

## Mica-based products for protecting coils and providing a slip plane in induction furnaces.



*Coge-Foil 504 products are designed to separate the refractory lining from the coil in induction furnaces:*

- *provides electrical insulation between the coil and the molten metal,*
- *prevents excessive heat loss,*
- *provides a vapour barrier against carbon gases,*
- *prevents the over-sintering of the refractory lining by maintaining a sufficient temperature gradient between the melt and the coil,*
- *protects the coil against overheating,*
- *provides superior slip plane properties and protects the coil from the expansion and contraction forces during the lining campaign,*
- *facilitates the “push out” of worn crucibles/linings.*

# COGEBI



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

Cogebi has always guaranteed the quality and effectiveness of its unique products and services by a general policy of excellence:

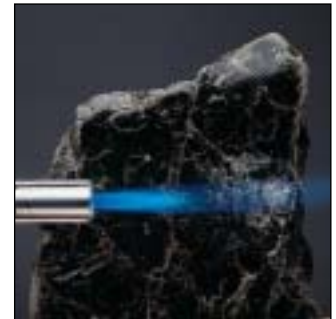
- ongoing commitment to innovation and creativity in order to design and develop new products and new proprietary production technologies
- maintaining direct contact between the customers and the various Cogebi teams
- manufacturing from the mica mineral to the finished product and control of the entire 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.

## COGE-FOIL 504

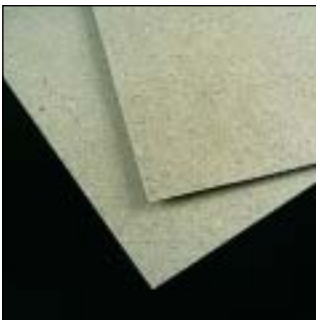
Coge-Foil 504 products are based on phlogopite mica, which is the most heat resistant type of mica (1200°C).

It contains a small amount of heat resistant binder.

Several grades are reinforced by glassfiber, glasscloth, harmless ceramic fiber or a metal mesh, depending on the application.



### COGE-FOIL 504 SHEETS



#### Specific features:

- Highest in density and dielectric strength (> 15 kV).
- Very good vapour barrier compared to woven glass or ceramic paper (comparative permeability ASTM E 128-89).
- Best in heat transfer.
- Superior slip plane properties (friction coefficient).

#### Installation:

The sheet size can be adjusted by cutting, then placed in the furnace where it is pressed smoothly by hand against the induction coil grout.

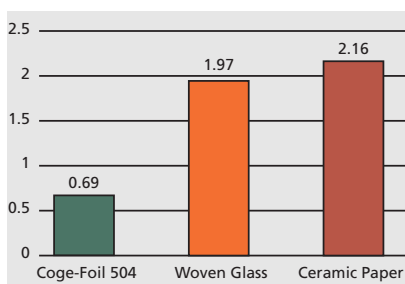
Adhesive is used to hold the Coge-Foil 504 sheets in place and to prevent any infiltration of refractory material.

Allow for an overlap of a few centimetres (1 - 2 inches).

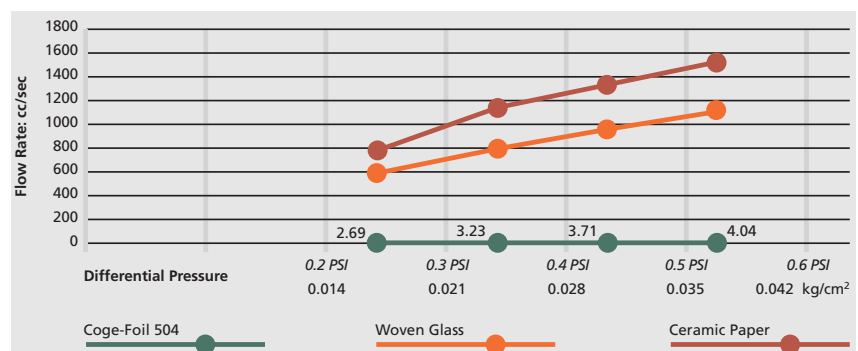
#### Supply form:

- thickness: from 0.5 to 5 mm.
- Sizes: 1000 x 1000 to 1000 x 2400 mm.

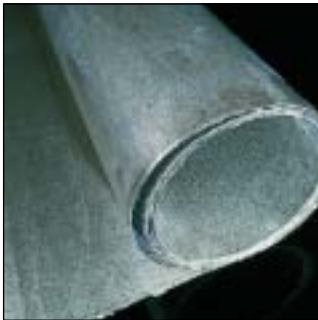
#### Friction coefficient



#### Comparative permeability (ASTM E128-89)



## COGE-FOIL 504 ROLLS



### Specific features:

- Lower density than the 504 sheets.
- Easy to cut to service different sizes of furnaces.
- Reduced heat transfer.
- Easy to stock.

### Supply form:

- Roll width: 1000 mm.
- Roll length: 20 or 40 m.

Coge-Foil	504 R 20	504 R 30	504 R 40	504 R 50
Thickness	0.20 mm	0.30 mm	0.40 mm	0.50 mm
Mica content	350 g/m <sup>2</sup>	500 g/m <sup>2</sup>	600 g/m <sup>2</sup>	730 g/m <sup>2</sup>
Dielectric strenght	> 2 kV	> 3 kV	> 4 kV	> 5 kV

### Coge-Foil 504-48-34:

Similar to 504 R 40 with tensile strenght *glass cloth* reinforcement.

### Installation:

Having decided which Coge-Foil type to use, cut sheets from the rolls to the size required for the furnace.

Install like a Coge-Foil 504 sheet.

## COGE-FOIL 504 SINTER



### Specific features:

- Identical to Coge-Foil 504 rolls.
- Reinforced by *glass fiber* on both sides.
- Higher tearing strength.
- Especially designed to wrap collapsible crucible formers used in the lining sintering process with direct filling of liquid metal.

### Supply form:

- Roll width: 1000 mm
- Roll length. see below



*Coge-Foil 504 Sinter is essential to ensure an optimal sintering of the refractory lining by protecting the upper part against excessive heat radiation, which could lead to an irregular sintering of the crucible.*

Coge-Foil Sinter	504-25-50	504-32-50	504-48-50
Thickness	0.38 mm	0.40 mm	0.50 mm
Mica content	250 g/m <sup>2</sup>	320 g/m <sup>2</sup>	480 g/m <sup>2</sup>
Dielectric strenght	> 3 kV	> 4 kV	> 5 kV
Roll length	20 or 40 m	20 or 40 m	12.5 or 25 m

### Installation:

Coge-Foil 504 Sinter contributes in an essential manner to the success of this fast and economic sintering system. The reusable former is wrapped with one layer. For the tapered portion, cut the Coge-Foil 504 Sinter into 50 mm wide overlapping strips and hold together with an adhesive tape.

Once the refractory lining has been compacted, the former is dismantled and withdrawn, leaving the Coge-Foil 504 Sinter against the lining. Place retainer rings carefully against the foil to ensure its stability, and cover the bottom with scrap metal for its protection.

**COGE-COMBI 504**



**Specific features:**

- Harmless ceramic fiber / mica laminate.
- Low thermal conductivity (ASTM C - 177 chart).
- Best for preventing heat losses.
- Act as a buffer layer between the coil and the crucible.

**Supply form:**

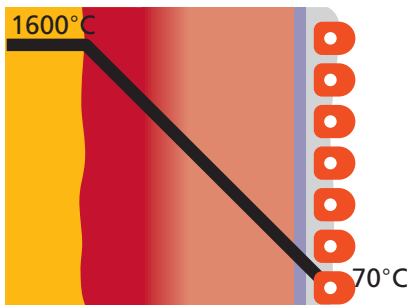
- Roll width: 1000 mm
- Roll length. 12.5 or 25 m

COGE-Combi	504-19-2	504-32-2	504-48-2	504-48-3
Total thickness	2.10 mm	2.35 mm	2.50 mm	3.50 mm
Ceramic thickness	2 mm	2 mm	2 mm	3 mm
Mica content	190 g/m <sup>2</sup>	320 g/m <sup>2</sup>	480 g/m <sup>2</sup>	480 g/m <sup>2</sup>
Dielectric strenght	> 4 kV	> 5 kV	> 6 kV	> 7 kV

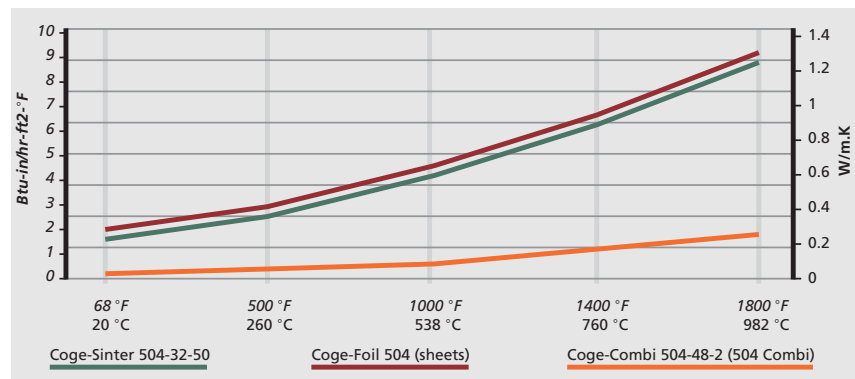
**Installation:**

The ceramic side of the Coge-Combi 504 material is to be placed against the coil, leaving the

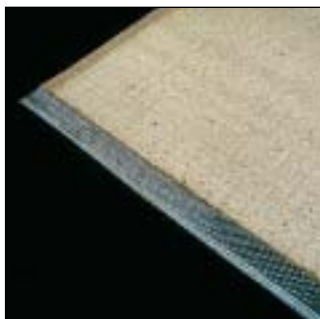
mica to provide the slip plane. Otherwise, same installation procedure as for the Coge-Foil 504 sheets is to be used.



**Thermal Conductivity (ASTM C-177)**



**COGE-TEC 504 T**



**Specific features:**

- A stainless and antimagnetic steel net sandwiched between 2 layers of mica to detect worn out lining which is resulting in leakage of the molten metal.
- To be connected to an electronic measuring/alarm unit following the guidelines of the furnace manufacturer.

**Supply form:**

- Thickness: 1 mm.
- Sheet size: 1000 x 1000 up to 1000 x 2400 mm.

The values given in this document have been established on the basis of average measurements taken on plates or rolls in our laboratories before use. They are subject to modification and we assume no liability in respect of these measurements.