SPECIAL CATALOGUE

SALES WORLDWIDE

92 % FROM IN-HOUSE PRODUCTION

Sealing technology made to measure
Profiles and frames from in-house production
About EMKA

The EMKA GROUP is world market leader for locks, latches, hinges and seals used in switch and control cabinets.

For more than 40 years, the company has been active across all sectors in the fields of industry (switch and control cabinets, HVACR systems, mechanical engineering) and transport (railway and commercial vehicles, caravans, etc.) with conventional and electronic locking solutions.

The overall range comprises more than 30,000 catalogue and special articles, which are developed, manufactured, refined and assembled at eleven production sites in Germany, France, Great Britain, Spain, Bosnia-Herzegovina, Serbia, China, India and Indonesia.

In one of the two new plants in Bosnia, the company produces around 900 moulds for injection moulding and die casting every year - both for own production and for external customers.

With 2,100 employees, EMKA serves over 36,000 customers in 55 countries worldwide. In 2020, the company achieved turnover of over 295 million euros.

EMKA - Ingenious Locking Technology.
Worldwide first choice

2,100 employees

Own production at 11 international locations

Represented in 55 countries worldwide

More than 30,000 catalogue and special products

More than 36,000 customers worldwide
Sealing technology is a core business of EMKA.

The company is an expert in extruding rubber and plastic profiles with its own production plants in Spain and England.

EMKA produces more than 1,500 gaskets and rubber profiles made of various materials as catalogue standard as well as countless individual customer solutions after detailed consultation with our sealing experts.

Loops and roll editing tape, stamped steel and reinforcements of textile fibres can be additionally incorporated. For subsequent processing we can also manufacture fixed lengths, rings and corner frames. The application of adhesive tape, lubricant varnish or flocking, as well as special special coatings for electro-magnetic compatibility (EMC seals) round off the range of services.

EMKA know-how guarantees top quality.
Product range

Edge protection profiles

Self-clamping sealing profiles

U-section profiles

Profiles with adhesive area

Clamping and holding profiles

Sealing profiles according to industry-specific standards
EMKA Sealing Systems
Arnedo (La Rioja), Spain

- Certified according to ISO 9001, ISO 14001, IATF 16949
- Production area 12,000 m²
- Processing of: EPDM, CR, NBR, thermoplastics
- 1 salt bath extrusion line
- 3 UHF extrusion lines, 2 PVC, 1 TPE
- 5 components extrudable
- Cutting and punching machines for precise lengths
- Injection presses for mould corners
- Film vulcanization for corners and rings
- SK film laminator
EMKA Profiles
Birmingham, England

- Certified according to ISO 9001
- Production area 4,500 m²
- Processing of: EPDM, CR, NBR
- 3 salt bath extrusion lines
- 2 components extrudable
- Cutting and punching machines for precise lengths
- Injection presses for mould corners
- Film vulcanization for corners and rings
- SK film laminator
Rubber extrusion lines with salt bath and UHF vulcanization

Extruder

Permanent camera-based profile geometry monitoring (PIX-Argus)

Drilling device for vent holes
Mitre cut

Laser marking of the rubber profile according to customer requirements

PE film bonding for rings and frames

Line end with automatic take-up device
Mounting types

The mounting type is a decisive factor in choosing the right profile. The profiles distributed by EMKA offer mounting types for every application. The four standard mounting types are explained and illustrated below.

**Self-clamping**

Self-clamping profiles have an internal steel or wire clamping strip in the clamping area, which ensures that the seal is held securely on the sheet edge.

The clamping area and the sealing area usually consist of soft rubber in different Shore hardness as well as foam rubber with different density. Depending on the installation situation and requirements, a simple edge protection or a clip-on profile with sealing balloon or sealing lip can be attached to the edge.

In order to achieve a perfect sealing result, it is necessary to adhere to the bending radii specified in the catalogue. Material buckling or stretching can cause leaks.

**Stamped wire or wire spiral carrier?**

Through the use of steel or wire clamping strips, profiles can adhere well even without adhesive bonding. Steel strapping generally shows a higher clamping effect than wire strapping. However, with "unbroken" profiles, the restricted bending radii laterally over the legs can be disadvantageous. This can be remedied by breaking the connecting webs; however, this can result in an "unsteady" appearance of the profile strand. In most technical applications the appearance is irrelevant.

The choice between wire or steel clamping band depends on the respective installation situation and the desired appearance.
Plugged

The plugged profile does not have a metal insert and is not glued.

It is plugged into a gap or channel between two edges and safely seals the cavity in this way.

Clamped

Clamping profiles are ideal for screwless insertion of windows into metal or wood cut-outs. The use of a rubber clamping profile guarantees a firm, durable and rattle-free connection in many types of special vehicles, mobile construction site cabins and large machines.

In addition to the filler profile, you can also order the mounting aids from EMKA.

Glued

Bonding technology is particularly suitable for economical and quick fastening. The profile is glued to a flat area.

Due to an adhesive strip attached to the profile, the handling is very easy to install. In the case of the adhesive cellular rubber profiles, integrated cotton threads guarantee a stretch-free assembly and thus prevent stretching and subsequent shrinkage of the seal.
In addition to the base material, many characteristics influence the function and quality of the seal. These include elasticity, residual compression and resistance to chemicals, heat and environmental influences.

EMKA mainly uses the materials EPDM, NBR and silicone. The materials PVC, TPE and CR are also used.

**Polymers**

**Thermoplastics**
- PP
- PE
- PS
- PVC
- TPE
- and others

**Elastomers**
- SBR
- EPDM
- NBR
- CR
- Silicone
- and others

**EPDM (ethylene propylene diene monomer rubber)**
- Very good resistance to aging
- UV resistance
- Very good resistance to weathering
- Good ozone resistance
- Very good electrical insulation properties
- Resistant to alcohols and diluted acids (e.g. brake fluids)
- Application range -40 °C to +100 °C
- Special EPDM compounds also -50 °C to +150 °C with hot water and air

**NBR (butadiene acrylonitrile rubber)**
- Very good oil resistance
- Small compression set
- Good low temperature behaviour
- Typical application range -30 °C and +100 °C (with special compounds)
- Application in the food industry possible
**Silicone**

- Good elasticity even at very low and high temperatures
- Application range between -60 °C and +200 °C
- Conditional resistance to oils
- Resistance to weathering
- Resistance to aging
- Resistance to ozone
- UV resistance
- Very well suited for medical components
- Colour fastness

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### Material overview elastomers

<table>
<thead>
<tr>
<th>Short name</th>
<th>Typical operating temperatures</th>
<th>Resistances (extract)</th>
<th>Characteristics</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mineral oil</td>
<td>Petrol</td>
</tr>
<tr>
<td>EPDM</td>
<td>approx. -40 °C to +100 °C temporary up to +130 °C</td>
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<td>3</td>
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<tr>
<td>NBR</td>
<td>approx. -30 °C to +100 °C temporary up to +120 °C</td>
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<td>2</td>
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<tr>
<td>CR</td>
<td>approx. -25 °C to +100 °C</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Silicone</td>
<td>approx. -60 °C to +200 °C</td>
<td>2</td>
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### Material overview thermoplastics

<table>
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<th>Typical operating temperatures</th>
<th>Resistances (extract)</th>
<th>Characteristics</th>
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<tr>
<td></td>
<td></td>
<td>Mineral oil</td>
<td>Petrol</td>
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<td>PVC</td>
<td>approx. -10 °C to +70 °C temporary approx. -40 °C up to +90 °C</td>
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<tr>
<td>TPE</td>
<td>approx. -30 °C to +80 °C</td>
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1 = Very good resistance, little or no attack (for thermoplastics: swelling < 3 % or weight loss < 0.5 %)
2 = Good resistance, weak to moderate attack (for thermoplastics: swelling 3-8 % or weight loss 0.5-5 %)
3 = Not resistant, strong attack to complete destruction (for thermoplastics: swelling 3-8 % or weight loss > 5 %)
**Standards and certifications**

EMKA sealing profiles are particularly high quality and safe, as shown by numerous certificates according to DIN, VDI, UL or fire protection standards. These play an important role in the use of the seals in order to define their quality or suitability for different applications - also country-specific.

The high quality and product standards are ensured by the excellent manufacturing competence and the ISO 9001:2008 certified process control. In principle, the production sites are also certified in accordance with the ISO 14001:2009 and IATF 16949:2016 standards.

EMKA profiles comply with the following standards, among others:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Explanation</th>
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<tbody>
<tr>
<td>VDI 6022</td>
<td>Hygiene requirements for ventilation and air conditioning systems</td>
</tr>
<tr>
<td>PMMA compatible according to Röhm</td>
<td>Stress crack resistance (&quot;Röhm test method&quot; by bending test)</td>
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<tr>
<td>DIN 7863</td>
<td>Technical delivery conditions of the visible profiles for window and facade construction</td>
</tr>
<tr>
<td>UL 50 and UL 50E</td>
<td>Regulation in USA and Canada for components and the construction of certified switchgear and control cabinets</td>
</tr>
<tr>
<td>UL 94-HB</td>
<td>Regulation in USA and Canada: Standard test for investigating the burning properties and fire safety of plastics</td>
</tr>
<tr>
<td>EN 45545-2</td>
<td>Standard for fire protection in railway vehicles - Part 2: Requirements for the fire behavior of materials and components</td>
</tr>
<tr>
<td>ASTM C 1166-06 (2011)</td>
<td>Flame propagation testing for compact and porous elastomeric seals and sealing accessories</td>
</tr>
<tr>
<td>Bombardier SMP 800-C Rev. 6:2009.08.31</td>
<td>Generation of toxic gases through material combustion</td>
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<tr>
<td>ASTM E 1354:2016a</td>
<td>Standard test method for heat and visible smoke emission for materials and products using an oxygen consumption calorimeter</td>
</tr>
<tr>
<td>ASTM E 662:2015</td>
<td>Standard test method for the specific optical density of smoke generated by solid materials</td>
</tr>
<tr>
<td>BSS 7239:1988</td>
<td>Test method for the determination of toxic gases during the combustion of materials</td>
</tr>
<tr>
<td>BSS 7242:1989</td>
<td>Determination of the concentration of cyanide, chloride and fluoride ions in solutions from combustion processes</td>
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Processing / Finishing

**Cutting to length**

Upon customer request, profiles can be cut and packed online - i.e. in the running production line - or subsequently to lengths between 5 - 500 cm. Angled cuts, mitre cuts and notches are also possible.

**Application of adhesive tape**

The toolless mounting by gluing sealing profiles is used for more and more applications. The bonding of completely different materials as well as low-stress bonding due to large-area glued joints are major advantages here. Double-sided adhesive tapes can be applied subsequently for the respective application.

**Coating**

The natural, high friction coefficients of an elastomer can be significantly reduced with a bonded coating. This operation can be performed online - in the running production line - or subsequently, e.g. after corner vulcanization. The coating is transparent and therefore hardly visible.

**Flocking**

The flock fibers reduce the friction coefficients, which are very high in rubber. In addition, small unevenness and tolerances can be compensated. Typical applications are, for example, window seals in automotive engineering. Depending on the application, the flocking may wear off. Profile flocking changes the optical and haptic characteristics.

**Sheathing / EMC sealing**

A conductive foil is wrapped around the rubber profile and firmly bonded to the surface. The conductive connection of frame and door reduces electromagnetic interference. The attainable shielding effectiveness depends on numerous influencing factors.
Processing options

Information about frames and rings

Readily customised frames and rings according to customer specifications

We offer numerous assembly possibilities for the known profiles in fixed lengths. Thus, for frames and rings, the butt and corner joints can be bonded, film-vulcanized or realized by injection moulding (formed corners / end feeds). Possibly arising tool costs needs to be clarified beforehand due to the required assembly option.

Product benefits

- The exact and time-intensive mitre-cutting of the gasket or the observance of the given minimum bending radius of the gaskets are not necessary
- The ready-made frames and rings make it easy to attach to doors and cabinet frames
- No leakiness at butt ends and mitre joints

Glueing

The most simple process is to glue two profile ends.

For all rings, vent holes are strongly recommended as the compression force increases in a closed ring.

A better and more durable process is film vulcanization.
**Film vulcanization**

Film vulcanization is a permanent and durable process. A film of the same material is placed between the profile ends to be vulcanized. The time required for film vulcanization is higher than for glueing.

**Injection moulding**

Injection molding stands for mould corners and end feeds. Injection moulding is a process for creating special corners for a frame, for example. In the example shown, a lip profile is formed round in the corners (1), while the clamping area (2) of the profile is formed in a right angle. This is not possible when vulcanizing profile ends with mitre joint.
Mountain Top Industries: Cover system for pick-up loading area

Mountain Top Industries is one of the world’s leading manufacturers of pick-up accessories and develops covers, linings and partitions for off-road vehicle cargo compartments and stylish roll bars. Renowned vehicle manufacturers such as VW, Ford, Nissan, Isuzu, Mercedes, Mitsubishi and Toyota already rely on Mountain Top. Cover systems such as the Mountain Top Roll are created from many complexly assembled individual parts.

The nature of the rubber material poses a fundamental difficulty for the closure blades. The soft material is more difficult to process in combination with the hard component.

For this challenge Mountain Top has found a reliable partner in EMKA. In just 3 months, the joint team has succeeded in developing a product ready for series production that combines design, geometry, material mix and roller blind functionality.
ALSTOM Valenciennes Petite Forêt:
A new solution for passenger seats

The Valenciennes Petite Forêt site is Alstom’s centre of excellence for the design, manufacture and testing of metros, trams, RER and double-decker regional trains. All ALSTOM equipment is developed in Valenciennes. The site is also home to the Interior Design Development Centre, which designs parts for the interiors of all Alstom trains worldwide. As a historic player in the Hauts-de-France region (northern France), the site has more than 1,400 employees.

For the Citadis Dualis, a tram train for the Parisian suburbs and the "T12 Express" line, Alstom Valenciennes was looking for a solution to a cleaning problem. Objects and waste that fall behind the seat back can only be removed with considerable effort.

In cooperation with EMKA, a simple but effective solution was developed in 5 months: A large-volume U-shaped sealing frame made of soft, flexible foam rubber, which can be attached with adhesive tape, perfectly seals the space between backrest and mounting frame. The new U-frame is not only attached to new vehicles, but is also installed in existing trains during maintenance work.

Success Story

ALSTOM Valenciennes Petite Forêt:
A new solution for passenger seats
Profiles for industrial applications

As a system supplier for industrial enclosure construction, EMKA sees itself as a problem solver in order to develop an economically reasonable approach for opening, closing and sealing the enclosure together with the customer.

Through the development of individual concepts EMKA offers the appropriate sealing technology for different industrial sectors. Thus EMKA considers not only the seal, but also the closure and hinge technology as well as the material and construction of the respective industrial application. In doing so, EMKA falls back on a broad portfolio of existing sealing materials.

Contact our consultants and benefit from our expert knowledge! We have the right solution for every application.

Seals, self-clamping

<table>
<thead>
<tr>
<th>Sealing profile foam rubber, clamping profile material of choice</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</td>
<td>20</td>
</tr>
<tr>
<td>Foam rubber NBR, clamping profile NBR 60 ± 5 Shore A, black</td>
<td>21</td>
</tr>
<tr>
<td>Foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</td>
<td>21</td>
</tr>
<tr>
<td>Foam rubber NBR, clamping profile NBR 60 ± 5 Shore A, black</td>
<td>21</td>
</tr>
</tbody>
</table>

Sealing profile foam rubber EPDM, clamping profile EPDM 60 ± 5 Shore A, black

1011-34

All standard seals can be found in our seals catalogue or online at www.emka.com.
Seals, self-clamping

<table>
<thead>
<tr>
<th>Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</th>
<th>1011-09*</th>
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<table>
<thead>
<tr>
<th>Sealing profile foam rubber, clamping profile material of choice</th>
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<tbody>
<tr>
<td>Foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</td>
<td>1011-06*</td>
</tr>
<tr>
<td>Foam rubber NBR, clamping profile NBR 60 ± 5 Shore A, black</td>
<td>1011-16</td>
</tr>
</tbody>
</table>

| Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black | 1011-23-01 |

All standard seals can be found in our seals catalogue or online at www.emka.com.
Seals, self-clamping

Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black

UL 50
UL 94-HB

1011-12*

Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black

Bore holes approx. every 300 mm

UL 50
UL 94-HB

1011-45

Sealing profile foam rubber EPDM 25 Shore A, clamping profile EPDM 60 ± 5 Shore A, black

compressible

Steel spring core

1011-41

compressible

Steel spring core

UL 50
UL 94-HB

All standard seals can be found in our seals catalogue or online at www.emka.com.
# EMC seals

<table>
<thead>
<tr>
<th>Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</th>
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</thead>
<tbody>
<tr>
<td>Bore holes approx. every 300 mm</td>
<td>1011-05-E</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>Sealing profile foam rubber EPDM, clamping profile EPDM 65 ± 5 Shore A, black</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore holes approx. every 300 mm</td>
<td>1011-09-E</td>
</tr>
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</table>

All standard seals can be found in our seals catalogue or online at [www.emka.com](http://www.emka.com).
Profiles made of fire protection material

EMKA processes materials which are certified according to currently valid fire protection standards for railway vehicles.

e.g. according to (1) DIN EN 45545-2, (2) ASTM C1166, (3) ASTM E662, (4) SMP 800-C, (5) BSS 7239, (6) ASTM E1354.

Whether the achieved categories fit to the respective requirements or vehicle classes has to be verified for the individual case.

Product advantages of profiles made of EPDM fire protection material:

- Flame retardant for more safety
- Significant cost savings compared to silicone seals
- Readily customized frames and rings according to customer specifications possible
- Profile geometry also individually according to customer requirements
- Reliable top quality from in-house production in Europe

Seals made of fire protection material, self-clamping

<table>
<thead>
<tr>
<th>Sealing profile foam rubber EPDM, clamping profile EPDM 60 ± 5 Shore A, made of fire protection material, black</th>
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</thead>
<tbody>
<tr>
<td>(1) Steel spring core</td>
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<tr>
<td>(1) Stainless steel spring core</td>
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<table>
<thead>
<tr>
<th>Sealing profile silicone solid material, made of fire protection material</th>
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<tbody>
<tr>
<td>(1) (2) (3) (5) (6) 70 ± 5 Shore A, blue-black</td>
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<tr>
<td>(1) 75 ± 5 Shore A, white</td>
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<tr>
<td>(1) 60 ± 5 Shore A, black</td>
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</tbody>
</table>

All standard seals can be found in our seals catalogue or online at www.emka.com.
Seals made of fire protection material, self-clamping

Sealing profile foam rubber EPDM, clamping profile EPDM 60 ± 5 Shore A, made of fire protection material, black

<table>
<thead>
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<th>Description</th>
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<tbody>
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<td>(1)</td>
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Sealing profile silicone solid material, made of fire protection material

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<th>Description</th>
<th>Code</th>
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<tr>
<td>(1) (2) (3) (5) (6) 70 ± 5 Shore A, blue-black</td>
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<tr>
<td>(1) 75 ± 5 Shore A, white</td>
<td>1011-S42-HA</td>
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</table>

Sealing profile foam rubber EPDM, clamping profile EPDM 60 ± 5 Shore A, made of fire protection material, black

<table>
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<th>Description</th>
<th>Code</th>
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<td>(1)</td>
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All standard seals can be found in our seals catalogue or online at www.emka.com.
Profiles according to VDI guideline 6022

In guideline 6022 issued by “Verein Deutscher Ingenieure” (VDI) – Association of German Engineers – you can find a description of the minimum hygienic standards for ventilation and air conditioning systems. The guideline formulates requirements that have to be observed for planning, installation, operation and maintenance of ventilation and air-conditioning systems in order to guarantee absolute faultless hygienic condition of the systems as well as the outside air inlets for the air-conditioned premises.

VDI guideline 6022 is valid for the domain of builders, architects, engineers, ventilation planners, manufacturers of air-conditioning systems, machine builders, authorising bodies, operators, service companies, stakeholders of room users (e.g. staff associations or committees as well as company physicians and public health officers).

In line with the latest technical development and scientific knowledge, this guideline is intended to guarantee a precise operation and condition of ventilation and air-conditioning systems by means of preventive technical provisions.

Seals acc. to VDI 6022, self-clamping

<table>
<thead>
<tr>
<th>Sealing profile EPDM 45 ± 5 Shore A, clamping profile EPDM 60 ± 5 Shore A, black</th>
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<table>
<thead>
<tr>
<th>Sealing profile foam rubber EPDM, clamping profile EPDM 64 ± 5 Shore A, black</th>
<th>1011-S102</th>
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</table>
Cell sponge rubber according to VDI 6022

Delivery lengths:
For depths 3 – 7 = Coil length a 10 m
For depths 8 – 10 = Coil length a 5 m
For depths 11 = in stripes a 1 m

Dimension available from stock.
All other dimensions available in 2 to 3 weeks.

Special lengths available in 6 to 8 weeks.
Minimum quantity on request
(Article-No.: 1016- ... L mm)

<table>
<thead>
<tr>
<th>Dim.</th>
<th>Depth</th>
<th>EPDM</th>
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Cell sponge rubber material of choice, black, stretch-free and self-adhesive
Profiles for the food industry

Seals for clean and hygienic working areas in the food industry are made of silicone or NBR. The compounds used at EMKA are compliant with the requirements of FDA 21 CFR 177.2600.

In hygiene-intensive work areas, which are subject to certain standards, the interaction between seal and hinge is particularly important, as only in this way a completely abrasion-free surface can be achieved. A custom-made seal is often required here in order to achieve standard-compliant gap sizes when sealing the joints between door and housing.

In addition to individual solutions EMKA also offers a variety of standard gaskets made of different materials and in different shapes.

The appropriate sealing technology is developed in dialogue, just contact us!

Seals made of FDA compliant material, self-clamping

Sealing profile silicon solid material 60 ± 5 Shore A, clamping profile silicon solid material 60 ± 5 Shore A, blue

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Sealing profile silicon solid material 60 ± 5 Shore A, clamping profile silicon solid material 60 ± 5 Shore A, blue

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## Seals made of FDA compliant material, self-clamping

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All standard profiles as well as further information on the subject of seals can be found in our 108-page special catalogue:

**Sealing technology made to measure - Profiles and frames from in-house production**

All standard seals can be found in our seals catalogue or online at [www.emka.com](http://www.emka.com).
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