



Ruby Nica[®]

Insulating Lives. Worldwide.

**FOUNDRY
INDUSTRY**

ABOUT RUBY MICA CO. LTD.

Enabling the industry, cast chunks of metal into dreams of tomorrow, since 1968.

We specialize in providing total electro-thermal insulation solution for the foundry industry. Design and development of insulating materials for **Coreless Induction Furnace** and **Submerged Arc Furnace** form our area of expertise.

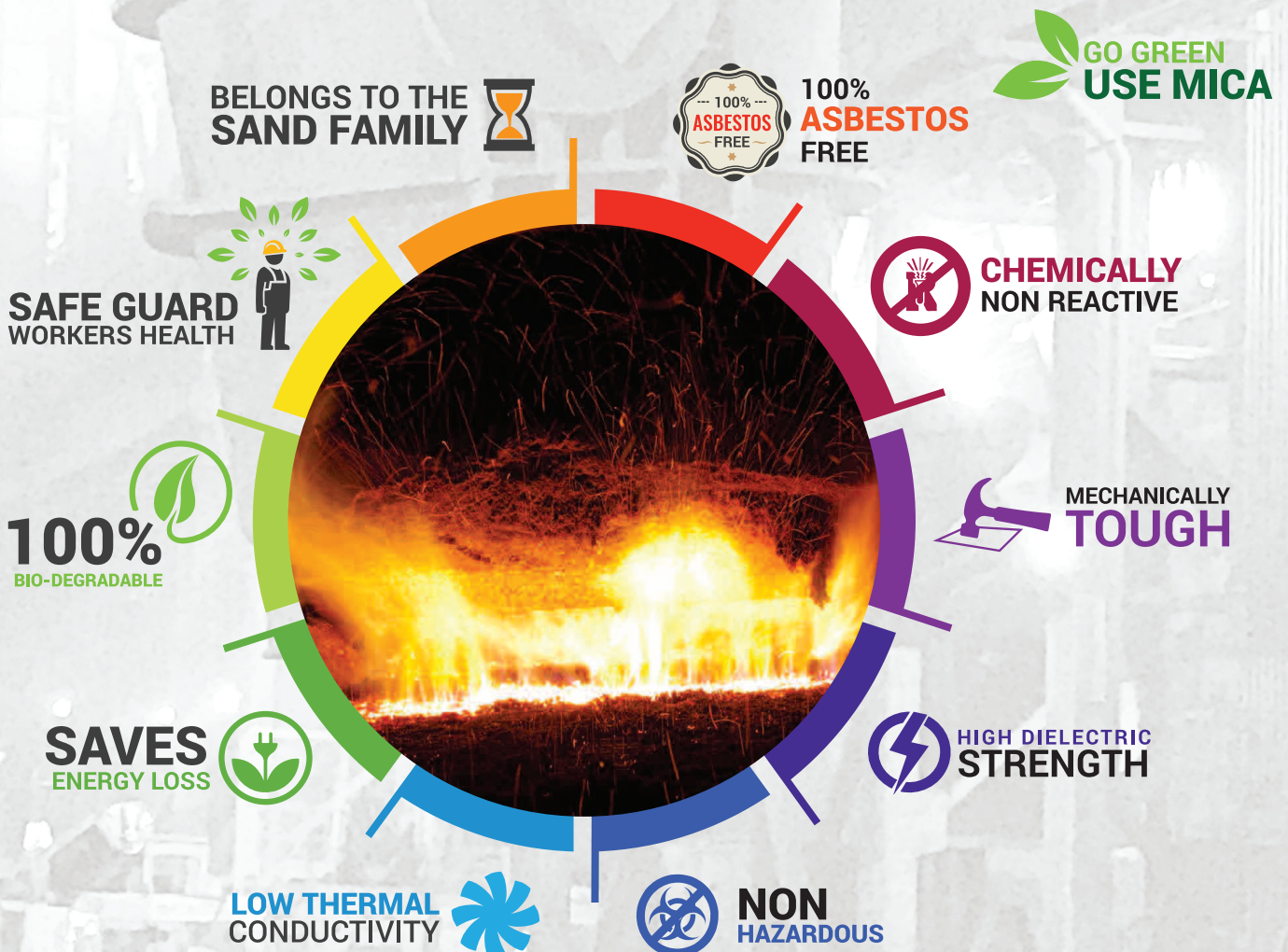
Our high performing insulating material range renders

- Durable insulation with fail-safe reliability even in the most demanding operating conditions.
- Minimize furnace downtime by lasting really long, highly resistant to quick burnouts.
- Outstanding heat insulation result in energy cost savings, significantly boosting overall furnace efficiency.
- Preservation of the intended metal molecular structure in the ladle by retaining heat and preventing sudden temperature drops.
- Asbestos free, biodegradable, environment friendly Mica ensures workers health safety at all times.



Complete quality control at every stage, right from the start to finish, ensure product consistency and timely delivery.

ADVANTAGE MICA



CORELESS INDUCTION FURNACE COIL INSULATION

In a Coreless Induction Furnace, Copper Coil is undoubtedly the most critical component of the equipment. Increasing its operational reliability and service life, continues to be a challenging task for furnace manufacturers around the world.

Unexpected coil failures endanger both, lives and commitments alike.

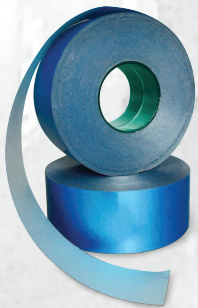
Commonly used woven cotton tapes seldom provide any protection against stray iron particles, which get heated up during the furnace operation putting the hollow copper coil at a high risk of puncture.

Mica Tapes are gaining industry wide recognition for their superior electro-thermal coil protection. They are wound on the coil directly forming a protective shield.

GLASS MICA GLASS TAPE



POLYESTER MICA PSA TAPE



STANDARD PACKAGING

Length : 50 meters roll
Width : 25/ 50 mm
Thickness : 0.14/ 0.18 mm

MICA TAPES

We have engineered two types of Mica Tapes mainly for this application.

Glass Mica Glass Tape consists of Uncalcined Muscovite Mica Paper laminated with Glass Cloth on both sides using a high performance Silicone resin as a binder. This Mica Tape has exceptional mechanical strength.

Polyester Mica PSA Tape consists of Uncalcined Muscovite Mica Paper laminated with Polyester Film. A pressure sensitive adhesive (PSA) coating on the PET Film aids in seamless coil taping. Adhesive side is covered with a protective LDPE Film, which needs to be peeled off before application. This Mica Tape has exceptional dielectric strength.

(Product customization possible as per request)

Mica Tapes for Induction Coil Insulation

Product	Thickness (mm)	Total Substance (GSM)	Mica Content (GSM)	Glass Content (GSM)	Polyester Content (GSM)	Tensile Strength (N/cm)	Break Down Voltage (kv)
GMG Tape	0.18 ± 0.02	300 ± 15	180 ± 10	35 ± 3 (x2)	-	>250	>2
PSA Tape	0.14 ± 0.02	278 ± 21	160 ± 10	-	42 ± 4	>40	>6

FURNACE INSULATION

Exponential global infrastructure growth has led to an evolution in furnace design. A quest to increase production output has translated into building bigger furnaces, handling more volumes of molten metal than ever.

Conventional Syndanio insulation is impaired with a lot of shortcomings. It can absorb as much as >15% water, which leads to weakening of insulation values, eventually collapsing and causing catastrophic failures. Its compressive strength of mere 150 MPa requires careful handling while application, often breaking under the slightest of shock. 1.7 Kv/mm dielectric strength and low 350°C max. working temperature must be compensated by using bulky form of insulation. Syndanio consists of asbestos fibers, which are a proven health hazard and banned in 20 countries.

Mica based environment friendly insulating products provide extremely robust furnace insulation, overcoming all the material shortcomings stated above

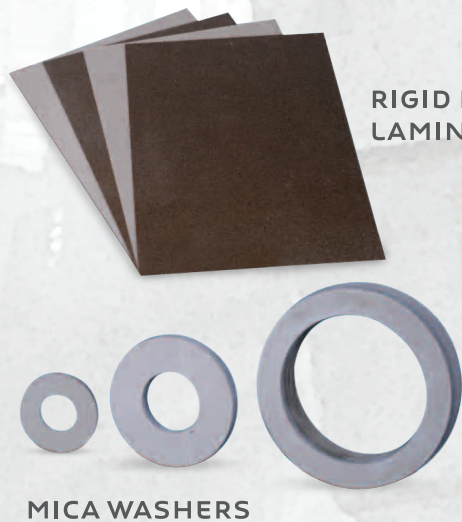
Rigid Mica Laminates are made by combining Uncalcined Muscovite or Phlogopite Mica Paper with an inorganic Silicone resin binder under specific heat and pressure.

Binder plays a critical role in the overall product performance. Hence, the best commercially available resin is imported from Germany having as high as 82% Solid Silicone content, for excellent results.

It has excellent rigidity, heat resistance, moisture resistance and di-electric properties. It is completely asbestos free and high chemical resistant insulation, having low thermal conductivity. It does not emit smoke or odor upon heating up.

We also manufacture high quality fiberglass based insulating material, with either Silicone or Epoxy resin as a binder.

MICA TUBES & MACHINED PARTS



Mica Laminates for Furnace Insulation

Product	Temperature Limit (°C)	Density (g/cm ³)	Mica Content (%)	Compressive Strength (MPa)	Thermal Conductivity (W/m ² K)	Break Down Voltage (kv/mm)	Water Absorption (%)
Muscovite Mica Laminate	600	2.3 ± 0.1	90	> 400	<0.16	>25	< 0.5
Phlogopite Mica Laminate	900	2.3 ± 0.1	90	> 400	<0.14	>25	< 0.5

SUBMERGED ARC FURNACE

Rigid Mica and fiberglass machined-parts are being successfully used in electrode holder insulation, pressure ring insulation, raw material feed system etc.

CORELESS INDUCTION FURNACE

Rigid Mica Laminates are successfully being used as inter-coil spacers, in shunts, as furnace bottom insulation rings etc.

STANDARD PACKAGING

Sheet

Length : 1000 mm

Width : 600/ 1000/ 1200 mm

Thickness : 0.1 to 75 mm

Tubes

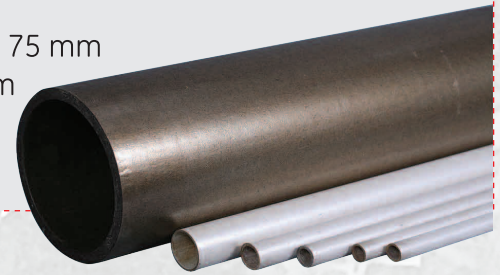
Length : 10 – 1000 mm

ID: 6 – 500 mm

Washers

Thickness : 0.1 – 75 mm

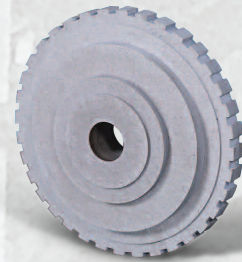
OD: 20 – 500 mm



MACHINED PARTS

Laminates, washers and tubes can be accurately custom machined to desired component drawings at our fully equipped, in house advance machining facilities.

(Product customization possible as per request)



EPOXY BONDED FIBERGLASS COMPONENTS



SILICONE BONDED FIBERGLASS COMPONENTS



Fiberglass Laminates for Furnace Insulation

Product	Temperature Limit (°C)	Density (g/cm ³)	Glass Content (%)	Compressive Strength (MPa)	Tensile Strength (MPa)	Break Down Voltage (kv/mm)	Water Absorption (%)
Epoxy Bonded Fiberglass Laminate	250	1.9 ± 0.1	75	> 400	> 275	>40	< 0.2
Silicone Bonded Fiberglass Laminate	400	1.9 ± 0.1	80	> 400	> 275	>30	< 0.2

SLIP PLANE INSULATION

Coil Safety lining is an absolute essential for overall furnace longevity. It has numerous benefits associated with its regular use and cannot be neglected under any circumstances.

Many furnace users use Asbestos sheet or no safety lining at all between the coil and the refractory lining, syphoning off years from the furnace's actual operational life.

Coil safety lining with Asbestos can be a complete nightmare given its material properties:

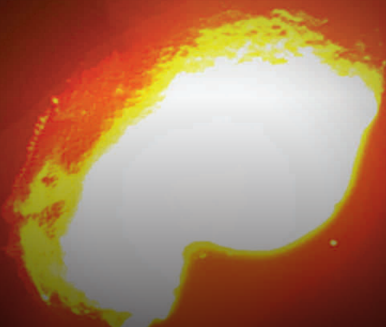
- It has very weak tear resistance, breaking easily with every bend along the coil curvature.
- Soaking it in water to make it lining ready, puts the overall coil lining insulation integrity at high risk.
- Residual moisture gushing out from asbestos lining damages and corrodes the copper coil, reducing its life span considerably.
- Asbestos is also a proven carcinogen, which causes lung cancer, banned from industrial use in more than 20 countries around the world.

Absence of the coil safety lining:

- Burnt ramming mass sticks to the coil in absence of a safety lining. Removal of sintered refractory from the coil by chipping or hammering puts the coil in grave danger of permanent damage.
- Direct contact with chemically reactive Acidic and Basic ramming masses gradually weakens the copper coil.

BENEFITS OF USING MICA FOLIUM AS A COIL SAFETY LINING

- Dry, highly flexible, tear resistant material is easy to apply. Simply press the Mica folium against the coil into place, by hand.
- Faster coil safety lining greatly reduces furnace downtime.
- It absorbs coil-lining stress and prevents refractory inclusions from getting to the coil area.
- It is both thermally and chemically very stable and non-reactive.
- It forms a gas diffusion barrier, stopping water vapour and other harmful gases released from ramming mass at bay.
- It isolates the coil from high temperature and electrical tracking.
- Mica forms a slip plane between the coil and the refractory lining making removal of burnt ramming mass quick, coil safe and hassle-free. No chipping or hammering is required and Mica works flawlessly with automatic burnt ramming mass ejection systems.
- Flexible Mica Ceramic Sheet and Mica Folium when used as ladle insulation prevents unwanted temperature drops, resulting in substantial energy cost savings.
- Mica Flexible Sheet with SS316 non-magnetic steel mesh insert helps trigger earth leakage warning in the furnace control panel when connected to a detection system.
- Mica is odourless, asbestos free, 100% biodegradable and non-hazardous. It is environment friendly and safe for the workers.



CORELESS INDUCTION FURNACE

An appropriate Mica Folium can be selected based on its application:

Glass Mica Folium consists of Uncalcined Phlogopite Mica Paper laminated with glass cloth using an inorganic Silicone resin as a binder. It can easily withstand high temperatures to the tune of >950° C. Its thickness ranges from 0.4 – 0.5 mm. It is suitable for small furnace/ladlelinings.

Glass Mica Ceramic Folium consists of Glass Mica Folium laminated with a high performing ceramic felt using an inorganic Silicone resin as a binder. It can easily withstand high temperatures to the tune of 1200° C.

GMC Folium 25 has 2 mm thick ceramic felt achieving a combined thickness of 2.5 mm, making it suitable for medium sized furnace/ladle linings.

GMC Folium 35 has 3 mm thick ceramic felt achieving a combined thickness of 3.5 mm, making it suitable for large sized furnace/ladle linings.

Flexible Mica Ceramic Sheet consists of 2 mm thick Silicone bonded Flexible Phlogopite Mica Sheet laminated with a high performing 3mm thick ceramic felt using an inorganic Silicone resin as a binder. A combined thickness of 5 mm is fit to thermally insulate >15 Tons molten metal handling capacity Ladle.

(Product customization possible as per request)

Glass Mica Folium for Slip Plane Insulation



GLASS MICA CERAMIC FOLIUM



GMC FOLIUM 25 & 35

STANDARD PACKAGING

Length : 10/ 20/ 25 meters roll
 Width : 1000 mm
 Thickness : 0.4 to 5 mm

Product	Thickness (mm)	Total Substance (GSM)	Mica Content (GSM)	Glass Content (GSM)	Ceramic Content (GSM)	Thermal Conductivity (W/m²K)	Break Down Voltage (kv/mm)
GM Folium	0.5 ± 0.05	850 ± 50	640 ± 52	35 ± 3 (x2)	-	<0.14	>15
GMC Folium 25	2.5 ± 0.5	1270 ± 125	640 ± 52	35 ± 3	360 ± 50	<0.16	>9
GMC Folium 35	3.5 ± 0.5	1450 ± 125	640 ± 52	35 ± 3	540 ± 50	<0.12	>7
Flexible Mica Ceramic Sheet	5 ± 0.5	4540 ± 125	4000 ± 52	-	540 ± 50	<0.12	>12

REFRACTORY COATING

We offer Mica Powder for use in manufacturing of metal casting mold paints. Mica powder when added to the paint mix prevents sand mold from cracking under high temperature and facilitates a smooth cast release.

Variants : Dry Ground Mica/ Wet Ground Mica/
 Dry Ground Calcined Mica
 Mesh : 60 to 325
 (Test certificate available upon request)



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