

Product Overview

Conductive Elastomers are fully cured silicones or fluorosilicone loaded with a variety of highly conductive particles providing superior EMI/RFI shielding performance combined with excellent environmental sealing. The various conductive fillers are designed to ensure galvanic compatibility whilst providing low contact resistance between mating surfaces.

Kemtron's many years of manufacturing experience combined with quality control and compliance testing ensures our Conductive Elastomers are suitable for the most demanding situations, offering consistency time after time.

Application

- Industrial controls.
- Instruments.
- Military equipment.
- Avionics.
- Medical electronics.
- Electronic equipment enclosures.

Availability

- Highly conductive EMI/RFI gasket and environmental seal.
- Extrusions.
- Flat gaskets.
- 'O' Rings.
- Sheet.
- Thickness from 0.5mm.
- Wide temperature range -55°C + 200°C.
- Fluorosilicone for harsh environments: Fuel oils and solvents.
- Choice of materials for galvanic compatibility.
- Flame retardant to UL94VO.
- Low smoke-low toxicity.
- Conductive self adhesive backing on sheets.

Technical Specifications

Material Selection

Kemtron manufacture conductive elastomers using four standard highly conductive fillers in both silicone and fluorosilicone variants, all have slightly different attributes:

Conductive fillers available for Silicone and Fluorosilicone

- **Nickel Plated Graphite**

A high quality cost effective commercial material with increased use in the military markets. Easily extruded or molded. SNG FR grade to UL94 V0 and meets the requirements of BS 6853:1999 Incorporating amendment No1. Low smoke and low toxicity.

- **Silver Plated Aluminium**

An excellent grade high performance material widely used for higher frequency applications in the commercial and military markets. Lighter in weight than some other materials.

- **Silver Plated Copper**

This material offers excellent RFI/EMI shielding performance across the frequency spectrum, but comes at a higher price and with increased weight.

- **Nickel**

This product has largely been replaced by Nickel Graphite but is still widely used in military and aerospace applications. Fluorosilicone has better aging properties than the silicone. A good performer at lower frequencies but also heavier than some other materials.

Silicone (VMQ)

Silicone rubber is used because the end use requires a material that retains its elastomeric properties over a very wide range of temperatures and does not degrade due to the presence of oxygen and ozone.

Silicone elastomers do have weaknesses in their properties and behavior. In comparison with other elastomers their tensile, tear and abrasion properties are significantly poorer, however, they do not decay as the temperature is increased and above 150°C they become on the whole better.

The swelling and chemical resistance of silicones is comparable to those of chloroprene rubber, they are not affected by aliphatic oils however they swell in naphthenic and are attacked by hot aromatic oils.

Silicones main weakness is to hydrolytic attack and decomposition especially to steam between 120°C and 140°C, they are also susceptible to attack by acids and alkalis.

Fluorosilicone (FVMQ)

Fluorosilicone is used because it overcomes the formers chemical resistance and swelling weaknesses whilst retaining on the whole the excellent high temperature properties. FVMQ however still suffers from attack by high temperature steam and hydrolysis by both acids and alkalis.

Production Capabilities

Kemtron's extensive manufacturing facilities combined with our development team, Quality control and experienced manufacturing personnel enable us to be one of Europe's leading manufacturers of electrically conductive elastomers.

Here at Kemtron we develop, test, compound, mould, extrude and vulcanize conductive elastomers. This enables us to be flexible in our approach towards customer satisfaction.

In addition to our standard range, we can develop and compound new grades of materials at our facility in the UK to meet customer specific requirements, subject to economic minimum quantities.

Materials

Material Code	Material
SNG	Silicone Nickel Graphite
FNG	Fluorosilicone Nickel Graphite
SNG-FR	Silicone Nickel Graphite Flame Retardant UL94 V0 and BS 6853:1999
SSA	Silicone Silver Aluminium 60° Shore A
FSA	Fluorosilicone Silver Aluminium 60° Shore A
FSA(70)	Fluorosilicone Silver plated Aluminium 70° Shore A
SSA (65B)	Silicone Silver Aluminium 65° Shore A Blue
SSC	Silicone Silver Copper
FSC	Fluorosilicone Silver Copper
SN	Silicone Nickel
FN	Fluorosilicone Nickel

Low smoke, low toxicity fire retardant materials

Silicone Nickel Graphite flame retardant material SNG-FR is tested and approved by Underwriters Laboratories to UL94 V0 file number E344902 In addition the material has also been independently tested for smoke and toxicity, test results as shown:

Oxygen index to BS EN ISO 4589-2: 1999	Oxygen 41.6%
Smoke density to BS 6853:1999: Annex D.8.3	Average Ao (on) 0.00944
	Average Ao (off) 0.0104

The results suggest that the material meets the requirements for minor internal use on vehicle category 1a.

NF X 70-100-1: 2006	Conventional index
NF X 70-100-2: 2006	of Toxicity (CIT) 8.19

All test reports are available upon request.

Technical Specifications (Continued)

Test Results

Listed below are the test results of Kemtron's Electrically Conductive Silicone Elastomer materials. Some tests are performed in house and others by external laboratories all using calibrated equipment, testing to the standard specified in MIL-DTL-83528 C. Kemtron offer the performance data and methods of testing to MIL-DTL-83528 C for comparison only. All of Kemtron's test certificates and reports are available upon request. The results were obtained in laboratory conditions and should be used as a guide only. Customer hardware and many other factors are beyond our control. Therefore customers should perform their own tests to ensure suitability of the product for the desired performance.

Kemtron recognises the importance of quality and consistency in conductive elastomer seal manufacture. With this in mind;

- We specify, batch control and trace all raw materials.
- Control compounding with robust procedures and batch test every mix with calibrated test equipment to ensure batch to batch consistency and conformance to our published data sheets.
- Use certified and approved outside test laboratories.
- Batch control and trace all manufacturing including materials, tools, equipment and operators.

The controls are embedded into our accredited management system that we have held since 1988. All the above is overseen by our QA department and our in-house qualified Polymer Engineer / Chemist ensuring proven consistency and traceable results.

Test Description	Material Performance										
Elastomer Binder	SNG VMQ	SNG-FR VMQ	SSA VMQ	SSA65B VMQ	SSC VMQ	SN VMQ	FNG FVMQ	FSA FVMQ	FSA70 FVMQ	FSC FVMQ	FN FVMQ
Conductive Filler	Ni/C	Ni/C	Ag/Al	Ag/Al	Ag/Cu	Ni	Ni/C	Ag/Al	Ag/Al	Ag/Cu	Ni
Colour	Dark Grey	Light Grey	Tan	Blue	Tan	Dark Grey	Dark Green	Light Green	Light Green	Green	Dark Green
Volume Resistivity MIL-DTL 83528 C (ohm-cm, max.) As supplied (without Pressure sensitive adhesive)	0.05	0.05	0.008	0.008	0.004	0.1	0.05	0.008	0.008	0.004	0.1
Hardness(Shore A ±5) ASTM D2240	60	65	60	65	65	65	65	60	70	65	70
Specific gravity (±0.1) ASTM D792	2.0	2.0	2.0	2.0	3.5	4.5	2.2	2.0	2.0	4.0	4.8
Tensile strength (lb./in. min) ASTM D412	300	275	170	270	290	210	190	233	200	210	160
Elongation % ASTM D412	450	440	350	390	480	470	270	310	250	220	340
Tear Strength (lb./in. min) ASTM D624	70	70	55	70	50	60	40	45	45	50	44
Compression set ASTM D395 70 hrs @ 100°C (%) Method B	8.6	12.1	24.0	14.1	29	11	14	21	21	21	16
Compression / deflection ASTM D575 method B 100PSI on 1.58mm%	19	20	20	19	19	17	20	19	19	19	18
Operating Temperatures											
Max °C	160	160	160	160	125	160	160	160	160	125	160
Min °C	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55	-55
Shielding Effectiveness MIL-DTL 83528 C (dB)											
20 MHz	106	106	108	106	106	106	106	106	106	90	103
40 MHz	105	105	106	106	106	105	105	103	105	106	104
60 MHz	106	105	109	107	106	105	105	104	107	106	105
80 MHz	114	111	118	114	112	111	110	111	111	112	111
100 MHz	111	108	109	108	107	109	108	108	106	106	108
200 MHz	116	114	117	116	114	114	114	112	106	115	112
400 MHz	119	112	123	120	111	121	116	122	117	114	117
600 MHz	112	105	114	112	105	111	106	108	106	108	110
800 MHz	114	109	120	119	116	131	116	116	120	112	112
1 GHz	118	107	101	116	102	105	100	108	109	112	111
2 GHz	111	102	101	102	105	100	100	100	106	104	101
4 GHz	100	106	107	102	113	102	104	105	112	102	101
6 GHz	104	103	105	106	100	105	104	113	97	104	101
8 GHz	110	115	105	104	106	106	106	117	114	112	103
10 GHz	110	109	102	109	107	106	105	115	112	115	107
Electrical Stability After Break (Ohm-cm, max)	0.1	0.1	0.01	0.01	0.008	0.15	0.1	0.015	0.015	0.015	0.15
Heat Ageing MIL-DTL 83528 C 48 hours at 1.25 x max Operating Temperature Ohm-cm, max	0.1	0.1	0.02	0.02	0.01	0.2	0.1	0.01	0.015	0.015	0.2

Technical Specifications (Continued)

Properties of elastomers that can be measured and how they impact on selection of the appropriate material for gasket/sealing purposes

Hardness

Hardness is a measure of the degree of indentation when an indenter of known geometry is placed on the elastomeric surface under a known constant force for a fixed time. The different scales used Shore A and IRHD are defined by the form of the indenter, applied load and time of reading after indenter application. In a standard elastomer there is reasonable agreement between observed hardness and Young's Modulus (E). In the case of conductive elastomers this relationship is not so clear cut since the elastomer acts more as a binder for the filler and the hardness appears to have a rule of mixtures response.



Tensile strength and elongation at break

Tensile strength and elongation at break are obtained from the same standard dumbbell shaped test-piece punched from a moulded sheet of rubber of known thickness. By use of tensile test equipment fitted with an extensometer a stress v strain response curve can be obtained and a judgement of the stresses and strains that can be made on the material during service made.

Tear

The tearing properties of a material are obtained using tensile test equipment and a standard test piece of known dimensions. Tests are carried out in tension and the results reported in terms of load required per distance moved by the tear tip.

Compression set

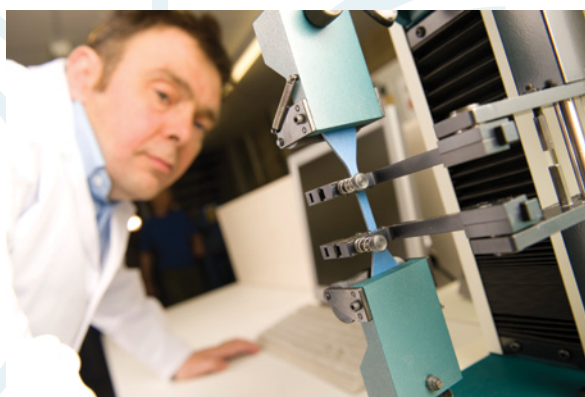
Compression set (or more correctly permanent set after compression to a fixed strain) should not be confused with either Creep or Stress Relaxation. The test was originally conceived as a measure of state of cure. The test basically involves compressing a cylinder of material to a fixed strain and leaving it for a known temperature for a fixed time. The compression is removed, the cylinder allowed to recover over a fixed time and the height re-measured. The value recorded being the percentage difference according to the equation below;

$$\text{Compression set at Constant Strain} = \frac{t_0 - t_r}{t_0 - t_s} \times 100$$

Where

t₀	is the original thickness
t_r	is the thickness after recovery
t_s	is the deflection applied (thickness of shim)

Hence, the test as originally conceived would be carried out on test pieces cured for varying times at a fixed



temperature and the correct cure determined from where the compression set value was found to be a minimum. Although the original purpose of the test has been superseded by modern rheometers the test continues to be used. The reason for this being the belief that the test gives an indication of creep which can be seen below is not strictly true. Since the test is an amalgamation of that used to assess creep and stress relaxation.

Creep also known as cold flow

Creep is defined as the change in strain with time whilst the elastomer is held under a constant stress. This stress can take the form of compression, tension and/or shear.

In terms of how creep applies to a seal or gasket, this is dependent on whether it is constrained or non-constrained. In the non-constrained environment the strain within the elastomer will increase with time until in theory the stress within the elastomer reaches a minimum. The elastomer seal/gasket will compress and spread out. In the constrained environment the seal/gasket will conform to the groove allowed and the creep arrested.

Technical Specifications (Continued)

Stress relaxation

Stress relaxation is defined as the change in stress with time whilst the elastomer is held under a constant strain.

Consider that you have a seal that during installation is compressed by 10% of its original thickness. To obtain this 10% compression requires 100 MPa, and you can consider that the elastomer is exerting 100 MPa in return and the seal would be able to retain internal and external forces of 100 MPa. However, with time and ageing the stress exerted by the elastomeric seal can decay i.e. it may only exert 90 MPa yet still be compressed by 10%.

The paragraph above describes the reality of Stress Relaxation in compression the other two modes of tension or shear can also be measured.

Certain schools of thought recommend that stress relaxation issues can be overcome by increasing the initial compression the seal / gasket is taken to by 25% in the expectation that stress relaxation will occur and the operational force will be that required. This approach obviously assumes that the seal/gasket will be able to withstand the extra strain and the seal/gasket behavior to the extra stress remains the same. Consideration must also be given to whether it is retained in a groove or free to take up a natural form on deflection.

Compression deflection

This test is carried out using a disc of the gasket/seal material of a known thickness and diameter to which is applied a load equivalent to 100 psi and the deflection measured.

Accelerated ageing tests

In general any of the above tests can be carried out on test samples either aged or cut from test sheets which have been exposed to air ageing at an elevated temperature. Such tests may give an indication of how the material will perform in the long term in the service environment.

Standard Tests Specific to Conductive Elastomers

Volume resistivity

In this test a sample of the conductive Elastomer whose dimensions are known is put under compression to a known strain. The difference between the known applied current is compared to that flowing through the Elastomer and the resistivity of the Elastomer.

Volume resistivity after extension/break

This test is the same as that for volume resistivity except that the sample is punched from the central strip of a dumbbell that has been stretched to break and then allowed to recover for thirty minutes.

This test gives an indication of the behavior of the material if it is stretched during installation or is re-used during servicing.

Dynamic volume resistivity

In this test the variation in the volume resistivity is measured whilst a sample of known dimensions is put under a fixed load. The load is then oscillated around this fixed point by a known amount over a range of frequencies and the volume resistivity recorded.

The purpose of this test is to give an indication as to how the seal/gasket will perform in service when the vibrations from equipment operations are imposed upon it.

Conductive Silicone & Fluorosilicone Elastomers – Product Handling & Storage

Conductive elastomer products are expected to provide a service life of many years. However, if the product is to be stored, certain factors may have a detrimental effect. Kemtron recommend that the following precautions are carefully observed to ensure product longevity:

Handling

These materials should not be subjected to stretching in either storage or installation otherwise the conductive particles may disperse in the rubber, resulting in degradation of the shielding performance. In addition materials should be handled using cotton gloves to prevent surface contamination. Extra care must be used when fitting gaskets into channels, especially "O" rings. The product should be eased into the final groove shape from each end or opposite diagonals, working slowly inwards or round the outside. It must not be placed in at one end and simply pushed in along the length, this will stretch the gasket and leave excess material. If in doubt please contact us for our recommendations.

Storage temperature

It is recommended that the product be stored at normal ambient temperatures.

Exposure to light & UV

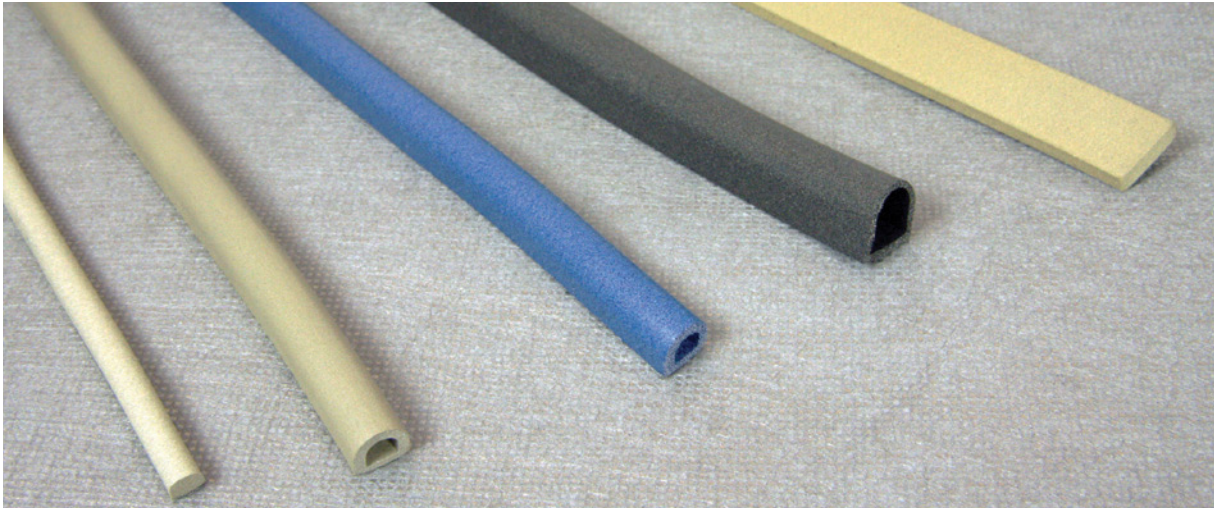
Exposure to any UV source (i.e artificial or natural light) should be avoided if possible. It should be kept stored in light proof, sulphur free packaging.

Method of storage

The material must be stored without any stretching or crushing. It is best kept in light proof, sulphur free polythene bags or light proof, sulphur free boxes.

Contact with other materials

The product should not be allowed to come into contact with Solvents, oils & greases, PVC, any material containing sulphur, dissimilar rubbers or metal containers.



Product Overview

Kemtron manufacture a wide variety of profiles from our standard tooling. We are also able to produce to your exact requirement with minimal tooling cost.

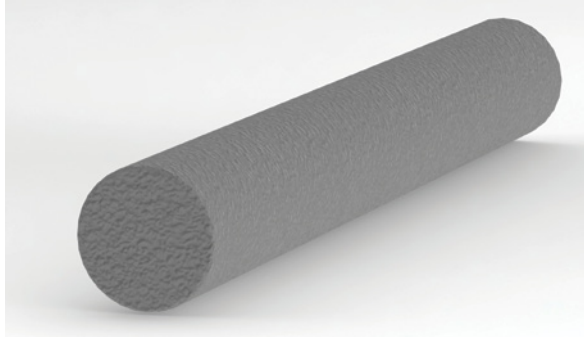
Extruded profiles are available in continuous, cut lengths or fabricated to your requirements, such as rectangles by vulcanizing the joints. This process uses the same conductive polymer compound. Ensuring complete electrical conductivity is maintained across the joints. Please see 'O' ring section.

Design Considerations

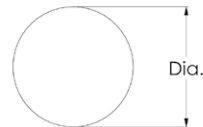
- When selecting a profile it is important to give attention to the mechanical design of your product. Round and D section seals should ideally be mounted in a suitably sized channel or groove.
- If the gasket is to fit in a groove. It is important that the gasket size chosen does not overfill the groove, when using solid sections you should ensure that the groove cross sectional area is a minimum of 5% greater than the proposed gasket cross section. See groove design data.
- Attention must also be paid to the closing force required to compress the gasket to the working height required.
- Self adhesive backing usually only partially covers an area of extrusions and is non-conductive. This is offered as an assembly aid only.

Technical Specifications

Round

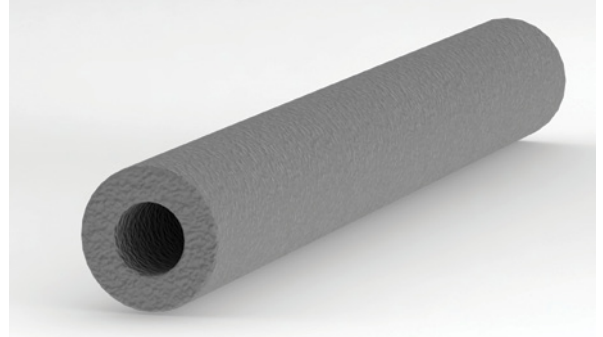


Profile 1201

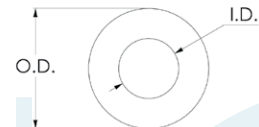


Diameter	Part Number
1.00	1201-XXX-0010
1.10	1201-XXX-0011
1.20	1201-XXX-0012
1.30	1201-XXX-0013
1.40	1201-XXX-0014
1.50	1201-XXX-0015
1.60	1201-XXX-0016
1.80	1201-XXX-0018
2.00	1201-XXX-0020
2.20	1201-XXX-0022
2.40	1201-XXX-0024
2.50	1201-XXX-0025
2.80	1201-XXX-0028
3.00	1201-XXX-0030
3.20	1201-XXX-0032
3.50	1201-XXX-0035
3.80	1201-XXX-0038
4.00	1201-XXX-0040
4.30	1201-XXX-0043
4.50	1201-XXX-0045
4.80	1201-XXX-0048
5.00	1201-XXX-0050
5.30	1201-XXX-0053
5.50	1201-XXX-0055
5.80	1201-XXX-0058
6.00	1201-XXX-0060
6.30	1201-XXX-0063
6.50	1201-XXX-0065
6.80	1201-XXX-0068
7.00	1201-XXX-0070
7.30	1201-XXX-0073
7.50	1201-XXX-0075
7.80	1201-XXX-0078
8.00	1201-XXX-0080

Tubular



Profile 1202



OD mm	ID mm	Part Number
1.20	0.5	1202-XXX-0012-0005
1.30	0.5	1202-XXX-0013-0005
1.40	0.5	1202-XXX-0014-0005
1.50	0.5	1202-XXX-0015-0005
1.60	0.5	1202-XXX-0016-0005
1.70	0.5	1202-XXX-0017-0005
1.80	0.5	1202-XXX-0018-0005
1.90	0.5	1202-XXX-0019-0005
2.00	0.5	1202-XXX-0020-0005
1.60	0.8	1202-XXX-0016-0008
1.70	0.8	1202-XXX-0017-0008
1.80	0.8	1202-XXX-0018-0008
1.90	0.8	1202-XXX-0019-0008
2.00	0.8	1202-XXX-0020-0008
2.10	0.8	1202-XXX-0021-0006
2.20	0.8	1202-XXX-0022-0008
2.30	0.8	1202-XXX-0023-0008
2.40	0.8	1202-XXX-0024-0008
2.50	0.8	1202-XXX-0025-0008
2.60	0.8	1202-XXX-0026-0008
2.70	0.8	1202-XXX-0027-0008
2.80	0.8	1202-XXX-0028-0008
2.90	0.8	1202-XXX-0029-0008
3.00	0.8	1202-XXX-0030-0008
2.00	1.0	1202-XXX-0020-0010
2.10	1.0	1202-XXX-0021-0010
2.20	1.0	1202-XXX-0022-0010
2.30	1.0	1202-XXX-0023-0010
2.40	1.0	1202-XXX-0024-0010
2.50	1.0	1202-XXX-0025-0010
2.60	1.0	1202-XXX-0026-0010
2.70	1.0	1202-XXX-0027-0010
2.80	1.0	1202-XXX-0028-0010
2.90	1.0	1202-XXX-0029-0010
3.00	1.0	1202-XXX-0030-0010
3.10	1.0	1202-XXX-0031-0010
3.20	1.0	1202-XXX-0032-0010
3.30	1.0	1202-XXX-0033-0010
3.40	1.0	1202-XXX-0034-0010
3.50	1.0	1202-XXX-0035-0010

Technical Specifications (Continued)

OD mm	ID mm	Part Number	OD mm	ID mm	Part Number
3.60	1.0	1202-XXX-0036-0010	4.10	1.5	1202-XXX-0041-0015
3.70	1.0	1202-XXX-0037-0010	4.20	1.5	1202-XXX-0042-0015
3.80	1.0	1202-XXX-0038-0010	4.30	1.5	1202-XXX-0043-0015
3.90	1.0	1202-XXX-0039-0010	4.40	1.5	1202-XXX-0044-0015
4.00	1.0	1202-XXX-0040-0010	4.50	1.5	1202-XXX-0045-0015
2.50	1.1	1202-XXX-0025-0011	4.60	1.5	1202-XXX-0046-0015
2.60	1.1	1202-XXX-0026-0011	4.70	1.5	1202-XXX-0047-0015
2.70	1.1	1202-XXX-0027-0011	4.80	1.5	1202-XXX-0048-0015
2.80	1.1	1202-XXX-0028-0011	4.90	1.5	1202-XXX-0049-0015
2.90	1.1	1202-XXX-0029-0011	5.00	1.5	1202-XXX-0050-0015
3.00	1.1	1202-XXX-0030-0011	3.00	1.6	1202-XXX-0030-0016
3.10	1.1	1202-XXX-0031-0011	3.10	1.6	1202-XXX-0031-0016
3.20	1.1	1202-XXX-0032-0011	3.20	1.6	1202-XXX-0032-0016
3.30	1.1	1202-XXX-0033-0011	3.30	1.6	1202-XXX-0033-0016
3.40	1.1	1202-XXX-0034-0011	3.40	1.6	1202-XXX-0034-0016
3.50	1.1	1202-XXX-0035-0011	3.50	1.6	1202-XXX-0035-0016
3.60	1.1	1202-XXX-0036-0011	3.60	1.6	1202-XXX-0036-0016
3.70	1.1	1202-XXX-0037-0011	3.70	1.6	1202-XXX-0037-0016
3.80	1.1	1202-XXX-0038-0011	3.80	1.6	1202-XXX-0038-0016
3.90	1.1	1202-XXX-0039-0011	3.90	1.6	1202-XXX-0039-0016
4.00	1.1	1202-XXX-0040-0011	4.00	1.6	1202-XXX-0040-0016
2.50	1.2	1202-XXX-0025-0012	4.10	1.6	1202-XXX-0041-0016
2.60	1.2	1202-XXX-0026-0012	4.20	1.6	1202-XXX-0042-0016
2.70	1.2	1202-XXX-0027-0012	4.30	1.6	1202-XXX-0043-0016
2.80	1.2	1202-XXX-0028-0012	4.40	1.6	1202-XXX-0044-0016
2.90	1.2	1202-XXX-0029-0012	4.50	1.6	1202-XXX-0045-0016
3.00	1.2	1202-XXX-0030-0012	4.60	1.6	1202-XXX-0046-0016
3.10	1.2	1202-XXX-0031-0012	4.70	1.6	1202-XXX-0047-0016
3.20	1.2	1202-XXX-0032-0012	4.80	1.6	1202-XXX-0048-0016
3.30	1.2	1202-XXX-0033-0012	4.90	1.6	1202-XXX-0049-0016
3.40	1.2	1202-XXX-0034-0012	5.00	1.6	1202-XXX-0050-0016
3.50	1.2	1202-XXX-0035-0012	4.00	2.0	1202-XXX-0040-0020
3.60	1.2	1202-XXX-0036-0012	4.10	2.0	1202-XXX-0041-0020
3.70	1.2	1202-XXX-0037-0012	4.20	2.0	1202-XXX-0042-0020
3.80	1.2	1202-XXX-0038-0012	4.30	2.0	1202-XXX-0043-0020
3.90	1.2	1202-XXX-0039-0012	4.40	2.0	1202-XXX-0044-0020
4.00	1.2	1202-XXX-0040-0012	4.50	2.0	1202-XXX-0045-0020
2.50	1.3	1202-XXX-0025-0013	4.60	2.0	1202-XXX-0046-0020
2.60	1.3	1202-XXX-0026-0013	4.70	2.0	1202-XXX-0047-0020
2.70	1.3	1202-XXX-0027-0013	4.80	2.0	1202-XXX-0048-0020
2.80	1.3	1202-XXX-0028-0013	4.90	2.0	1202-XXX-0049-0020
2.90	1.3	1202-XXX-0029-0013	5.00	2.0	1202-XXX-0050-0020
3.00	1.3	1202-XXX-0030-0013	5.10	2.0	1202-XXX-0051-0020
3.10	1.3	1202-XXX-0031-0013	5.20	2.0	1202-XXX-0052-0020
3.20	1.3	1202-XXX-0032-0013	5.30	2.0	1202-XXX-0053-0020
3.30	1.3	1202-XXX-0033-0013	5.40	2.0	1202-XXX-0054-0020
3.40	1.3	1202-XXX-0034-0013	5.50	2.0	1202-XXX-0055-0020
3.50	1.3	1202-XXX-0035-0013	5.60	2.0	1202-XXX-0056-0020
3.60	1.3	1202-XXX-0036-0013	5.70	2.0	1202-XXX-0057-0020
3.70	1.3	1202-XXX-0037-0013	5.80	2.0	1202-XXX-0058-0020
3.80	1.3	1202-XXX-0038-0013	5.90	2.0	1202-XXX-0059-0020
3.90	1.3	1202-XXX-0039-0013	6.00	2.0	1202-XXX-0060-0020
4.00	1.3	1202-XXX-0040-0013	4.00	2.2	1202-XXX-0040-0022
3.00	1.5	1202-XXX-0030-0015	4.10	2.2	1202-XXX-0041-0022
3.10	1.5	1202-XXX-0031-0015	4.20	2.2	1202-XXX-0042-0022
3.20	1.5	1202-XXX-0032-0015	4.30	2.2	1202-XXX-0043-0022
3.30	1.5	1202-XXX-0033-0015	4.40	2.2	1202-XXX-0044-0022
3.40	1.5	1202-XXX-0034-0015	4.50	2.2	1202-XXX-0045-0022
3.50	1.5	1202-XXX-0035-0015	4.60	2.2	1202-XXX-0046-0022
3.60	1.5	1202-XXX-0036-0015	4.70	2.2	1202-XXX-0047-0022
3.70	1.5	1202-XXX-0037-0015	4.80	2.2	1202-XXX-0048-0022
3.80	1.5	1202-XXX-0038-0015	4.90	2.2	1202-XXX-0049-0022
3.90	1.5	1202-XXX-0039-0015	5.00	2.2	1202-XXX-0050-0022
4.00	1.5	1202-XXX-0040-0015	5.10	2.2	1202-XXX-0051-0022
			5.20	2.2	1202-XXX-0052-0022

Technical Specifications (Continued)

OD mm	ID mm	Part Number	OD mm	ID mm	Part Number
5.30	2.2	1202-XXX-0053-0022	8.60	3.0	1202-XXX-0086-0030
5.40	2.2	1202-XXX-0054-0022	8.70	3.0	1202-XXX-0087-0030
5.50	2.2	1202-XXX-0055-0022	8.80	3.0	1202-XXX-0088-0030
5.60	2.2	1202-XXX-0056-0022	8.90	3.0	1202-XXX-0089-0030
5.70	2.2	1202-XXX-0057-0022	9.00	3.0	1202-XXX-0090-0030
5.80	2.2	1202-XXX-0058-0022	6.00	3.2	1202-XXX-0060-0032
5.90	2.2	1202-XXX-0059-0022	6.10	3.2	1202-XXX-0061-0032
6.00	2.2	1202-XXX-0060-0022	6.20	3.2	1202-XXX-0062-0032
4.50	2.5	1202-XXX-0045-0025	6.30	3.2	1202-XXX-0063-0032
4.60	2.5	1202-XXX-0046-0025	6.40	3.2	1202-XXX-0064-0032
4.70	2.5	1202-XXX-0047-0025	6.50	3.2	1202-XXX-0065-0032
4.80	2.5	1202-XXX-0048-0025	6.60	3.2	1202-XXX-0066-0032
4.90	2.5	1202-XXX-0049-0025	6.70	3.2	1202-XXX-0067-0032
5.00	2.5	1202-XXX-0050-0025	6.80	3.2	1202-XXX-0068-0032
5.10	2.5	1202-XXX-0051-0025	6.90	3.2	1202-XXX-0069-0032
5.20	2.5	1202-XXX-0052-0025	7.00	3.2	1202-XXX-0070-0032
5.30	2.5	1202-XXX-0053-0025	7.00	3.2	1202-XXX-0070-0032
5.40	2.5	1202-XXX-0054-0025	7.10	3.2	1202-XXX-0071-0032
5.50	2.5	1202-XXX-0055-0025	7.20	3.2	1202-XXX-0072-0032
5.60	2.5	1202-XXX-0056-0025	7.30	3.2	1202-XXX-0073-0032
5.70	2.5	1202-XXX-0057-0025	7.40	3.2	1202-XXX-0074-0032
5.80	2.5	1202-XXX-0058-0025	7.50	3.2	1202-XXX-0075-0032
5.90	2.5	1202-XXX-0059-0025	7.60	3.2	1202-XXX-0076-0032
6.00	2.5	1202-XXX-0060-0025	7.70	3.2	1202-XXX-0077-0032
4.80	2.8	1202-XXX-0048-0028	7.80	3.2	1202-XXX-0078-0032
4.90	2.8	1202-XXX-0049-0028	7.90	3.2	1202-XXX-0079-0032
5.00	2.8	1202-XXX-0050-0028	8.00	3.2	1202-XXX-0080-0032
5.10	2.8	1202-XXX-0051-0028	8.10	3.2	1202-XXX-0081-0032
5.20	2.8	1202-XXX-0052-0028	8.20	3.2	1202-XXX-0082-0032
5.30	2.8	1202-XXX-0053-0028	8.30	3.2	1202-XXX-0083-0032
5.40	2.8	1202-XXX-0054-0028	8.40	3.2	1202-XXX-0084-0032
5.50	2.8	1202-XXX-0055-0028	8.50	3.2	1202-XXX-0085-0032
5.60	2.8	1202-XXX-0056-0028	8.60	3.2	1202-XXX-0086-0032
5.70	2.8	1202-XXX-0057-0028	8.70	3.2	1202-XXX-0087-0032
5.80	2.8	1202-XXX-0058-0028	8.80	3.2	1202-XXX-0088-0032
5.90	2.8	1202-XXX-0059-0028	8.90	3.2	1202-XXX-0089-0032
6.00	2.8	1202-XXX-0060-0028	9.00	3.2	1202-XXX-0090-0032
6.00	3.0	1202-XXX-0060-0030	7.00	4.0	1202-XXX-0070-0040
6.10	3.0	1202-XXX-0061-0030	7.00	4.0	1202-XXX-0070-0040
6.20	3.0	1202-XXX-0062-0030	7.10	4.0	1202-XXX-0071-0040
6.30	3.0	1202-XXX-0063-0030	7.20	4.0	1202-XXX-0072-0040
6.40	3.0	1202-XXX-0064-0030	7.30	4.0	1202-XXX-0073-0040
6.50	3.0	1202-XXX-0065-0030	7.40	4.0	1202-XXX-0074-0040
6.60	3.0	1202-XXX-0066-0030	7.50	4.0	1202-XXX-0075-0040
6.70	3.0	1202-XXX-0067-0030	7.60	4.0	1202-XXX-0076-0040
6.80	3.0	1202-XXX-0068-0030	7.70	4.0	1202-XXX-0077-0040
6.90	3.0	1202-XXX-0069-0030	7.80	4.0	1202-XXX-0078-0040
7.00	3.0	1202-XXX-0070-0030	7.90	4.0	1202-XXX-0079-0040
7.00	3.0	1202-XXX-0070-0030	8.00	4.0	1202-XXX-0080-0040
7.10	3.0	1202-XXX-0071-0030	8.10	4.0	1202-XXX-0081-0040
7.20	3.0	1202-XXX-0072-0030	8.20	4.0	1202-XXX-0082-0040
7.30	3.0	1202-XXX-0073-0030	8.30	4.0	1202-XXX-0083-0040
7.40	3.0	1202-XXX-0074-0030	8.40	4.0	1202-XXX-0084-0040
7.50	3.0	1202-XXX-0075-0030	8.50	4.0	1202-XXX-0085-0040
7.60	3.0	1202-XXX-0076-0030	8.60	4.0	1202-XXX-0086-0040
7.70	3.0	1202-XXX-0077-0030	8.70	4.0	1202-XXX-0087-0040
7.80	3.0	1202-XXX-0078-0030	8.80	4.0	1202-XXX-0088-0040
7.90	3.0	1202-XXX-0079-0030	8.90	4.0	1202-XXX-0089-0040
8.00	3.0	1202-XXX-0080-0030	9.00	4.0	1202-XXX-0090-0040
8.10	3.0	1202-XXX-0081-0030	7.50	4.5	1202-XXX-0075-0045
8.20	3.0	1202-XXX-0082-0030	7.60	4.5	1202-XXX-0076-0045
8.30	3.0	1202-XXX-0083-0030	7.70	4.5	1202-XXX-0077-0045
8.40	3.0	1202-XXX-0084-0030	7.80	4.5	1202-XXX-0078-0045
8.50	3.0	1202-XXX-0085-0030	7.90	4.5	1202-XXX-0079-0045
			8.00	4.5	1202-XXX-0080-0045

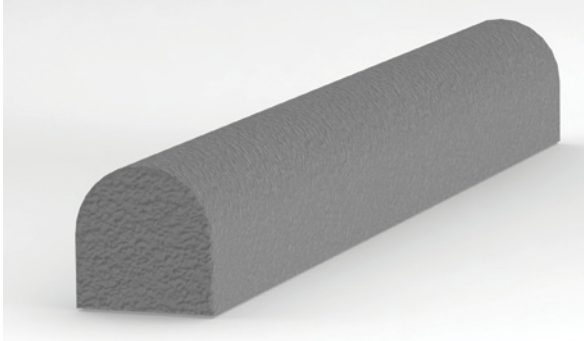
Technical Specifications (Continued)

OD mm	ID mm	Part Number
8.10	4.5	1202-XXX-0081-0045
8.20	4.5	1202-XXX-0082-0045
8.30	4.5	1202-XXX-0083-0045
8.40	4.5	1202-XXX-0084-0045
8.50	4.5	1202-XXX-0085-0045
8.60	4.5	1202-XXX-0086-0045
8.70	4.5	1202-XXX-0087-0045
8.80	4.5	1202-XXX-0088-0045
8.90	4.5	1202-XXX-0089-0045
9.00	4.5	1202-XXX-0090-0045
7.50	4.8	1202-XXX-0075-0048
7.60	4.8	1202-XXX-0076-0048
7.70	4.8	1202-XXX-0077-0048
7.80	4.8	1202-XXX-0078-0048
7.90	4.8	1202-XXX-0079-0048
8.00	4.8	1202-XXX-0080-0048
8.10	4.8	1202-XXX-0081-0048
8.20	4.8	1202-XXX-0082-0048
8.30	4.8	1202-XXX-0083-0048
8.40	4.8	1202-XXX-0084-0048
8.50	4.8	1202-XXX-0085-0048
8.60	4.8	1202-XXX-0086-0048
8.70	4.8	1202-XXX-0087-0048
8.80	4.8	1202-XXX-0088-0048
8.90	4.8	1202-XXX-0089-0048
9.00	4.8	1202-XXX-0090-0048
8.00	5.0	1202-XXX-0080-0050
8.10	5.0	1202-XXX-0081-0050
8.20	5.0	1202-XXX-0082-0050
8.30	5.0	1202-XXX-0083-0050
8.40	5.0	1202-XXX-0084-0050
8.50	5.0	1202-XXX-0085-0050
8.60	5.0	1202-XXX-0086-0050
8.70	5.0	1202-XXX-0087-0050
8.80	5.0	1202-XXX-0088-0050
8.90	5.0	1202-XXX-0089-0050
9.00	5.0	1202-XXX-0090-0050

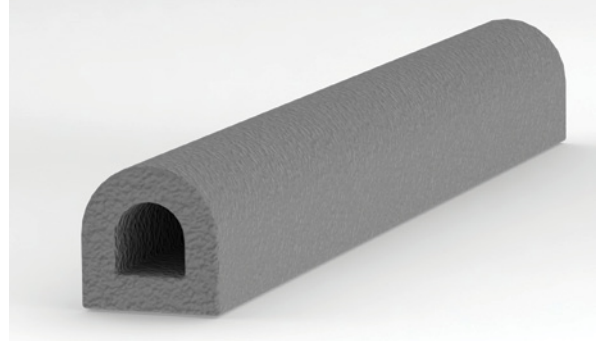


Technical Specifications (Continued)

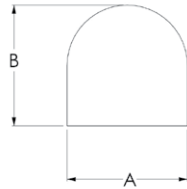
Solid D



Hollow D

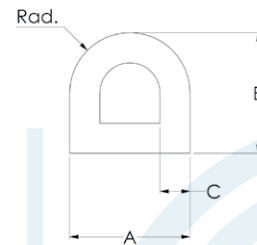


Profile 1203



Width A	Height B	Part Number
1.40	1.63	1203-XXX-0014-0016
1.57	1.73	1203-XXX-0016-0017
2.39	1.98	1203-XXX-0024-0020
1.98	2.26	1203-XXX-0020-0023
1.57	2.54	1203-XXX-0016-0025
3.81	2.79	1203-XXX-0038-0028
3.00	3.96	1203-XXX-0030-0040
4.52	4.45	1203-XXX-0045-0045
3.96	3.96	1203-XXX-0040-0040

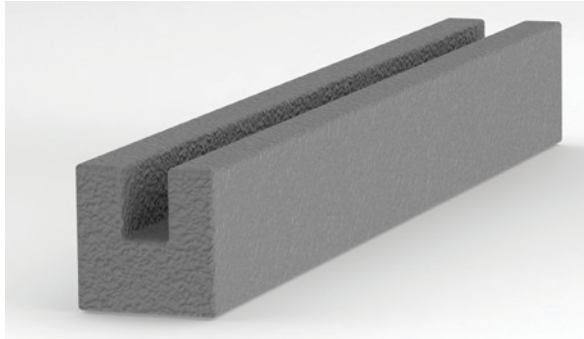
Profile 1204



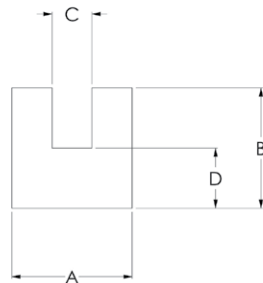
Width A	Height B	Wall C	Radii R	Part Number
3.96	3.96	1.14	1.98	1204-XXX-0040-0040
4.75	4.72	1.27	2.36	1204-XXX-0048-0048
7.92	7.92	1.27	3.96	1204-XXX-0080-0080
7.92	7.92	1.57	3.96	1204-XXX-0081-0081
12.37	8.23	2.03	6.20	1204-XXX-0124-0080
6.35	6.35	1.65	3.18	1204-XXX-0064-0064

Technical Specifications (Continued)

Channel

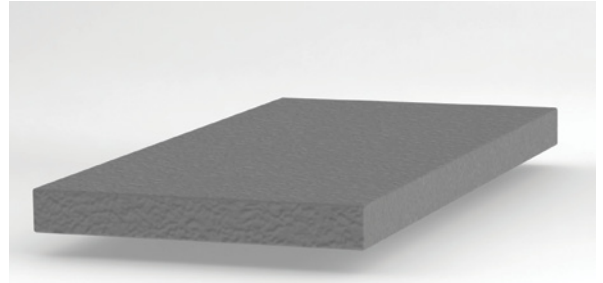


Profile 1206



Dim A	Dim B	Dim C	Dim D	Part Number
2.54	2.54	0.86	0.84	1206-XXX-0025-0025
3.20	2.79	0.66	1.27	1206-XXX-0032-0028
3.20	5.72	0.51	1.91	1206-XXX-0032-0058
3.96	3.94	1.57	1.19	1206-XXX-0040-0040
4.45	3.96	1.19	1.91	1206-XXX-0045-0040
8.31	5.94	1.57	2.92	1206-XXX-0080-0060

Flat Strip



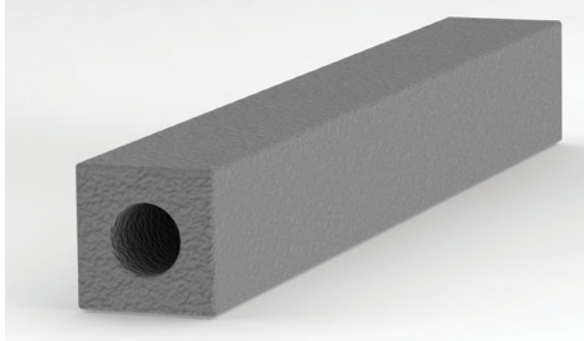
Profile 1207



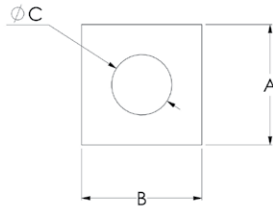
Dim A	Dim B	Part Number
1.60	1.07	1207-XXX-0016-0010
2.41	1.57	1207-XXX-0024-0016
3.05	1.91	1207-XXX-0030-0020
3.18	1.57	1207-XXX-0032-0016
3.96	1.57	1207-XXX-0040-0016
6.35	1.57	1207-XXX-0064-0016
12.70	1.91	1207-XXX-0127-0020
12.70	3.18	1207-XXX-0127-0032
12.70	4.78	1207-XXX-0127-0048
19.05	1.57	1207-XXX-0190-0016
22.35	1.57	1207-XXX-0224-0016
25.40	6.35	1207-XXX-0254-0064

Technical Specifications (Continued)

Hollow Rectangular



Profile 1208



Dim A	Dim B	ØC	Part Number
7.75	8.38	3.18	1208-XXX-0078-0084
9.53	9.53	4.78	1208-XXX-0095-0095

Tolerances

Up to 2.0mm ± 0.1mm
 2.0mm to 5.0mm ± 0.15mm
 5.0mm to 9.0mm ± 0.2mm

Materials

Material Code	Material
SNG	Silicone Nickel Graphite
FNG	Fluorosilicone Nickel Graphite
SNG-FR	Silicone Nickel Graphite Flame Retardant UL94 VO and BS 6853:1999
SSA	Silicone Silver Aluminium 60° Shore A
FSA	Fluorosilicone Silver Aluminium 60° Shore A
FSA(70)	Fluorosilicone Silver plated Aluminium 70° Shore A
SSA (65B)	Silicone Silver Aluminium 65° Shore A Blue
SSC	Silicone Silver Copper
FSC	Fluorosilicone Silver Copper
SN	Silicone Nickel
FN	Fluorosilicone Nickel

How To Order

Select chosen profile and size from our extrusion section then insert the material code XXX (1201-XXX-0030).

e.g.

1201-SNG-0030

Silicone nickel graphite 3.0mm dia cord

Gaskets in Grooves

For the typical electronic enclosure, groove mounted gaskets are better than surface mounted gaskets because when the gasket is compressed in the groove the two mating flanges can come into contact with each other thereby enhancing the EMC performance with the advantage of the groove acting as a compression stop and therefore protecting the gasket from damage at the same time.

Solid and Hollow Gaskets in Grooves

Because solid and tubular style gaskets, when compressed, cannot change their volume the groove has to be larger in width to accommodate the change in shape, otherwise severe gasket damage can be caused when the flanges are fixed together. This can result in loss of compression on the gasket and "compression set" occurring. This will give a reduction of shielding effectiveness, coupled with the possibility of environmental leakage. The groove width should be from 5% to 35% larger than the gasket width, but this is dependent upon the gasket profile being used. For example, a round section gasket has less volume than a square section gasket of the same diameter/width.

The important factor is that in the worst case of high tolerances on the gasket size versus low tolerances on the groove size is that when the gasket is compressed by both flanges, it fills the available space by no more than 100%, i.e.: the volume of the accommodating groove with both flanges touching should be equal to, but be no less than the volume of the gasket cross section.

Knife Edge into Grooves with Tubular Gaskets

Large applications, such as cabinets, may use a tubular type gasket fitted into a groove and the mating flange known as a knife edge. The knife edge plunges into the gasket causing the seal. With tubular gaskets the knife edge collapses the gasket rather than compressing it. The knife edge should not penetrate the gasket by more than 50% of its diameter or there may be a danger of the gasket being unable to recover due to the excess pressure applied by the knife edge.

Technical Specifications (Continued)

Gasket Groove Sizes

Cord Diameter mm	15% Compression		20% Compression	
	Depth	Width	Depth	Width
1.00	0.85	1.10	0.80	1.15
1.10	0.94	1.21	0.88	1.27
1.20	1.02	1.32	0.96	1.38
1.30	1.11	1.43	1.04	1.50
1.40	1.19	1.54	1.12	1.61
1.50	1.28	1.65	1.20	1.73
1.60	1.36	1.76	1.28	1.84
1.80	1.53	1.98	1.44	2.07
2.00	1.70	2.20	1.60	2.30
2.20	1.87	2.42	1.76	2.53
2.40	2.04	2.64	1.92	2.76
2.50	2.13	2.75	2.00	2.88
2.60	2.21	2.86	2.08	2.99
2.80	2.38	3.08	2.24	3.22
3.00	2.55	3.30	2.40	3.45
3.20	2.72	3.52	2.56	3.68
3.50	2.98	3.85	2.80	4.03
3.80	3.23	4.18	3.04	4.37
4.00	3.40	4.40	3.20	4.60
4.30	3.66	4.73	3.44	4.95
4.50	3.83	4.95	3.60	5.18
4.80	4.08	5.28	3.84	5.52
5.00	4.25	5.50	4.00	5.75
5.30	4.51	5.83	4.24	6.10
5.50	4.68	6.05	4.40	6.33
5.80	4.93	6.38	4.64	6.67
6.00	5.10	6.60	4.80	6.90
6.30	5.36	6.93	5.04	7.25
6.50	5.53	7.15	5.20	7.48

The above cross sectional area groove sizes allow for the free movement of the gasket when being compressed. This method of calculation ensures that the volume of the gasket does not exceed that of the groove when fully compressed, resulting in groove overflow. This also minimises the amount of compression force required to achieve a good RFI/EMI seal.

It is important to note that when designing in an EMC gasket, that the principles of O ring design for pressure sealing do not apply. The groove depth dimension is the most important, as it is this that limits the gasket compression. The groove width has no maximum dimension and is only there for gasket location purposes. Tighter groove dimensions using volume calculations may be employed to enhance environmental sealing. However this will increase the compression forces required.

The above calculations are based on reducing the depth of the groove by a given compression % and increasing the width by the same amount less 5% EG: 20% reduction in depth 15% increase in width.

When choosing a tube section as a gasket it is recommended that consideration be given to the lower compression forces, making sure that there is enough resilience in the gasket to ensure a good RFI/EMI seal. In these cases it is sometimes better to use the volume groove size calculation, with the groove side walls offering support for the tube.

Because there are so many variables with tube cross sections it is difficult to give precise information on this subject. Kemtron are able to supply samples for evaluation purposes.

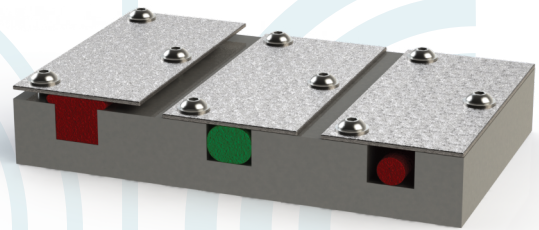
Compression %	10	15	20	25
Cord Diameter mm	Force per 100mm			
1.0	17N	24N	35N	47N
2.0	26N	43N	68N	94N
3.0	37N	66N	110N	154N
4.0	66N	105N	146N	196N

Tolerances

Up to 2.0mm ± 0.1mm
 2.0mm to 5.0mm ± 0.15mm
 5.0mm to 9.0mm ± 0.2mm

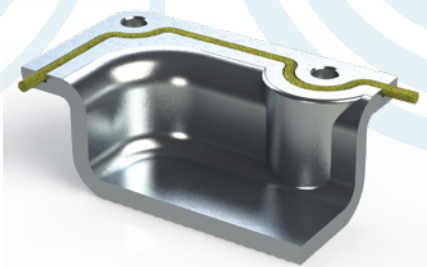
It is also important to consider the tolerances of the gasket and the groove.

Compressed Gasket



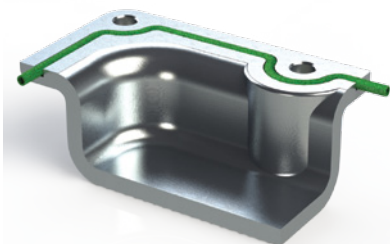
Internal Bend Radius

Casting With Solid Cord Gasket

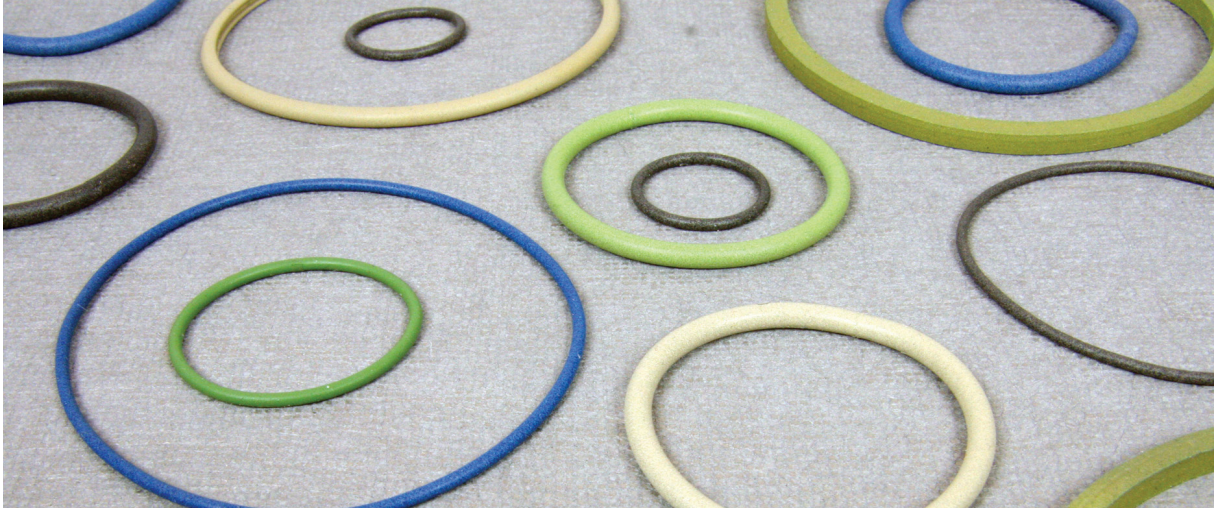


The minimum internal bend radius of a solid cord gasket is 1.5 x cross section of cord.

Casting With Tube Gasket



The minimum internal bend radius of a tube gasket where the id of the tube is no greater than 30% of the cross section is 2.5 x cross section of tube.



Product Overview

Kemtron's experience in the manufacture of 'O' rings is vast, our preferred method of production is extruded and jointed. We have a huge selection of vulcanizing tools to suit our standard extrusions.

The jointing process uses the same conductive polymer compound ensuring complete electrical conductivity is maintained across the joints. Moulded versions are available if specifically requested.

Both silicone & fluorosilicone with all varieties of conductive fillers are available for the manufacture of 'O' rings.

Advantages Of Vulcanised 'O' Rings

- Cost effective.
- No tooling costs.
- Reduced lead times.
- Better surface finish (zero flash).
- Allows hollow sections to be used for lower compression force.
- Custom lengths easily produced.
- Tight tolerances on developed length and cross section.
- Vulcanised 'O' rings with a ID as small as 10mm depending on cord diameter.

Design Considerations

- When selecting a profile it is important to give attention to the mechanical design of your product. Round and D section seals should ideally be mounted in a suitably sized groove.
- If the gasket is to fit in a groove. It is important that the gasket size chosen does not overfill the channel, when using solid sections you should ensure that the groove cross sectional area is a minimum of 5% greater than the proposed gasket cross section.
- Attention must also be paid to the closing force required to compress the gasket to the working height required.

Technical Specifications

Tolerances

Up to 2.0mm ± 0.1mm
 2.0mm to 5.0mm ± 0.15mm
 5.0mm to 9.0mm ± 0.2mm

Developed length ± 1.5mm = less than ±0.5mm on diameter

Standard Vulcanized Cord 'O' Rings

Material	Material Code
Silicone Nickel Graphite	SNG
Silicone Nickel Graphite Fire Retardant	SNG-FR
Fluorosilicone Nickel Graphite	FNG
Silicone Silver Aluminium	SSA
Silicone Silver Aluminium 65 Shore Blue	SSA (65B)
Fluorosilicone Silver Aluminium	FSA
Fluorosilicone Silver Aluminium 70 Shore	FSA (70)
Silicone Silver Copper	SSC
Fluorosilicone Silver Copper	FSC
Silicone Nickel	SN
Fluorosilicone Nickel	FN

Standard Cord Cross Sections	Section Reference	Minimum Inside Diameter of 'O' Ring
1.00mm	0010	10mm
1.20mm	0012	10mm
1.30mm	0013	10mm
1.40mm	0014	10mm
1.50mm	0015	10mm
1.60mm	0016	10mm
1.80mm	0018	11mm
2.00mm	0020	12mm
2.20mm	0022	12mm
2.40mm	0024	12mm
2.50mm	0025	12mm
2.60mm	0026	12mm
2.80mm	0028	16mm
3.00mm	0030	16mm
3.20mm	0032	16mm
3.50mm	0035	19mm
3.80mm	0038	22mm
4.00mm	0040	22mm
4.30mm	0043	25mm
4.50mm	0045	25mm
4.80mm	0048	28mm
5.00mm	0050	30mm

How to order

Select the material from the list and insert the material code followed by the section reference and finally the inside diameter. (1301-XXX-XXXX-XXXX)

e.g.

1301-SSA-0016-0355	Vulcanized 'O' Ring Silicone Silver Aluminium 1.6mm cross section 35.5mm internal dimension
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Standard Inside Diameter Of 'O' Ring

10.00	1301 XXX-XXXX-0100
10.50	1301 XXX-XXXX-0105
11.00	1301 XXX-XXXX-0110
11.50	1301 XXX-XXXX-0115
12.00	1301 XXX-XXXX-0120
12.50	1301 XXX-XXXX-0125
13.00	1301 XXX-XXXX-0130
13.50	1301 XXX-XXXX-0135
14.00	1301 XXX-XXXX-0140
14.50	1301 XXX-XXXX-0145
15.00	1301 XXX-XXXX-0150
15.50	1301 XXX-XXXX-0155
16.00	1301 XXX-XXXX-0160
16.50	1301 XXX-XXXX-0165
17.00	1301 XXX-XXXX-0170
17.50	1301 XXX-XXXX-0175
18.00	1301 XXX-XXXX-0180
18.50	1301 XXX-XXXX-0185
19.00	1301 XXX-XXXX-0190
19.50	1301 XXX-XXXX-0195
20.00	1301 XXX-XXXX-0200
20.50	1301 XXX-XXXX-0205
21.00	1301 XXX-XXXX-0210
21.50	1301 XXX-XXXX-0205
22.00	1301 XXX-XXXX-0220
22.50	1301 XXX-XXXX-0205
23.00	1301 XXX-XXXX-0230
23.50	1301 XXX-XXXX-0235
24.00	1301 XXX-XXXX-0240
24.50	1301 XXX-XXXX-0245
25.00	1301 XXX-XXXX-0250
25.50	1301 XXX-XXXX-0255
26.00	1301 XXX-XXXX-0260
26.50	1301 XXX-XXXX-0265
27.00	1301 XXX-XXXX-0270
27.50	1301 XXX-XXXX-0275
28.00	1301 XXX-XXXX-0280
28.50	1301 XXX-XXXX-0285
29.00	1301 XXX-XXXX-0290
29.50	1301 XXX-XXXX-0295
30.00	1301 XXX-XXXX-0300
30.50	1301 XXX-XXXX-0305
31.00	1301 XXX-XXXX-0310
31.50	1301 XXX-XXXX-0305
32.00	1301 XXX-XXXX-0320
32.50	1301 XXX-XXXX-0305
33.00	1301 XXX-XXXX-0330
33.50	1301 XXX-XXXX-0335
34.00	1301 XXX-XXXX-0340
34.50	1301 XXX-XXXX-0345
35.00	1301 XXX-XXXX-0350
35.50	1301 XXX-XXXX-0355
36.00	1301 XXX-XXXX-0360
36.50	1301 XXX-XXXX-0365
37.00	1301 XXX-XXXX-0370
37.50	1301 XXX-XXXX-0375
38.00	1301 XXX-XXXX-0380
38.50	1301 XXX-XXXX-0385
39.00	1301 XXX-XXXX-0390
39.50	1301 XXX-XXXX-0395
40.00	1301 XXX-XXXX-0400
40.50	1301 XXX-XXXX-0405

Technical Specifications

Standard Inside Diameter Of 'O' Ring			
41.00	1301 XXX-XXXX-0410	72.50	1301 XXX-XXXX-0705
41.50	1301 XXX-XXXX-0405	73.00	1301 XXX-XXXX-0730
42.00	1301 XXX-XXXX-0420	73.50	1301 XXX-XXXX-0735
42.50	1301 XXX-XXXX-0405	74.00	1301 XXX-XXXX-0740
43.00	1301 XXX-XXXX-0430	74.50	1301 XXX-XXXX-0745
43.50	1301 XXX-XXXX-0435	75.00	1301 XXX-XXXX-0750
44.00	1301 XXX-XXXX-0440	75.50	1301 XXX-XXXX-0755
44.50	1301 XXX-XXXX-0445	76.00	1301 XXX-XXXX-0760
45.00	1301 XXX-XXXX-0450	76.50	1301 XXX-XXXX-0765
45.50	1301 XXX-XXXX-0455	77.00	1301 XXX-XXXX-0770
46.00	1301 XXX-XXXX-0460	77.50	1301 XXX-XXXX-0775
46.50	1301 XXX-XXXX-0465	78.00	1301 XXX-XXXX-0780
47.00	1301 XXX-XXXX-0470	78.50	1301 XXX-XXXX-0785
47.50	1301 XXX-XXXX-0475	79.00	1301 XXX-XXXX-0790
48.00	1301 XXX-XXXX-0480	79.50	1301 XXX-XXXX-0795
48.50	1301 XXX-XXXX-0485	80.00	1301 XXX-XXXX-0800
49.00	1301 XXX-XXXX-0490	80.50	1301 XXX-XXXX-0805
49.50	1301 XXX-XXXX-0495	81.00	1301 XXX-XXXX-0810
50.00	1301 XXX-XXXX-0500	81.50	1301 XXX-XXXX-0805
50.50	1301 XXX-XXXX-0505	82.00	1301 XXX-XXXX-0820
51.00	1301 XXX-XXXX-0510	82.50	1301 XXX-XXXX-0805
51.50	1301 XXX-XXXX-0505	83.00	1301 XXX-XXXX-0830
52.00	1301 XXX-XXXX-0520	83.50	1301 XXX-XXXX-0835
52.50	1301 XXX-XXXX-0505	84.00	1301 XXX-XXXX-0840
53.00	1301 XXX-XXXX-0530	84.50	1301 XXX-XXXX-0845
53.50	1301 XXX-XXXX-0535	85.00	1301 XXX-XXXX-0850
54.00	1301 XXX-XXXX-0540	85.50	1301 XXX-XXXX-0855
54.50	1301 XXX-XXXX-0545	86.00	1301 XXX-XXXX-0860
55.00	1301 XXX-XXXX-0550	86.50	1301 XXX-XXXX-0865
55.50	1301 XXX-XXXX-0555	87.00	1301 XXX-XXXX-0870
56.00	1301 XXX-XXXX-0560	87.50	1301 XXX-XXXX-0875
56.50	1301 XXX-XXXX-0565	88.00	1301 XXX-XXXX-0880
57.00	1301 XXX-XXXX-0570	88.50	1301 XXX-XXXX-0885
57.50	1301 XXX-XXXX-0575	89.00	1301 XXX-XXXX-0890
58.00	1301 XXX-XXXX-0580	89.50	1301 XXX-XXXX-0895
58.50	1301 XXX-XXXX-0585	90.00	1301 XXX-XXXX-0900
59.00	1301 XXX-XXXX-0590	90.50	1301 XXX-XXXX-0905
59.50	1301 XXX-XXXX-0595	91.00	1301 XXX-XXXX-0910
60.00	1301 XXX-XXXX-0600	91.50	1301 XXX-XXXX-0905
60.50	1301 XXX-XXXX-0605	92.00	1301 XXX-XXXX-0920
61.00	1301 XXX-XXXX-0610	92.50	1301 XXX-XXXX-0905
61.50	1301 XXX-XXXX-0605	93.00	1301 XXX-XXXX-0930
62.00	1301 XXX-XXXX-0620	93.50	1301 XXX-XXXX-0935
62.50	1301 XXX-XXXX-0605	94.00	1301 XXX-XXXX-0940
63.00	1301 XXX-XXXX-0630	94.50	1301 XXX-XXXX-0945
63.50	1301 XXX-XXXX-0635	95.00	1301 XXX-XXXX-0950
64.00	1301 XXX-XXXX-0640	95.50	1301 XXX-XXXX-0955
64.50	1301 XXX-XXXX-0645	96.00	1301 XXX-XXXX-0960
65.00	1301 XXX-XXXX-0650	96.50	1301 XXX-XXXX-0965
65.50	1301 XXX-XXXX-0655	97.00	1301 XXX-XXXX-0970
66.00	1301 XXX-XXXX-0660	97.50	1301 XXX-XXXX-0975
66.50	1301 XXX-XXXX-0665	98.00	1301 XXX-XXXX-0980
67.00	1301 XXX-XXXX-0670	98.50	1301 XXX-XXXX-0985
67.50	1301 XXX-XXXX-0675	99.00	1301 XXX-XXXX-0990
68.00	1301 XXX-XXXX-0680	99.50	1301 XXX-XXXX-0995
68.50	1301 XXX-XXXX-0685	100.00	1301 XXX-XXXX-1000
69.00	1301 XXX-XXXX-0690	100.50	1301 XXX-XXXX-1005
69.50	1301 XXX-XXXX-0695	101.00	1301 XXX-XXXX-1010
70.00	1301 XXX-XXXX-0700	101.50	1301 XXX-XXXX-1015
70.50	1301 XXX-XXXX-0705	102.00	1301 XXX-XXXX-1020
71.00	1301 XXX-XXXX-0710	102.50	1301 XXX-XXXX-1025
71.50	1301 XXX-XXXX-0705	103.00	1301 XXX-XXXX-1030
72.00	1301 XXX-XXXX-0720	103.50	1301 XXX-XXXX-1035
		104.00	1301 XXX-XXXX-1040
		104.50	1301 XXX-XXXX-1045

Technical Specifications

Standard Inside Diameter Of 'O' Ring			
105.00	1301 XXX-XXXX-1050	136.00	1301 XXX-XXXX-1360
105.50	1301 XXX-XXXX-1055	136.50	1301 XXX-XXXX-1365
106.00	1301 XXX-XXXX-1060	137.00	1301 XXX-XXXX-1370
106.50	1301 XXX-XXXX-1065	137.50	1301 XXX-XXXX-1375
107.00	1301 XXX-XXXX-1070	138.00	1301 XXX-XXXX-1380
107.50	1301 XXX-XXXX-1075	138.50	1301 XXX-XXXX-1385
108.00	1301 XXX-XXXX-1080	139.00	1301 XXX-XXXX-1390
108.50	1301 XXX-XXXX-1085	139.50	1301 XXX-XXXX-1395
109.00	1301 XXX-XXXX-1090	140.00	1301 XXX-XXXX-1400
109.50	1301 XXX-XXXX-1095	140.50	1301 XXX-XXXX-1405
110.00	1301 XXX-XXXX-1100	141.00	1301 XXX-XXXX-1410
110.50	1301 XXX-XXXX-1105	141.50	1301 XXX-XXXX-1415
111.00	1301 XXX-XXXX-1110	142.00	1301 XXX-XXXX-1420
111.50	1301 XXX-XXXX-1115	142.50	1301 XXX-XXXX-1425
112.00	1301 XXX-XXXX-1120	143.00	1301 XXX-XXXX-1430
112.50	1301 XXX-XXXX-1125	143.50	1301 XXX-XXXX-1435
113.00	1301 XXX-XXXX-1130	144.00	1301 XXX-XXXX-1440
113.50	1301 XXX-XXXX-1135	144.50	1301 XXX-XXXX-1445
114.00	1301 XXX-XXXX-1140	145.00	1301 XXX-XXXX-1450
114.50	1301 XXX-XXXX-1145	145.50	1301 XXX-XXXX-1455
115.00	1301 XXX-XXXX-1150	146.00	1301 XXX-XXXX-1460
115.50	1301 XXX-XXXX-1155	146.50	1301 XXX-XXXX-1465
116.00	1301 XXX-XXXX-1160	147.00	1301 XXX-XXXX-1470
116.50	1301 XXX-XXXX-1165	147.50	1301 XXX-XXXX-1475
117.00	1301 XXX-XXXX-1170	148.00	1301 XXX-XXXX-1480
117.50	1301 XXX-XXXX-1175	148.50	1301 XXX-XXXX-1485
118.00	1301 XXX-XXXX-1180	149.00	1301 XXX-XXXX-1490
118.50	1301 XXX-XXXX-1185	149.50	1301 XXX-XXXX-1495
119.00	1301 XXX-XXXX-1190	150.00	1301 XXX-XXXX-1500
119.50	1301 XXX-XXXX-1195	151.00	1301 XXX-XXXX-1510
120.00	1301 XXX-XXXX-1200	152.00	1301 XXX-XXXX-1520
120.50	1301 XXX-XXXX-1205	153.00	1301 XXX-XXXX-1530
121.00	1301 XXX-XXXX-1210	154.00	1301 XXX-XXXX-1540
121.50	1301 XXX-XXXX-1215	155.00	1301 XXX-XXXX-1550
122.00	1301 XXX-XXXX-1220	156.00	1301 XXX-XXXX-1560
122.50	1301 XXX-XXXX-1225	157.00	1301 XXX-XXXX-1570
123.00	1301 XXX-XXXX-1230	158.00	1301 XXX-XXXX-1580
123.50	1301 XXX-XXXX-1235	159.00	1301 XXX-XXXX-1590
124.00	1301 XXX-XXXX-1240	160.00	1301 XXX-XXXX-1600
124.50	1301 XXX-XXXX-1245	161.00	1301 XXX-XXXX-1610
125.00	1301 XXX-XXXX-1250	162.00	1301 XXX-XXXX-1620
125.50	1301 XXX-XXXX-1255	163.00	1301 XXX-XXXX-1630
126.00	1301 XXX-XXXX-1260	164.00	1301 XXX-XXXX-1640
126.50	1301 XXX-XXXX-1265	165.00	1301 XXX-XXXX-1650
127.00	1301 XXX-XXXX-1270	166.00	1301 XXX-XXXX-1660
127.50	1301 XXX-XXXX-1275	167.00	1301 XXX-XXXX-1670
128.00	1301 XXX-XXXX-1280	168.00	1301 XXX-XXXX-1680
128.50	1301 XXX-XXXX-1285	169.00	1301 XXX-XXXX-1690
129.00	1301 XXX-XXXX-1290	170.00	1301 XXX-XXXX-1700
129.50	1301 XXX-XXXX-1295	171.00	1301 XXX-XXXX-1710
130.00	1301 XXX-XXXX-1300	172.00	1301 XXX-XXXX-1720
130.50	1301 XXX-XXXX-1305	173.00	1301 XXX-XXXX-1730
131.00	1301 XXX-XXXX-1310	174.00	1301 XXX-XXXX-1740
131.50	1301 XXX-XXXX-1315	175.00	1301 XXX-XXXX-1750
132.00	1301 XXX-XXXX-1320	176.00	1301 XXX-XXXX-1760
132.50	1301 XXX-XXXX-1325	177.00	1301 XXX-XXXX-1770
133.00	1301 XXX-XXXX-1330	178.00	1301 XXX-XXXX-1780
133.50	1301 XXX-XXXX-1335	179.00	1301 XXX-XXXX-1790
134.00	1301 XXX-XXXX-1340	180.00	1301 XXX-XXXX-1800
134.50	1301 XXX-XXXX-1345	181.00	1301 XXX-XXXX-1810
135.00	1301 XXX-XXXX-1350	182.00	1301 XXX-XXXX-1820
135.50	1301 XXX-XXXX-1355	183.00	1301 XXX-XXXX-1830
		184.00	1301 XXX-XXXX-1840
		185.00	1301 XXX-XXXX-1850
		186.00	1301 XXX-XXXX-1860

Technical Specifications

Standard Inside Diameter Of 'O' Ring	
187.00	1301 XXX-XXXX-1870
188.00	1301 XXX-XXXX-1880
189.00	1301 XXX-XXXX-1890
190.00	1301 XXX-XXXX-1800
191.00	1301 XXX-XXXX-1910
192.00	1301 XXX-XXXX-1920
193.00	1301 XXX-XXXX-1930
194.00	1301 XXX-XXXX-1940
195.00	1301 XXX-XXXX-1950
196.00	1301 XXX-XXXX-1960
197.00	1301 XXX-XXXX-1970
198.00	1301 XXX-XXXX-1980
199.00	1301 XXX-XXXX-1990
200.00	1301 XXX-XXXX-2000
201.00	1301 XXX-XXXX-2010
202.00	1301 XXX-XXXX-2020
203.00	1301 XXX-XXXX-2030
204.00	1301 XXX-XXXX-2040
205.00	1301 XXX-XXXX-2050
206.00	1301 XXX-XXXX-2060
207.00	1301 XXX-XXXX-2070
208.00	1301 XXX-XXXX-2080
209.00	1301 XXX-XXXX-2090
210.00	1301 XXX-XXXX-2100
211.00	1301 XXX-XXXX-2110
212.00	1301 XXX-XXXX-2120
213.00	1301 XXX-XXXX-2130
214.00	1301 XXX-XXXX-2140
215.00	1301 XXX-XXXX-2150
216.00	1301 XXX-XXXX-2160
217.00	1301 XXX-XXXX-2170
218.00	1301 XXX-XXXX-2180
219.00	1301 XXX-XXXX-2190
220.00	1301 XXX-XXXX-2200
221.00	1301 XXX-XXXX-2210
222.00	1301 XXX-XXXX-2220
223.00	1301 XXX-XXXX-2230
224.00	1301 XXX-XXXX-2240
225.00	1301 XXX-XXXX-2250
226.00	1301 XXX-XXXX-2260
227.00	1301 XXX-XXXX-2270
228.00	1301 XXX-XXXX-2280
229.00	1301 XXX-XXXX-2290
230.00	1301 XXX-XXXX-2300
231.00	1301 XXX-XXXX-2310
232.00	1301 XXX-XXXX-2320
233.00	1301 XXX-XXXX-2330
234.00	1301 XXX-XXXX-2340
235.00	1301 XXX-XXXX-2350
236.00	1301 XXX-XXXX-2360
237.00	1301 XXX-XXXX-2370
238.00	1301 XXX-XXXX-2380
239.00	1301 XXX-XXXX-2390
240.00	1301 XXX-XXXX-2400
241.00	1301 XXX-XXXX-2410
242.00	1301 XXX-XXXX-2420
243.00	1301 XXX-XXXX-2430
244.00	1301 XXX-XXXX-2440
245.00	1301 XXX-XXXX-2450
246.00	1301 XXX-XXXX-2460
247.00	1301 XXX-XXXX-2470
248.00	1301 XXX-XXXX-2480
249.00	1301 XXX-XXXX-2490
250.00	1301 XXX-XXXX-2500

Standard Vulcanized Tube 'O' Rings

Material	Material Code
Silicone Nickel Graphite	SNG
Silicone Nickel Graphite Fire Retardant	SNG-FR
Fluorosilicone Nickel Graphite	FNG
Silicone Silver Aluminium	SSA
Silicone Silver Aluminium 65 Shore Blue	SSA (65B)
Fluorosilicone Silver Aluminium	FSA
Fluorosilicone Silver Aluminium 70 Shore	FSA (70)
Silicone Silver Copper	SSC
Fluorosilicone Silver Copper	FSC
Silicone Nickel	SN
Fluorosilicone Nickel	FN

Tube O/D Cross Sections	Minimum Inside Diameter of 'O' Ring
1.00mm	10mm
1.20mm	10mm
1.30mm	10mm
1.40mm	10mm
1.50mm	10mm
1.60mm	10mm
1.80mm	10mm
2.00mm	12mm
2.20mm	12mm
2.40mm	12mm
2.50mm	12mm
2.60mm	12mm
2.80mm	16mm
3.00mm	16mm
3.20mm	16mm
3.50mm	19mm
3.80mm	22mm
4.00mm	22mm
4.30mm	25mm
4.50mm	25mm
4.80mm	28mm
5.00mm	30mm

Standard Tube Cross Sections	Section Reference
1.20 X 0.5	0012-0005
1.30 X 0.5	0013-0005
1.40 X 0.5	0014-0005
1.50 X 0.5	0015-0005
1.60 X 0.5	0016-0005
1.80 X 0.5	0018-0005
2.00 X 0.5	0020-0005
1.60 X 0.8	0016-0008
1.80 X 0.8	0018-0008
2.00 X 0.8	0020-0008
2.20 X 0.8	0022-0008
2.40 X 0.8	0024-0008
2.50 X 0.8	0025-0008
2.60 X 0.8	0026-0008
2.80 X 0.8	0028-0008
3.00 X 0.8	0030-0008
2.00 X 1.0	0020-0010
2.20 X 1.0	0022-0010
2.40 X 1.0	0024-0010
2.50 X 1.0	0025-0010
2.60 X 1.0	0026-0010
2.80 X 1.0	0028-0010
3.00 X 1.0	0030-0010
3.20 X 1.0	0032-0010

Technical Specifications

Standard Inside Diameter Of 'O' Ring

3.50 X 1.0	0035-0010
3.80 X 1.0	0038-0010
4.00 X 1.0	0040-0010
2.50 X 1.1	0025-0011
2.60 X 1.1	0026-0011
2.80 X 1.1	0028-0011
3.00 X 1.1	0030-0011
3.20 X 1.1	0032-0011
3.50 X 1.1	0035-0011
3.80 X 1.1	0038-0011
4.00 X 1.1	0040-0011
2.50 X 1.2	0025-0012
2.60 X 1.2	0026-0012
2.80 X 1.2	0028-0012
3.00 X 1.2	0030-0012
3.20 X 1.2	0032-0012
3.50 X 1.2	0035-0012
3.80 X 1.2	0038-0012
4.00 X 1.2	0040-0012
2.50 X 1.3	0025-0013
2.60 X 1.3	0026-0013
2.80 X 1.3	0028-0013
3.00 X 1.3	0030-0013
3.20 X 1.3	0032-0013
3.50 X 1.3	0035-0013
3.80 X 1.3	0038-0013
4.00 X 1.3	0040-0013
3.00 X 1.5	0030-0015
3.20 X 1.5	0032-0015
3.50 X 1.5	0035-0015
3.80 X 1.5	0038-0015
4.00 X 1.5	0040-0015
4.30 X 1.5	0043-0015
4.50 X 1.5	0045-0015
4.80 X 1.5	0048-0015
5.00 X 1.5	0050-0015
3.00 X 1.6	0030-0016
3.20 X 1.6	0032-0016
3.50 X 1.6	0035-0016
3.80 X 1.6	0038-0016
4.00 X 1.6	0040-0016
4.10 X 1.6	0041-0016
4.30 X 1.6	0043-0016
4.50 X 1.6	0045-0016
4.80 X 1.6	0048-0016
5.00 X 1.6	0050-0016
4.00 X 2.0	0040-0020
4.30 X 2.0	0043-0020
4.50 X 2.0	0045-0020
4.80 X 2.0	0048-0020
5.00 X 2.0	0050-0020
4.00 X 2.2	0040-0022
4.30 X 2.2	0043-0022
4.50 X 2.2	0045-0022
4.80 X 2.2	0048-0022
5.00 X 2.2	0050-0022
4.50 X 2.5	0045-0025
4.80 X 2.5	0048-0025
5.00 X 2.5	0050-0025
4.80 X 2.8	0048-0028
5.00 X 2.8	0050-0028

How to order

Select the material from the list and insert the material code followed by the section reference and finally the inside diameter. (1302-XXX-XXXX-XXXX-XXXX)

e.g.

1302-SNG-0030-0015-0500 Silicone Nickel Graphite Hollow cross section
 3.0mm O/D x 1.5mm I/D 'O' Ring 50mm
 internal.

Inside Diameter of 'O' Ring

10.00	1302 XXX-XXXX-XXXX-0100
10.50	1302 XXX-XXXX-XXXX-0105
11.00	1302 XXX-XXXX-XXXX-0110
11.50	1302 XXX-XXXX-XXXX-0105
12.00	1302 XXX-XXXX-XXXX-0120
12.50	1302 XXX-XXXX-XXXX-0105
13.00	1302 XXX-XXXX-XXXX-0130
13.50	1302 XXX-XXXX-XXXX-0135
14.00	1302 XXX-XXXX-XXXX-0140
14.50	1302 XXX-XXXX-XXXX-0145
15.00	1302 XXX-XXXX-XXXX-0150
15.50	1302 XXX-XXXX-XXXX-0155
16.00	1302 XXX-XXXX-XXXX-0160
16.50	1302 XXX-XXXX-XXXX-0165
17.00	1302 XXX-XXXX-XXXX-0170
17.50	1302 XXX-XXXX-XXXX-0175
18.00	1302 XXX-XXXX-XXXX-0180
18.50	1302 XXX-XXXX-XXXX-0185
19.00	1302 XXX-XXXX-XXXX-0190
19.50	1302 XXX-XXXX-XXXX-0195
20.00	1302 XXX-XXXX-XXXX-0200
20.50	1302 XXX-XXXX-XXXX-0205
21.00	1302 XXX-XXXX-XXXX-0210
21.50	1302 XXX-XXXX-XXXX-0205
22.00	1302 XXX-XXXX-XXXX-0220
22.50	1302 XXX-XXXX-XXXX-0205
23.00	1302 XXX-XXXX-XXXX-0230
23.50	1302 XXX-XXXX-XXXX-0235
24.00	1302 XXX-XXXX-XXXX-0240
24.50	1302 XXX-XXXX-XXXX-0245
25.00	1302 XXX-XXXX-XXXX-0250
25.50	1302 XXX-XXXX-XXXX-0255
26.00	1302 XXX-XXXX-XXXX-0260
26.50	1302 XXX-XXXX-XXXX-0265
27.00	1302 XXX-XXXX-XXXX-0270
27.50	1302 XXX-XXXX-XXXX-0275
28.00	1302 XXX-XXXX-XXXX-0280
28.50	1302 XXX-XXXX-XXXX-0285
29.00	1302 XXX-XXXX-XXXX-0290
29.50	1302 XXX-XXXX-XXXX-0295
30.00	1302 XXX-XXXX-XXXX-0300
30.50	1302 XXX-XXXX-XXXX-0305
31.00	1302 XXX-XXXX-XXXX-0310
31.50	1302 XXX-XXXX-XXXX-0305
32.00	1302 XXX-XXXX-XXXX-0320
32.50	1302 XXX-XXXX-XXXX-0305
33.00	1302 XXX-XXXX-XXXX-0330
33.50	1302 XXX-XXXX-XXXX-0335
34.00	1302 XXX-XXXX-XXXX-0340
34.50	1302 XXX-XXXX-XXXX-0345
35.00	1302 XXX-XXXX-XXXX-0350
35.50	1302 XXX-XXXX-XXXX-0355
36.00	1302 XXX-XXXX-XXXX-0360
36.50	1302 XXX-XXXX-XXXX-0365

Technical Specifications

Standard Inside Diameter Of 'O' Ring			
37.00	1302 XXX-XXXX-XXXX-0370	68.50	1302 XXX-XXXX-XXXX-0685
37.50	1302 XXX-XXXX-XXXX-0375	69.00	1302 XXX-XXXX-XXXX-0690
38.00	1302 XXX-XXXX-XXXX-0380	69.50	1302 XXX-XXXX-XXXX-0695
38.50	1302 XXX-XXXX-XXXX-0385	70.00	1302 XXX-XXXX-XXXX-0700
39.00	1302 XXX-XXXX-XXXX-0390	70.50	1302 XXX-XXXX-XXXX-0705
39.50	1302 XXX-XXXX-XXXX-0395	71.00	1302 XXX-XXXX-XXXX-0710
40.00	1302 XXX-XXXX-XXXX-0400	71.50	1302 XXX-XXXX-XXXX-0705
40.50	1302 XXX-XXXX-XXXX-0405	72.00	1302 XXX-XXXX-XXXX-0720
41.00	1302 XXX-XXXX-XXXX-0410	72.50	1302 XXX-XXXX-XXXX-0705
41.50	1302 XXX-XXXX-XXXX-0405	73.00	1302 XXX-XXXX-XXXX-0735
42.00	1302 XXX-XXXX-XXXX-0420	74.00	1302 XXX-XXXX-XXXX-0740
42.50	1302 XXX-XXXX-XXXX-0405	74.50	1302 XXX-XXXX-XXXX-0745
43.00	1302 XXX-XXXX-XXXX-0430	75.00	1302 XXX-XXXX-XXXX-0750
43.50	1302 XXX-XXXX-XXXX-0435	75.50	1302 XXX-XXXX-XXXX-0755
44.00	1302 XXX-XXXX-XXXX-0440	76.00	1302 XXX-XXXX-XXXX-0760
44.50	1302 XXX-XXXX-XXXX-0445	76.50	1302 XXX-XXXX-XXXX-0765
45.00	1302 XXX-XXXX-XXXX-0450	77.00	1302 XXX-XXXX-XXXX-0770
45.50	1302 XXX-XXXX-XXXX-0455	77.50	1302 XXX-XXXX-XXXX-0775
46.00	1302 XXX-XXXX-XXXX-0460	78.00	1302 XXX-XXXX-XXXX-0780
46.50	1302 XXX-XXXX-XXXX-0465	78.50	1302 XXX-XXXX-XXXX-0785
47.00	1302 XXX-XXXX-XXXX-0470	79.00	1302 XXX-XXXX-XXXX-0790
47.50	1302 XXX-XXXX-XXXX-0475	79.50	1302 XXX-XXXX-XXXX-0795
48.00	1302 XXX-XXXX-XXXX-0480	80.00	1302 XXX-XXXX-XXXX-0800
48.50	1302 XXX-XXXX-XXXX-0485	80.50	1302 XXX-XXXX-XXXX-0805
49.00	1302 XXX-XXXX-XXXX-0490	81.00	1302 XXX-XXXX-XXXX-0810
49.50	1302 XXX-XXXX-XXXX-0495	81.50	1302 XXX-XXXX-XXXX-0805
50.00	1302 XXX-XXXX-XXXX-0500	82.00	1302 XXX-XXXX-XXXX-0820
50.50	1302 XXX-XXXX-XXXX-0505	82.50	1302 XXX-XXXX-XXXX-0805
51.00	1302 XXX-XXXX-XXXX-0510	83.00	1302 XXX-XXXX-XXXX-0830
51.50	1302 XXX-XXXX-XXXX-0505	83.50	1302 XXX-XXXX-XXXX-0835
52.00	1302 XXX-XXXX-XXXX-0520	84.00	1302 XXX-XXXX-XXXX-0840
52.50	1302 XXX-XXXX-XXXX-0505	84.50	1302 XXX-XXXX-XXXX-0845
53.00	1302 XXX-XXXX-XXXX-0530	85.00	1302 XXX-XXXX-XXXX-0850
53.50	1302 XXX-XXXX-XXXX-0535	85.50	1302 XXX-XXXX-XXXX-0855
54.00	1302 XXX-XXXX-XXXX-0540	86.00	1302 XXX-XXXX-XXXX-0860
54.50	1302 XXX-XXXX-XXXX-0545	86.50	1302 XXX-XXXX-XXXX-0865
55.00	1302 XXX-XXXX-XXXX-0550	87.00	1302 XXX-XXXX-XXXX-0870
55.50	1302 XXX-XXXX-XXXX-0555	87.50	1302 XXX-XXXX-XXXX-0875
56.00	1302 XXX-XXXX-XXXX-0560	88.00	1302 XXX-XXXX-XXXX-0880
56.50	1302 XXX-XXXX-XXXX-0565	88.50	1302 XXX-XXXX-XXXX-0885
57.00	1302 XXX-XXXX-XXXX-0570	89.00	1302 XXX-XXXX-XXXX-0890
57.50	1302 XXX-XXXX-XXXX-0575	89.50	1302 XXX-XXXX-XXXX-0895
58.00	1302 XXX-XXXX-XXXX-0580	90.00	1302 XXX-XXXX-XXXX-0900
58.50	1302 XXX-XXXX-XXXX-0585	90.50	1302 XXX-XXXX-XXXX-0905
59.00	1302 XXX-XXXX-XXXX-0590	91.00	1302 XXX-XXXX-XXXX-0910
59.50	1302 XXX-XXXX-XXXX-0595	91.50	1302 XXX-XXXX-XXXX-0905
60.00	1302 XXX-XXXX-XXXX-0600	92.00	1302 XXX-XXXX-XXXX-0920
60.50	1302 XXX-XXXX-XXXX-0605	92.50	1302 XXX-XXXX-XXXX-0905
61.00	1302 XXX-XXXX-XXXX-0610	93.00	1302 XXX-XXXX-XXXX-0930
61.50	1302 XXX-XXXX-XXXX-0605	93.50	1302 XXX-XXXX-XXXX-0935
62.00	1302 XXX-XXXX-XXXX-0620	94.00	1302 XXX-XXXX-XXXX-0940
62.50	1302 XXX-XXXX-XXXX-0605	94.50	1302 XXX-XXXX-XXXX-0945
63.00	1302 XXX-XXXX-XXXX-0630	95.00	1302 XXX-XXXX-XXXX-0950
63.50	1302 XXX-XXXX-XXXX-0635	95.50	1302 XXX-XXXX-XXXX-0955
64.00	1302 XXX-XXXX-XXXX-0640	96.00	1302 XXX-XXXX-XXXX-0960
64.50	1302 XXX-XXXX-XXXX-0645	96.50	1302 XXX-XXXX-XXXX-0965
65.00	1302 XXX-XXXX-XXXX-0650	97.00	1302 XXX-XXXX-XXXX-0970
65.50	1302 XXX-XXXX-XXXX-0655	97.50	1302 XXX-XXXX-XXXX-0975
66.00	1302 XXX-XXXX-XXXX-0660	98.00	1302 XXX-XXXX-XXXX-0980
66.50	1302 XXX-XXXX-XXXX-0665	98.50	1302 XXX-XXXX-XXXX-0985
67.00	1302 XXX-XXXX-XXXX-0670	99.00	1302 XXX-XXXX-XXXX-0990
67.50	1302 XXX-XXXX-XXXX-0675	99.50	1302 XXX-XXXX-XXXX-0995
68.00	1302 XXX-XXXX-XXXX-0680	100.00	1302 XXX-XXXX-XXXX-1000

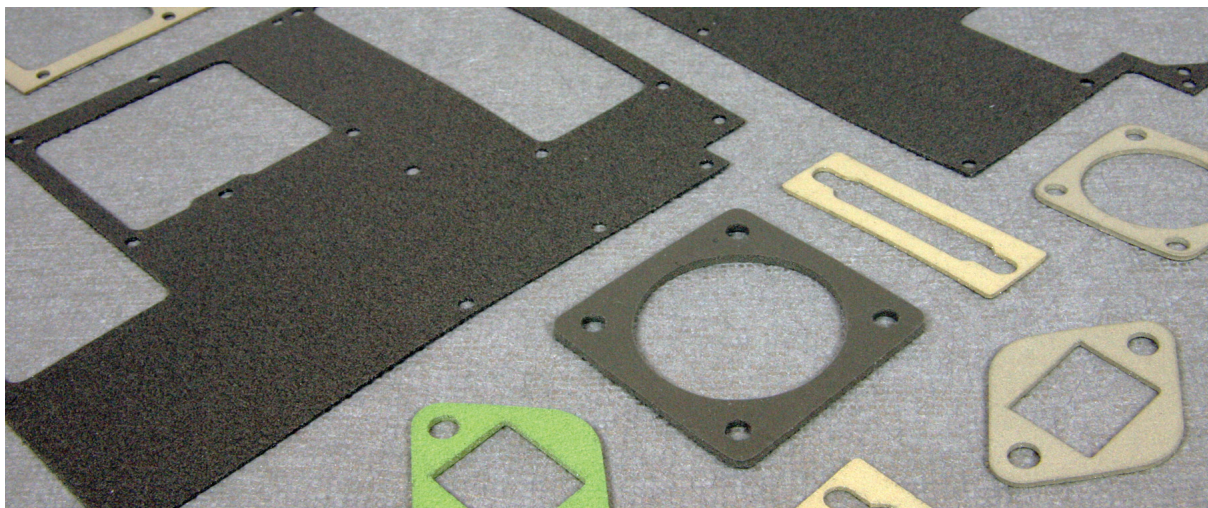
Technical Specifications

Standard Inside Diameter Of 'O' Ring			
100.50	1302 XXX-XXXX-XXXX-1005	132.50	1302 XXX-XXXX-XXXX-1305
101.00	1302 XXX-XXXX-XXXX-1010	133.00	1302 XXX-XXXX-XXXX-1330
101.50	1302 XXX-XXXX-XXXX-1015	133.50	1302 XXX-XXXX-XXXX-1335
102.00	1302 XXX-XXXX-XXXX-1020	134.00	1302 XXX-XXXX-XXXX-1340
102.50	1302 XXX-XXXX-XXXX-1025	134.50	1302 XXX-XXXX-XXXX-1345
103.00	1302 XXX-XXXX-XXXX-1030	135.00	1302 XXX-XXXX-XXXX-1350
103.50	1302 XXX-XXXX-XXXX-1035	135.50	1302 XXX-XXXX-XXXX-1355
104.00	1302 XXX-XXXX-XXXX-1040	136.00	1302 XXX-XXXX-XXXX-1360
104.50	1302 XXX-XXXX-XXXX-1045	136.50	1302 XXX-XXXX-XXXX-1365
105.00	1302 XXX-XXXX-XXXX-1050	137.00	1302 XXX-XXXX-XXXX-1370
105.50	1302 XXX-XXXX-XXXX-1055	137.50	1302 XXX-XXXX-XXXX-1375
106.00	1302 XXX-XXXX-XXXX-1060	138.00	1302 XXX-XXXX-XXXX-1380
106.50	1302 XXX-XXXX-XXXX-1065	138.50	1302 XXX-XXXX-XXXX-1385
107.00	1302 XXX-XXXX-XXXX-1070	139.00	1302 XXX-XXXX-XXXX-1390
107.50	1302 XXX-XXXX-XXXX-1075	139.50	1302 XXX-XXXX-XXXX-1395
108.00	1302 XXX-XXXX-XXXX-1080	140.00	1302 XXX-XXXX-XXXX-1400
108.50	1302 XXX-XXXX-XXXX-1085	140.50	1302 XXX-XXXX-XXXX-1405
109.00	1302 XXX-XXXX-XXXX-1090	141.00	1302 XXX-XXXX-XXXX-1410
109.50	1302 XXX-XXXX-XXXX-1095	141.50	1302 XXX-XXXX-XXXX-1415
110.00	1302 XXX-XXXX-XXXX-1100	142.00	1302 XXX-XXXX-XXXX-1420
110.50	1302 XXX-XXXX-XXXX-1105	142.50	1302 XXX-XXXX-XXXX-1425
111.00	1302 XXX-XXXX-XXXX-1110	143.00	1302 XXX-XXXX-XXXX-1430
111.50	1302 XXX-XXXX-XXXX-1115	143.50	1302 XXX-XXXX-XXXX-1435
112.00	1302 XXX-XXXX-XXXX-1120	144.00	1302 XXX-XXXX-XXXX-1440
112.50	1302 XXX-XXXX-XXXX-1125	144.50	1302 XXX-XXXX-XXXX-1445
113.00	1302 XXX-XXXX-XXXX-1130	145.00	1302 XXX-XXXX-XXXX-1450
113.50	1302 XXX-XXXX-XXXX-1135	145.50	1302 XXX-XXXX-XXXX-1455
114.00	1302 XXX-XXXX-XXXX-1140	146.00	1302 XXX-XXXX-XXXX-1460
114.50	1302 XXX-XXXX-XXXX-1145	146.50	1302 XXX-XXXX-XXXX-1465
115.00	1302 XXX-XXXX-XXXX-1150	147.00	1302 XXX-XXXX-XXXX-1470
115.50	1302 XXX-XXXX-XXXX-1155	147.50	1302 XXX-XXXX-XXXX-1475
116.00	1302 XXX-XXXX-XXXX-1160	148.00	1302 XXX-XXXX-XXXX-1480
116.50	1302 XXX-XXXX-XXXX-1165	148.50	1302 XXX-XXXX-XXXX-1485
117.00	1302 XXX-XXXX-XXXX-1170	149.00	1302 XXX-XXXX-XXXX-1490
117.50	1302 XXX-XXXX-XXXX-1175	149.50	1302 XXX-XXXX-XXXX-1495
118.00	1302 XXX-XXXX-XXXX-1180	150.00	1302 XXX-XXXX-XXXX-1500
118.50	1302 XXX-XXXX-XXXX-1185	151.00	1302 XXX-XXXX-XXXX-1510
119.00	1302 XXX-XXXX-XXXX-1190	152.00	1302 XXX-XXXX-XXXX-1520
119.50	1302 XXX-XXXX-XXXX-1195	153.00	1302 XXX-XXXX-XXXX-1530
120.00	1302 XXX-XXXX-XXXX-1200	154.00	1302 XXX-XXXX-XXXX-1540
120.50	1302 XXX-XXXX-XXXX-1205	155.00	1302 XXX-XXXX-XXXX-1550
121.00	1302 XXX-XXXX-XXXX-1210	156.00	1302 XXX-XXXX-XXXX-1560
121.50	1302 XXX-XXXX-XXXX-1215	157.00	1302 XXX-XXXX-XXXX-1570
122.00	1302 XXX-XXXX-XXXX-1220	158.00	1302 XXX-XXXX-XXXX-1580
122.50	1302 XXX-XXXX-XXXX-1225	159.00	1302 XXX-XXXX-XXXX-1590
123.00	1302 XXX-XXXX-XXXX-1230	160.00	1302 XXX-XXXX-XXXX-1600
123.50	1302 XXX-XXXX-XXXX-1235	161.00	1302 XXX-XXXX-XXXX-1610
124.00	1302 XXX-XXXX-XXXX-1240	162.00	1302 XXX-XXXX-XXXX-1620
124.50	1302 XXX-XXXX-XXXX-1245	163.00	1302 XXX-XXXX-XXXX-1630
125.00	1302 XXX-XXXX-XXXX-1250	164.00	1302 XXX-XXXX-XXXX-1640
125.50	1302 XXX-XXXX-XXXX-1255	165.00	1302 XXX-XXXX-XXXX-1650
126.00	1302 XXX-XXXX-XXXX-1260	166.00	1302 XXX-XXXX-XXXX-1660
126.50	1302 XXX-XXXX-XXXX-1265	167.00	1302 XXX-XXXX-XXXX-1670
127.00	1302 XXX-XXXX-XXXX-1270	168.00	1302 XXX-XXXX-XXXX-1680
127.50	1302 XXX-XXXX-XXXX-1275	169.00	1302 XXX-XXXX-XXXX-1690
128.00	1302 XXX-XXXX-XXXX-1280	170.00	1302 XXX-XXXX-XXXX-1700
128.50	1302 XXX-XXXX-XXXX-1285	171.00	1302 XXX-XXXX-XXXX-1710
129.00	1302 XXX-XXXX-XXXX-1290	172.00	1302 XXX-XXXX-XXXX-1720
129.50	1302 XXX-XXXX-XXXX-1295	173.00	1302 XXX-XXXX-XXXX-1730
130.00	1302 XXX-XXXX-XXXX-1300	174.00	1302 XXX-XXXX-XXXX-1740
130.50	1302 XXX-XXXX-XXXX-1305	175.00	1302 XXX-XXXX-XXXX-1750
131.00	1302 XXX-XXXX-XXXX-1310	176.00	1302 XXX-XXXX-XXXX-1760
131.50	1302 XXX-XXXX-XXXX-1315	177.00	1302 XXX-XXXX-XXXX-1770
132.00	1302 XXX-XXXX-XXXX-1320	178.00	1302 XXX-XXXX-XXXX-1780
		179.00	1302 XXX-XXXX-XXXX-1790

Technical Specifications

Standard Inside Diameter Of 'O' Ring			
180.00	1302 XXX-XXXX-XXXX-1800	241.00	1302 XXX-XXXX-XXXX-2410
181.00	1302 XXX-XXXX-XXXX-1810	242.00	1302 XXX-XXXX-XXXX-2420
182.00	1302 XXX-XXXX-XXXX-1820	243.00	1302 XXX-XXXX-XXXX-2430
183.00	1302 XXX-XXXX-XXXX-1830	244.00	1302 XXX-XXXX-XXXX-2440
184.00	1302 XXX-XXXX-XXXX-1840	245.00	1302 XXX-XXXX-XXXX-2450
185.00	1302 XXX-XXXX-XXXX-1850	246.00	1302 XXX-XXXX-XXXX-2460
186.00	1302 XXX-XXXX-XXXX-1860	247.00	1302 XXX-XXXX-XXXX-2470
187.00	1302 XXX-XXXX-XXXX-1870	248.00	1302 XXX-XXXX-XXXX-2480
188.00	1302 XXX-XXXX-XXXX-1880	249.00	1302 XXX-XXXX-XXXX-2490
189.00	1302 XXX-XXXX-XXXX-1890	250.00	1302 XXX-XXXX-XXXX-2500
190.00	1302 XXX-XXXX-XXXX-1900		
191.00	1302 XXX-XXXX-XXXX-1910		
192.00	1302 XXX-XXXX-XXXX-1920		
193.00	1302 XXX-XXXX-XXXX-1930		
194.00	1302 XXX-XXXX-XXXX-1940		
195.00	1302 XXX-XXXX-XXXX-1950		
196.00	1302 XXX-XXXX-XXXX-1960		
197.00	1302 XXX-XXXX-XXXX-1970		
198.00	1302 XXX-XXXX-XXXX-1980		
199.00	1302 XXX-XXXX-XXXX-1990		
200.00	1302 XXX-XXXX-XXXX-2000		
201.00	1302 XXX-XXXX-XXXX-2010		
202.00	1302 XXX-XXXX-XXXX-2020		
203.00	1302 XXX-XXXX-XXXX-2030		
204.00	1302 XXX-XXXX-XXXX-2040		
205.00	1302 XXX-XXXX-XXXX-2050		
206.00	1302 XXX-XXXX-XXXX-2060		
207.00	1302 XXX-XXXX-XXXX-2070		
208.00	1302 XXX-XXXX-XXXX-2080		
209.00	1302 XXX-XXXX-XXXX-2090		
210.00	1302 XXX-XXXX-XXXX-2100		
211.00	1302 XXX-XXXX-XXXX-2110		
212.00	1302 XXX-XXXX-XXXX-2120		
213.00	1302 XXX-XXXX-XXXX-2130		
214.00	1302 XXX-XXXX-XXXX-2140		
215.00	1302 XXX-XXXX-XXXX-2150		
216.00	1302 XXX-XXXX-XXXX-2160		
217.00	1302 XXX-XXXX-XXXX-2170		
218.00	1302 XXX-XXXX-XXXX-2180		
219.00	1302 XXX-XXXX-XXXX-2190		
220.00	1302 XXX-XXXX-XXXX-2200		
221.00	1302 XXX-XXXX-XXXX-2210		
222.00	1302 XXX-XXXX-XXXX-2220		
223.00	1302 XXX-XXXX-XXXX-2230		
224.00	1302 XXX-XXXX-XXXX-2240		
225.00	1302 XXX-XXXX-XXXX-2250		
226.00	1302 XXX-XXXX-XXXX-2260		
227.00	1302 XXX-XXXX-XXXX-2270		
228.00	1302 XXX-XXXX-XXXX-2280		
229.00	1302 XXX-XXXX-XXXX-2290		
230.00	1302 XXX-XXXX-XXXX-2300		
231.00	1302 XXX-XXXX-XXXX-2310		
232.00	1302 XXX-XXXX-XXXX-2320		
233.00	1302 XXX-XXXX-XXXX-2330		
234.00	1302 XXX-XXXX-XXXX-2340		
235.00	1302 XXX-XXXX-XXXX-2350		
236.00	1302 XXX-XXXX-XXXX-2360		
237.00	1302 XXX-XXXX-XXXX-2370		
238.00	1302 XXX-XXXX-XXXX-2380		
239.00	1302 XXX-XXXX-XXXX-2390		
240.00	1302 XXX-XXXX-XXXX-2400		





Product Overview

Flat gaskets are produced from moulded sheet using economic rule dies. Larger gaskets can be cut from moulded or fabricated picture frames. This option has the advantage of saving material and allows larger gaskets to be produced economically. Fabricated frames use either extruded or moulded flat section that is joined by vulcanizing the polymer. The same conductive polymer compound is used to vulcanize the joints ensuring complete electrical conductivity is maintained across the joint.

This process has allowed Kemtron to produce gaskets up to 2 meters' long, with the same mechanical and electrical integrity as is found in a single part gasket cut from sheet. This method of manufacture often offers cost savings over cutting from sheet with subsequent loss of waste material.

Our in-house production facilities are suitable for prototype, short and medium production runs, up to commercial quantities.

Design Considerations

- It is important that this material is not over-compressed. If the design of the equipment does not allow for any mechanical method of preventing over-compression, the gasket should be fitted with built-in compression limiters, either metal stops fitted to the gasket, or metal collars fitted into each fixing hole.
- The material is not suitable in sliding applications.
- Recommended compression: 10% to 20%.
- Self adhesive backing (conductive or non-conductive) is offered as an assembly aid only.
- Fluorosilicone: self-adhesive backing is not recommended for use with this type of elastomer.
- Minimum material width should not be less than 2mm or at least the material thickness in any part of the gasket. If this cannot be achieved around fixing holes consider using a slot. Particular attention is required if specifying compression collars in holes.
- Consideration must be given to compression forces, hole centres, size and number of fixings and rigidity of mating flanges.
- Integral compression stops or collars should be considered to limit over compression if external controls cannot be applied. Recommended minimum sheet thickness for integral limits is 1.5mm.

Technical Specifications

Materials

Material Code	Material
SNG	Silicone Nickel Graphite
FNG	Fluorosilicone Nickel Graphite
SNG-FR	Silicone Nickel Graphite Flame Retardant UL94 VO and BS 6853:1999
SSA	Silicone Silver Aluminium 60° Shore A
FSA	Fluorosilicone Silver Aluminium 60° Shore A
FSA(70)	Fluorosilicone Silver plated Aluminium 70° Shore A
SSA (65B)	Silicone Silver Aluminium 65° Shore A Blue
SSC	Silicone Silver Copper
FSC	Fluorosilicone Silver Copper
SN	Silicone Nickel
FN	Fluorosilicone Nickel

Standard Sheet Sizes

- 150mm x 150mm (code 1210)
- 250mm x 300mm (code 1211)
- 300mm x 300mm (code 1212)

Standard Thicknesses

- 0.5mm
- 0.8mm
- 1.0mm
- 1.2mm
- 1.5mm
- 1.6mm
- 1.8mm
- 2.0mm
- 2.5mm
- 3.0mm
- 3.2mm

Other thicknesses and sheet sizes are available subject to minimum quantities.

Self Adhesive Backing

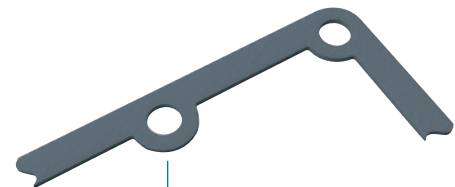
Kemtron have developed a proprietary conductive adhesive for sheet materials, This adhesive has a shelf life of 6 months and is intended for use as an assembly aid only.

Dimensional Tolerances:

Thickness ± 0.15 mm up to 2mm, ± 0.25 mm above 2mm
 Linear ± 0.8 mm,

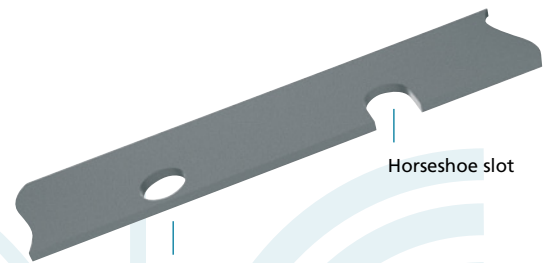
Hole Centre's ± 0.4 mm

Minimum Land



2mm Land area (Or thickness of material if over 2mm)

Horse Shoe Slot



Horseshoe slot

Insufficient Land

How To Order

Specify the sheet size code followed by the material code and finally the thickness using 4 numerical digits to 1 decimal place.

If self adhesive backing is required add SAB after the part number.

Examples

1210-FNG-0008 = Fluorosilicone Nickel Graphite 150mm x 150mm x 0.8mm

1211-SSA-0015 SAB = Silicone Silver Aluminium self adhesive backed 250mm x 300mm x 1.5mm

For die cut gaskets please supply a detailed drawing.

Technical Specifications (Continued)

Surface Mounted Gaskets

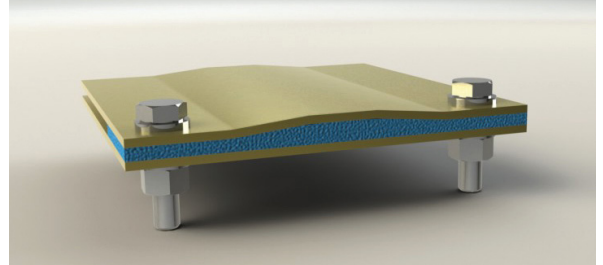
With surface mounted elastomeric gaskets, the aim should be to limit the compression of the gasket to between 10% and 20%. 10% being the minimum with a solid silicone style of gasket. (Some form of compression stop or limit is essential with surface mounted gaskets to prevent over compression).

Compression stops can be built into many styles of gasket, or made as an integral part of the flange. Their height should equal that of the maximum compressed height of the gasket. Compression stops fitted into gaskets can be in the form of collars or washers so that fixing bolts can pass through them or as solid studs located either side of a fixing bolt.

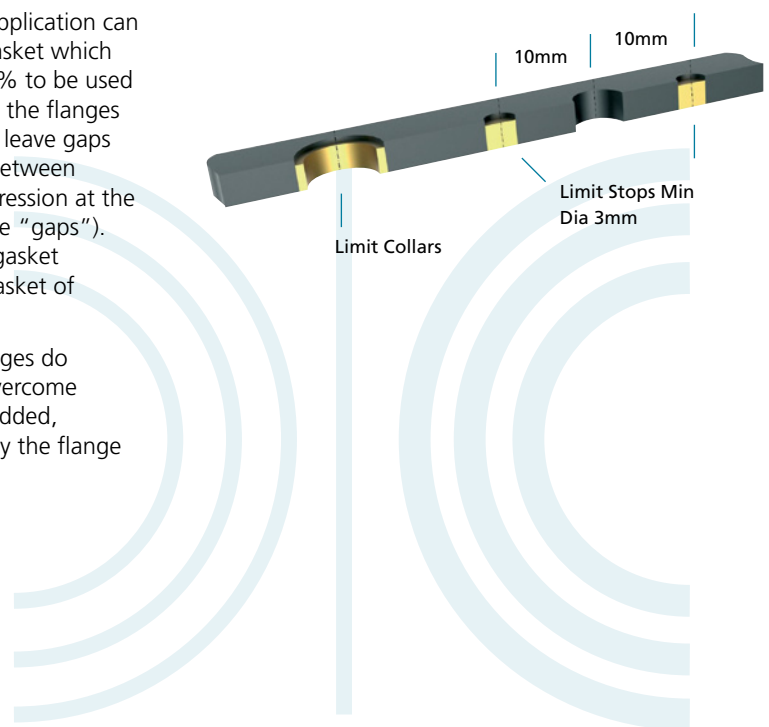
The thickness of the gasket for a known application can be calculated as follows e.g. Consider a gasket which can be compressed between 10% and 25% to be used on flanges which are not perfectly flat, i.e. the flanges without gaskets touch at some points and leave gaps in others. Since the gasket will compress between 10% and 25% we will require 25% compression at the high points and 10% at the low points (the "gaps"). The greatest gap is therefore 15% of the gasket thickness. If that gap is 0.45mm, then a gasket of 3.0mm thickness is required

This is fine in theory provided that the flanges do not "bow" when placed under load. To overcome flange distortion, fixings may need to be added, the number of which will be determined by the flange stiffness/rigidity.

Compression 3



Compression Limit Applications



Notice

Information supplied in these data sheets is based on independent and laboratory tests which Kemtron believes to be reliable. Kemtron has no control over the design of customer's product which incorporates Kemtron's products, therefore it is the responsibility of the user to determine the suitability for his particular application and we recommend that the user make his own test to determine suitability. The product described in this data sheet shall be of standard quality, however the products are sold without warranty of fitness for a particular purpose, either expressed or implied, except to the extent expressly stated on Kemtron's invoice, quotation or order acknowledgement. Kemtron does not warrant that products described in this data sheet will be free of conflict with existing or future patents of third parties. All risks of lack of fitness, patent infringement and the like are assumed by the user.