

# CONDUCTIVE SILICONE GASKETS



# C O N T E N T S

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# Introduction

**GETELEC formulates its own conductive materials** and uses its expertise to transform them, thus enabling us to provide our clients with bespoke solutions.

We use specific silicone grades as the basis of our formulations to which we add conductive loads so that they have electromagnetic shielding properties.

The load used depends on the electromagnetic performance desired and the environment your equipment is working in.

The conductive particles (10 to 40 micron) forming the load (between 60% and 80% of the load) of our conductive formulations can be varied in order to achieve the right formulation for each application and environment.

In this way, electromagnetic performance and attenuation levels vary depending on the conductive material load, permitting us to adjust material costs to suit your application.

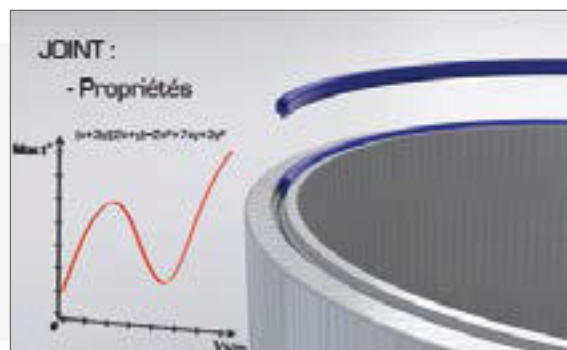
All our formulations meet MIL G 83528 standard and guarantee to comply with your customer specifications.

### The 3 main objectives of our formulations:

- electrical continuity performance
- mechanical performance (residual deformation, elongation at break etc.)
- Resistance to extreme temperatures

Our laboratory and research centre support clients from selection of material through to the choice of transformation procedure.

Our in-house control of the different processes means we are able to create a bespoke solution for your environment.



# Guide to conductive materials by industry sector

**GETELEC** develops its own conductive mixtures for more than **45 years**, meeting the requirements of MIL G 83528. Our engineers have developed a broad range of conductive silicones with various loads (Cu/Ag, Al/Ag, Ag, Ni/C, Carbon, etc.), enabling us to obtain electrically conductive

materials that meet the different requirements of our customers.

MILITARY / AERONAUTIC APPLICATIONS PRODUCTS					
Reference	Load	Attenuation 200MHz – 10GHz	Temperature (°C)	Comments	Transformation possibilities
GT 1000 GT 1007	Silver-plated copper Silver-plated copper (fluorinated)	120 to 140 dB	-55 to +125	Good EMP shielding Low degassing rate. Electrical and thermal conductor all in one. Very stable over time. High mechanical strength.	
GT 5000 GT 5007	Silver-plated aluminum Silver-plated aluminum (fluorinated)	104 to 137 dB	-55 to +160	Compatible with most alloys. Low density Resistant to high temperatures (200°C peak)	
GT 5080 GT 5087	Passivated silver-plated aluminum Passivated silver-plated aluminum (fluorinated)	80 dB	-55 to +160	Good resistance to extreme corrosion Salt fog resistance 2500 hours according to ASTM B 117	
GT 2020 GT 2024 GT 2027	Pure Silver Pure Silver Pure Silver (fluorinated)	60 dB	-55 to +160	High electromagnetic performance product - highly conductive - very low volume resistivity - excellent attenuation performance Resistant to high temperatures (200°C peak)	
GT 4000	Silver-plated glass beads	110 to 140 dB	-55 to +160	Very stable temperature (200°C peak) Compatible with most alloys Low density Excellent high frequency performance	
GT 5200	Silver-plated aluminum	104 to 137 dB	-55 to +160	Conductive EPDM Good resistance to high temperature (up to 190°C peak) Good resistance to abrasion. Gas permeability Excellent mechanical strength Resistant to solvents type Methyl Ethyl Ketone (MEK).	
GT 5000EX	Silver-plated aluminum	104 to 137 dB	-55 to +160	Expanded conductive silicone Very low density Compatible with most alloys Resistant to high temperatures (200°C peak)	
GT 2020EX	Pure Silver	60 dB	-55 to +160	Expanded conductive silicone Very low density High electromagnetic performance product - highly conductive - very low volume resistivity - excellent attenuation performance Resistant to high temperatures (200°C)	

CIVILIAN ELECTRONIC APPLICATIONS PRODUCTS					
Reference	Load	Attenuation 200MHz – 10GHz	Temperature (°C)	Comments	Transformation possibilities
GT 1015	Silver-plated copper	120 to 140 dB	-55 to +125	Good EMP shielding Low degassing rate. Electrical and thermal conductor all in one. Very stable over time. High mechanical strength.	
GT 5080 GT 5087	Passivated silver-plated aluminum Passivated silver-plated aluminum (fluorinated)	80 dB	-55 to +160	Good resistance to salt fog Salt fog resistance 2500 hours according to ASTM B 117	
GT 2660 GT 2667	Pure Silver Pure Silver (fluorinated)	110 dB	-55 to +160	Conductive outer skin around non-loaded silicone Low cost solution	
GT 3000 GT 3007	Silver-plated nickel Silver-plated nickel (fluorinated)	110 to 130 dB	-55 to +125	Very stable temperature Particles with irregular shapes for better contact between them Good corrosion-resistance on aluminum support (168 hours test in salt fog)	
GT 13100	Nickel graphite	90 dB	-35 to +90	Conductive flexible thermoplastic (non-silicone) Good low frequency performance Stable electrical properties Very good resistance to low temperatures Low cost solution	

TELECOMS APPLICATIONS PRODUCTS					
Reference	Load	Attenuation 200MHz – 10GHz	Temperature (°C)	Comments	Transformation possibilities
GT 3100 GT 3107	Nickel Graphite Nickel Graphite (fluorinated)	100 dB	-55 to +150	Good low frequency performance. Stable electrical properties UL 94V0 compliant grade	
BL 10000 BL 10007	Carbon Carbon (fluorinated)	105 dB	-55 to +125	Conductive and leaktight product very often used for sealing telecoms cabinet doors. Good mechanical properties (RDC, elongation at break) Very good salt fog resistance UL 157 compliant	

Molded  
 Extruded  
 Cut  
 Secured by vulcanization  
 Sheet

# Conductive silicones

We use specific silicone grades as the basis of our formulations to which we add conductive loads so that they have electromagnetic shielding properties. The load used depends on the electromagnetic performance desired and the environment your equipment is working in.

The conductive particles (10 to 40 micron) forming the load (between 60% and 80% of the load) of our conductive formulations can be varied in order to achieve the right formulation for each application and environment. All our formulations meet MIL G 83528 standard and guarantee to comply with your customer specifications. The 3 main objectives of our formulations:

- electrical continuity performance
- mechanical performance (Residual deformation, elongation at break, etc.)
- Resistance to extreme temperatures

	Standards	GT 1000	GT 1007	GT 1015	GT 2020	GT 2024	GT 2027	GT 3000	GT 3007	
Type MIL G 83528		K	C	A	-	E	F	L		
Elastomer		Silicone	Fluorinated silicone	Silicone	Silicone	Silicone	Fluorinated silicone	Silicone	Fluorosilicone	
Load		Silver-plated copper	Silver-plated copper	Silver-plated copper	Pure silver	Pure silver	Pure silver	Silver-plated nickel	Silver-plated nickel	
Volume resistivity $\Omega \cdot \text{cm}$	MIL G 83528	< 0.005	< 0.006	< 0.004	< 0.006	< 0.0016	< 0.006	< 0.005	< 0.006	
Shore A hardness	ASTM D 2240	82	73	69	75	69	75	75	60	
Density g/cm <sup>3</sup>	ASTM D 792 Method A	3.40	3.90	3.64	3.90	3.80	4.30	3.70	3.50	
Break resistance Mpa	ASTM D 412 Method A C	2.20	1.79	1.78	4.61	2.64	3.3	3.00	2.4	
% elongation at break	ASTM D 412 Method A C	341	250	283	355	380	158.5	290	250	
Tear strength N/mm	ASTM D 624 C	13.44	8.92	13.83	13.73	16.28	14.4	9.50	7.50	
% residual deformation after 70 hours compression at 100°C	ASTM D 395 Method B	17.50	25.30	14.30	33.12	15.10	19	< 32	< 35	
Working temperature °C		-55 to +125	-55 to +125	-55 to +125	-55 to +160	-55 to +160	-55 to +160	-55 à + 125	-55 à + 125	
Color		Gray	Gray	Gray	Light beige	Light beige	Beige	Gray	Gray	
Shielding performance: 20 MHz 100 MHz 500 MHz 2 GHz 10 GHz	* MILG 83528	130 dB 140 dB 120 dB 120 dB 120 dB	113 dB 144 dB 119 dB 128 dB 114 dB	113 dB 139 dB 120 dB 128 dB 114 dB	110 dB 110 dB 110 dB 110 dB 110 dB	113 dB 147 dB 118 dB 128 dB 110 dB	125 dB 110 dB 110 dB 110 dB 110 dB	120 dB 126 dB 137 dB 132 dB 112 dB	120 dB 126 dB 137 dB 132 dB 112 dB	

Molded
 Extruded
 Cut
 Secured by vulcanization
 Sheet

\* See page 8

## TOLERANCES STANDARDS

SHEET SIZE 300mm x 300mm	
Thickness (mm)	TOLERANCES STD
0.20	± 0.07
From 0.30 to 0.40	±0.10
0.50	± 0.15
0.60	± 0.15
0.70	± 0.15
0.80	± 0.18
0.90	± 0.18
From 1.0 to 2.0	± 0.20
Greater than 2	± 13%

SHEET SIZE 150mm x 150mm	
Thickness (mm)	TOLERANCES STD
0.20	+0.05 / -0
From 0.30 to 0.40	±0.10
0.50	± 0.07
0.60	± 0.10
0.70	± 0.10
0.80	± 0.15
0.90	± 0.15
From 1.0 to 2.0	± 0.15
Greater than 2	± 13%

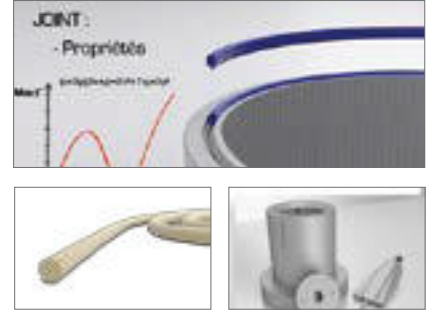
The tolerances applicable for control are those shown on this page except when a FAI, a DVI or a specific control document are requested to Getelec.

1

	GT 3100	GT 3107	GT 4000	GT 5000	GT 5007	GT 5080	GT 5087	GT 5200	BL 10000	BL 10007	GT 13100
	-	-	M	B	D	-	-				
	Silicone	Fluorinated silicone	Silicone	Silicone	Fluorinated silicone	Silicone	Fluorinated silicone	EPDM	Silicone	Fluorinated silicone	Thermoplastic elastomer
	Nickel Graphite	Nickel Graphite	Silver-plated glass bead	Silver-plated aluminum	Silver-plated aluminum	Treated aluminum	Treated aluminum	Silver-plated Aluminum	Carbon	Carbon	Nickel Graphite
	< 0.10	< 0.10	< 0.015	< 0.0054	< 0.0029	2.5	2.5	< 0.015	2.7	2.7	0.03
	65	65	67	65	71	70	80	70	70	73	55
	2	2.3	2	1.90	2	2.5	2.5	2	1.22	1.23	2.34
	1.37	1.30	2.47	1.89	1.85	1.38	1.38	1.70	4.41	6.3	0.50
	150	200	180	286	262	100 / 300	100 / 300	470	200	177.6	200
	8.73	6.08	8.06	8.43	7.36	4.37	4.37	12.00	11.77	21.7	4.10
	40	25	25	17.30	21	30	30	40	18	18	40
	-55 to +150	-55 to +150	-55 to +160	-55 to +160	-55 to +160	-55 to +160	-55 to +160	-45 to +160	-55 to +125	-55 to +125	-35 to +90
	Dark gray	Dark gray	Gray	Gray	Light blue	Black	Black	Gray	Black	Black	Gray
	100 dB 100 dB 100 dB 100 dB 100 dB	100 dB 100 dB 100 dB 100 dB 100 dB	118 dB 131 dB 138 dB 132 dB 112 dB	128 dB 137 dB 133 dB 122 dB 104 dB	105 dB 108 dB 110 dB 115 dB 91 dB	80 dB 80 dB 80 dB 80 dB 80 dB	80 dB 80 dB 80 dB 80 dB 80 dB	128 dB 137 dB 133 dB 122 dB 104 dB	60 dB 105 dB 105 dB 105 dB 105 dB	60 dB 60 dB 60 dB 60 dB 60 dB	90 dB 90 dB 90 dB 90 dB 90 dB
											Injection

All these mixtures may be available in a fire/smoke/toxicity-retardant version, (UL, FAR, etc.), EN 45545.

All these products may be available in UL version on demand.



# 1 Charged Conductive Silicones

## Silver-plated copper charged conductive silicone – GT 1000

GT1000 is a conductive, silver-plated copper charged silicone elastomer, which enables the creation of sealed, conductive joints. This is a conductive mixture which is compliant with the MIL G 83528 Type K standard.

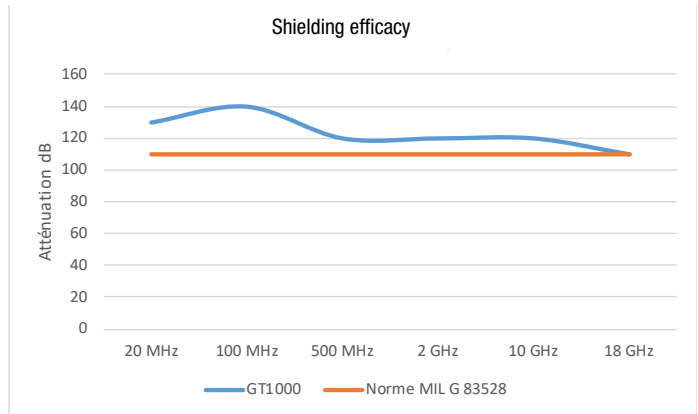
**Advantages**

- Good EMP resistance
- Low degassing rate (suitable for aerospace applications)
- Both electrically and thermally conductive
- Excellent stability over time

### FEATURES

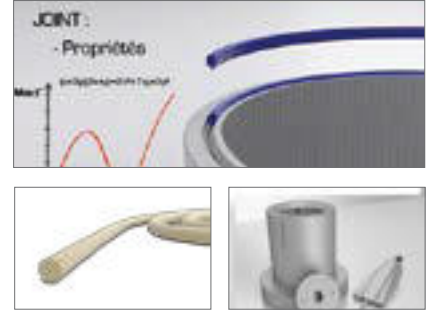
MATERIAL	Standards - Test	GT 1000	Specification MIL G 83528
Type MIL G 83528		Type K	-
Elastomer		Silicone	-
Load condition		Cu-Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.005	0.005
Shore hardness A	ASTM D 2240	82	65
Density	ASTM D 792 Method A	3.40	3.50
Break resistance MPa	ASTM D 412 Method A C	2.20	-
Elongation at break %	ASTM D 412 Method A C	341	100-300
Tear resistance N/mm	ASTM D 624 C	13.44	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	17.50	Max. 35
Continuous usage temperature		-55°C to +125°C	-55°C to +125°C
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Silver-plated copper charged fluorinated conductive silicone – GT 1007

GT1007 is a silver-plated copper-charged, fluorinated conductive silicone elastomer which enables the creation of sealed, conductive joints, which can come into contact with solvents, oils, hydrocarbons or hydraulic fluids. This is a conductive mixture which is compliant with the MIL G 83528 Type C standard.

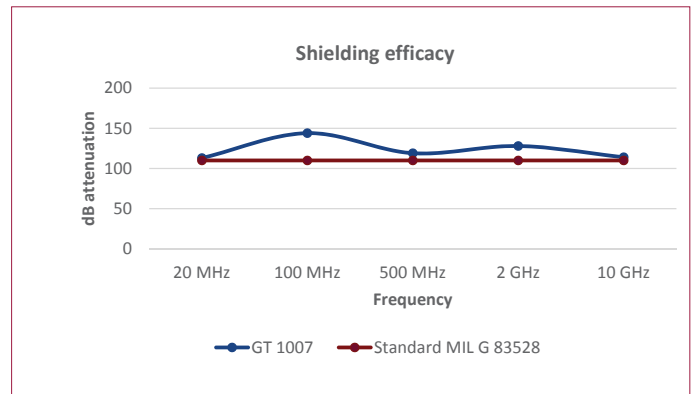
**Advantages**

- Good EMP resistance
- Low degassing rate (suitable for aerospace applications)
- Both electrically and thermally conductive
- Excellent stability over time

### FEATURES

MATERIAL	Standards - Test	GT 1007	Specification MIL G 83528
Type MIL G 83528		C type	-
Elastomer		Fluorinated silicone	-
Load condition		Cu-Ag	-
Volume resistivity $\Omega/cm$	MIL G 83528	< 0.006	0.010
Shore hardness A	ASTM D 2240	73	75
Density	ASTM D 762 Method A	3.90	4.00
Break resistance MPa	ASTM D 412 Method A C	1.79	-
Elongation at break %	ASTM D 412 Method A C	250	100-300
Tear resistance N/mm	ASTM D 624 C	8.92	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	25.30	Max. 35
Continuous usage temperature		-55°C to +125°C	-55°C to +125°C
Colour		Grey	-

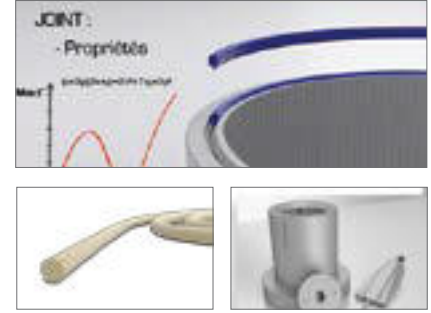
### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet





# 1 Charged Conductive Silicones

## Pure silver charged conductive silicone – GT 2020

GT2020 is a pure silver charged conductive silicone elastomer which enables the creation of sealed, conductive joints. Highly-conductive material resistant to peak temperatures of up to 200°C.

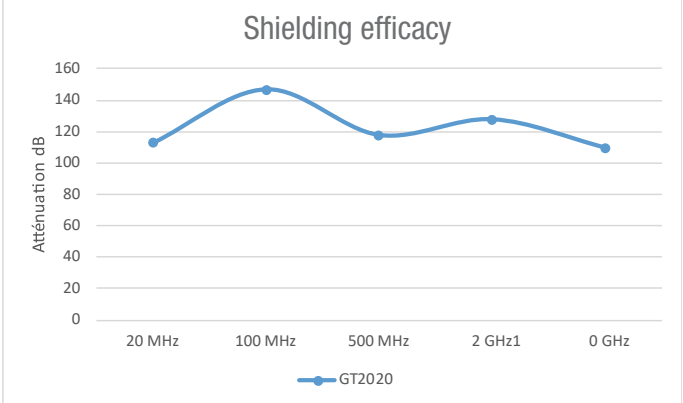
**Advantages**

- Highly conductive
- Very low volume resistivity
- Excellent attenuation performance
- High-temperature resistance (peak 200°C)

### FEATURES

MATERIAL	Standards - Test	GT 2020	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Silicone	-
Load condition		Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.006	-
Shore hardness A	ASTM D 2240	75	-
Density	ASTM D 792 Method A	3.90	-
Break resistance MPa	ASTM D 412 Method A C	4.61	-
Elongation at break %	ASTM D 412 Method A C	355	-
Tear resistance N/mm	ASTM D 624 C	13.73	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	-	-
Continuous usage temperature		-55°C to +160°C	-
Colour		Light beige	-

### MICROWAVE SHIELDING

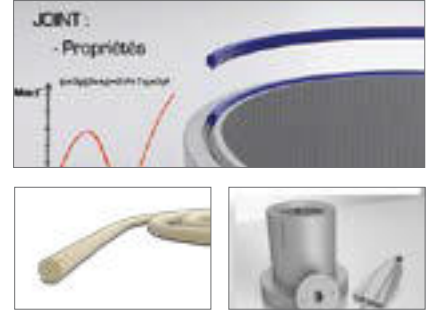


### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet

Low outgassing tests regarding specification ECSS-Q-ST-70-02C

Total mass loss TML %	Relative mass loss %	Collected volatile condensable materials CVCM %	WVR vapor release WMR %
0.08	0.07	0.03	0.01



# 1 Charged Conductive Silicones

## Pure silver charged fluorinated conductive silicone – GT 2027

GT2027 is a pure silver charged fluorinated conductive silicone elastomer which enables the creation of sealed, conductive joints. This is a conductive mixture which is compliant with the MIL G 83528 Type F standard. Highly conductive material resistant to peak temperatures of up to 200°C.

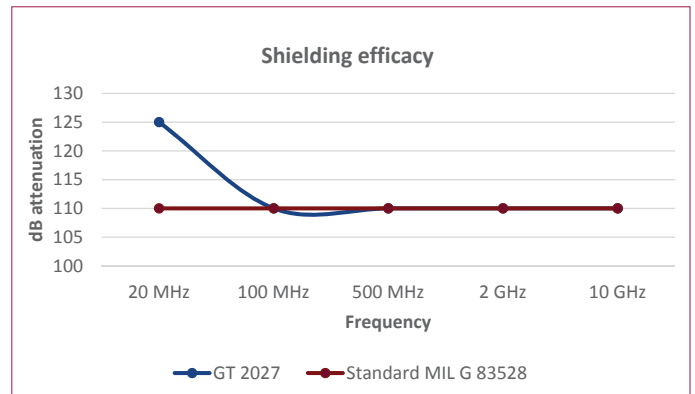
**Advantages**

- Highly conductive
- Very low volume resistivity
- Excellent attenuation performance
- High-temperature resistance (peak 200°C)

### FEATURES

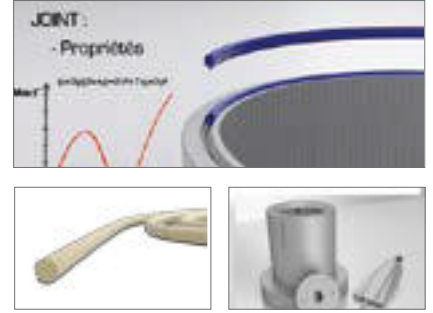
MATERIAL	Standards - Test	GT 2027	Specification MIL G 83528
Type MIL G 83528		F	-
Elastomer		Fluorinated silicone	-
Load condition		Ag	-
Volume resistivity $\Omega/cm$	MIL G 83528	< 0.006	0.002
Shore hardness A	ASTM D 2240	75	75
Density	ASTM D 792 Method A	4.30	4.00
Break resistance MPa	ASTM D 412 Method A C	-	-
Elongation at break %	ASTM D 412 Method A C	-	100 - 300
Tear resistance N/mm	ASTM D 624 C	-	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	19	60
Continuous usage temperature		-55°C to +160°C	-55°C to +160°C
Colour		Beige	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



## 1 Charged Conductive Silicones

# Silver-plated nickel charged conductive silicone – GT 3000

GT3000 is a conductive, silver-plated nickel charged silicone elastomer, which enables the creation of sealed, conductive joints. This is a conductive mixture which is compliant with the MIL G 83528 Type L standard.

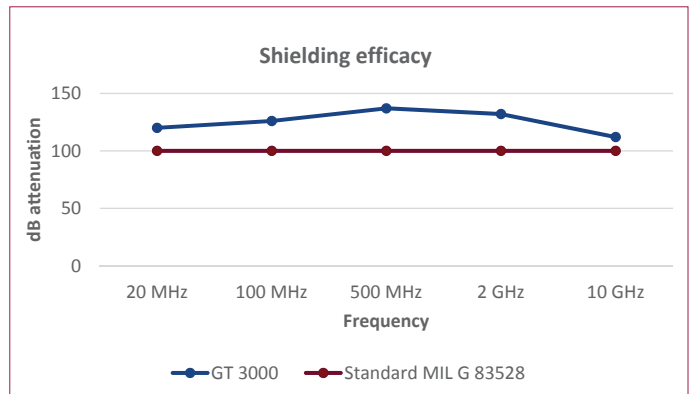
**Advantages**

- Very stable temperature range
- Irregular particle shape for better particle contact
- Good corrosion resistance on aluminium support (168 hour test in salt spray)

### FEATURES

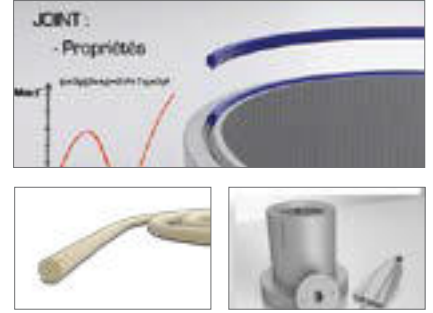
MATERIAL	Standards - Test	GT 3000	Specification MIL G 83528
Type MIL G 83528		L	-
Elastomer		Silicone	-
Load condition		Ni/Ag	-
Volume resistivity $\Omega/cm$	MIL G 83528	< 0.005	0.005
Shore hardness A	ASTM D 2240	75	75
Density	ASTM D 792 Method A	3.70	4.00
Break resistance MPa	ASTM D 412 Method A C	3.00	-
Elongation at break %	ASTM D 412 Method A C	290	100-300
Tear resistance N/mm	ASTM D 624 C	9.50	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	< 32	32
Continuous usage temperature		-55°C to +125°C	-55°C to +125°C
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Silver-plated nickel charged fluorinated conductive silicone – GT 3007

GT3007 is a conductive, silver-plated nickel charged fluorinated silicone elastomer which enables the creation of sealed, conductive joints.

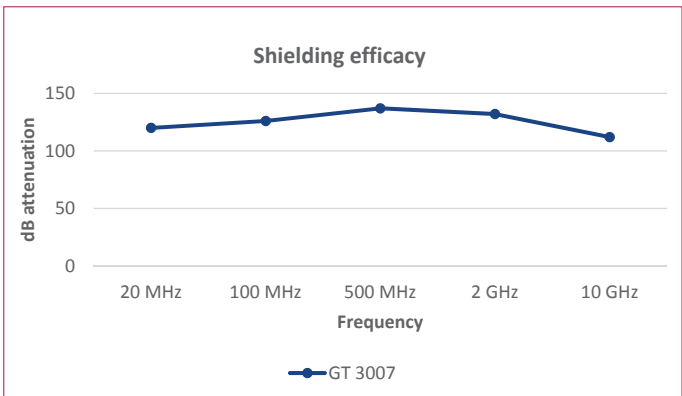
**Advantages**

- Very stable temperature range
- Irregular particle shape for better particle contact
- Good corrosion resistance on aluminium support (168 hour test in salt spray)

### FEATURES

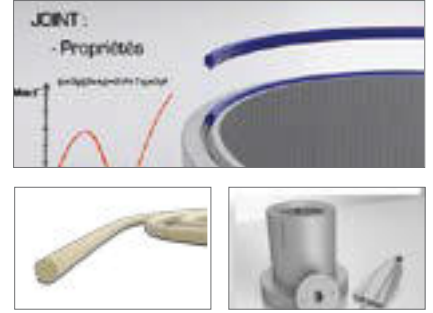
MATERIAL	Standards - Test	GT 3007	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Fluorinated silicone	-
Load condition		Ni/Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.006	-
Shore hardness A	ASTM D 2240	60	-
Density	ASTM D 792 Method A	3.50	-
Break resistance MPa	ASTM D 412 Method A C	2.40	-
Elongation at break %	ASTM D 412 Method A C	250	-
Tear resistance N/mm	ASTM D 624 C	7.50	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	< 35	-
Continuous usage temperature		-55°C to +125°C	-
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Graphite nickel charged conductive silicone – GT 3100

GT3100 is a conductive, graphite nickel charged silicone elastomer, which enables the creation of sealed, conductive joints. This is a conductive mixture with excellent low-frequency performance.

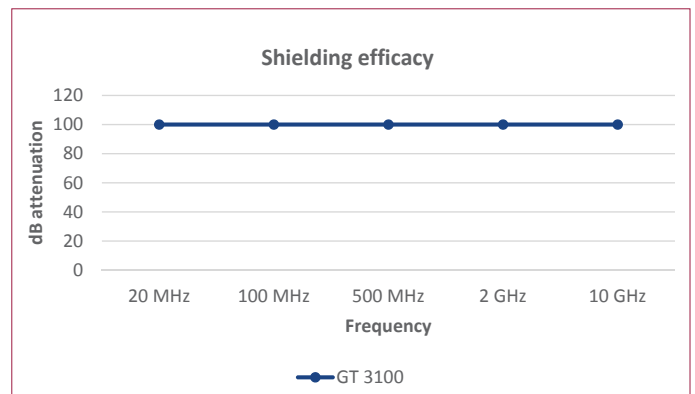
**Advantages**

- Good low-frequency performance
- Stable electrical properties
- Grade compliant with UL 94V0
- Economical solution

### FEATURES

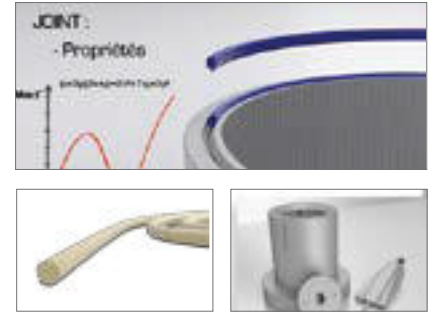
MATERIAL	Standards - Test	GT 3100	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Silicone	-
Load condition		Ni/C	-
Volume resistivity Ω/cm	MIL G 83528	< 0.10	-
Shore hardness A	ASTM D 2240	65	-
Density	ASTM D 792 Method A	2	-
Break resistance MPa	ASTM D 412 Method A C	1.37	-
Elongation at break %	ASTM D 412 Method A C	150	-
Tear resistance N/mm	ASTM D 624 C	8.73	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	40	-
Continuous usage temperature		-55°C to +150°C	-
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Graphite nickel charged fluorinated conductive silicone – GT 3107

GT3107 is a graphite nickel-charged, fluorinated conductive silicone elastomer which enables the creation of sealed, conductive joints, which can come into contact with solvents, oils, hydrocarbons or hydraulic fluids. This is a conductive mixture with excellent low-frequency performance.

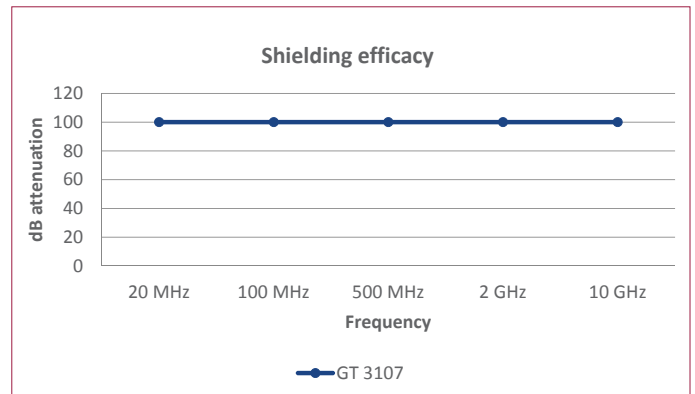
**Advantages**

- Good low-frequency performance
- Stable electrical properties
- Grade compliant with UL 94V0
- Economical solution
- Excellent resistance to oils and hydrocarbons

### FEATURES

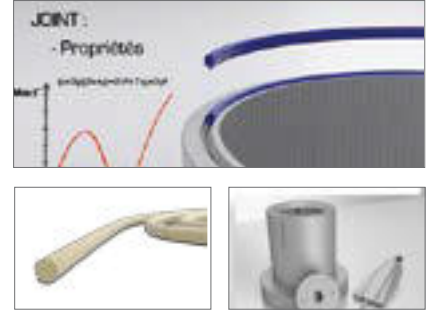
MATERIAL	Standards - Test	GT 3107	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Fluorinated silicone	-
Load condition		Ni/C	-
Volume resistivity Ω/cm	MIL G 83528	< 0.10	-
Shore hardness A	ASTM D 2240	65	-
Density	ASTM D 792 Method A	2.30	-
Break resistance MPa	ASTM D 412 Method A C	1.30	-
Elongation at break %	ASTM D 412 Method A C	200	-
Tear resistance N/mm	ASTM D 624 C	6.08	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	25	-
Continuous usage temperature		-55°C to +150°C	-
Colour		Dark grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Silver-plated glass bead charged conductive silicone – GT 4000

GT4000 is a conductive, silver-plated glass bead charged silicone elastomer, which enables the creation of sealed, conductive joints. This is a conductive mixture which is compliant with the MIL G 83528 Type M standard.

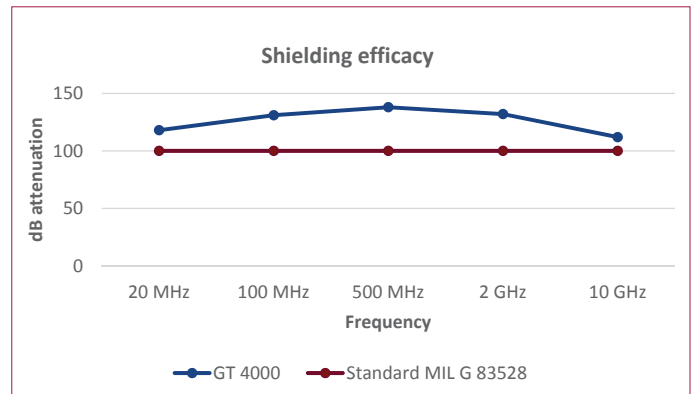
**Advantages**

- Very stable at high temperatures (peak 200°)
- Compatible with most alloys
- Low density
- Excellent high-frequency performance

### FEATURES

MATERIAL	Standards - Test	GT 4000	Specification MIL G 83528
Type MIL G 83528		M	-
Elastomer		Silicone	-
Load condition		Silver-plated glass beads	-
Volume resistivity Ω/cm	MIL G 83528	< 0.015	0.06
Shore hardness A	ASTM D 2240	67	65
Density	ASTM D 792 Method A	2.00	1.90
Break resistance MPa	ASTM D 412 Method A C	2.47	-
Elongation at break %	ASTM D 412 Method A C	180	100 - 300
Tear resistance N/mm	ASTM D 624 C	8.06	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	25	30
Continuous usage temperature		-55°C to +160°C	-55°C to +160°C
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Silver-plated aluminium charged conductive silicone – GT 5000

GT5000 is a conductive, silver-plated aluminium charged silicone elastomer which enables the creation of sealed, conductive joints. This is a conductive mixture which is compliant with the MIL G 83528 Type B standard.

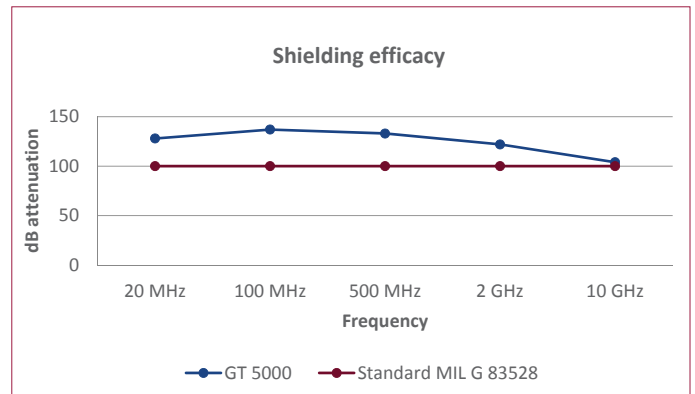
**Advantages**

- Very stable at high temperatures (peak 200°)
- Compatible with most alloys
- Low density
- Excellent high-frequency performance

### FEATURES

MATERIAL	Standards - Test	GT 5000	Specification MIL G 83528
Type MIL G 83528		B	-
Elastomer		Silicone	-
Load condition		Al/Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.0054	0.008
Shore hardness A	ASTM D 2240	65	65
Density	ASTM D 792 Method A	1.90	2.00
Break resistance MPa	ASTM D 412 Method A C	1.89	-
Elongation at break %	ASTM D 412 Method A C	286	100-300
Tear resistance N/mm	ASTM D 624 C	8.43	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	25	32
Continuous usage temperature		-55°C to +160°C	-55°C to +160°C
Colour		Grey	-

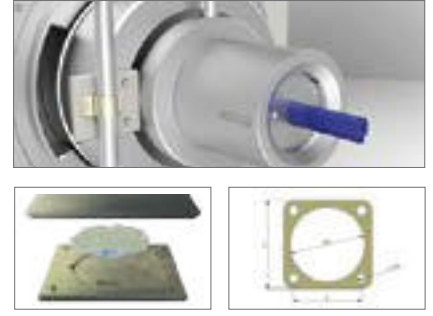
### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet





# 1 Charged Conductive Silicones

## Silver-plated aluminium charged fluorinated conductive silicone – GT 5007

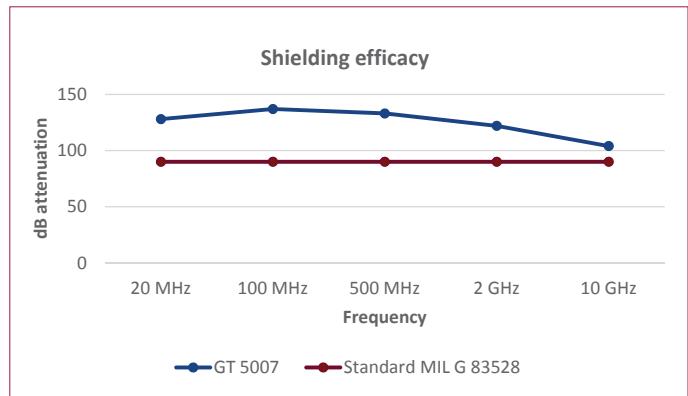
GT5007 is a silver-plated aluminium charged, fluorinated conductive silicone elastomer which enables the creation of sealed, conductive joints, which can come into contact with solvents, oils, hydrocarbons or hydraulic fluids. This is a conductive mixture which is compliant with the MIL G 83528 Type D standard.

- Advantages**
- Very stable at high temperatures (peak 200°)
  - Compatible with most alloys
  - Low density
  - Excellent high-frequency performance

### FEATURES

MATERIAL	Standards - Test	GT 5007	Specification MIL G 83528
Type MIL G 83528		D	-
Elastomer		Fluorinated silicone	-
Load condition		Al/Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.0029	0.012
Shore hardness A	ASTM D 2240	71	70
Density	ASTM D 792 Method A	2.00	2.00
Break resistance MPa	ASTM D 412 Method A C	1.85	-
Elongation at break %	ASTM D 412 Method A C	262	60-260
Tear resistance N/mm	ASTM D 624 C	7.36	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	21	30
Continuous usage temperature		-55°C to +160°C	-55°C to +160°C
Colour		Light blue	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Extrusion
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Treated aluminium charged conductive silicone – GT 5080

GT5080 is a conductive, treated aluminium charged silicone elastomer which enables the creation of sealed, conductive joints.

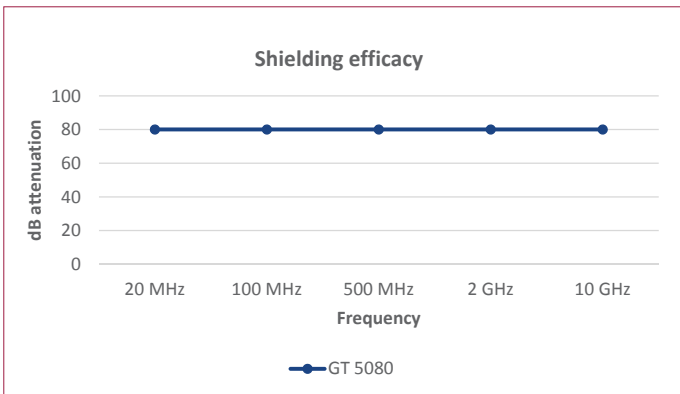
**Advantages**

- Good resistance to salt spray (corrosion resistance)
- Economical solution

### FEATURES

MATERIAL	Standards - Test	GT 5080	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Silicone	-
Load condition		Treated Al	-
Volume resistivity $\Omega/cm$	MIL G 83528	2.5	-
Shore hardness A	ASTM D 2240	70	-
Density	ASTM D 792 Method A	2.50	-
Break resistance MPa	ASTM D 412 Method A C	1.38	-
Elongation at break %	ASTM D 412 Method A C	100-300	-
Tear resistance N/mm	ASTM D 624 C	4.37	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	30	-
Continuous usage temperature		-55°C to +160°C	-
Colour		Black	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Treated aluminium charged fluorinated conductive silicone – GT 5087

GT5087 is a treated aluminium charged, fluorinated conductive silicone elastomer which enables the creation of sealed, conductive joints, which can come into contact with solvents, oils, hydrocarbons or hydraulic fluids.

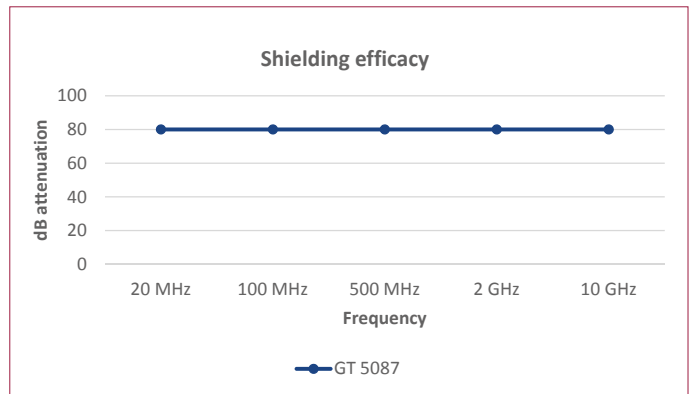
**Advantages**

- Good resistance to salt spray (corrosion resistance)
- Economical solution

### FEATURES

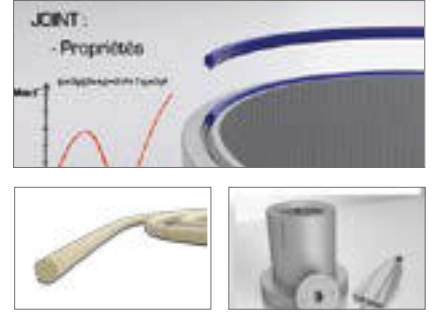
MATERIAL	Standards - Test	GT 5087	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		Fluorinated silicone	-
Load condition		Treated Al	-
Volume resistivity $\Omega/cm$	MIL G 83528	2.5	-
Shore hardness A	ASTM D 2240	80	-
Density	ASTM D 792 Method A	2.50	-
Break resistance MPa	ASTM D 412 Method A C	1.38	-
Elongation at break %	ASTM D 412 Method A C	100-300	-
Tear resistance N/mm	ASTM D 624 C	4.37	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	30	-
Continuous usage temperature		-55°C to +160°C	-
Colour		Black	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Cutting
- Vulcanisation-bonding
- Sheet



# 1 Charged Conductive Silicones

## Silver-plated aluminium charged conductive EPDM – GT 5200

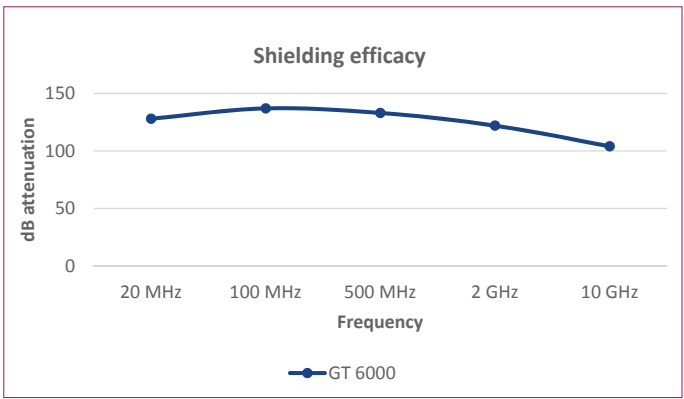
GT5200 is a conductive, silver-plated aluminium charged EPDM elastomer which enables the creation of sealed, conductive joints.

- Advantages**
- Good high-temperature resistance (up to peak 190°C)
  - Good abrasion resistance
  - Gas permeable
  - Excellent mechanical performance
  - Resistant to methyl ethyl ketone type aggressive solvents

### FEATURES

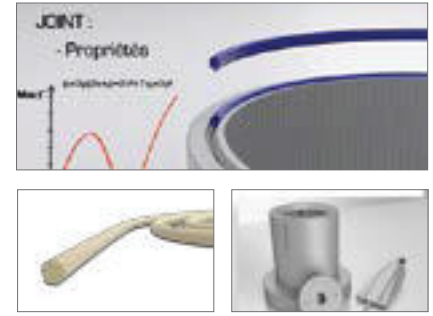
MATERIAL	Standards - Test	GT5200	Specification MIL G 83528
Type MIL G 83528		-	-
Elastomer		EPDM	-
Load condition		Al/Ag	-
Volume resistivity Ω/cm	MIL G 83528	< 0.015	-
Shore hardness A	ASTM D 2240	70	-
Density	ASTM D 792 Method A	2.00	-
Break resistance MPa	ASTM D 412 Method A C	1.70	-
Elongation at break %	ASTM D 412 Method A C	470	-
Tear resistance N/mm	ASTM D 624 C	12.00	-
Residual deformation after 70 hours of compression at 100°C %	ASTM D 395 Method B	40	-
Continuous usage temperature		-45°C to +160°C	-
Colour		Grey	-

### MICROWAVE SHIELDING



### FORMING OPTIONS

- Moulding
- Cutting
- Vulcanisation-bonding
- Sheet



## 1 Loaded Conductive Silicones

# Expanded conductive silicone – GT 2020EX

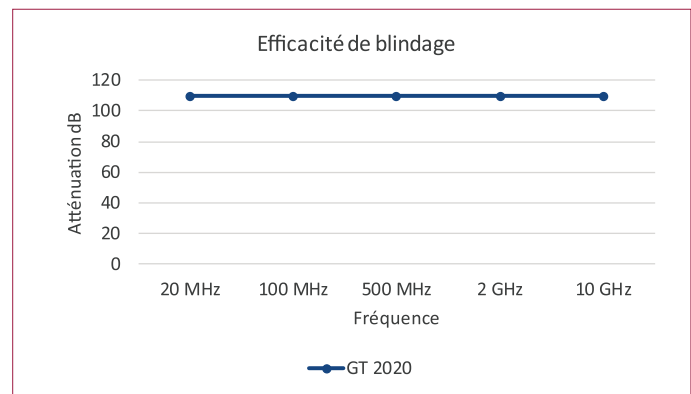
GT2020 EX is an expanded conductive silicone elastomer loaded with pure silver to provide low-density seals and conductors. Working temperature: -55°C to 160°C

**Advantages**

- Very low density
- Highly conductive
- Excellent attenuation performance

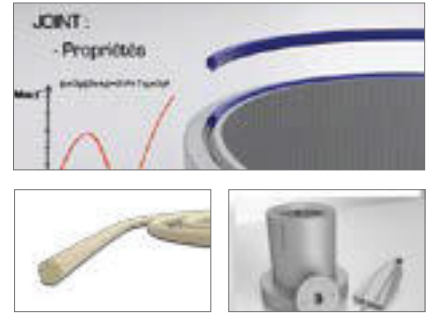
### PROPERTIES

MATERIAL	Standards - Test	GT 2020EX
Elastomer		Silicone
Load		Ag
Hardness Shore A (±5)	ASTM D 792	55
Specific mass at 25°C (g/cm³)	ASTM D 2240	1.84
Volume resistivity (Ω.cm)	MIL G 83528 on plate thickness 1.8mm	0.035
Tensile strength (Mpa)	ASTM D 412 Cut C	1.30
% Elongation at break	ASTM D 412 Cut C	48
Tear strength (kN/m)	ASTM D 624 Cut C	5.93
Color		Red Rose



### FORMAT OPTIONS

- Molded
- Cut
- Secured by vulcanization
- Sheet
- Secured



# 1 Loaded Conductive Silicones

## Expanded conductive silicone – GT 5000 EX

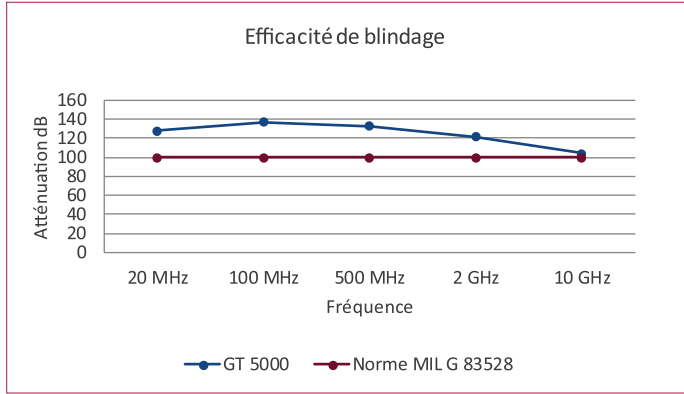
GT5000 EX is an expanded conductive silicone elastomer loaded with silver-plated aluminum to provide low-density seals and conductors. Working temperature: -55°C to 160°C

**Advantages**

- Very low density
- Very stable temperature
- Compatible with most alloys

### PROPERTIES

MATERIAL	Standards - Test	GT 5000EX
Elastomer		Silicone
Load		Al/Ag
Hardness Shore A (±5)	ASTM D 792	48
Specific mass at 25°C (g/cm³)	ASTM D 2240	0.96
Volume resistivity (Ω.cm)	MIL G 83528 on plate thickness 2mm	0.025
Tensile strength (Mpa)	ASTM D 412 Cut C	0.58
% Elongation at break	ASTM D 412 Cut C	50
Tear strength (kN/m)	ASTM D 624 Cut C	5.93
Color		Blue



### FORMAT OPTIONS

- Molded
- Cut
- Secured by vulcanization
- Sheet
- Secured

# Extruded conductive silicone

Most of GT conductive materials can be extruded in various sections and profile shapes. The vulcanization of the extruded seal ends allow the production of customized O-ring gaskets, without tooling charge and within very short deadline.  
 Large range of standard profiles available (see following pages).  
 For special profiles please contact us.

## CHARACTERISTICS

SILICONE ELASTOMER			
MATERIAL	TYPE MIL	LOAD	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1000	K	Silver-plated copper	15
GT 1015		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 5000	B	Silver-plated Aluminum	8
BL 10 000		Carbon	< 6 Ω-cm

FLUORINATED SILICONE ELASTOMER			
MATERIAL	TYPE MIL	LOAD	MAX RESISTIVITY (mΩ/cm) MIL G 83528
GT 1007	C	Copper/Silver-plated	15
GT 2027		Silver	10
GT 3007		Silver-plated Nickel	15
GT3107		Nickel Graphite	100
GT 5007	D	Aluminum/Silver-plated	12
BL 10007		Carbon	< 12 Ω-cm

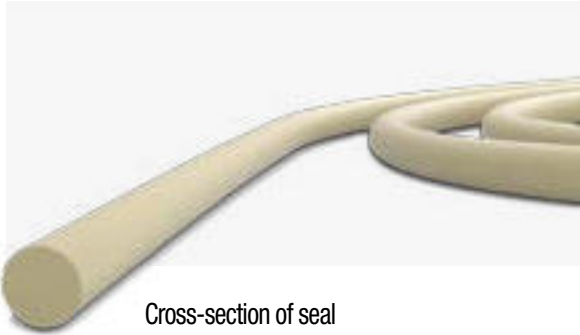
## RADIUS OF CURVATURE



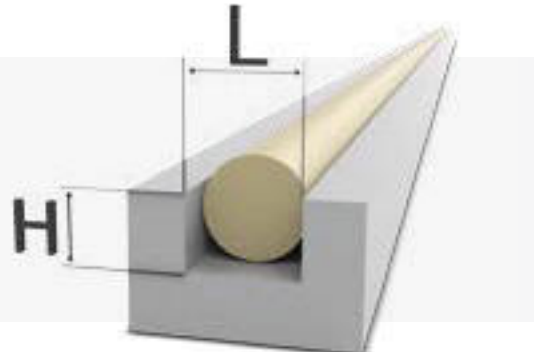
<b>Solid round section</b>	The minimum inner radius of curvature is 1.5 times the cross section of the profile
<b>Hollow round section (tube)</b>	The minimum inner radius of curvature is 2.5 times the cross section of the profile insofar as the inner diameter of the tube does not exceed 30% of its section.

# Solid round profile

1

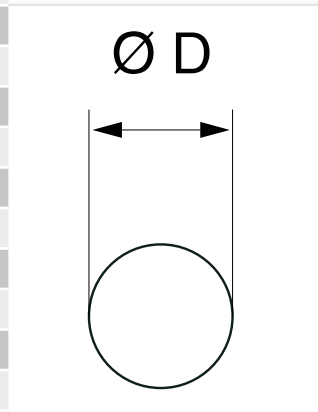


Cross-section of seal



Recommended groove dimensions  
Machining tolerance:  $\pm 0.05$

Ref.	D (mm)	H (mm)	L (mm)	Ref.	D (mm)	H (mm)	L (mm)
0538	0,50	0.4	0.6	2922	2,90	2.3	3.2
0610	0.60	0.45	0.80	3024	3,00	2.4	3.3
0710	0,71	0.55	0.8	3172	3,17	2.5	3.5
0810	0,80	0.6	0.9	3200	3,20	2.50	3.50
0910	0.9	0.7	1.1	3326	3,30	2.6	3.6
1020	1,00	0.8	1.1	3400	3,40	2.70	3.70
1100	1.10	0.90	1.30	3529	3,50	2.8	3.8
1211	1,20	1.0	1.3	3600	3,60	2.9	3.9
1251	1,25	1.0	1.4	3700	3,70	3.0	4.0
1300	1.30	1.00	1.50	3831	3,80	3.0	4.1
1351	1,35	1.1	1.5	3900	3,90	3.10	4.20
1400	1,40	1.1	1.5	4033	4,00	3.2	4.4
1550	1,50	1.2	1.6	4150	4,15	3.3	4.5
1613	1,60	1.3	1.7	4200	4,20	3.4	4.5
1735	1,70	1.4	1.9	4300	4,30	3.5	4.6
1815	1,80	1.4	2.0	4400	4,40	3.60	4.70
1900	1,90	1.5	2.1	4500	4,50	3.6	4.9
2017	2,00	1.6	2.2	5045	5,00	4.0	5.5
2100	2.10	1.70	2.30	5342	5,33	4.3	5.8
2218	2,20	1.8	2.4	5400	5,40	4.3	5.9
2300	2.30	1.8	2.5	5545	5,50	4.4	6.0
2419	2,40	1.9	2.6	6050	6,00	4.8	6.5
2502	2,50	2.0	2.7	6452	6,40	5.1	7.0
2621	2,60	2.1	2.8	7056	7,00	5.6	7.6
2725	2,70	2.2	2.9	7040	7,40	5.9	8.1
2842	2,84	2.3	3.1	8064	8,00	6.4	8.7
				1012	10,00	8.0	10.9



Contact us for alternative sizes.

**Example:**

1613 GT1000 = profile reference + Silicone silver plated conductor

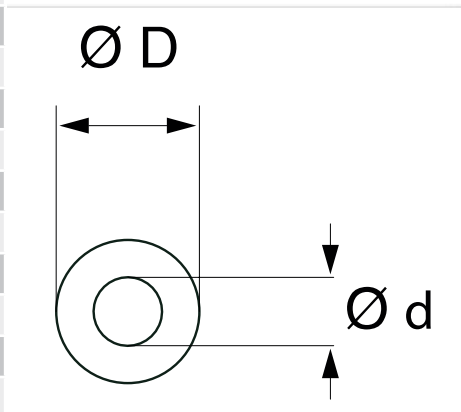
Recommended groove dimensions calculation is based on the following data:

Average seal compression 20%  
Groove fill rate 90%

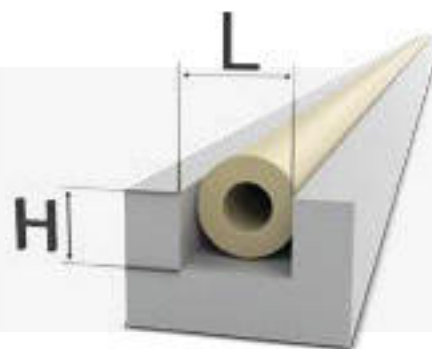


# Hollow round profile

Ref.	D (mm)	d (mm)	L (mm)	H (mm)	Ref.	D (mm)	d (mm)	L (mm)	H (mm)
1005	1.00	0.50	1.10	0.8	3214	3.18	1.40	3.30	2.40
1305	1.30	0.55	1.40	1.0	3211	3.20	1.10	3.60	2.40
1406	1.45	0.65	1.55	1.10	3215	3.20	1.50	3.40	2.40
1607	1.50	0.70	1.60	1.10	3217	3.20	1.70	3.40	2.20
1605	1.60	0.50	1.80	1.20	32016	3.20	1.60	3.40	2.30
1608	1.60	0.80	1.70	1.20	3202	3.20	2.00	3.40	2.10
1808	1.80	0.80	1.90	1.40	3412	3.40	1.20	3.60	2.60
1812	1.80	1.10	1.90	1.40	3420	3.40	2.00	3.50	2.50
2011	2.00	1.10	2.10	1.50	3519	3.50	1.90	3.70	2.60
2050	2.00	0.50	2.20	1.50	4013	4.00	1.30	4.20	2.80
2080	2.00	0.80	2.10	1.50	4020	4.00	2.00	4.20	2.80
2108	2.10	0.80	2.20	1.60	4520	4.50	2.00	4.70	3.40
2112	2.10	1.27	2.20	1.60	4525	4.50	2.50	4.60	3.30
2206	2.25	0.60	2.40	1.70	5023	5.00	2.30	5.20	3.80
2309	2.30	0.89	2.50	1.70	5323	5.30	2.30	5.50	4.00
2310	2.30	1.00	2.40	1.70	5535	5.50	3.50	5.70	4.10
2313	2.30	1.30	2.40	1.70	6030	6.00	3.00	6.20	4.50
2305	2.50	0.50	2.70	1.90	6004	6.00	4.00	6.10	4.40
2510	2.50	1.00	2.70	1.90	6432	6.40	3.20	6.60	4.80
2511	2.50	1.10	2.60	1.90	7034	7.00	3.40	7.20	5.30
2608	2.60	0.80	2.80	2.00	7037	7.00	3.75	7.20	5.00
2610	2.60	1.00	2.70	2.00	7837	7.85	3.75	8.00	5.90
2612	2.60	1.20	2.80	1.90	7949	7.95	4.88	8.20	6.00
2611	2.68	1.08	2.90	2.00	8061	8.00	6.00	8.20	5.60
2717	2.75	1.70	2.90	2.10	9060	9.00	6.00	9.20	6.80
2808	2.80	0.80	3.10	2.10	9563	9.50	6.40	9.70	7.10
2815	2.80	1.50	3.00	2.10	1106	11.00	6.50	11.20	8.30
30010	3.00	1.00	3.30	2.30	1206	12.00	6.00	12.20	9.00
3011	3.00	1.10	3.20	2.30	1208	12.00	8.00	12.10	8.50
3012	3.00	1.20	3.10	2.30	1209	12.00	9.00	12.00	8.40
3014	3.00	1.40	3.20	2.20	1601	16.00	15.00	16.00	10.00
3016	3.00	1.60	3.20	2.10	2813	28.00	12.50	28.00	20.00
3212	3.18	1.14	3.40	2.40	3002	30.00	20.00	30.00	22.00



Cross-section of seal



Recommended groove dimensions  
Machining tolerance:  $\pm 0.05$

Contact us for alternative sizes.

Example:

1613 GT1000 = profile reference + Silicone silver plated conductor

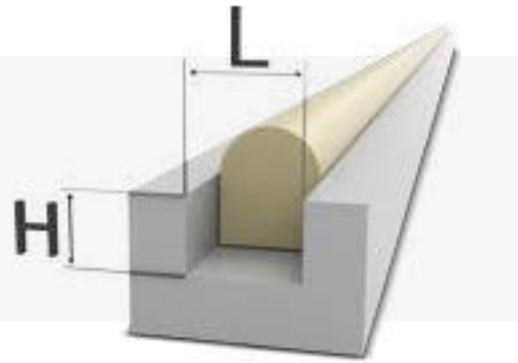
Recommended groove dimensions calculation is based on the following data:

Average seal compression 25%  
Groove fill rate 95%

# Solid "D" profile

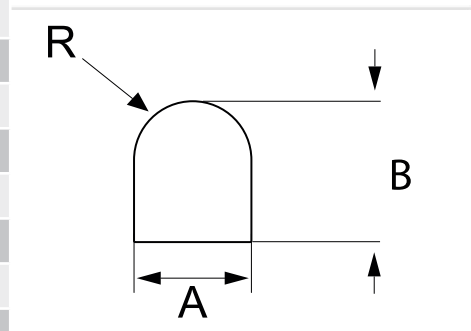


Cross-section of seal



Recommended groove dimensions  
Machining tolerance:  $\pm 0.05$

Ref.	A (mm)	B (mm)	R (mm)	L (mm)	H (mm)
2713	1,30	2,70	0,65	1,6	2,3
1617	1,60	1,70	0,80	1,8	1,4
2022	2,00	2,20	1,00	2,3	1,9
2024	2,00	2,40	1,00	2,3	2,0
2217	2,20	1,75	1,10	2,4	1,5
2420	2,40	2,00	1,20	2,7	1,7
3035	3,00	3,50	1,50	3,5	3,0
3045	3,00	4,50	1,50	3,6	3,8
3046	3,00	4,60	1,50	3,6	3,9
3060	3,00	6,00	1,50	3,6	5,1
3997	3,96	3,96	1,98	4,5	3,4
4030	3,96	3,00	1,50	4,3	2,6
4544	4,50	4,40	2,25	5,1	3,7
5040	4,00	5,00	2,00	4,7	4,3
50045	5,00	4,50	2,50	5,6	3,8
60031	6,00	3,00	3,00	6,0	2,6



Contact us for alternative sizes.

## Example:

1613 GT1000 = profile reference + Silicone silver plated conductor

Recommended groove dimensions calculation is based on the following data:

Average seal compression 15%  
Groove fill rate 92%

# Hollow "D" profile

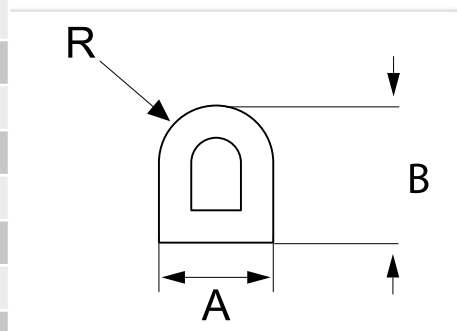


Cross-section of seal



Recommended groove dimensions  
Machining tolerance:  $\pm 0.05$

Ref.	A (mm)	B (mm)	R (mm)	Wall thickness (mm)
3931	3.92	3.00	1.96	0.80
3996	3.96	3.96	1.98	1.14
4031	3.96	3.00	2.00	0.80
4747	4.70	4.70	2.35	1.27
47047	4.75	4.75		
4948	4.80	4.80	2.40	1.30
6031	6.00	3.00		
6331	6.35	6.35	3.18	1.61
70009	7.00	9.00	3.50	1.60
70011	7.00	10.00		
70080	7.00	8.00		
7638	7.60	3.00		
7639	7.60	3.98	3.80	1.00
7979	7.90	7.90	3.95	1.57
1003	10.00	10.00		1.57
1030	10.00	3.00		
1111	11.99	10.99	6.00	2.00
1510	15.00	10.00	7.50	1.50



**Contact us for alternative sizes.**

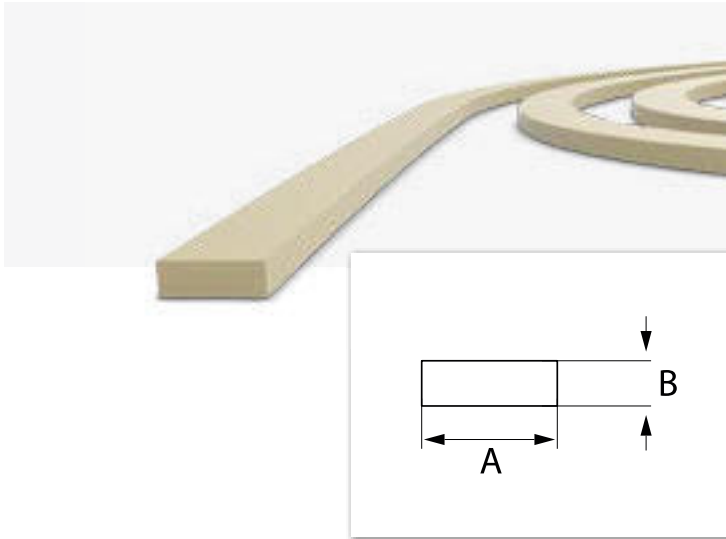
**Example:**

3931 GT1000 = Silicone loaded with silver plated copper

# Other extruded conductive profiles

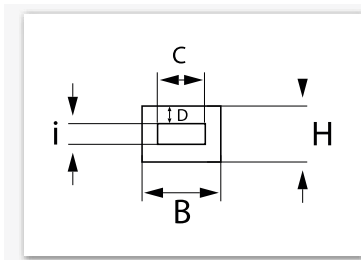
1

## SOLID RECTANGULAR PROFILE



Ref.	A (mm)	B (mm)	Ref.	A (mm)	B (mm)
1025	1.00	2.50	2503	5.00	3.00
1610	1.60	1.07	6010	6.00	1.00
1805	1.80	0.50	6020	6.00	2.00
2010	2.00	1.00	6080	6.00	8.00
2415	2.41	1.57	6416	6.40	1.60
2501	2.50	1.00	6580	6.50	8.00
2515	2.50	1.50	7512	7.50	1.25
3032	3.00	3.20	8060	8.00	6.00
3040	3.00	4.00	1016	10.00	1.60
3115	3.00	1.50	1203	12.00	3.00
3010	3.00	1.00	1240	12.00	4.00
3019	3.05	1.91	1248	12.70	4.78
3216	3.20	1.60	1273	12.70	3.18
3232	3.20	1.00	1503	15.00	3.00
3248	3.20	4.80	2542	25.40	2.00
3610	3.60	1.10	3510	35.00	1.00
4016	4.00	1.60	3710	37.00	10.00

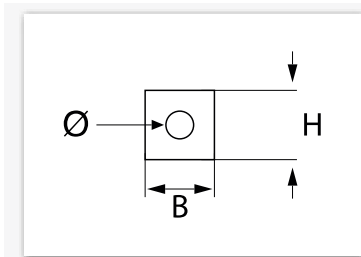
## HOLLOW RECTANGULAR PROFILE



Ref.	B (mm)	H (mm)	C (mm)	D (mm)	i (mm)
2738	3.80	2.70	2.30	0.80	1.00
1268	12.00	6.00	8.00	0.80	4.40



## HOLLOW SQUARE PROFILE

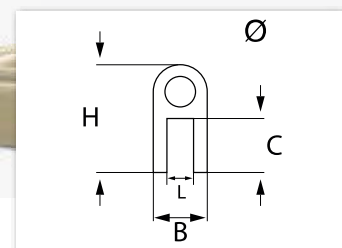


Ref.	B (mm)	H (mm)	Ø (mm)
2828	2.80	2.80	1.20
3031	3.00	3.00	1.00
30315	3.00	3.00	1.50
3535	3.50	3.50	1.40
6062	6.00	6.00	2.50



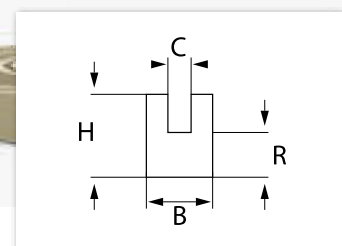
Ref.	B (mm)	H (mm)	L (mm)	C (mm)	Ø (mm)
1531	1.57	3.18	0.81	1.60	0.50
1836	1.80	3.60	0.40	1.80	0.50
2357	2.30	5.70	0.80	3.40	0.90
2055	2.00	5.50	0.80	3.50	1.00
2560	2.50	6.00	-	-	1.00
3163	3.18	6.35	1.57	3.18	1.80
3523	3.50	4.50	1.60	1.70	2.30

### "A" PROFILE



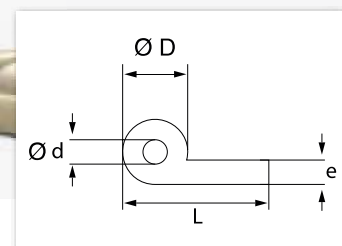
Ref.	B (mm)	H (mm)	C (mm)	R (mm)
2525	2.54	2.54	0.86	0.84
3228	3.20	2.80	0.66	1.27
3939	3.96	3.96	1.57	1.19
39039	3.96	3.96	1.57	2.80
4050	4.00	5.00	1.40	2.70
4056	4.50	5.50	2.10	3.00
4439	4.45	4.00	1.19	1.91
8080	8.00	8.00	5.00	1.50
9162	9.15	6.20	3.00	4.40

### "U" PROFILE



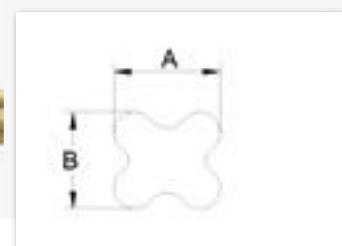
Ref.	Ø D (mm)	Ø d (mm)	L (mm)	e (mm)
5712	3.50	2.55	5.70	1.20
4084	4.00	2.00	8.40	2.00
4090	4.00	1.50	9.00	1.50
5011	5.00	1.80	11.00	1.70
8014	7.92	4.70	14.30	1.60
8114	7.92	3.42	14.30	1.60
3015	3.00	1.50	15.00	2.00
6401	6.40	3.20	16.00	1.60
1165	11.00	6.50	17.50	1.60
9019	9.00	6.48	19.00	1.60
7018	6.40	4.80	19.10	1.60
1021	10.00	6.00	21.00	2.00

### "P" PROFILE



### QUADRILOBE

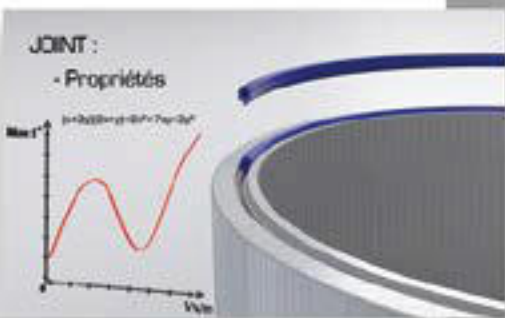
Ref.	A (mm)	B (mm)
2831	2.80	3.10



# JOINTS sur-Mesure



1. Prise en compte des contraintes



2. R&D: formulation et mise en forme



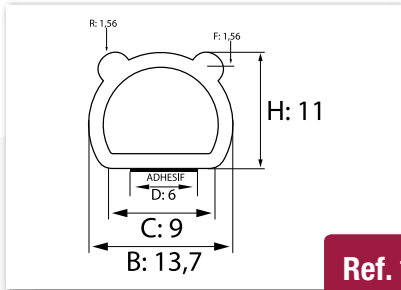
3. Fabrication des outillages



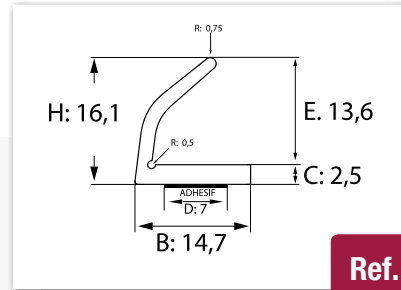
4. Extrusion sur-mesure



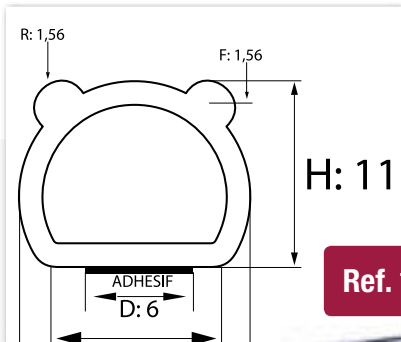
# Telecoms cabinets and bays specific profile



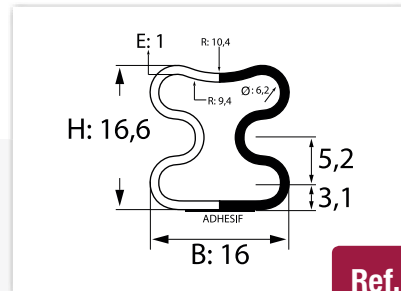
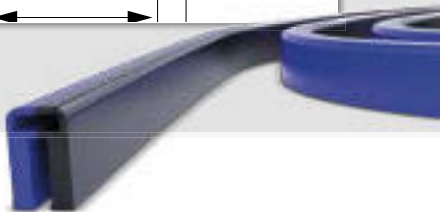
Ref. 1371



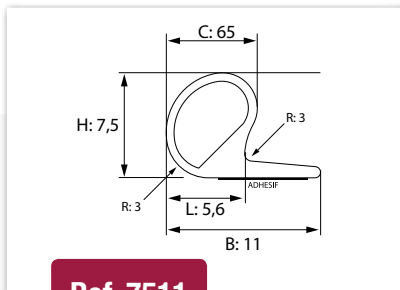
Ref. 1517



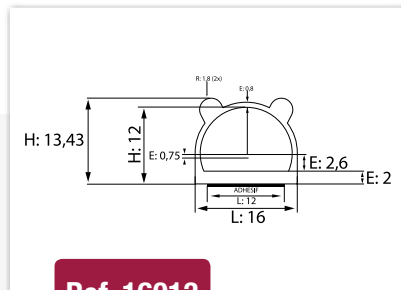
Ref. 1539



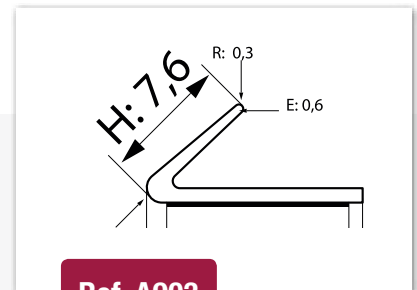
Ref. 1616



Ref. 7511



Ref. 16013



Ref. A903



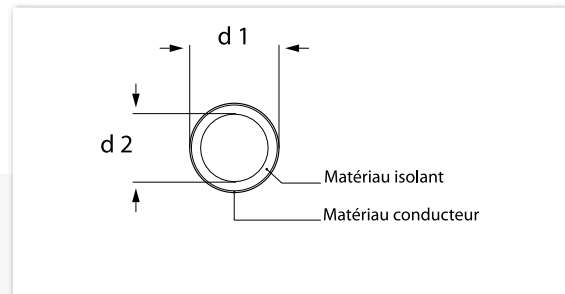
# Profile with conductive coating

MCC gaskets are made up of a conductive outer skin applied to an insulating core. These products are made by double layer co-extrusion. This continuous transformation method makes it possible to guarantee excellent cohesion between the insulating and the conducting materials. The seal is available in solid and hollow round profile in continuous length, cut to length or glued into O rings.

The conductive outer skin comprises an elastomer loaded with silver, silver plated copper etc. The binder is a silicone or fluorosilicone in the case of usage in an aggressive environment (hydrocarbons, solvents, etc.).

The average thickness of this conductive coat is 0.2mm.

Ref.	(D)mm	d (mm)
1812	1.80	1.10
2108	2.10	0.80
2505	2.50	0.50
2511	2.50	1.10
2608	2.60	0.80
3211	3.20	1.10
3202	3.20	2.00
6432	6.40	3.20



	Standards	GT 2640	GT 2647	GT 2660	GT 2667
Type MIL G 83528		K	K	K	K
Elastomer		Silicone	Fluorosilicone	Silicone	Fluorosilicone
Load		silver	silver	silver	silver
Volume resistivity $\Omega$ -cm	MIL G 83528	< 0.005	< 0.005	< 0.005	< 0.005
Shore hardness A $\pm$ 7	ASTM D 2240	40	40	60	60
Working temperature $^{\circ}$ C		-55 to +125	-55 to +125	-55 to +125	-55 to +125
Colour		Beige	Beige	Beige	Beige
Shielding performance: 20 MHz 100 MHz 500 MHz 2GHz 10GHz		> 60 dB	> 60 dB	> 60 dB	> 60 dB



# Flat connector gaskets

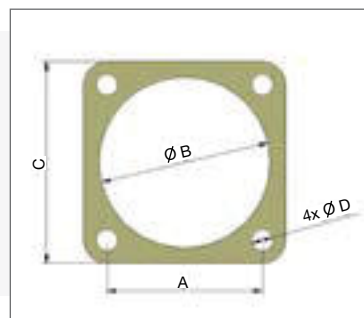
Housing	Getelec reference	A ± 0.25mm	B ± 0.51mm	C ± 0.38mm	D ± 0.25mm	Standard thickness (mm)
6	D 110	11.90	9.53	18.75	3.60	0.50 or 0.80
6	D 111	12.70	11.00	17.50	3.00	0.50 or 0.80
8	D 112	15.10	16.00	21.34	3.43	0.50 or 0.80
8	D 113	15.10	14.40	20.60	3.00	0.50 or 0.80
8	D 114	15.10	12.70	22.23	3.96	0.50 or 0.80
9	D 115	18.20	19.00	24.50	3.60	0.50 or 0.80
10	D 116	18.20	15.88	25.40	3.96	0.50 or 0.80
11	D 117	20.60	22.23	26.93	3.60	0.50 or 0.80
12	D 118	20.60	19.05	27.80	3.60	0.50 or 0.80
13	D 119	23.00	25.53	29.30	3.43	0.50 or 0.80
14	D 120	23.00	22.23	30.18	3.96	0.50 or 0.80
16	D 121	24.60	25.40	32.54	3.96	0.50 or 0.80
15/16	D 122	24.60	28.83	31.95	3.96	0.50 or 0.80
18	D 123	27.00	28.83	35.00	3.96	0.50 or 0.80
17/18	D 124	27.00	32.00	34.32	3.96	0.50 or 0.80
19/20	D 125	29.36	34.93	38.10	3.60	0.50 or 0.80
20	D 126	29.36	33.30	37.26	3.20	0.50 or 0.80
21/22	D 127	31.75	38.10	41.30	3.60	0.50 or 0.80
22	D 128	31.75	34.93	41.30	4.37	0.50 or 0.80
23/24	D 129	34.93	41.30	44.45	4.37	0.50 or 0.80
24	D 130	34.93	38.10	44.45	5.16	0.50 or 0.80
25	D 131	38.10	44.45	47.63	4.37	0.50 or 0.80
28	D 132	39.70	44.45	50.80	5.20	0.50 or 0.80
32	D 133	44.45	50.80	57.15	5.60	0.50 or 0.80
36	D 134	49.23	57.15	63.50	5.60	0.50 or 0.80
40	D 135	55.58	63.50	69.85	5.60	0.50 or 0.80
44	D 136	60.33	70.64	76.20	5.60	0.50 or 0.80
48	D 137	66.70	77.00	82.55	5.60	0.50 or 0.80

**Contact us for alternative thicknesses.**

Gaskets made from:

GT1000, GT1015, GT2020, GT3100, GT5000, BL10000, MS composite seals

These seals can be made in insulating fluorosilicone or not or in corrosion-resistant bi-material.



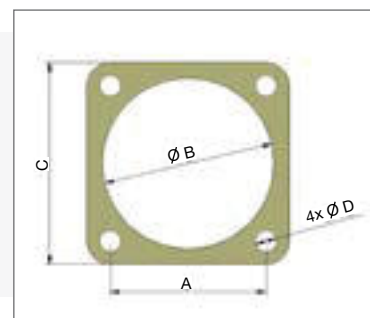
GETELEC reference	A ± 0.25mm	B ± 0.51mm	C ± 0.38mm	D ± 0.25mm	Standard thickness (mm)
G 21	8.60	7.70	12.90	2.40	0.50 ou 0.80
J 61	12.70	11.00	17.50	3.00	0.50 ou 0.80
S 122	12.70	11.20	18.00	3.20	0.50 ou 0.80
A 57	15.10	14.40	20.60	3.00	0.50 ou 0.80
B 76	15.10	14.40	20.60	3.00	0.50 ou 0.80
H 13	15.10	14.30	21.00	3.30	0.50 ou 0.80
K 177	18.00	14.80	24.00	3.50	0.50 ou 0.80
H 194	18.00	11.30	24.00	3.50	0.50 ou 0.80
F 86	18.20	17.50	24.00	3.50	0.50 ou 0.80
Z 30	18.20	15.50	24.00	3.20	0.50 ou 0.80
K 34	18.25	19.00	24.50	3.50	0.50 ou 0.80
H 15	18.30	18.40	24.40	3.30	0.50 ou 0.80
A 256	20.60	18.00	28.00	3.20	0.50 ou 0.80
C 86	20.60	19.05	26.20	3.10	0.50 ou 0.80
H 64	20.60	22.20	26.90	3.50	0.50 ou 0.80
H 14	20.60	23.20	27.00	3.30	0.50 ou 0.80
R 3	20.60	23.50	30.00	3.50	0.50 ou 0.80
Z 31	20.60	19.50	26.50	3.20	0.50 ou 0.80
J 151	21.00	19.50	27.00	3.50	0.50 ou 0.80
C 84	23.00	23.00	28.60	3.00	0.50 ou 0.80
B 6	24.60	24.00	33.00	3.20	0.50 ou 0.80
J 193	24.60	28.60	32.00	3.60	0.50 ou 0.80
Z 32	24.60	26.00	32.00	3.20	0.50 ou 0.80
K 178	25.00	31.00	25.40	3.50	0.50 ou 0.80
D 30	26.20	25.10	35.00	3.50	0.50 ou 0.80
E 104	27.00	32.00	34.30	4.00	0.50 ou 0.80
F 99	27.00	30.90	33.50	3.30	0.50 ou 0.80
N 32	27.00	30.00	33.00	3.20	0.50 ou 0.80
S 123	28.20	31.75	36.50	3.00	0.50 ou 0.80
W 195	31.00	30.50	40.00	4.50	0.50 ou 0.80
S 124	30.50	35.00	39.70	3.00	0.50 ou 0.80
N 33	31.70	36.00	40.00	3.20	0.50 ou 0.80
B 187	31.75	32.10	41.30	3.60	0.50 ou 0.80
K 179	33.00	30.50	42.00	5.50	0.50 ou 0.80
S 125	34.90	38.00	42.90	3.00	0.50 ou 0.80
N 34	35.00	39.20	43.00	3.20	0.50 ou 0.80
J 142	42.00	36.00	49.00	4.00	0.50 ou 0.80

**Contact us for alternative thicknesses.**

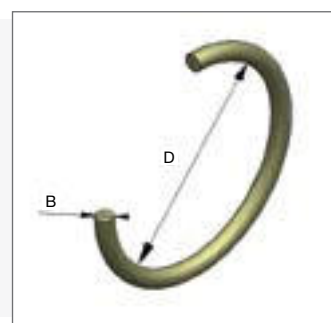
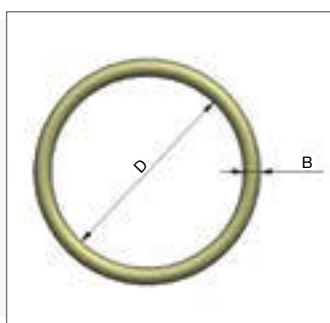
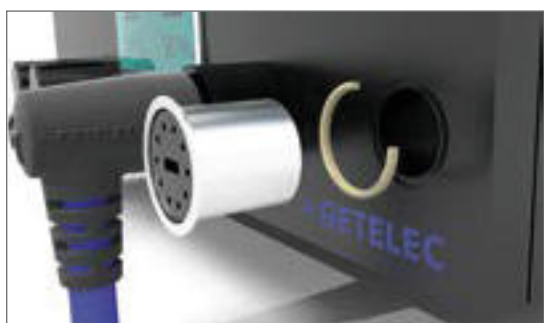
Gaskets made from:

GT1000, GT1015, GT2020, GT3100, GT5000, BL10000, MS composite seals

These seals can also be made in insulating fluorosilicone or not or in corrosion-resistant bi-material.



# Round connector seals



HOUSING	REF.	CROSS-SECTION	INTERIOR Ø
-	LR 16	1.50	7.60
-	LR 34	1.50	10.50
-	LR 31	1.70	7.50
-	LR 32	1.80	12.50
-	LR 71	1.80	14.00
-	LR 72	1.80	17.17
09-10	LR 17	1.80	20.30
-	LR 14	1.80	20.50
09-10	LR 67	1.80	21.90
-	LR 68	1.80	23.50
11-12	LR 18	1.80	25.10
-	LR 15	1.80	25.30
INTERIOR Ø		TOLERANCES	
01 to 38 mm.		± 0.25 mm	
38 to 65 mm.		± 0.40 mm	

HOUSING	REF.	CROSS-SECTION	INTERIOR Ø
13-14	LR 12	1.80	28.30
15-16	LR 13	1.80	31.50
-	LR 10	1.80	33.00
17-18	LR 19	1.80	34.60
-	LR 11	2.60	32.00
19-20	LR 20	2.60	37.80
-	LR 54	2.60	40.00
-	LR 55	2.60	57.00
21-22	LR 84	2.60	40.90
23-24	LR 124	2.60	44.10
-	LR 125	2.60	47.40
-	LR 134	2.60	60.00
CROSS-SECTIONS		TOLERANCES	
1.5 to 1.8 mm.		± 0.08 mm	
1.8 to 2.6 mm.		± 0.15 mm	

**Fast delivery on other dimensions on request.**

**Gaskets made from:**

GT1000, GT1015, GT2020, GT3100, GT5000, BL10000,  
 These seals can also be made in insulating fluorosilicone  
 or not or in corrosion-resistant bi-material

# D Sub Connector Seals

D SUB connector seals are used for connecting drawer bays and miniature chassis cables.

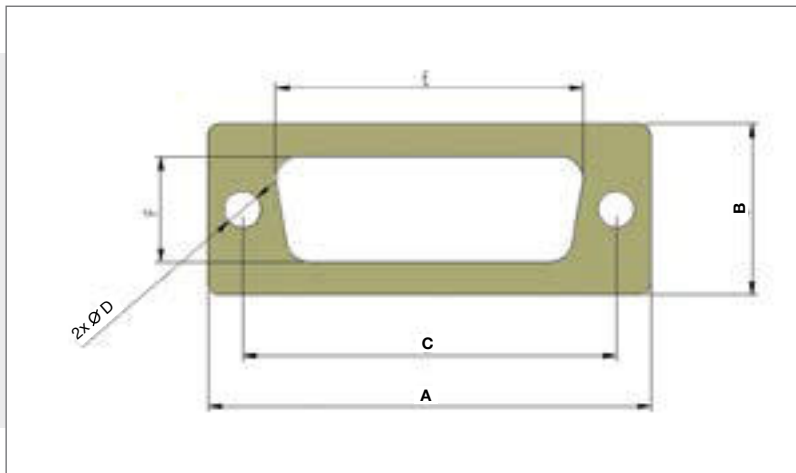
This type of seal is widely used in the following areas:

telecoms, medical, information technology, military and aerospace.

GETELEC supplies these seals in standard sizes from 9 to 50 pins.

These seals can also be custom-produced to suit your needs.

1



Housing sizes	Getelec reference	A (mm)± 0.38	B (mm)± 0.38	C (mm)± 0.25	D (mm)± 0.25	E (mm)± 0.38	F (mm)± 0.25	Cutting angle
9 contacts	H 127	30.81	15.09	25.00	3.05	17.70	9.14	10°
15 contacts	H 128	39.52	15.24	33.32	3.30	27.43	9.40	10°
25 contacts	H 129	53.01	15.09	47.04	3.05	40.21	9.60	10°
37 contacts	D 165	69.32	15.09	63.50	3.05	56.67	9.60	10°
50 contacts	D 166	66.93	15.37	61.11	3.05	53.57	11.84	10°

**All these dimensions are expressed in millimeters.**

**Possibility of making MICRO-D connector seals on request**

Seals made of material:

GT1000, GT1015, GT2020, GT3100, GT5000, BL10000, MS composite seals, thicknesses 0.4 to 0.8 mm

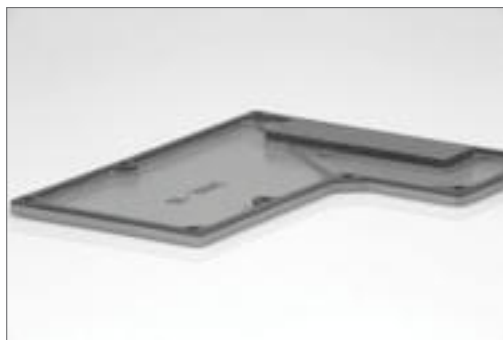
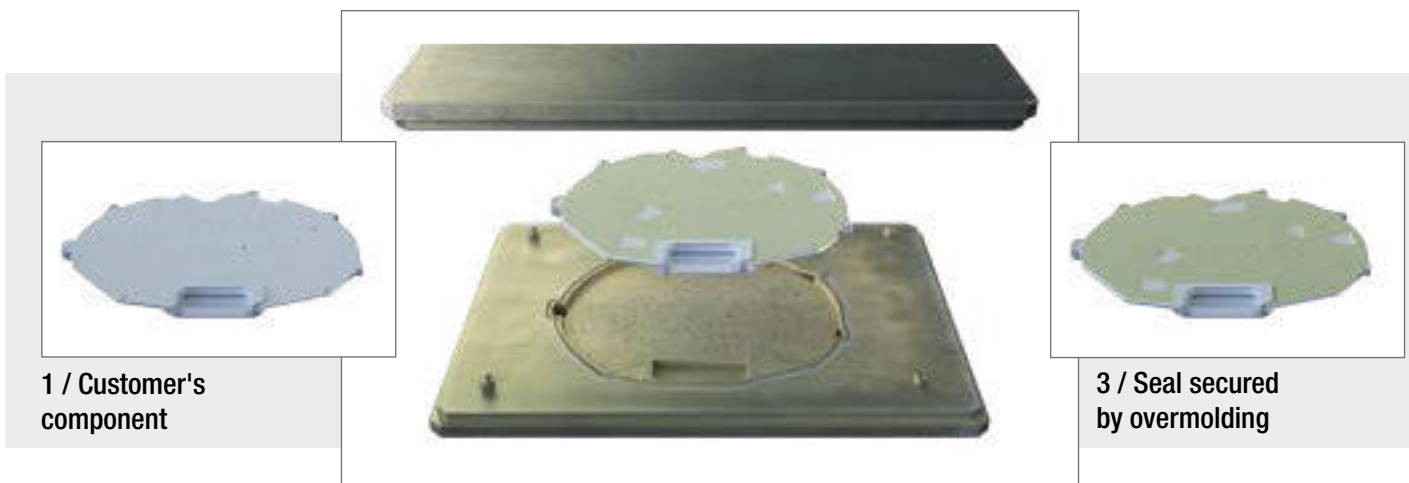
These joints can also be made of fluorinated or non-fluorinated insulating silicone, or corrosion-resistant bi-material

# Seals secured by overmolding

The procedure, used in our production facility, enables seals to be vulcanized by molding onto the covers of electronic assemblies, in the various conductive materials, bringing the following advantages:

- No need to glue seals
- Improved mechanical performance
- Elimination of cumulative tolerances in the cover/adhesive/seal assembly
- Eliminates the need to machine grooves for positioning flat or rounded seals
- Optimized seal cost
- Enables provision of externally fitted insulating component, enabling corrosion-resistant assemblies
- Choice of materials
- Fast delivery

The assembly's electrical and mechanical characteristics are similar to those quoted on the specification sheets of the material used.



We are also able to provide a complete solution with mechanical part and gasket.

# Seals positioned by robotic arm

Automatic placement technology is a completely automated electromagnetic shielding solution for your equipment allowing you to meet the most demanding electromagnetic compatibility requirements.

Seals are placed in position with exceptional precision, adhering perfectly to the application surface.

Advantages:

- Reduced costs
- No gluing process
- No manual seal placement
- Prototyping in under 48 hours
- Bi-material joint availability (one part insulating/one part conductive) and insulator.



## Characteristics

	GT/D 1010		GT/D 5010	
	Standards - test	Value	Standards - test	Value
Material	-	Silicone	-	Silicone
Load	-	Cu/Ag	-	Al/Ag
Shielding performance 200 MHz to 10 GHz	MIL-G-83528	80-100 dB	MIL-G-83528	80-100 dB
Volume resistivity Ohm-cm	MIL-G-83528	0.05	MIL-G-83528	0.01
Tensile strength (min.)	ASTM D 412	0.60 MPa	ASTM D 412	> 0,55 MPa
Elongation (min.)	ASTM D 412	60%	ASTM D 412	> 50 %
Hardness (shore A), +/- 10	ASTM D2240	45	ASTM D2240	60
RDC (22 hrs at 70°C), % Max.	ASTM D395 Method B	35%	ASTM D395 Method B	25%
Density (g/cm3)	ASTM D792	2.6	ASTM D792	1.90
Maximum working temperature	-	125°C	-	160°C

**Cord diameter: 0.5mm to 2mm in single or multi layers.**

**Available in ready-to-use syringe.**

**Places cord on the equipment (conductor and/ insulator)**

# GT 1006 Die-cut waveguide flange seals

Conductive GT1006 is a silicone elastomer, loaded with passivated silver-plated copper, with expanded copper reinforcement. This product is particularly recommended for waveguide flanges, as the reinforcement prevents creep inside the guide when the joint is tightened.

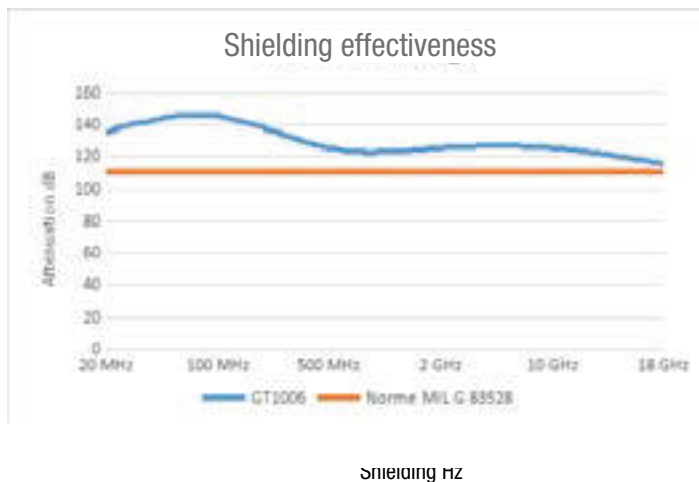
For applications needing pressurisation, it is possible to have a raised lip around the opening to ensure sealing.

Joints made are re-usable after dis-assembly.

## CHARACTERISTICS

PRODUCT	GT 1006	MIL G 83528 specification
Load	Cu-Ag	-
MIL G 83528 standard	Type G	-
Volume resistivity $\Omega$ -cm	< 0.002	0.007
Density	490	475
Hardness shore A	86	80
Break resistance kg/cm <sup>2</sup>	-	-
Tear strength kg/cm	-	-
% elongation at break	10.5	20
% residual deformation after 70 hours' compression at 100°C	-	-
Continuous working temperature °C	-55°C to +125°C	-55°C to +125°C
Colour	Brick red	-
Resistance after ageing $\Omega$ -cm	0.105	0.01
Resistance under vibration $\Omega$ -cm	For 0.06 After 0.009	0.01 0.007

## MICROWAVE SHIELDING



### Format options:

- Moulded
- Cut
- Sheet

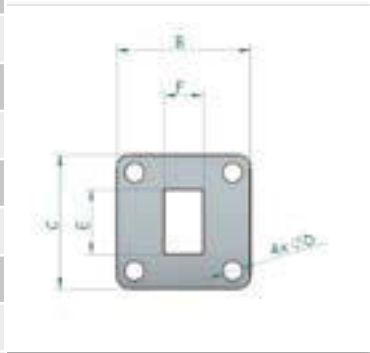
# GT 1006 Die-cut waveguide flange seals

Frequency range (Ghz)	Band	Size of waveguide	JAN Designation	Flange type			Getelec article Reference	MIL 83528 013 Reference [ ]-( )	Getelec tool Reference
				UG	CPR	CMR			
26.50 - 40.00	Ka	WR28	RG-96/U (silver)	UG-599/U	-	-	PF8561	[ G ]-(001)	
18.00 - 26.50	K	WR42	RG-53/U (brass)	UG-595/U UG-597/U	-	-	PF060010068	[ G ]-(003)	D 72
12.40 - 18.00	Ku	WR62	RG-91/U (brass)	UG-419/U	-	-	PF8562	[ G ]-(005)	D 83
10.00 - 15.00	-	WR75	-	-	-	-	PF060010018	[ G ]-(007)	R 31/B
8.20 - 12.40	X	WR90	RG-52/U (brass)	UG-39/U UG-135/U	-	-	PF060010001	[ G ]-(009)	D 82 (1)
				UG-1736/U UG-1737/U	CPR-90F	-	PF8563	[ G ]-(010)	C 92
7.05 - 10.00	X1	WR112	RG-51/U (brass)	UG-51/U UG-138/U	-	-	PF060010002	[ G ]-(015)	D 87 (1)
				UG-1734/U UG-1735/U	CPR-112F	-	PF060010128	[ G ]-(016)	D 92
5.85 - 8.20	Xb	WR137	RG-50/U (brass)	UG-344/U UG-441/U	-	-	PF060010074	[ G ]-(019)	D 88 (1)
				UG-1732/U UG-1733/U	CPR-137F	-	PF060010042	[ G ]-(020)	D 54
				-	-	CMR-137	PF060010075	[ G ]-(021)	D 99
4.90 - 7.05	-	WR159	-	UG-1730/U UG-1731/U	CPR-159F	-	PF060010107	[ G ]-(024)	D 84
				-	-	CMR-159	PF8564	[ G ]-(025)	
3.95 - 5.85	C	WR187	RG-49/U (brass)	UG-149A/U UG-407/U	-	-	PF060010049	[ G ]-(026)	D 89 (1)
				UG-1728/U UG-1729/U	CPR-187F	-	PF8565	[ G ]-(027)	D 32
				-	-	CMR-187	PF8566	[ G ]-(028)	
3.30 - 4.90	-	WR229	-	UG-1726/U UG-1727/U	CPR-229F	-	PF060010105	[ G ]-(031)	D 94
				-	-	CMR-229	PF8567	[ G ]-(032)	
2.60 - 3.95	S	WR284	RG-48/U (brass)	UG-53/U UG-584/U	-	-	PF060010061	[ G ]-(033)	D 90 (1)
				UG-1724/U UG-1725/U	CPR-284F	-	PF8568	[ G ]-(034)	
				-	-	CMR-284	PF8569	[ G ]-(035)	
2.20 - 3.30	-	WR340	RG-112/U (brass)	UG-533/U UG-554/U	CPR-340F	-	PF8570	[ G ]-(038)	D 91
1.70 - 2.60	W	WR430	RG-104/U (brass)	UG-435A/U UG-437A/U	-	-	PF8571	[ G ]-(040)	D 85
				-	CPR-430F	-	PF8572	[ G ]-(041)	
1.12 - 1.70	L	WR650	RG-69/U (brass)	UG-417A/U UG-418A/U	-	-	PF060010009	[ G ]-(042)	D 86

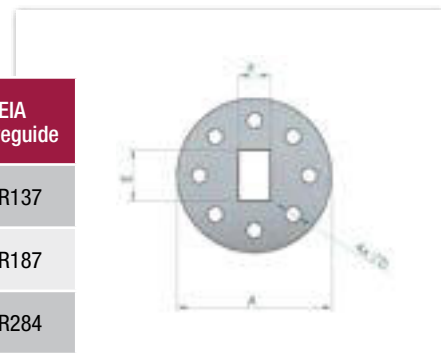


# GT 1006 Die-cut waveguide flange seals

Reference Getelec Article	Reference Tools Reference	B (mm)	C (mm)	E (mm)	F (mm)	D (mm)	Thickness (mm)	EIA waveguide
PF8561		19.05	19.05	3.68	7.24	2.95	0.70	WR28
PF060010068	D 72	22.23	22.23	4.45	10.80	2.95	0.70	WR42
PF8562	D 83	33.35	33.35	16.00	8.13	3.56	0.70	WR62
PF060010018	R 31/B	38.00	38.00	19.30	9.78	3.94	0.70	WR75
PF060010001	D 82/1	41.28	41.28	22.99	10.29	4.29	0.70	WR90
PF8563	C 92	53.19	40.49	10.29	22.99	4.29	0.70	WR90
PF060010002	D 87/1	47.63	47.63	28.70	12.83	4.57	0.70	WR112
PF060010128	D 92	63.50	44.45	12.83	28.70	4.34	0.70	WR112
PF060010042	D 54	68.25	49.20	16.08	35.05	5.23	0.70	WR137
PF060010075	D 99	57.94	38.89	16.05	35.10	3.81	0.70	WR137
PF060010107	D 84	80.98	61.93	20.45	40.64	6.53	0.70	WR159
PF8564		63.50	44.45	20.32	40.64	4.06 / 3.81	0.70	WR159
PF8565	D 32	63.50	88.90	47.75	22.35	6.76	0.70	WR187
PF8566		70.64	45.31	22.40	47.80	3.96 / 3.58	0.70	WR187
PF060010105	D 94	98.43	69.85	29.34	58.42	6.86	0.70	WR229
PF8567		80.16	50.80	29.34	58.42	3.81	0.70	WR229
PF8568		76.20	114.30	72.39	34.29	6.76	0.70	WR284
PF8569		59.54	37.64	72.39	34.29	4.37 / 4.78	0.70	WR284
PF8570	D 91	138.18	95.25	43.43	86.61	6.71 / 6.35	0.70	WR340
PF8571	D 85	161.14	106.38	54.86	109.47	6.76	0.70	WR430
PF060010009	D 86	220.68	138.13	82.80	165.35	6.35 / 8.33	0.70	WR650



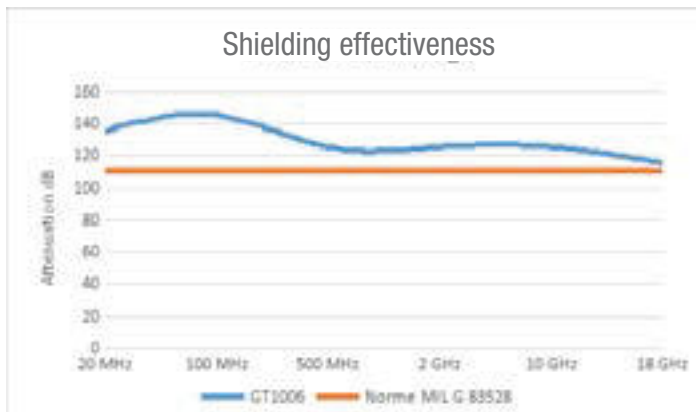
Getelec Article Reference	Reference Getelec Tools	A (mm)	E (mm)	F (mm)	D (mm)	Thickness	EIA waveguide
PF060010074	D 88/1	79.38	35.10	16.05	5.94	0.70	WR137
PF060010049	D 89/1	92.08	47.80	22.40	5.94	0.70	WR187
PF060010061	D 90/1	134.93	72.39	34.29	7.37	0.70	WR284



# Moulded waveguide flange seals

Frequency range (Ghz)	Band	Size of aveguide	JAN Designation	Flange type			Getelec Article Reference	MIK 83528 Reference 013 [ ]-( )	Reference tool Reference
				UG	CPR	CMR			
26.50 - 40.00	Ka	WR28	RG-96/U (silver)	UG-600A/U	-	-	PF3457	[K]-(002)	LR 121
18.00 - 26.50	K	WR42	RG-53/U (brass)	UG-596A/U UG-598A/U	-	-	PF8572	[K]-(004)	LR 120
12.40 - 18.00	Ku	WR62	RG-91/U (brass)	UG-541A/U	-	-	PF030040098	[K]-(006)	LR 42
				-	-	-	PF8573	-	LR 41
10.00 - 15.00	-	WR75	-	-	-	-	PF030040100	[K]-(008)	LR 35
8.20 - 12.40	X	WR90	RG-52/U (brass)	UG-136A/U UG-40A/U	-	-	PF030040097	[K]-(011)	LR 62
				UG-136B/U UG-40B/U	-	-	PF030040096	[K]-(012)	LR 61
				UG-1360/U UG-1361/U	CPR-90G	-	PF8574	[K]-(013)	LR 116
7.05 - 10.00	X1	WR112	RG-51/U (brass)	UG-52B/U UG-137B/U	-	-	PF030040072	[K]-(017)	LR 63
				UG-1358/U UG-1359/U	CPR-112G	-	PF040040013	[K]-(018)	LR 117
5.85 - 8.20	Xb	WR137	RG-50/U (brass)	UG-1356/U UG-1357/U	CPR-137G	-	PF040040026	[K]-(023)	LR 118
3.95 - 5.85	C	WR187	RG-49/U (brass)	UG-148C/U UG-406B/U	-	-	PF030040016	[K]-(029)	LR 65
				UG-1352/U UG-1353/U	CPR-187G	-	PF040040016	[K]-(030)	LR 119
2.60 - 3.95	S	WR284	RG-48/U (brass)	UG-54B/U UG-585A/U	-	-	PF030040017	[K]-(036)	LR 66
				UG-1348/U UG-1349/U	CPR-284G	-	PF040040010	[K]-(037)	LR 51

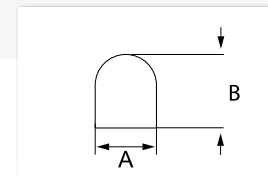
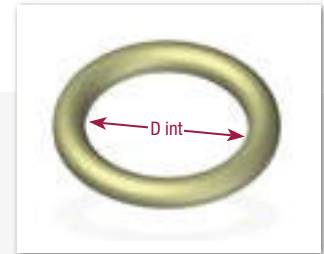
**Material:** Conductive silicone loaded with silver plated copper: **Ref. GT 1000 (cf. chapter 1)**



# Moulded waveguide flange seals

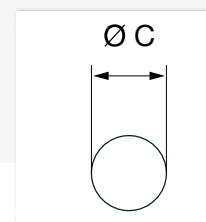
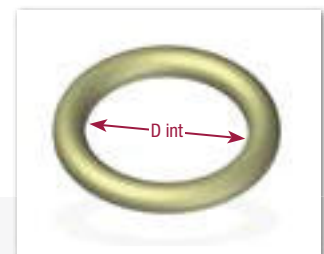
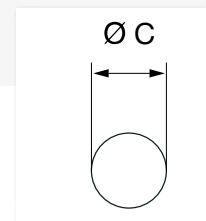
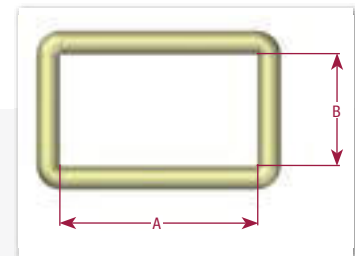
## "D" SECTION O-RING SEAL

Getelec Article Reference	Reference Getelec Tools	D (mm)	A (mm)	B (mm)	EIA waveguide
PF3457	LR 121	10.4	2	1.4	WR 28
PF8572	LR 120	14.9	2	1.2	WR 42
PF030040098	LR 42	22.5	3.9	3.1	WR 62
PF030040100	LR 35	28.5	2.5	1.6	WR 75
PF030040096	LR 61	33.3	2.9	1.9	WR 90
PF030040097	LR 62	34	2.4	2.2	WR 90
PF030040072	LR 63	39.4	2.6	2	WR 112
PF030040016	LR 65	68.1	2.9		WR 187
PF030040017	LR 66	99.3	6.1	4.8	WR 284



## "O" SECTION RECTANGULAR SEAL

Getelec Article Reference	Reference Getelec Tools	A (mm)	B (mm)	C (mm)	EIA waveguide
PF8573	LR 41	18.4	10.4	2.1	WR 62
PF8574	LR 116	29.5	16.8	2.6	WR 90
PF040040013	LR 117	35.8	19.93	2.6	WR 112
PF040040026	LR 118	42.2	23.1	2.6	WR 137
PF040040016	LR 119	55.2	29.8	3.5	WR 187
PF040040010	LR 51	80.6	42.5	3.5	WR 284



## "O" SECTION O-RING SEAL

Getelec Article Reference	Reference Getelec Tools	C (mm)	D (mm)	EIA waveguide
PF030040016	LR 65	2.9	68.1	WR 187