



## Product Overview

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A flat, sheet material, comprising a solid silicone rubber, embedded with Monel or Aluminium metal wires orientated perpendicular to its surface. Excellent RFI/EMI/EMP shielding performance is achieved as the material has a wire density of up to 140 wires/cm<sup>2</sup> in solid silicone providing an environmental and RFI/EMI seal when clamped between two metallic surfaces. These wires are crimped to aid compression and are chemically bonded to ensure their retention. They will also penetrate most light oxide layers, ensuring a low contact resistance path when suitably compressed.

A choice of silicones variants along with different wire counts are available allowing this product to be used in a wide range of applications.

Kemtron have developed new grades of material to fulfil a need that meets the performance of our 430/440 materials but with improved environmental sealing qualities. We have achieved this by using a very soft solid silicone with a reduced wire count of 100 wires per cm<sup>2</sup> the same as our silicone sponge. The advantages of these new materials over silicone sponge are that we can manufacture increased sheet widths of 225mm with a minimum thickness of 0.8mm. Material consistency is a great advantage over silicone sponge as there is no uneven cell structure to consider that affects moisture ingress and closure force (Full data on these materials can be found listed under 470/480 in the Technical Specification).

## Application

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- A good solution for achieving RFI/EMI/EMP and environmental sealing in a single gasket.
- Ideal for use as access panels, seals, connector gaskets etc.
- Good conformity to allow for uneven surfaces.

## Availability

Kemtron is able to offer a wide variety of options as the material is cut in-house from large blocks, up to 225mm wide, using our high-speed slicer, enabling us to offer all thicknesses (subject to material type) to suit the customer's exact design requirement.

- Die-cut gaskets.
- Large fabricated gaskets.
- Virtually any flat shape can be produced.
- Sheet material.
- Strip material available in continuous lengths.
- Self-adhesive backing to allow for easy assembly.
- Can be fitted with compression limit stops or collars.
- Small gaskets can be punched in one operation, keeping production costs to a minimum.
- Larger gaskets can be produced cost effectively and without the constraint of sheet size limitation from strips of material fabricated into the required finished shape, thus avoiding waste material from the centre of the gasket.
- A fluorosilicone version is available for use in environments where fuels/oils/hydraulic fluids and other contaminants are present.
- Solid Silicone 410/420, for use in applications where higher compression forces allow for better environmental sealing.
- Soft solid silicone 470/480 or silicone sponge 430/440 for applications that require lower compression forces.

## Design Considerations

- It is important that this material is not overcompressed. 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 around each fixing hole.
- There is no need for a conductive connection where strips are joined as the wires forming the EMC contact run vertically through the material; a waterproof seal is achieved by vulcanising the join with silicone.
- The material is not suitable for frequent opening or sliding applications.
- Recommended compression: 15% to 20%.
- 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.
- Particular consideration must be given to compression forces (see data in this section) hole centres, size and number of fixings and rigidity of mating flanges.

## Production Capabilities

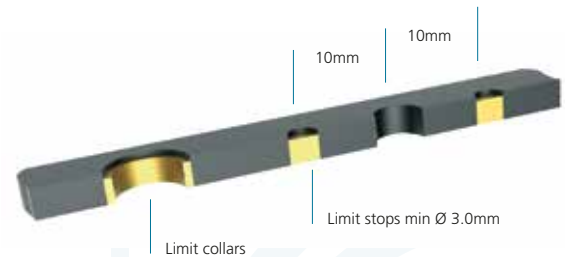
Kemtron holds large stocks of raw material blocks, which are cut in-house on one of the most advanced slicing machines in Europe, and which enables us to produce bespoke gaskets economically and on time.

We are able to cut sheets up to 228mm wide by 1000mm long, whilst holding a parallel tolerance of  $\pm 0.2\text{mm}$  and can apply self-adhesive backing prior to die cutting and or fabrication.

Gasket fabrication is a routine feature of our work, enabling us to produce economic gaskets by maximising material usage, without the limitations of sheet width. Joins are vulcanised using a silicone compound and overcompression stops or collars can be fitted to the gasket if required.

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

## Compression Limit Applications



## Minimum Land



## Horse Shoe Slot



## Typical Shielding Performance

Frequency	410/450	420/460	430/470	440/480
20 Mhz	94	95	94	94
40 Mhz	96	96	99	96
60 Mhz	100	97	99	100
80 Mhz	99	98	100	100
100 Mhz	111	105	109	111
200 Mhz	111	105	109	111
400 Mhz	112	107	105	110
600 Mhz	110	103	102	108
800 Mhz	116	110	109	116
1 Ghz	111	111	107	111
2 Ghz	106	112	112	112
4 Ghz	98	97	95	101
6 Ghz	91	90	89	90
8 Ghz	90	90	87	92
10 Ghz	84	89	84	88

## Typical Closing Force Required

Code	Material Thickness	Compression %	N/cm <sup>2</sup>
410/420	0.8mm	10%	17
	0.8mm	15%	36
	0.8mm	20%	49
	1.6mm	10%	20
	1.6mm	15%	45
	1.6mm	20%	81
430/440	2.4mm	10%	58
	2.4mm	15%	83
	2.4mm	20%	97

Code	Material Thickness	Compression %	N/cm <sup>2</sup>
430/440	1.6mm	10%	40
	1.6mm	15%	46
	1.6mm	20%	52
	2.4mm	10%	31
	2.4mm	15%	34
	2.4mm	20%	38
	3.2mm	10%	18
	3.2mm	15%	22
	3.2mm	20%	28

Code	Material Thickness	Compression %	N/cm <sup>2</sup>
450/460	0.8mm	10%	15
	0.8mm	15%	38
	0.8mm	20%	61
	1.6mm	10%	22
	1.6mm	15%	52
	1.6mm	20%	88
	2.4mm	10%	78
	2.4mm	15%	102
	2.4mm	20%	129

Code	Material Thickness	Compression %	N/cm <sup>2</sup>
470/480	1.6mm	10%	14
	1.6mm	15%	27
	1.6mm	20%	36
	2.4mm	10%	37
	2.4mm	15%	43
	2.4mm	20%	65
	3.2mm	10%	41
	3.2mm	15%	45
	3.2mm	20%	55

\* The above data is representative of results from tests and show forces that you should expect to experience. When using these figures you should allow for tolerances in the gasket material and also on the hardware. These figures are given as a guide only.

## Dimensional Tolerances

- Linear  $\pm 0.8\text{mm}$
- Hole Centres  $\pm 0.4\text{mm}$
- Thickness  $\pm 0.13\text{mm}$
- Sheet Length  $\pm 10\text{mm}$

## Handling Considerations

Care should be taken when handling this material as any exposed metal points may scratch unprotected skin.

## Material Types and Sizes

Part No.	Material	Min Thickness	Sheet Width(s)	Max Sheet Length
410	Monel wires in Solid Silicone	0.8mm	225mm (+0/-5)	1000mm
420	Aluminium wires in Solid Silicone	0.8mm	225mm (+0/-5)	1000mm
430	Monel wires in Silicone Sponge	1.2mm	80mm (+0/-5)	900mm
440	Aluminium wires in Silicone Sponge	1.2mm	80mm (+0/-5)	900mm
450	Monel wires in Solid Fluorosilicone	0.8mm	150mm (+0/-5)	1000mm
460	Aluminium wires in Solid Fluorosilicone	0.8mm	150mm (+0/-5)	1000mm
470	Monel wires in Soft Solid Silicone	0.8mm	225mm (+0/-5)	1000mm
480	Aluminium wires in Soft Solid Silicone	0.8mm	225mm (+0/-5)	1000mm

## How to order

To order strips use the material type number followed by the thickness and width (expressed as 4 digits to one decimal place). Add SAB to the end of the part number if you require self-adhesive backing.

## Examples

**430-0016-0127** = 1.6mm thick Monel Wires in Silicone Sponge, width 12.7mm.

**420-0008-0032SAB** = 0.8mm thick Aluminium Wires in Solid Silicone, width 3.2mm with self-adhesive backing.

## 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.

## Standard Strip Material

Material	Material Code
Monel Wire in Solid Silicone	410
Aluminium Wire in Solid Silicone	420
Monel Wire in Silicone Sponge	430
Aluminium Wire in Silicone Sponge	440
Monel in Solid Fluorosilicone	450
Aluminium in Solid Fluorosilicone	460
Monel wire in soft solid silicone	470
Aluminium wire in soft solid silicone	480

Ht.	Width	Material Code								Part No.
		410	420	430	440	450	460	470	480	
0.8mm	3.2mm			*	*					0008-0032
0.8mm	4.8mm			*	*					0008-0048
0.8mm	6.4mm			*	*					0008-0064
0.8mm	9.5mm			*	*					0008-0095
0.8mm	12.7mm			*	*					0008-0127
1.6mm	4.8mm									0016-0048
1.6mm	6.4mm									0016-0064
1.6mm	9.5mm									0016-0095
1.6mm	12.7mm									0016-0127
1.6mm	15.9mm									0016-0159
1.6mm	19.1mm									0016-0191
2.4mm	4.8mm									0024-0048
2.4mm	6.4mm									0024-0064
2.4mm	9.5mm									0024-0095
2.4mm	12.7mm									0024-0127
2.4mm	15.9mm									0024-0159
2.4mm	19.1mm									0024-0191
3.2mm	6.4mm									0032-0064
3.2mm	9.5mm									0032-0095
3.2mm	12.7mm									0032-0127
3.2mm	15.9mm									0032-0159
3.2mm	19.1mm									0032-0191

\* Not available in 0.8mm thickness.

## Material Specifications

Wire	
Monel	BS 3075 NA13 – QQ-N-281-B
Aluminium	BS EN 573 pt3 – Alloy 5056

Elastomers	Specifications	Temp Range	Colour
Silicone Solid	A-A-59588	-60°C to 200°C	Light Grey
Soft Silicone Solid	A-A-59588	-60°C to 200°C	Light Grey
Silicone Sponge	AMS 3195	-60°C to 200°C	Light Grey
Fluorosilicone	MIL-R-25988 G 50	-55°C to 200°C	Blue

Test	Standard	Solid Silicone
Tensile strength	ASTM D412	2.5 MPa
Elongation	ASTM D412	250%