



GETELEC

We protect your electronics



## OUR SOLUTIONS FOR AUTOMOTIVE INDUSTRY

Electric, hybrid and hydrogen technologies

[www.getelec.com](http://www.getelec.com)



## OUR COMPANY

For over 50 years, Getelec has designed and manufactured customized solutions for technical sealing, electromagnetic protection, microwave absorption and heat dissipation. Getelec's products are ideal for protecting high-tech equipment placed under conditions of severe environmental stress.

Getelec has become a world-class specialist in elastomer formulations and a trusted partner of high-profile customers in many industrial sectors.

## OUR SOLUTIONS

They adapt to the new generation of electric car, while remaining compatible with future developments.

ENGINE MANAGEMENT

POWER CONVERTER

BATTERY CHARGERS

ELECTRIC MOTORS

## OUR EXPERTISE

All aspects of our materials are developed by our chemical engineers. From selecting raw materials to final processing, we create specific formulations tailored to each request and have full control over all development processes and procedures.

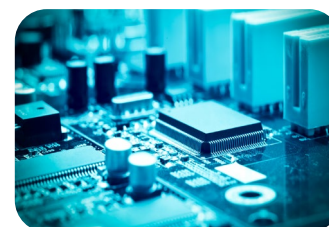
Through this expertise, we can create a bespoke solution that matches your individual requirements and complies with your specifications.

## APPLICATIONS

For electric and hybrid technology

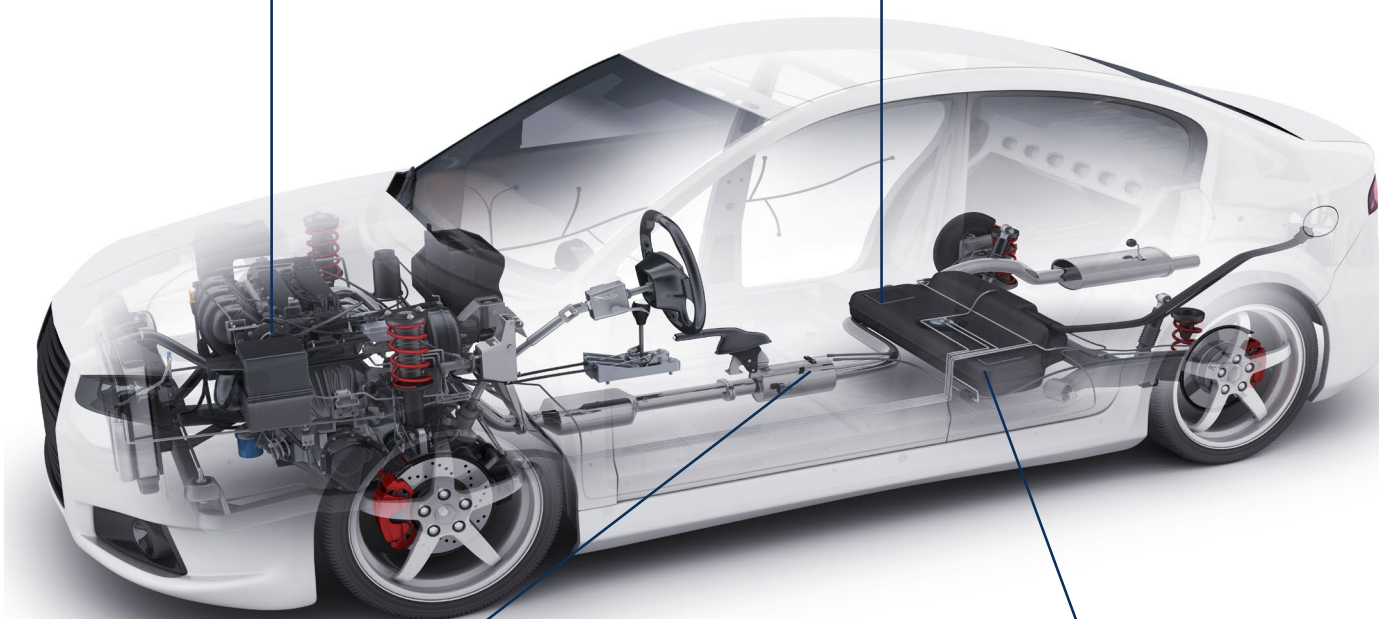
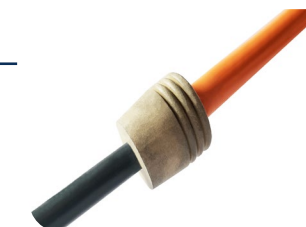
### BATTERY MANAGEMENT SYSTEMS

Volume resistivity between 0.0016 and 2.7  $\Omega \cdot \text{cm}$   
Shielding effectiveness from 60 to 120 dB  
(Frequency 20 MHz - 10 GHz)



### CONDUCTIVE BATTERY INTERCONNECT SEAL

Volume resistivity between 0.0016 and 2.7  $\Omega \cdot \text{cm}$   
Shielding effectiveness from 40 to 110 dB  
(Frequency 20 MHz - 10 GHz)



### HEAT SINK

Thermal conductivity between 1 and 8.5 W/m.K



### EMC SHIELDING FOR POWER CONVERTER

Volume resistivity from 0.0016 to 2.7  $\Omega \cdot \text{cm}$   
Shielding effectiveness from 30 to 100 dB  
(Frequency 20 MHz - 10 GHz)

## OUR FIELDS OF APPLICATION

- Automotive industry
- Aeronautical industry
- Defense sector
- Industrial electronics
- Energy
- Railways industry
- Medical sector
- Space industry
- Telecommunications

## OUR DEPARTMENTS



Laboratory



Innovation - R&D



Industrialization

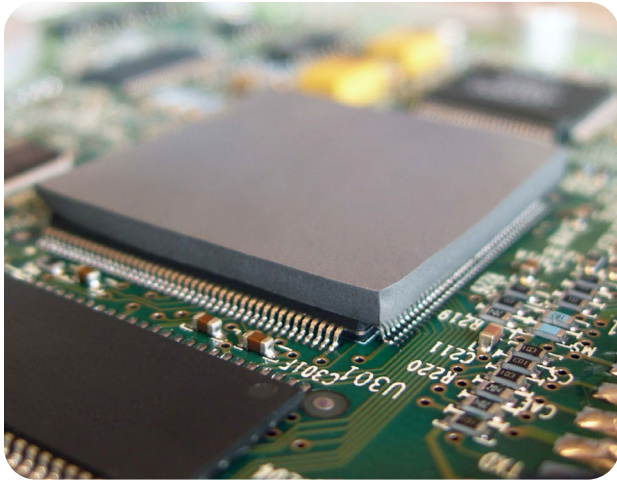


Production



PRODUCT RANGE

For electric and hybrid technology



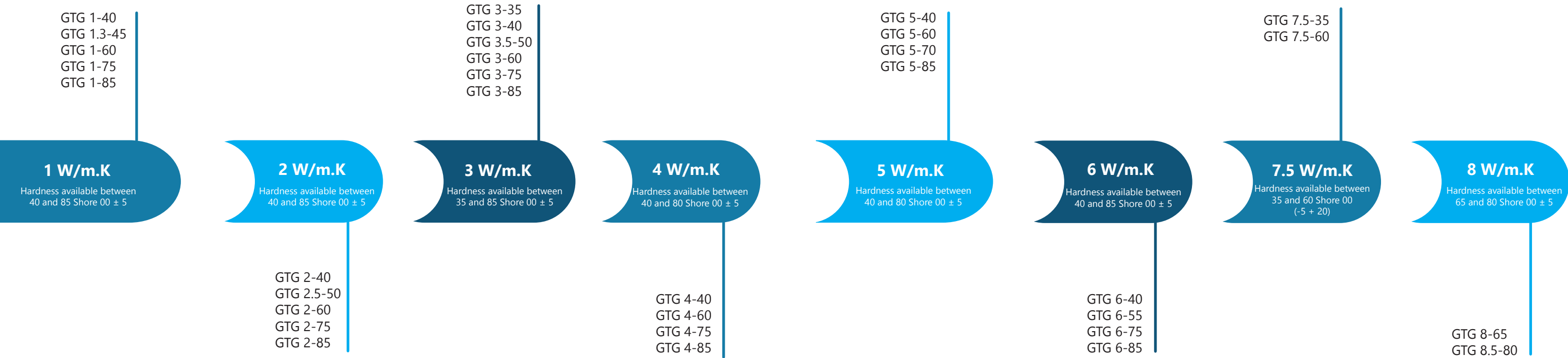
THERMAL PAD

The GTG range include highly conductive thermal pads that are ideal for applications where high thermal conductivity is required. Their specific formulations developed by our laboratory, together with their fillers, confer exceptional thermal conductivity to these elastomers.

- Thermal conductivity between **1 to 8.5 W/m.K**



Details and specifications of our **thermal pad**

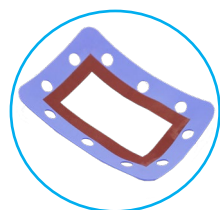


## OUR SOLUTIONS

Through our experience in high-performance elastomers, we have tailored our expertise to address a wide range of sealing challenge. For this reason, we are now developing dedicated solutions for PEM (Proton Exchange Membrane) fuel cell stacks.

Our special contribution to this industry is to design seals from our specially developed silicone materials for these applications.

### Our complete range oncludes



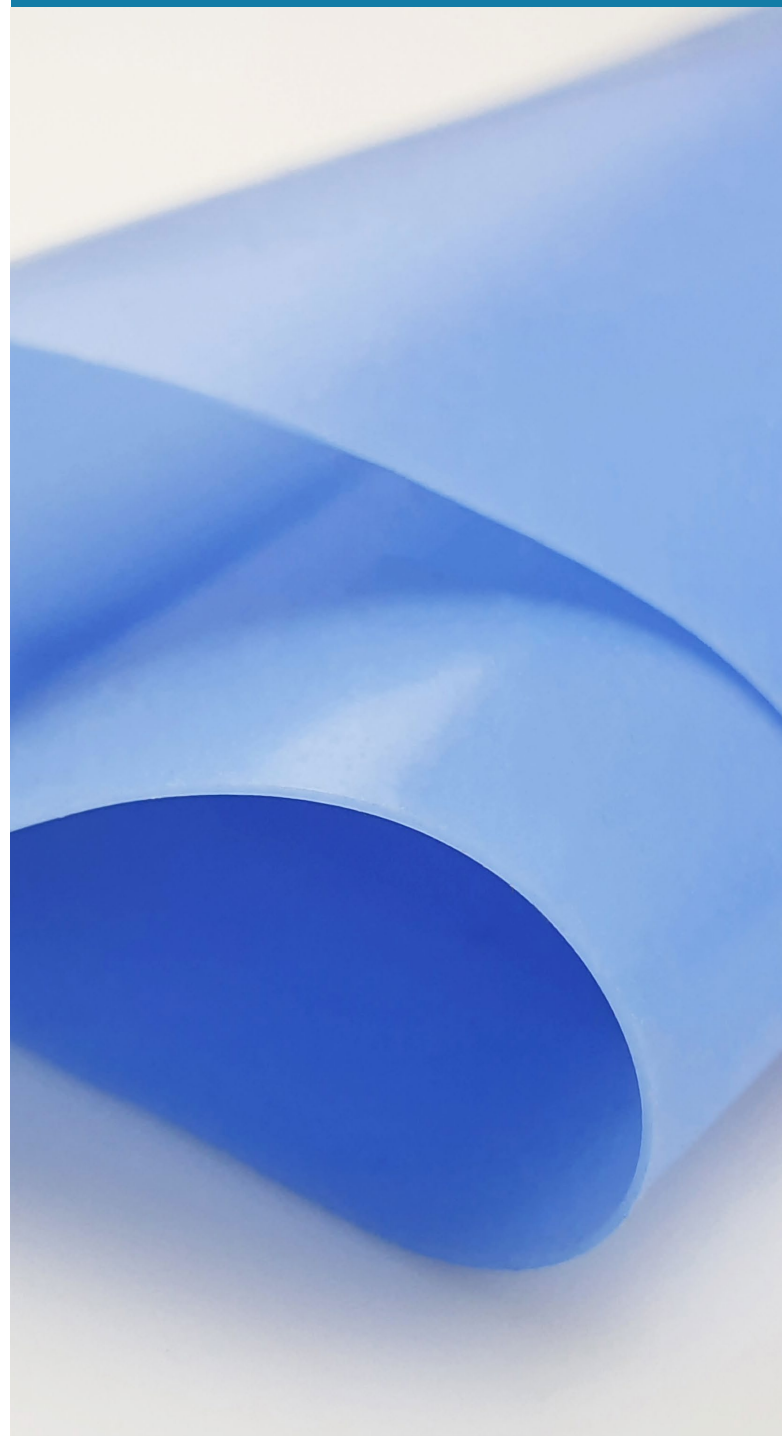
**Environmental sealing  
flat gaskets**



**Seals overmolded directly  
on components**

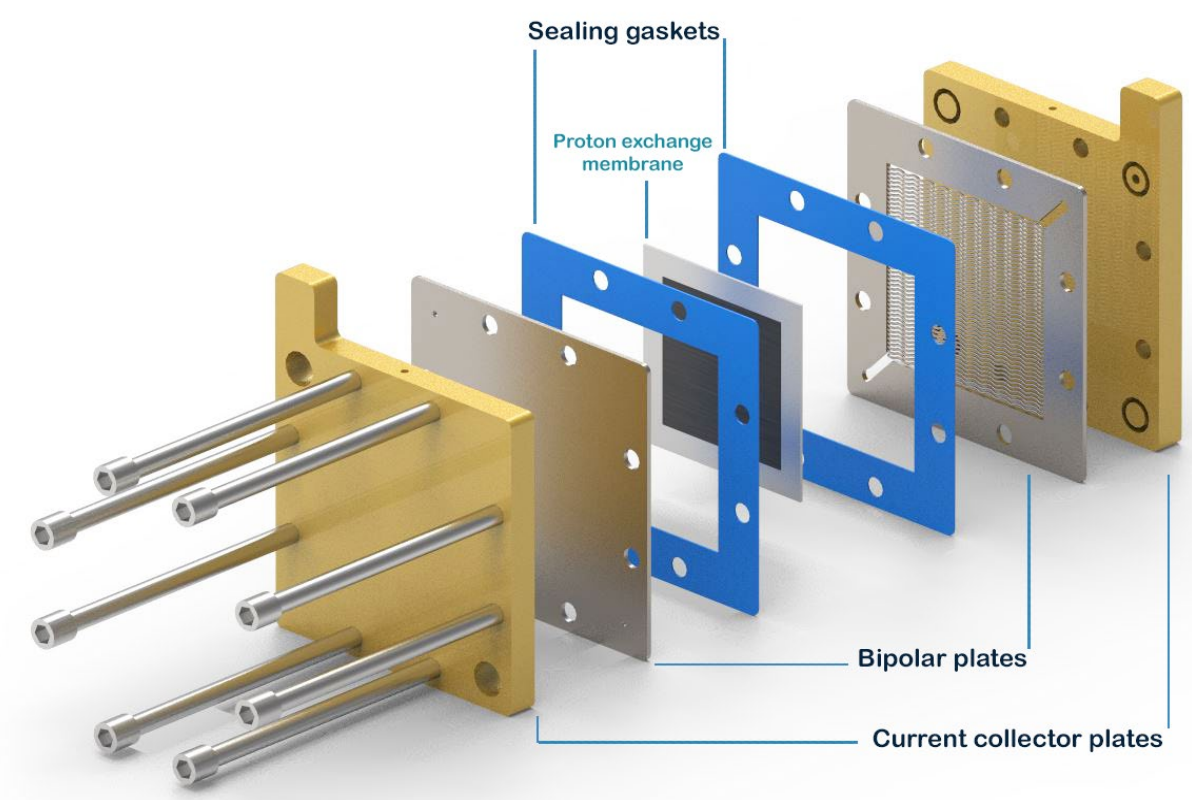


**Seals molded to  
shape**



## SEALS FOR FUEL CELLS

The assembly between the membrane and electrodes (also called the MEA) includes seals. Their pupose is to control the compression that will guarantee the cell's seal and the reliability of the contact (electrical, fluid and thermal) between the various materials that make up the core of the cell.



The thickness of the seals is one of the most important parameters in manufacturing a fuel cell, as it determines the degree to which the flow fields in the electrode are constricted.

For a good contact (i.e. low contact resistance) it is essential that the values are located between 0.05 mm and 0.07 mm for a carbon paper substrate and between 0.25 mm and 0.38 mm for a carbon cloth substrate.

As the electrode thickness for the anode and cathode can vary, the thickness of the seal for each sode is determined separately using the formula :

Gasket thickness = (Individual electrode thickness)-(Required constriction)



# SILICONE AND FLUOROSILICONE TECHNICAL DATA

Our **silicone** products are VMQ (ASTM D 1418) with a working temperature of -79°C and +232°C.

Our **fluorosilicone** products are FVMQ (ASTM D 1418) with a working temperature of -60°C to +230°C. They provide excellent resistance to solvents, fuels, organic oils and silicone oils.

	Standards & testing	GT-MEA-4S	GT-MEA-6S	GT-MEA-4F	GT-MEA-6F
Elastomer		Silicone	Silicone	Fluorosilicone	Fluorosilicone
Hardness shore A (±5)	ASTM D 2240	40	60	40	60
Specific mass at 25°C (g/cm <sup>3</sup> )	ASTM D 792	1.10	1.27	1.43	1.46
Tensile strength : Psi Mpa	ASTM D 412	1000 6.80	950 6.55	1250 8.60	1200 8.30
Elongation (%)	ASTM D 412	500	300	400	300
Compression set after 22 hours at 177°C (%)	ASTM D 395 method B	30	33	20	25

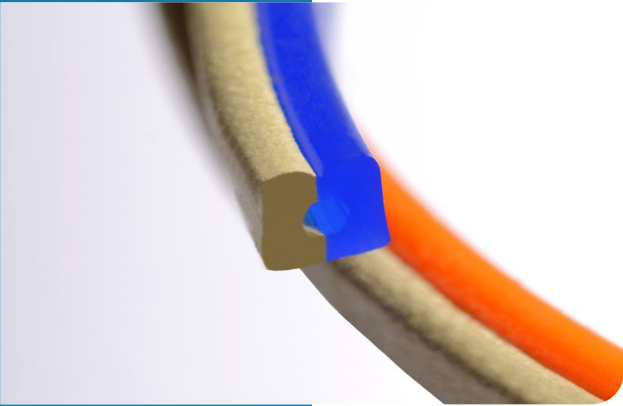


## OUR OTHER SOLUTIONS

### CORROSION-RESISTANT CONDUCTIVE SILICONE ELASTOMER

Effective solution to corrosion problems encountered when using conductive gaskets that come into contact with various electrolytes (salt spray, acidic environment...). We offer a solution with a bi-material gasket consisting of a conductive part and an environmental silicone sealing part produced using a co-extrusion process into one seal.

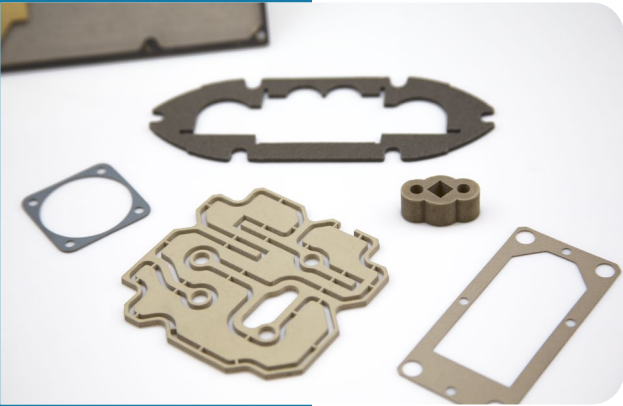
- Volume resistivity from 0.0016 to 2.7 ohm.cm
- Shielding effectiveness from 80 to 140 dB (Frequency 20 MHz - 10 GHz)



### ELECTRICALLY CONDUCTIVE ELASTOMER

For over 50 years, GETELEC has developed its proprietary conductive silicone materials that comply with MIL G 83528, MIL STD 285 and GAM EG-13 standards. These seals are manufactured using different processes (molded, die-cut, extruded, vulcanized and form-in-place).

- Volume resistivity from 0.0016 and 2.7 ohm.cm
- Shielding effectiveness from 80 to 140 dB (Frequency 20 MHz - 10 GHz)



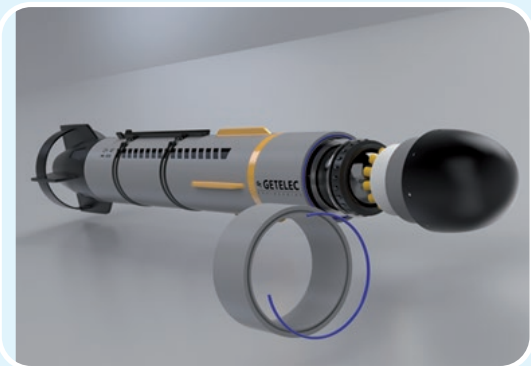
### ENVIRONMENTAL SEALING ELASTOMER

A range of environmental silicone sealants for the production of molded parts, O-rings, extruded profiles and flat gaskets. All our materials are available in silicone or fluorosilicone versions.

- Hardness from 20 Sh A to 90 Sh A

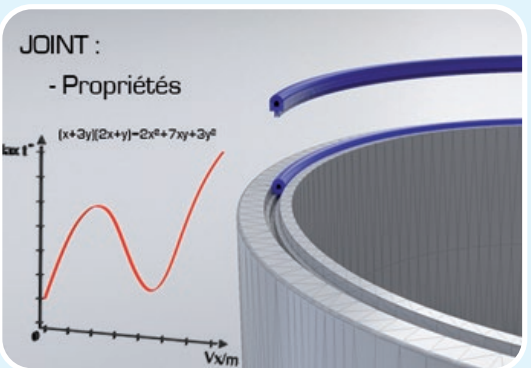


OUR EXPERTISE



UNDERSTANDING YOUR SPECIFIC REQUIREMENTS

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 complis with your specifications



EXPERTISE IN FORMULATION AND DESIGN

Our R&D laboratory fomulates 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 that we canproduce all your products on request, from prototypes to large-scale production.



EXPERTISE IN TOOL DESIGN

Our design office identifies and designs the right tols for your projects. With this expertise, we have the resources to deliver a turnkey solution and to provide support dans guidance throughout your entire project

STANDARD OR CUSTOM FORMATTING

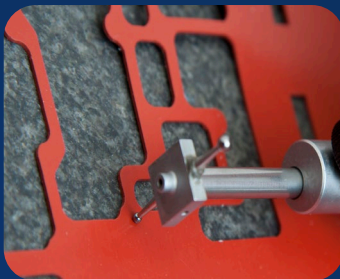
Based on your specifications and the layour plans of your gaskets, our technical team will provide guidance and assistance from the definition of the material to the dimensional definition of the finished gasket



Molding to shape



Extrusion



Custom die-cut



Sheet



Overmolding directly in components

OUR QUALITY APPROACH

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 obslscence. Thanks to this philosophy, we have been certified to ISO 9001 and EN9100 for over 25 years.





THEY TRUST US :



TRONICO  
ALCEN



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