



GETELEC

We protect your electronics

OUR SOLUTIONS FOR **AEROSPACE INDUSTRY**



ISO 9001 = AS/EN/JISQ 9100

www.getelec.com



Innovative EMC Solutions
High-tech industry
Custom-made realization
Personalized support
R&D Laboratory
ISO 9001/EN 9100 Certifications
Expertise
Design office
Quality

DEDICATED SUPPORT & QUALIFIED EXPERTISE

Listening to your needs is an essential element in our trade policy. The entire design and development of your product is based on trust and working in collaboration with our customers. This mutual transparency allows us to accompany you in all points in the development of it and thus to offer you turnkey solutions for all your projects.

Our highly qualified teams support you in defining your needs and are at your disposal throughout the duration of your project. From the choice of material to the final production of your product, they will advise and guide you to guarantee your technological success.

Our historical know-how allows you to benefit from recognized expertise and certified by many demanding standards such as ISO 9001, EN 9100 and ESA ECSS-Q-ST-7002C. The trust placed in us by major players such as Thales Alenia space, Airbus, Hemeria and Syrlinks testifies to our commitment to quality.

A UNIQUE BESPOKE SOLUTION

Our historical know-how allows you to benefit from the most efficient and innovative products on the market, adapted to all your mechanical, electrical, and environmental constraints.

Your most specific requirements are at the heart of our approach. At Getelec, we work closely with you to shape the aerospace of tomorrow. The synergy between our design office and our R&D laboratory Getelec Lab allows us to design innovative products, especially adapted to the aerospace industry.

From innovative low-density products to specific developments, our expertise is at your service to meet your most specific needs.

A rigorous **know-how**, a passion for **innovation** and **expertise** that anticipates your needs.

About us



An independent French company with unique know-how since 1968, Getelec has become a global specialist in EMC shielding and a key partner for major contractors in many industrial sectors.

Getelec designs and manufactures customized solutions for technical sealing, electromagnetic protection (EMC), microwave absorption and heat dissipation. Getelec products are particularly suitable for the protection of high-tech equipment under severe environmental constraints.

Our technological advancement allows us to continuously develop innovative and bespoke strategic products to meet the complex specifications and multi-sector demand of our customers.

At Getelec, we share your vision of a more sustainable future. That's why we continually rethink our innovations, placing the environment and sustainability at the heart of our developments.

We design our products with a clear vision: to combine cutting-edge performance and respect for the environment. Thanks to the integration of bio-based and recyclable materials, we are redefining the standards of innovation tomorrow.

Discover our dedicated product range :



CONDUCTIVE ELASTOMERS



BI-MATERIAL SOLUTIONS



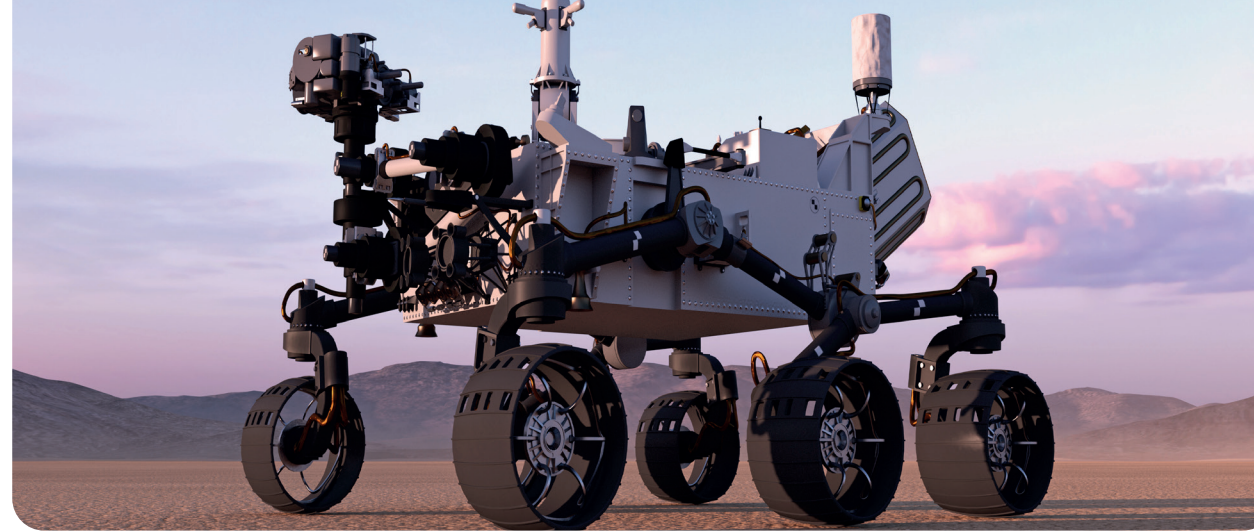
ENVIRONMENTAL SEALING SOLUTIONS



MICROWAVE ABSORBERS



THERMAL GAP PAD



Technical innovation that secure your orbital missions.

The space sector imposes extreme demands. Each product must withstand harsh environments, operate flawlessly over the long term, and ensure absolute accuracy. With more than 180 000 products in orbit, GETELEC is a benchmark for performance, reliability and stability in the space universe.

Our expertise in electromagnetic compatibility enables rigorous integration from the design stage, eliminating any risk of interference and ensuring optimal operation of each embedded component.

Thanks to advanced thermal management, our solutions maintain an ideal operating temperature, ensuring consistent performance even in the most extreme conditions.

Benefit from a dedicated team of engineers to support you in all stages of your project. Our production plant, based on our premises in Yvelines, is fully equipped with the latest generation machines to offer you unique product quality in a short lead time.



EXPLORATION ROBOTS

In space, robots face extreme conditions: intense solar radiation, charged particles, and multiple electromagnetic waves. Their autonomous, combined operation with a multitude of sensors, cameras and communication systems make them particularly vulnerable to interference.

GETELEC takes up this challenge with its dedicated space-based EMC range, designed to guarantee equipment reliability in the most hostile environments. Our solutions ensure optimal electromagnetic protection, so that every signal remains pure, every measurement accurate, and every mission successful.

SATELLITES AND EMBEDDED SYSTEMS

In space, every signal counts. Satellites and their electronic subassemblies operate in environments where electromagnetic interference can compromise your equipment and your challenges.

Discover our bespoke EMC solutions, designed to push the limits of reliability. Thanks to high-performance conductive seals and next-generation microwave absorbers, we ensure perfect electrical continuity, optimal interference absorption, and long-lasting protection of the performance of your equipment.



RADAR ANTENNAS

Radar antennas and terrestrial systems play a key role in the processing and transmission of data from orbital infrastructure. Exposed to severe environmental constraints and stringent electromagnetic compatibility requirements, this equipment requires bespoke protection.

GETELEC supports your projects with advanced expertise and a range of innovative EMC solutions, designed to meet the most demanding technical challenges. Our teams advise you in the choice of materials and ensure a personalized integration to guarantee the reliability and performance of your installations.

EXPLORATION ROBOTS

TECHNICAL KNOW-HOW AT THE SERVICE OF EXPLORATION



Our thermal gap pad

In our R&D laboratory, we offer four product ranges ranging from 1 W/m.K to 10 W/m.K. Their flexibility ensures that all surface roughnesses are taken into account during their compression and will thus ensure optimal operation of your equipment at both low and high temperatures.

The advantages of our thermal pad :

- Very high conductivity
- Custom-made realization
- Low degassing rate



Technical sealing reinvented

Thanks to our wide range of sealing silicone we meet all your needs in terms of technical sealing. With hardnesses ranging from 20 to 90 Shore A and extreme temperature resistance, our materials guarantee your products a **durable robustness and optimal performance, even in the most demanding environments.**

The advantages of our sealing elastomers

- Resistance to extreme temperature
- Custom-made realization
- Low degassing rate



Bespoke realization

Every step of your product design and development is based on a relationship of trust and absolute transparency. Thanks to a close collaboration with our design office, we support you from start to finish, to transform your ideas into ready-to-use solutions, perfectly adapted to your challenges and problems.

Our highly qualified teams support you in defining your needs and are at your disposal throughout the duration of your project. From the construction of the specifications to the choice of the material and the final production of your product, we put at your service our know-how to guarantee the technological success of your projects.

Our production unit is equipped with the most advanced technologies on the market. Thanks to continuous quality control, we produce tailor-made parts with optimal precision, within controlled time and costs from prototype to large series.

Our historical know-how is not limited to the development of materials and the mastery of manufacturing processes. Thanks to our R&D laboratory Getelec Lab, we are also able to support you in your search for solutions and new materials. We also have the possibility to design our own extrusion systems in-house to meet all your projects requiring complex profiles in optimized lead times and cost.

This complete mastery of the value chain allows us to meet your most complex innovative needs.

SATELLITES & EMBEDDED SYSTEMS
CUSTOMIZED EMC SOLUTIONS

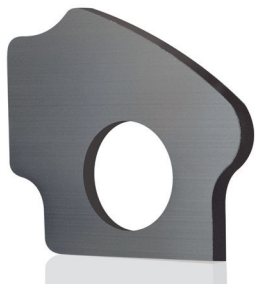


Our conductive elastomers

Our conductive elastomers are developed in every way by our chemical engineers. From the selection of raw materials to the final processing, they carry out specific formulations for each application and master all the processes of development. The conductive particles (10 to 40 microns) that make up the charge of our conductive mixtures (between 60 and 80% charge rate) allows you to acquire an optimal EMC shielding.

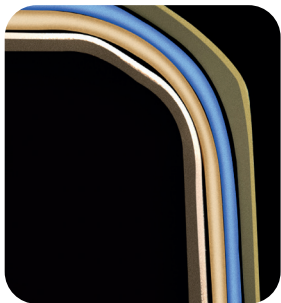
The three guarantees of our conductive elastomers :

- The performance of electrical continuity
- Mechanical performance
- Resistance to extreme environments



The GT602 R85

The absorbers of the GT602 range have narrow band performance but also high performance in power density (> 1 W/cm2). Thanks to its low degassing properties, the GT602 is perfectly suitable for the space industry.



From idea to series - Innovation without delay

Thanks to our optimized know-how and production capacity, we design tailor-made solutions in a short time. From die engineering to mass-production extrusion, our complete control guarantees **quality, performance, and precision for all your complex extruded profiles and finished parts.**



GT602 R85 Technical Data

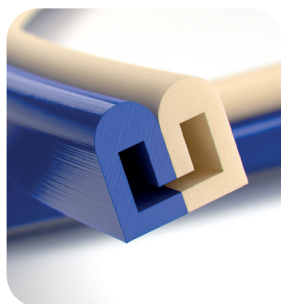
Getelec reference	Thicknesses (mm)	Frequency of resonance	Attenuation	Compliance with ESA standard
GT 602 R85	2	6 GHz	28 dB	Yes
	1.8	7 GHZ	27 dB	
	1.6	8 GHz	21 dB	
	1.5	9 GHZ	27 dB	
	1.3	10 GHz	27 dB	

Available format :

-  Cut  Sheet  With adhesive

RADAR ANNTENNAS

MASTERING THE INVISIBLE FIELD FOR YOUR TRANSMISSIONS



Our bi-material IP/EMC solutions

Our bi-material gaskets are composed of a conductive part and an insulating part, all united in a single gasket by a co-extrusion principle. In fact, by dissociating the EMC shielding function from the environmental sealing function, the gasket is then more resistant to extreme environments. Resistant to water, pressure and corrosion, they provide technical sealing and optimal electromagnetic shielding, even in aggressive environments

The advantages of our bi-material solutions :

- Dual IP/EMC protection
- Small footprint
- Custom-made realization
- Longer life compared to one mono-material gasket

Technical sealing solutions



We formulate our own silicone blends and master their transformation in order to offer you tailor-made solutions adapted to your needs. The use of specific silicone grade allows us to offer you a complete range of silicones and fluorosilicone available at hardnesses between 20 and 90 Shore A.

Know-how that makes the difference

Our production center is equipped with the most advanced technologies on the market. From prototype to large series, we master all molding, cutting, extrusion, overmolding and vulcanization processes, to guarantee you a **high-end finished product, in accordance with your strictest requirements**, in optimized lead times.



The perfect combination of endurance and performance

In demanding environments, components must combine performance, robustness, durability and efficiency.

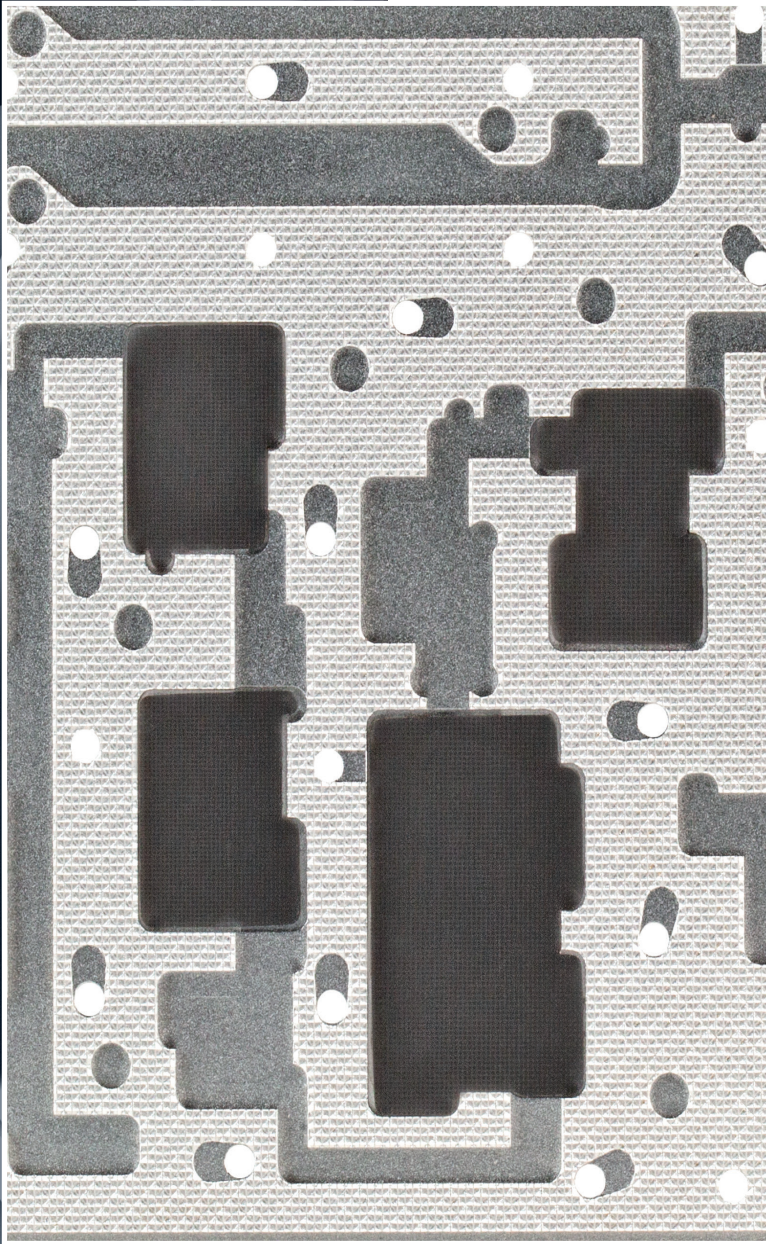
That's why we have developed a range of technical sealing elastomers, designed to meet the most complex challenges for each component and guarantees **exceptional durability and a high-end finish of your products.**

Thanks to our expertise in advanced extrusion, we realize bespoke solutions, adapted to all geometries, with complex profiles, unlimited lengths, and optimized lead times.

The advantages of our environmental sealing elastomers :

- Flame retardant UL94 HB, V0
- Chemical resistance
- Permeability and absorption of gases
- Excellent dielectric properties

OUR MICROWAVE ABSORBERS



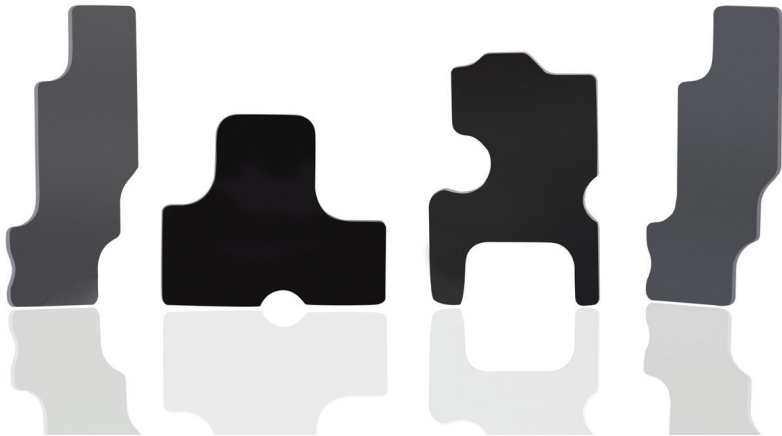
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The main objective of microwave absorbers is to solve problems related to the insulation and absorption of electromagnetic emissions in order to preserve the proper functioning of your equipment. Our range of microwave absorbers will allow you to benefit from the best passive components for your technologies. Easily integrable thanks to a tailor-made construction and the adhesive option, our absorbers will protect your electronic equipment on the K, Ku and Ka frequency bands, in addition to the L, S, C and X bands.

Presentation of our range of microwave absorbers :

Formulated in-house by our Getelec Lab R&D laboratory, our range of microwave absorbers, compliant with ESA requirements, ensures optimal performance of your electrical equipment. With an absorption capacity greater than 20 dB of incidence and resistance to temperatures ranging from – 160 °C to +200 °C, our microwave absorbers are compatible with next-generation electronic equipment.



Our flexible microwave absorbers :

Our GT602 microwave absorbers have narrow band performance but also high power density performance (>1W/cm2) allowing them to be positioned on high power antennas or equipment. Thanks to its low degassing properties, our GT602 range is suitable for space applications.



The revolution of microwave absorption available in a syringe

In addition to traditional shaping, our GT602 range is also available in ready-to-use syringe form !

ATTENUATION GUIDE

Attenuation	Percentage absorbed
- 5 dB	68.38 %
-10 dB	90.00 %
-15 dB	96.84 %
-20 dB	99.00 %
- 40 dB	99.99 %

GETELEC material reference	Thicknesses (mm)	Resonance frequency
GT602 R90	4.5	1 GHz
GT602 R90	3.2	2 GHz
GT602 R90	2.4	3 GHz
GT602 R90	2.2	4 GHz
GT602 R88	2	5 GHz
GT602 R85	2	6 GHz
GT602 R85	1.8	7 GHz
GT602 R85	1.6	8 GHz
GT602 R85	1.5	9 GHz
GT602 R85	1.3	10 GHz
GT602 R74	1.7	11 GHz
GT602 R71	1.6	12 GHz
GT602 R71	1.5	13 GHz
GT602 R71	1.45	14 GHz
GT602 R71	1.4	15 GHz
GT602 R71	1.3	16 GHz
GT602 R65	1.2	17 GHz
GT602 R65	1.15	18 GHz
GT602 R64	1.1	24 GHz
GT602 R63	0.95	28 GHz
GT602 R62	1.1	35 GHz

Rigid microwave absorbers :

Our GT502 are high frequency absorbent materials developed by our laboratory. Compound based on epoxy or polyurethane and small diameter iron carbonyl spheres dispersed in a suitable resin and whose homogeneity of the mixture is ensured by a complex system developed by Getelec.

Properties	Standards	GT 502
Material		Epoxy
Hardness (Shore D)	ASTM D 2240	95
Density (g/cm3)	ASTM D 792 Method A	4.57
Breaking load (Mpa)	NF EN ISO 527-1	56
Elongation at break (%)	NF EN ISO 527-1	2.4
Operating temperature (°C)		-180 to +200

Find all our microwave absorbers on our website

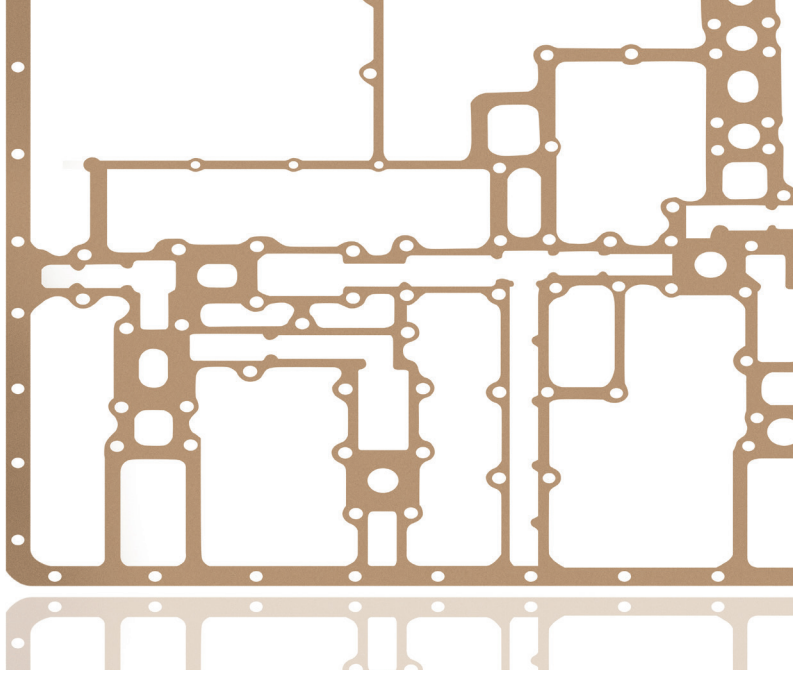
OUR CONDUCTIVE ELASTOMERS



Our conductive elastomers are developed in every way by our chemical engineers. From the selection of raw materials to final processing, they create specific formulations for each request and master all the development processes and procedures. The conductive particles (10 to 40 microns) that constitute the filler of our conductive mixtures (between 60 and 80% filler rate) allow you to acquire optimal EMC shielding.

The three guarantees of our conductive elastomers :

- The performance of electrical continuity
- Mechanical performance
- Extreme temperature resistance



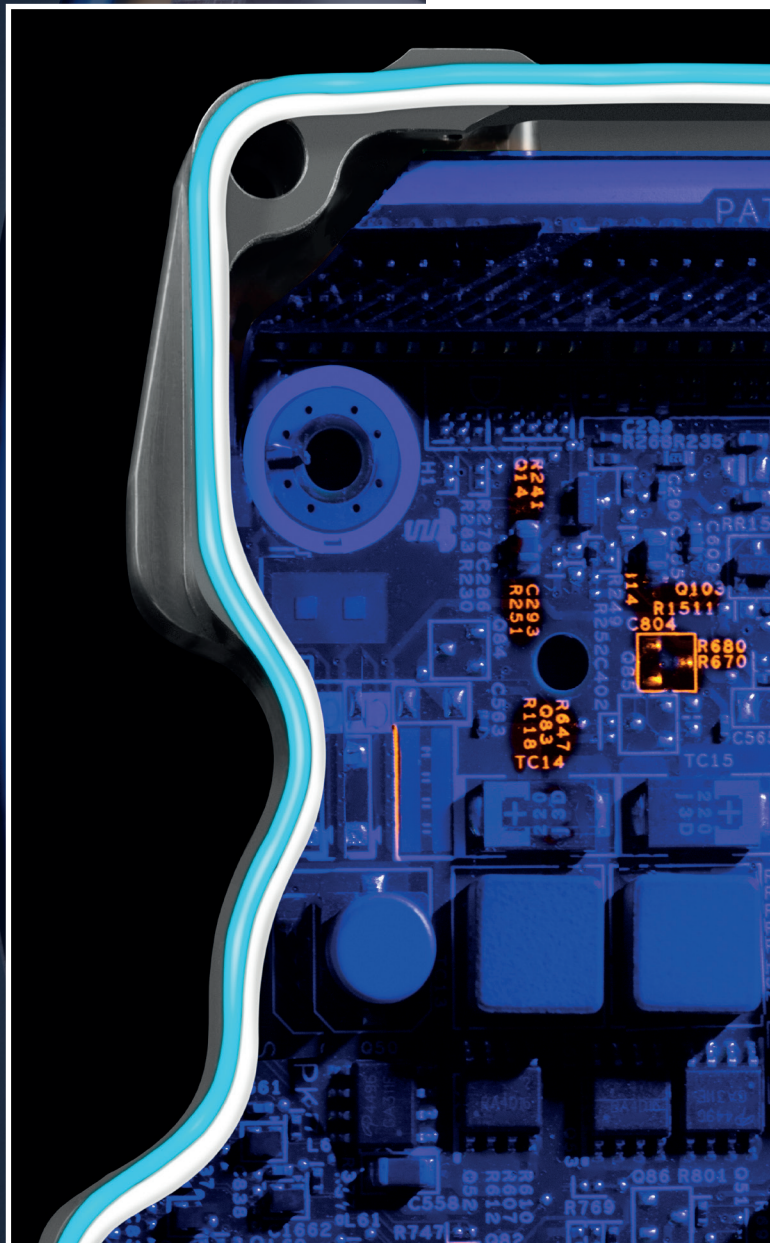
Properties Tests	GT 1000	GT 1000 FLEX	GT 2020	GT 5000 EX SP	GT 5000 FLEX	GT 5000
Type MIL G 83528	Type K	-	-	-	-	B
Elastomer	Silicone	Silicone	Silicone	Expanded silicone	Silicone	Silicone
Conductive filler	Silver-plated copper	Silver-plated copper	Pure silver	Silver-plated aluminum	Silver-plated aluminum	Silver-plated aluminum
Volume resistivity (Ω.cm)	< 0.005	< 0.005	< 0.006	Max 0.5	< 0.0040	< 0.0054
Hardness (shore A) [ASTM D 2240]	82	40	75	45 ± 5	30 ± 5	65
Density (g/cm³) [ASTM D 792 Method A]	3.40	2.67	3.90	1.0 ± 0.13	1.67	1.90
Break resistance (Mpa) [ASTM D 412 Method AC]	2.80	0.81	4.61	-	1.02	1.89
Elongation at break (%) [ASTM D 412 Method AC]	250	250	355	-	260	286
Tear strength (N/mm) [ASTM D 624 C]	13.44	3.89	13.73	-	2.01	8.43
Residual deformation after compression 70 hours at 100°C (%) [ASTM D 395 Method B]	17.50	6.3	33.12	-	10.20	17.30
Working temperature (°C)	-55°C to +125°C	-55°C to +125°C	-55 to +160 °C	-55°C to +160°C (With adhesive)	-55°C to +160°C	-55°C to +160°C
Shielding efficacy: 20MHz 100 MHz 500MHz 2GHz 10GHz	130 dB 140 dB 120 dB 120 dB 120 dB	66 dB 86 dB 100 dB 80 dB 87 dB	110 dB 110 dB 110 dB 110 dB 110 dB	128 dB 137 dB 133 dB 122 dB 104 dB	79 dB 90 dB 104 dB 86 dB 106 dB	118 dB 131 dB 138 dB 132 dB 112 dB
ESA-ECSS-Q-ST-70-02C qualification [TML,RML(<1%) et CVCM (<0.1%)]	Compliant	Compliant	Compliant	Compliant	Compliant	Non-compliant
Color	Gray / Beige	Gray / Beige	Light beige	Beige	Gray / Beige	Gray / Beige

Find all our conductive materials on our website

Available format :

Our know-how and our support policy also requires taking into account your constraints and tolerances, which is why all our solutions can be made to measure according to your specific plans and manufacturing processes in a short lead time.

OUR BI-MATERIALS ELASTOMERS



ISO 9001 – AS/EN/JISQ 9100



Our bi-material EMC gaskets are an effective solution to the corrosion problems encountered when using conductive seals when they are in contact with different electrolytic agents, salt spray and other acid media. Our bi-material gaskets are composed of a conductive part and an insulating part, all united in a single gasket by a co-extrusion principle. In fact, by dissociating the EMC shielding function from the environmental sealing function, the seal is then more resistant to extreme environments.

Focus on the functions of bi-material gaskets :

Resistant to water and pressure, our bi-material gaskets provide you with electromagnetic shielding and an optimal seal meeting the requirements for your space communication infrastructure.

Requiring a single groove, this solution facilitates the machining of your mechanical parts by optimizing the space requirement.



Properties Conductive part	GT 1067	GT 3160	GT 5040	GT 5047	GT 5060	GT 5067
Elastomer	Fluorosilicone	Silicone	Silicone	Fluorosilicone	Silicone	Fluorosilicone
Conductive filler	Silver-platted copper	Nickel Graphite	Silver-plated aluminum			
Volume resistivity (Ω.cm) [MIL G 83528]	< 0.005	< 0.10	< 0.0054			
Hardness (shore A ± 7) [ASTM D 2240]	82	65	65			
Density (g/cm³) [ASTM D 792 Method A]	3.40	2	1.90			
Break resistance (Mpa) [ASTM D 412 Method AC]	2.20	1.37	1.89			
Elongation at break (%) [ASTM D 412 Method AC]	250	150	286			
Tear strength (kg/cm) [ASTM D 624 C]	13.70	8.9	8.60			
Residual deformation after compression 70 hours at 100°C (%) [ASTM D 395 Method B]	17.50	40	17.30			
Shielding efficacy : 20MHz 100 MHz 500MHz 2GHz 10GHz	130 dB 140 dB 120 dB 120 dB 120 dB	100 dB 100 dB 100 dB 100 dB 100 dB	128 dB 137 dB 133 dB 122 dB 104 dB			
Working temperature (°C)	-55 to +125	-55 to +150	-55 to +160			
Color	Beige	Dark gray	Beige			
Properties Insulating part						
Specific mass at 25°C [ASTM D792]	1.27	1.27	1.40	1.43	1.27	1.46
Hardness (Shore A ±5) [ASTM D 2240]	60	60	40	40	60	60
Tensile strength Psi Mpa [ASTM D 412]	950 6.55	950 6.55	1000 6.80	1250 8.60	950 6.55	1200 8.30
Elongation (%) [ASTM D 412]	300	300	500	400	300	300
Residual deformation after compression 22 hours at 177°C (%) [ASTM D 395 method B]	33	33	30	20	33	25
Color	Blue	Blue	Orange	Blue	Blue	Light blue
Available format	Molded Extruded Customized cutting Adhered by vulcanization					

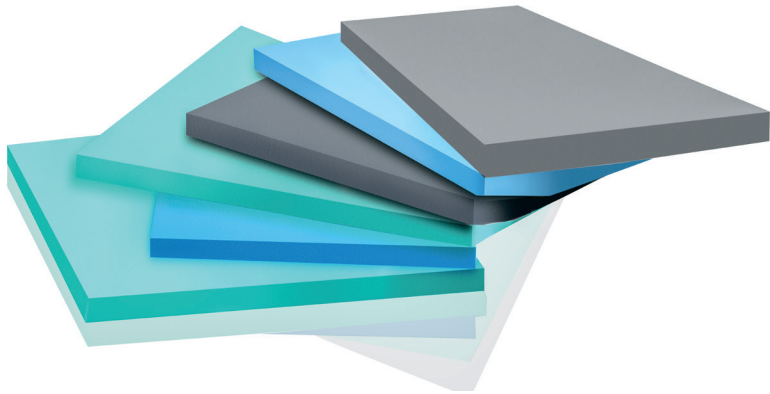
Find all our bi-material elastomers on our website

The advantages of our bi-material elastomers

- Dual IP/EMC protection
- Small footprint
- Bespoke solution
- Longer life compared to a mono-material gasket

OUR THERMAL GAP PAD

Entirely developed by our R&D laboratory, our complete range of heat sinks includes more than fifty references divided into five distinct ranges. In addition to our GTS range we also offer:



The GTG range: composed of about thirty references ranging from 1W/m.K to 10 W/m.K. Benefit from flexible products that will ensure that all surface roughnesses are taken into account during their compression and thus ensure optimal operation of your equipment at both low and high temperatures.

The GTC range: Our silicone-free solutions are developed from a specific polymer base perfectly suited to applications requiring no release of silicone-based product (siloxane type).

The GTD range : Available in cartridges from 180 to 900 cc, our GTD are ready to be deposited.

The GTR range : Thanks to a reinforcement in Nylon, our thermal mattresses allow the realization of very small thicknesses

Technical data of the GTS range

	Methods Tests	GTS 6-70R	GTS 8-65	GTS -9-80	GTS 10-50
Hardness ± 5 (Shore 00)	ASTM D 2240 Measured after 3 seconds	70	65	80	50
Thermal conductivity (w/m.K)	ASTM D 7984 Modified transient plane source (MTPS)	6 ± 0.2	8.1 ± 0.1	9.1 ± 0.2	10.01 ± 0.2
Density (g/cm³)	ASTM D 792	3.23 ± 0.01	3.3 ± 0.01	3.35 ±0.05	3.44 ±0.05
Elongation at break (%)	ASTM D 412	> 100	> 20	> 20	> 20
Dielectric strength (kV/mm)	ASTM D 149	15	10	11	7
Breakdown voltage (kV/mm)	ASTM D 149	-	16	16	6
Volume resistivity (Ω.m)	ASTM D 257	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹⁰
Dielectric constant @1Mhz	ASTM D 150	-	7.9	8	3
Dissipation factor @1Mhz	ASTM D 150	-	0.013	0.010	0.006
TML (%)	ESA-ECSS-Q-ST-70-02C	0.09	0.07	0.07	0.08
RML (%)	ESA-ECSS-Q-ST-70-02C	0.04	0.07	0.06	0.07
CVCM (%)	ESA-ECSS-Q-ST-70-2C	0.03	0.02	0.01	0.03
Working temperature (°C)		-45°C to +200°C	-40°C to +150°C	-40°C to +160°C	-40°C to +160°C
Available thicknesses (mm)		From 0.8 to 10 mm	From 1.5 to 10 mm	From 1 to 20mm	From 1 to 20 mm
Flame retardant	UL 94	-	V0	V0	-
RoHs		Yes			
Color		Light green	Light gray	Gray	Light brown

Find all our thermal gap pad solutions on our website.

OUR ENVIRONMENTAL SEALING SILICONE

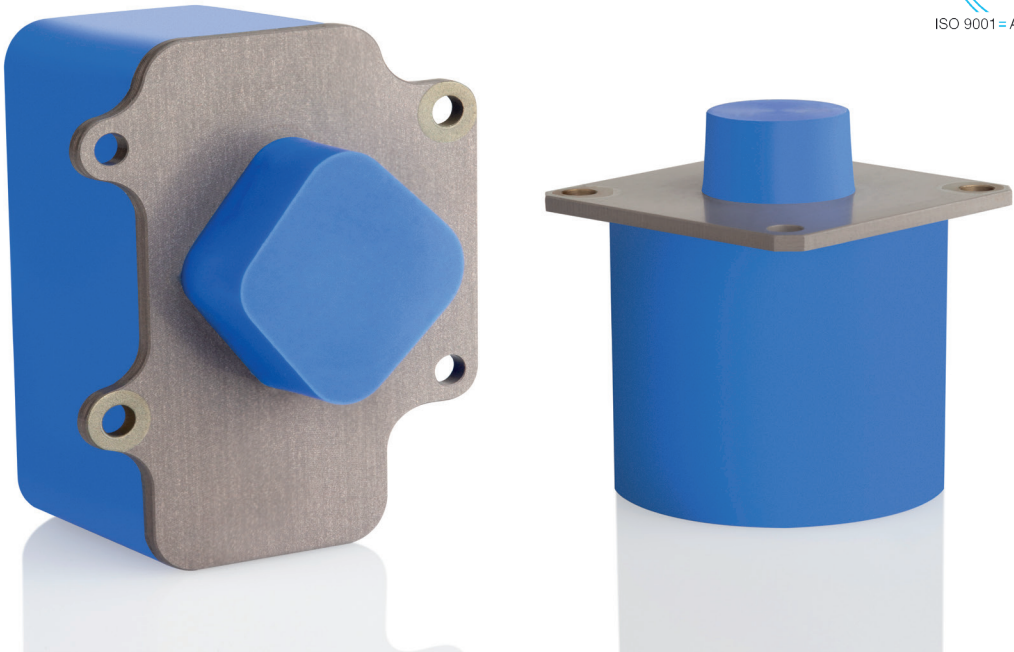
Thanks to the integration of high-performance silicone grades, specifically formulated to meet the extreme constraints of the space environment, we have developed two major families of advanced materials: silicones and fluorosilicone.

Our SP environmental sealing silicone range is particularly suitable for aerospace applications thanks to their low degassing rates and their compliance with ESA ECSS-Q-ST-70-02C qualification.

Technical data of the SP range

Properties Tests	GT 40 SP	GT 50 SP	GT60 SP
Elastomer	Silicone	Silicone	Silicone
Hardness (shore A) [ASTM D 2240]	40	50	60
Density (g/cm³) [ASTM D 792 Method A]	1.12	1.21	1.38
Break resistance (Mpa) [ASTM D 412 Method AC]	8.14	8.78	6.40
Elongation at break (%) [ASTM D 412 Method AC]	753	729	461
Tear strength (N/mm) [ASTM D 624 C]	38.60	37.07	32.20
Continuous use temperature (°C)	-73°C to +232°C	-73°C to +232°C	-73°C to +232°C
ESA-ECSS-Q-ST-70-02C qualification [TML,RML(<1%) et CVCM (<0.1%)]	Compliant [TML : 0.19% RML : 0.14% CVCM : 0.05%]	Compliant	Compliant

Find all our technical environmental sealing solutions on our website





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