
- ▶ Ruggedized computer
 - ▶ Business class seat finish
 - ▶ Embedded electronics and systems
 - ▶ Electronic brake control management

Characteristics	Standards	GT 70 E RF-2	GT 70 M RF-2	GT 70 E RF-4
Density (g/cm³)	ASTM D 792	1.35 ± 0.05	1.35 ± 0.05	1.39
Hardness shore A	ASTM D 2240	70 ± 5	70 ± 5	71
Breaking strength MPa	ASTM D 412	> 6	> 6	8.2
Tear resistance kN/m	ASTM D 624	> 10	> 10	34.1
Elongation at break %	ASTM D 412	> 180	> 180	376
Compression set after 70 hours at 150 °C	ASTM D 395	< 50	< 50	< 50
Continuous working temperature		-60°C to +200°C (peak at +230°C)	-60°C to +200°C (peak at +230°C)	-60°C to +200° (peak at 230°C)
Color		As requested by the customer	As requested by the customer	As requested by the customer

FLUOROSILICONE			
MATERIALS	MIL TYPE	CONDUCTIVE FILLER	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1007	C	Silver-plated copper	15
GT 2027	F	Silver	10
GT 3007		Silver-plated Nickel	15
GT 3107		Nickel Graphite	100
GT 5007	D	Silver-plated aluminum	12
BL 10007		Carbon	< 12 Ω-cm



ENVIRONMENTAL SEALING ELASTOMERS

We have a wide range of standard solid and hollow profiles available to suit most customer configurations.

We produce extrusion dies at very competitive prices. Therefore, we can offer our customers tailor-made shapes when the profile is not available in the catalog.

In addition to our standard silicone materials (VMQ/FVMQ), we also specialize in :

- Flame retardant silicone UL 94 HB, V0
- Railway grade silicone in accordance with NFF16-101 et 102, and EN 45545-2
- Aeronautical grade silicone with fire/smoke/toxicity resistance in compliance with FAR 25.853 (AIRBUS ABD0031 standard)
- Space grade silicone (low outgassing rate) in compliance with standard ASTM E 595 (TML < 1 %, CVCM < 0.1 %)
- Aeronautical grade material
- Liquid silicone (LSR)
- Food grade silicone FDA (FDA)
- Medical grade material
- Phenyl silicone (PVMQ)

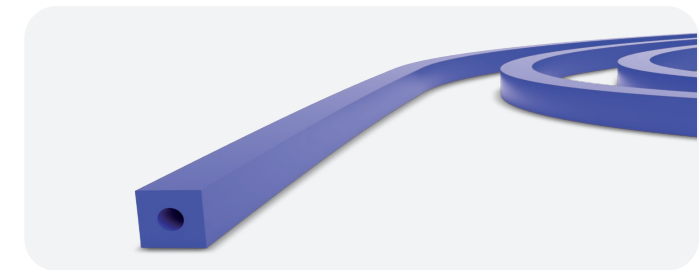
	Silicone (VMQ)
Air	Excellent
Alcohol	Good
Hydrocarbon	Very low (projection)
Grease (excluding silicone)	Good
Vegetable oils	Good
Silicone oils	Insufficient
Weak acids	Good
Strong acids	Does not resist
Water vapor	Poor at high temperatures (OK up to 100°C)

	Fluorosilicone (FVMQ)
Air	Excellent
Alcohol	Good
Hydrocarbon	Excellent
Grease (Excluding silicone)	Very good
Mineral oils	Very good
Weak acids	Good
Strong acids	Very low to none

TOLERANCES FOR EXTRUDED SECTIONS	
DIMENSIONS (mm)	TOLERANCES
0.5 to 1.8	± 0.07
1.8 to 2.5	± 0.10
2.5 to 5.0	± 0.15
5.0 to 9.0	± 0.25
> 9.0	± 3%

TOLERANCES FOR HOLE DIAMETER ON SECTIONS	
DIMENSIONS (mm)	TOLERANCES
0.5 to 1.0	± 15%
> 1.0	± 10%

The tolerances applicable for inspection are those indicated on this page, unless the customer part is subject to an FAI, an industrial validation file (DVI) or a specific Getelec inspection document.



Silicone

VMQ silicone products (ASTM D 1418)
Working temperature : -73°C to +232°C

These elastomers are used to make molded parts, extruded seals, die-cut flat seals or seals vulcanized in place. They maintain their mechanical characteristics over a wide temperature range.

	Standards	GT 20	GT 30	GT 40	GT 50	GT 60	GT 70	GT 80
Elastomer		Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Silicone
Hardness shore A (±5)	ASTM D 2240	25	30	40	50	60	70	80
Mass density at 25°C (g/cm³)	ASTM D 792	1.10	1.11	1.10	1.19	1.27	1.35	1.43
Tensile strength Psi Mpa	ASTM D 412	870 6	980 6.75	1000 6.80	980 6.75	950 6.55	1000 6.89	965 6.65
Elongation %	ASTM D 412	950	850	500	380	300	180	165
Compression set after 22 hours at 177°C (%)	ASTM D 395 Method B	20	20	30	32	33	34	35
Color		Red	White	Orange	Red	Blue	Red	Red

Fluorosilicone

FVMQ fluorosilicone product (ASTM D 1418)
Working temperature : -60°C to +230°C

They provide excellent resistance to solvents, fuels, organic oils and silicone oils.

These elastomers are used to make molded parts, extruded seals, die-cut flat seals or seals vulcanized in place. They maintain their mechanical characteristics over a wide temperature range.



	Standards	GT 37	GT 47	GT 57	GT 67	GT 77
Elastomer		Fluorosilicone	Fluorosilicone	Fluorosilicone	Fluorosilicone	Fluorosilicone
Hardness shore A (±5)	ASTM D 2240	30	40	50	60	70
Mass density at 25°C (g/cm³)	ASTM D 792	1.36	1.43	1.44	1.46	1.48
Tensile strength Psi Mpa	ASTM D 412	1000 6.90	1250 8.60	1200 8.45	1200 8.30	125 8.60
Elongation %	ASTM D 412	480	400	350	300	300
Compression set after 22 hours at 177°C (%)	ASTM D 395 Method B	20	20	25	25	25
Color		Blue	Blue	Blue	Blue	Blue

By separating the shielding function from the environmental sealing function, our bi-material gaskets are an effective solution to the corrosion problems encountered when using conductive gaskets in contact with various electrolytes, salt spray or acidic media. These gaskets are water en pressure resistant.

CHARACTERISTICS

CORROSION-RESISTANT CONDUCTIVE SILICONE ELASTOMER			
MATERIAL	ENVIRONMENTAL SEALING ELASTOMER	CONDUCTIVE FILLER	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1040	Silicone 40 sh	Silver-plated copper	15
GT 1060	Silicone 60 sh	Silver-plated copper	15
GT 2040	Silicone 40 sh	Silver	10
GT 2060	Silicone 60 sh	Silver	10
GT 3140	Silicone 40 sh	Nickel Graphite	100
GT 3160	Silicone 60 sh	Nickel Graphite	100
GT 5040	Silicone 40 sh	Silver-plated aluminum	8
GT 5060	Silicone 60 sh	Silver-plated aluminum	8
GT 5068	EPDM-Si 65 sh	Silver-plated aluminum	8
BL 10060	Silicone 60 sh	Carbon	< 6 Ω-cm

CORROSION-RESISTANT CONDUCTIVE FLUOROSILICONE ELASTOMER			
MATERIAL	ENVIRONMENTAL SEALING ELASTOMER	CONDUCTIVE FILLER	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1047	Fluorosilicone 40 sh	Silver-plated copper	15
GT 1067	Fluorosilicone 60 sh	Silver-plated copper	15
GT 2047	Fluorosilicone 40 sh	Silver	10
GT 2067	Fluorosilicone 60 sh	Silver	10
GT 3147	Fluorosilicone 40 sh	Nickel Graphite	100
GT 3167	Fluorosilicone 60 sh	Nickel Graphite	100
GT 5047	Fluorosilicone 40 sh	Silver-plated aluminum	8
GT 5067	Fluorosilicone 60 sh	Silver-plated aluminum	8
BL 10067	Fluorosilicone 60 sh	Carbon	< 6 Ω-cm

OUR SELECTION OF EXTRUDED SILICONE PROFILES

All the profiles shown are available for our entire range of materials.

For specific profile request, please contact us.

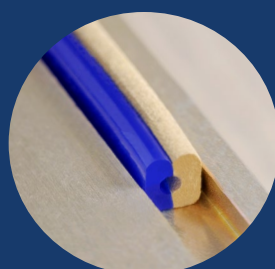
Our expertise in figures :

27 tons
of blended elastomers

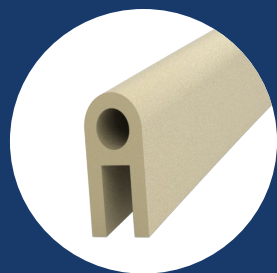
Over 25 000
product references

300 000 meters
of extruded products per year

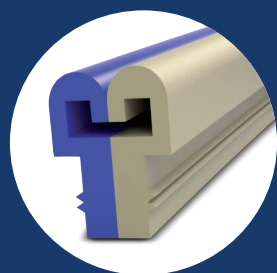
400 product
formulas



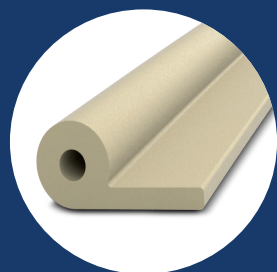
>> STANDARD PROFILES AVAILABLE



« A » Profile



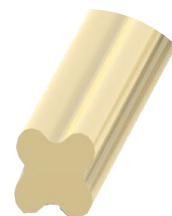
7092 Profile



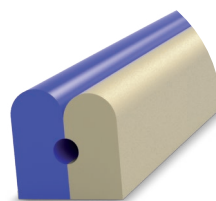
« P » Profile



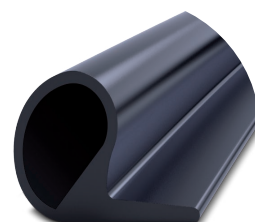
« Hollow round » Profile



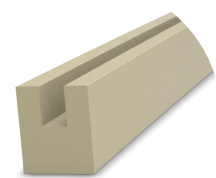
« Quadrilobe » Profile



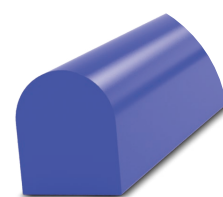
« Hollow double D » Profile



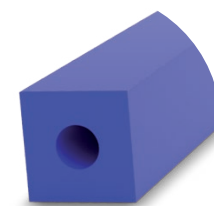
7511 Profile



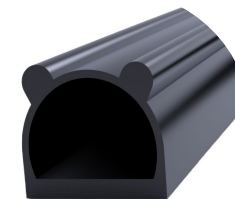
« U » Profile



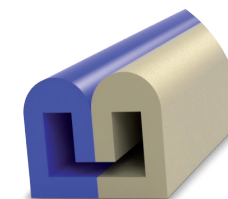
« Solid D » Profile



« Hollow square » Profile



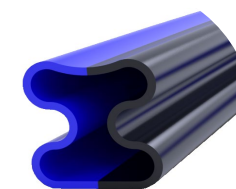
1371 Profile



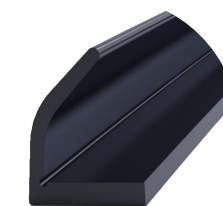
6959 Profile



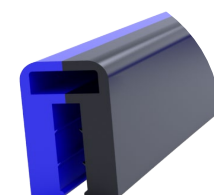
« Solid rectangular » Profile



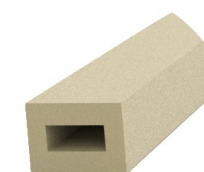
1616 Profile



A903 Profile



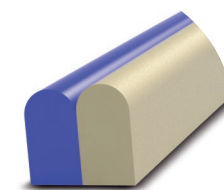
1539 Profile



« Hollow rectangular » Profile



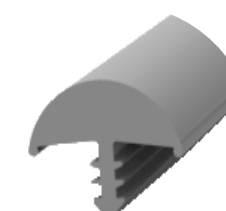
« Hollow round » Profile



« Solid double D » Profile



« Hollow D » Profile



« Mushroom » Profile

OUR EXPERTISE

Our EMC expertise at the service of your projects

Our teams will assist you in defining your requirements and are at your disposal throughout the entire duration of your project. From material selection to the final production of your product, they will provide advice and guidance to achieve technological success.

A bespoke response

Our engineers are equipped with the latest generation of precision equipment to design all your products from prototypes to mass production.

A very large choice of materials

Through our wide range of products, you will find the most innovative and reliable solution on the market for your project.

OUR QUALITÉ APPROACH

«Since 1968, expertise, innovation and customer satisfaction have been the driving forces behind Getelec's corporate policy».

The high quality of our products is the key to the sustainability of your technology. For this reason, all of our products comply with the strictest French and international standards in order to guarantee unbeatable quality and avoid obsolescence. Thanks to this philosophy we have been certified to ISO 9001 and EN 9100 for over 25 years.



MANAGEMENT SYSTEM CERTIFICATE

Certificate No.
59406-2009-AQ-FRA-SINCERT

First Issue Date	Certificate Issue Date	Certificate Reissue Date	Certification Expiry Date
2011-05-20	2020-10-06	2020-10-06	2023-05-19
Expire date of last certification Cycle: 2020-05-19			
Date of last recertification: 2020-09-10			

This certifies that the quality management system of

GETELEC

375 rue Morane Saulnier, BUC 78530, France

Conforms to the quality management system standard

ISO 9001:2015

and

EN 9100:2018

(TECHNICALLY EQUIVALENT TO AS9100D AND JIS Q 9100:2016)

Assessment has been performed in accordance with EN9104-001:2013 standard requirements

Certification Structure: SINGLE SITE

This certificate is valid for the following products or services:

(Further clarifications regarding the scope and the applicability of the requirements of the standard(s) may be obtained by consulting the certified organization)

Design, manufacturing and sale of electromagnetic shielding gasket realized by molding, extrusion, bonding and die-cutting.

Conception, fabrication et vente de produits de blindage électromagnétique et d'élastomères tech collage et decoupage.

Sector IAF: 19

Place and date:
Vimercate (MB), 2020-10-07



SGQ N° 003 A
SGA N° 003 D
SGE N° 007 M
SCR N° 004 F

EMAS N° 009 P
PRD N° 003 B
PRS N° 094 C
SSI N° 002 G

Membro di MLA EA per gli schemi di accreditamento
SGQ, SGA, PRD, PRS, SGP, GHS, LAB e LAT, di MLA IAF
per gli schemi di accreditamento SGQ, SGA, SSI, FSH
e PRD e di MLA ILAC per gli schemi di accreditamento
LAB, MED, LAT e ISP

For the Accredited Unit:
DNV GL Business Assurance Italia S.r.l.

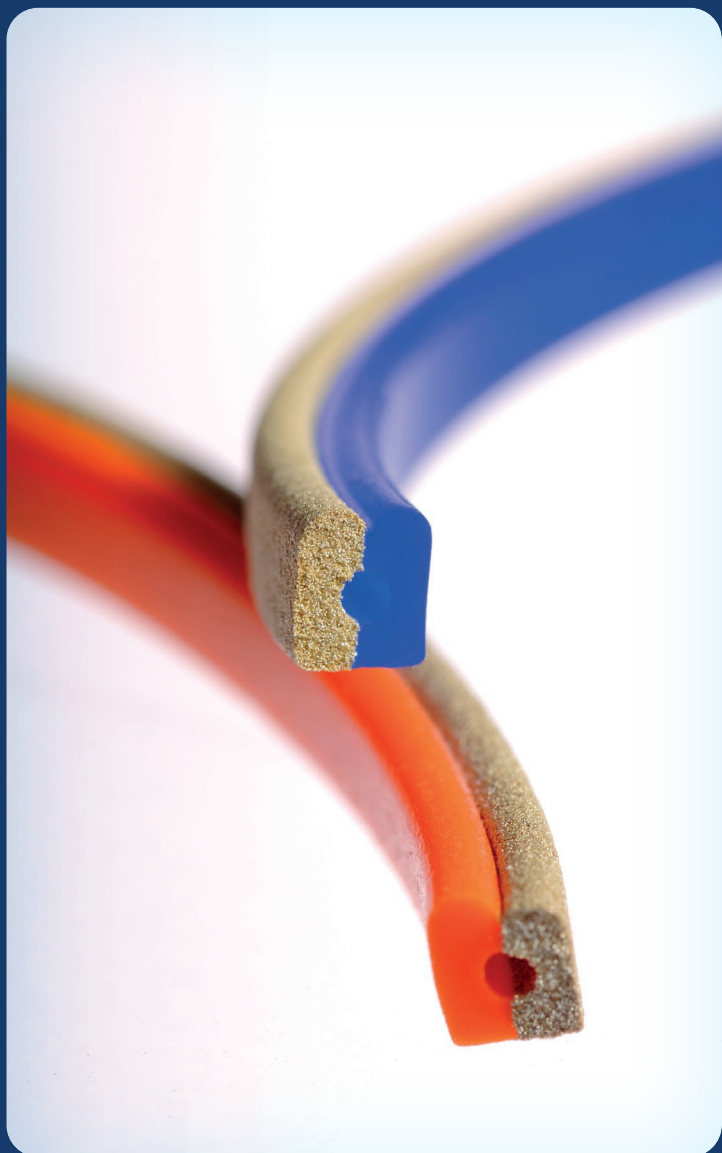
Sabrina Bianchini

Sabrina Bianchini
Management Representative



GETELEC

We protect your electronics



ELECTROMAGNETIC SHIELDING

TECHNICAL SEALING

HEAT SINKS

MICROWAVE ABSORBERS

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