



**COGEBI**  
EXCELLENCE IN MICA

**MICA SOLUTIONS**  
for industrial applications

[www.elinar.ru](http://www.elinar.ru) | [www.cogebi.com](http://www.cogebi.com)

# Welcome to Cogebi

part of ELCIM group



#### ELCIM :

ELINAR - COGEBI is the world leader in the production of industrial mica-based products that are resistant to high voltage and to high temperatures.

ELINAR - COGEBI has always guaranteed the quality and effectiveness of its unique products and services through these guiding principles:

- Ongoing commitment to innovation and creativity in order to design and develop new products and new proprietary production technologies
- Maintaining direct contact between the customers and the various ELINAR - COGEBI teams
- Manufacturing from the mica mineral to the finished product, through vertical integration and control of the entire production chain
- Quality Assurance with monitoring of the various production stages and follow-up of product traceability
- Investments in order to ensure flexibility, capacity, quality and fast cycle time production and logistics
- Worldwide distribution and application support

COGEBI products for industrial applications are amongst the most important and successful COGEBI products for more than 20 years.







Thanks to outstanding properties, COGEBI products are used in a variety of industrial applications such as:

### Heating...

in industrial and household appliances, electro-domestic appliances, electromechanical and thermomechanical in industrial processes (pressing, automotive,...)

### Metal melting industry...

in foundries (especially coreless and channel furnaces), smelting plants, electrolytic pots, furnaces

### Gaskets...

petrochemical plants, automotive industry (gas, diesel and electric)

### Special applications...

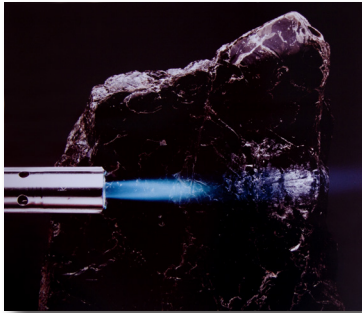
Whenever you need high temperature, chemical and electrical insulation combined with very good mechanical properties... THINK MICA!



# From natural mica...

## A gift of nature

Natural mica has exceptional physical characteristics. It can be found throughout the world, most notably in the presence of Paleozoic rocks. Accessible deposits are located primarily in India, Madagascar, Sri Lanka, Brazil and in Russia. Two types are extracted – Muscovite, in which there is a predominance of potassium and Phlogopite, in which the presence of Magnesium can be detected. Phlogopite mica withstands higher temperatures than Muscovite while Muscovite has better mechanical properties.



As a mineral, mica has exceptional characteristics – it can be split to obtain very thin flakes of uniform thickness. Mica can withstand temperature in excess of 1200 °C (Phlogopite), it is flame-resistant, non flammable, does not give off fumes and conducts very little heat, especially perpendicular to its strata.



Natural mica has a dielectric strength greater than 25kV/mm ( 625V/mil), has good resistance to arcing and electrical erosion and is permeable to microwaves.



Mica is tolerant of water and a majority of chemical agents, such as solvents, acids, bases and mineral oils.



Mica has good compressive strength. It performs well in the presence of tensile and bending stress. It has a high modulus of elasticity.



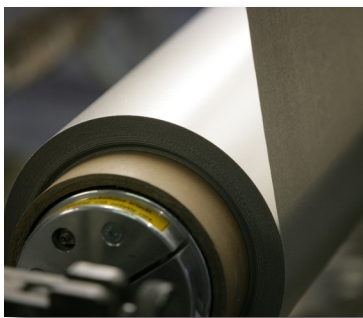


# ...to industrial applications

## Retaining the properties of natural mica

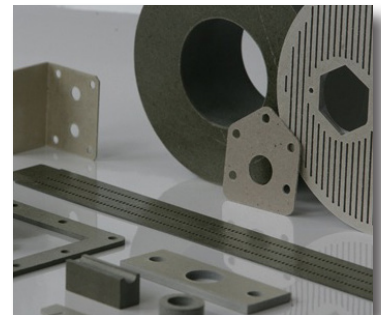
COGEBI has perfected technology that allows the agglomeration of mica fragments to create a homogenous material in continuous process. COGEBI has 2 process methods for the mica mineral: 1) Hydro-mechanical process based on highly pressurized water jet producing several microns thin flat particles and, 2) Thermo-Chemical process using high temperature and acid resulting also in thin flat particles.

The resulting water slurry is fed to a special type of paper machine which form continuous sheets of mica paper. At this stage, there is no need for a binding agent to hold the particles together, because their existing natural intermolecular attraction is usually sufficient.

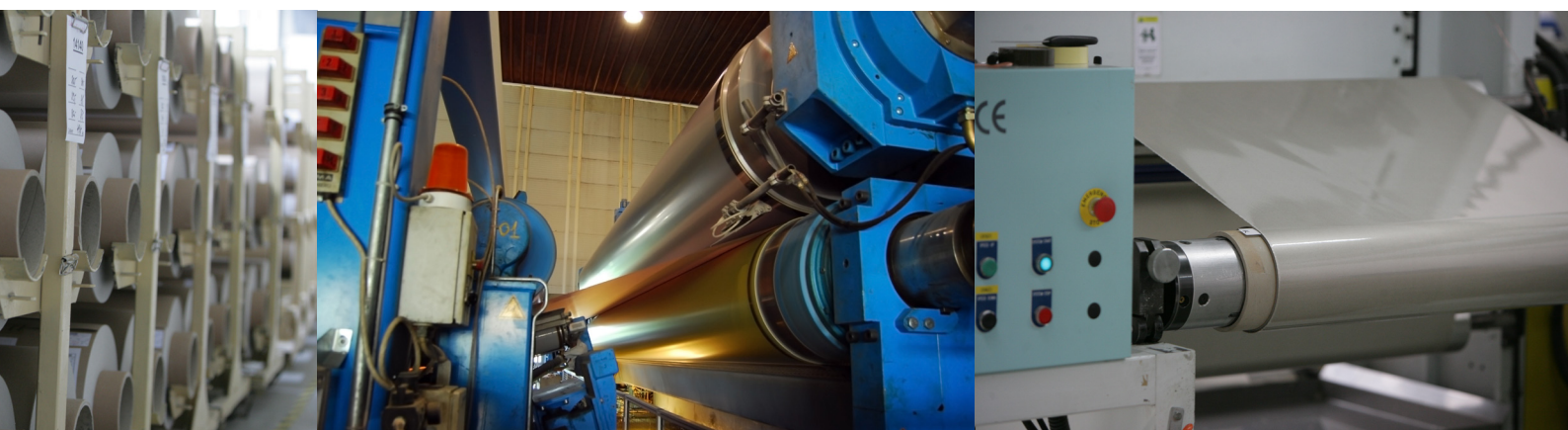


The result is 100 % mica paper based on Phloghopite or Muscovite made by two different production processes (Hydro-Mechanical or Thermo-Chemical).

Final products are in most cases based on mica paper and can be delivered in different forms. Cogebi can provide everything from flexible or rigid plates to rolls of different widths; machined or stamped parts from these different forms can also be provided.



All COGEBI products are Asbestos-free and the range of applications is enormous thanks to mica's combination of excellent thermal, electrical, mechanical properties and chemical resistance. Whenever you need a combination of those properties, the COGEBI R&D team is available to support your application requirements.



# COGEMICANITE 505

COGEMICANITE 505 series are rigid Mica plates designed for providing outstanding electrical insulation at high temperature. The two main group categories based on Mica type used (Phlogopite/Muscovite) with approximately 90% mica content with a proprietary resin. These plates or punched parts are widely used in heating elements for industrial and household appliances which require at least one of the following properties: excellent resistance to heat up to 1000°C; excellent electrical insulation; excellent microwave permeability; excellent punchability; high edge strength; environmentally safe and non-toxic.

**Available in:** sheets 1000x1200 mm, strips, punched pieces all in thickness of 0.2 to 1.5 mm

**Five different grades available:**

## COGEMICANITE 505.2:

A special degassed Muscovite grade. It fully resists the extreme high temperature cycles typically encountered for example, in automatic toasters.

## COGEMICANITE 505.3:

The standard Muscovite grade for all heating elements for hair dryers, hair setters, irons, tumble dryers, band heaters, nozzle heaters, etc.

## COGEMICANITE 505.4:

A higher density Muscovite grade with smoother surfaces. Most suitable for punching highly detailed pieces or when imprinting is required.

## COGEMICANITE 505.2P:

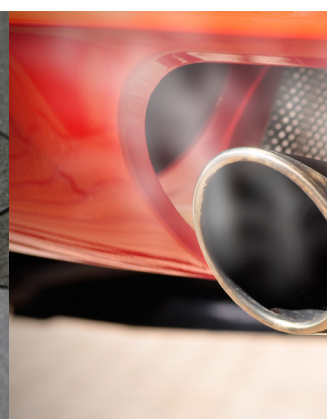
A special degassed Phlogopite low smoke and blister free grade, softer and more heat resistant. For extreme high temperature applications.

## COGEMICANITE 505.3P:

The standard Phlogopite grade for heating elements operating in an extreme temperature range.

**All the Cogemicanites 505 has content of mica ca 90 %, density 2.15 g/cm<sup>3</sup> and dielectric strength > 25kv/mm.**

	Mica Type	Heat Resistance °C Continuous/intermittent	Heat loss % at 500 °C / at 700 °C	Tensile strength N/mm2
505.2	Muscovite	500/800	<1/---	140
505.3	Muscovite	500/800	<1/---	150
505.4	Muscovite	500/800	<1/---	150
505.2P	Phlogopite	700/1000	<1/<2	100
505.3P	Phlogopite	700/1000	<2/<2	100



# COGEMICANITE 132

Where a flexible mica material is required, COGEMICANITE 132 is widely used in hairdryers, space heaters, circuit breakers and transformers. It is used as sheathing or covering, and also as a separator or insulation foil. Its spring power is used in some applications. Flexible COGEMICANITE 132 can be formed at room temperature and is entirely free of asbestos. The material can be cut to size without any problem, either by shearing or die-stamping.

**Available in:** sheets 1000x1200 mm, strips, punched pieces all in thickness of 0.2 to 2.0 mm

**Two different grades available:**

**COGEMICANITE 132-2:** is Muscovite mica impregnated with a heat resistant binder and polymerized by a heat treatment.

**COGEMICANITE 132-1P:** is Phlogopite impregnated with a heat resistant binder and polymerized by a heat treatment.

The choice of material depends on the application. Compared to Phlogopite, Muscovite is harder, clearer in color and reacts differently to heat.

**Both Cogemicanites 132 have content of mica ca 90-95% and dielectric strength > 20kV/mm.**

	Mica Type	Heat Resistance °C Continuous/intermittent	Dielectric strength kV/mm at 23 °C	Dielectric constant
132.2	Muscovite	500/800	>20	4.5
132.1P	Phlogopite	700/1000	>20	4.5





# COGETHERM

COGETHERM is a mica laminate designed for extreme conditions requiring one or more of the following properties. Rigid plates have excellent resistance to heat and even to open flame up to 700 °C (Muscovite) and 1000 °C (Phlogopite) with low thermal conductivity while at the same time offering excellent electrical insulation. Not only does COGETHERM have high resistance to pressure it is impervious to most chemicals, in particular oil and grease. Every day, safety becomes more important in industry, so material properties like asbestos-free, ecological safety and non-toxicity make COGETHERM a unique solution. The excellent properties of COGETHERM allows usage in a variety of applications (contact Cogebi for details) in the electro-mechanical sector (railway industry, arc chambers), as well as in the thermo-mechanical sector (hot presses, glass industry, steel works, aluminum production, induction furnaces, military, gas distribution).

**Cogebi also produces a wide range of tubes based on COGETHERM material (from inner diameter 6 mm and 1 m lenght).**

#### Available in:

sheets 1000x1200 mm, strips, punched pieces, laser cut, water jet, CNC all in thicknesses of 1.5 to 80.0 mm

#### Four different grades available:

##### COGETHERM M:

Cogetherm M has the highest resistance to pressure and is the most recommended for complicated cut pieces.

##### COGETHERM P:

The resistance to pressure of Cogetherm P is less then M and it should be applied only for continuous applications >500 °C.

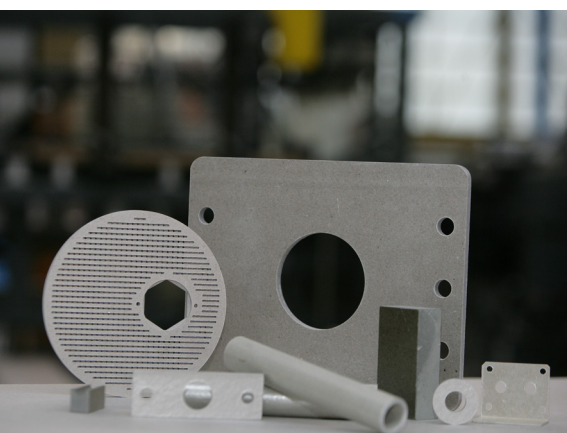
##### COGETHERM MC:

Our Muscovite degassed grade has low fume emissions during first application at temperatures >250°C, (available in thickness 1.5-10 mm).

##### COGETHERM PC:

Our Phlogopite degassed grade has low fume emississions, during first application at temperature >250°C.

	Mica Type	Compress. strength MPa at 20 °C / at 200 °C	Compress. strength MPa Continuous/intermittent	Heat Resistance °C kV/mm at 20/400°C
COGETHERM M	Muscovite	400/250	500/700	25/13
COGETHERM P	Phloghopite	330/240	700/1000	25/13
COGETHERM MC	Muscovite	360/235	500/700	25/13
COGETHERM PC	Phloghopite	310/225	700/1000	25/13







# COGEMICA HI-TEMP

COGEMICA® Hi-Temp based on phloghopite mica paper ensures the sealing in applications where temperatures up to 1000°C (1832°F) can be reached. Gaskets made of Hi-temp are used in automobile exhaust manifolds, gas turbines, gas and oil burners, heat exchangers, refineries, chemical industry, medical industry, petrochemical industry, turbo generators fuel cells and in other flange connections. It is also used as a filler for spiral wound gaskets and as a material for camprofile seals.

## Available in:

sheets 1000x1200 mm sheets and rolls 1000 mm wide with different lengths suitable for high volume production.

## Two different grades available:

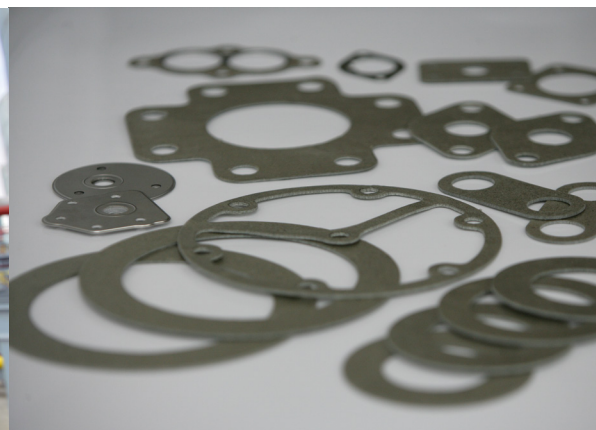
### COGEMICA HI-TEMP 710:

Through a special pressing process, this product provides better tensile strength and lower compressibility.

### COGEMICA HI-TEMP 730:

Delivered in rolls, 730 provides opportunities to minimize waste in punching processes with slightly lower tensile strength and higher compressibility than 710.

	Thickness mm	Delivery form	Tensile strength N/mm	Temp. range °C Continuous/intermittent	Max pressure bar
COGEMICA HI-TEMP 710	0,10 – 3,00	sheets	20	<1000/<1100	5
COGEMICA HI-TEMP 730	0,10 – 0,63	rolls	10	<1000/<1100	5



# COGE-FOIL 504

COGE FOIL 504 product range has been especially developed with Phloghopite mica paper for the metal melting industry (especially for induction furnaces). Cogefoil is designed for to separate of the refractory material from the lining around induction coil. The main advantages of using COGEFOIL materials are : electrical insulation of the induction coil, prevention of excessive heat loss, prevention of over-sintering of refractory material, vapor barrier against carbon gases. The different types of COGE-FOIL are designed to fulfill all customer needs from basic separation material to thermal barrier and can even come equipped with metal mesh to detect any risk of perforation of the crucible.

**Available in:** sheets 1000x1200 mm and rolls 1000 mm wide with different lengths

**COGE-FOIL 504 SHEETS:** Delivered in sheets and thanks to a special production process provides highest density amongst the whole range of products and the highest dielectric strength (> 15 kV). Excellent heat transfer.

**COGE-FOIL 504 ROLLS:** Products available with / without glass cloth reinforcement for better mechanical properties. Rolls provide opportunity for customizing and optimizing lengths as it can be cut for different sizes of induction furnaces.

**COGE-FOIL 504 SINTER:** For better tensile strength, the SINTER material has been developed with glass fibres while having the same good thermal and electrical properties as the other 504 materials.

**COGE-COMBI 504:** COMBI material is reinforced with thick ceramic fibre which provides the lowest thermal conductivity and results in low heat losses.

**COGE-TECH 504 T:** Our R+D team has developed a material for maximum safety with an antimagnetic steel mesh. When the steel mesh is connected to a control system it gives preventive information about worn-out lining material.

	Thickness mm	Composition	Mica content g/m <sup>2</sup>	Dielectric strength kV/mm
COGE-FOIL 504 SHEETS	0,50 – 5,00	Mica	NA	>20
COGE-FOIL 504 ROLLS	0,20 – 0,50	Mica	350 – 730	>2/6
COGE-FOIL 504 SINTER	0,38 – 0,50	Mica+non woven glass	250 – 480	>3/5
COGE-COMBI 504	2,50 – 3,50	Mica+ceramic fibre	190 – 480	>4/7
COGE- TECH 504 T	1,00	Mica+steel mesh	NA	NA





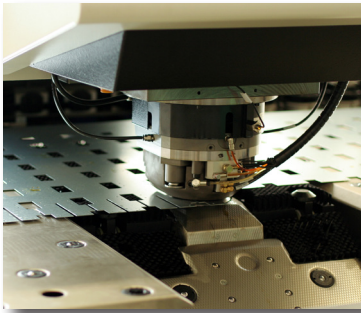
# Special Services

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## Machining

Based on increased demand we have developed our own machining capabilities for all our materials. These capabilities include machining or cutting of Mica tubes which are custom produced at COGEBI. Based on your demand we can machine up to 80 mm thick with dimensions up to 1200 x 1000 mm.

**Send Cogebi your drawings so we can send you a quote!**



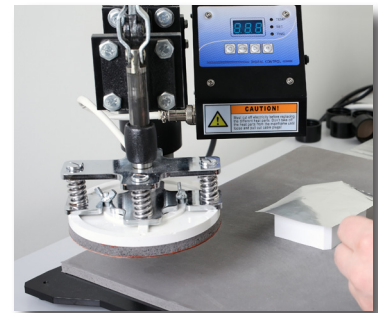
## Punching

From our sheets or roll materials we can punch segments or parts for your demands with our own punching center. Cogebi already has its own tools which might meet your demands for fast turn-around on your projects.

**Let Cogebi know what you need.....we're at your service!**

## New material development

The safety of our customers, or final users of products, has been and will continue to be one of Cogebi's key drivers. The very latest production techniques mean that COGEBI can supply high-tech products with the kind of exceptional properties that our customers demand for their own advanced technologies. We're the mica experts!  
**If we do not currently have the right solution, our R&D department will develop it for you, and with you.**





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