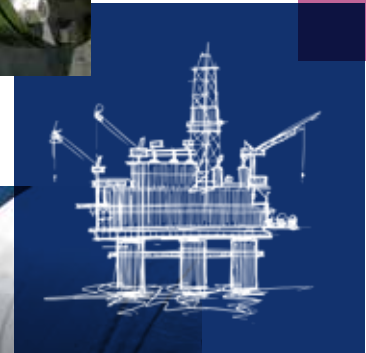


# Gaskets Applications

Thermal resistant mineral fibres for high performance sealing solutions



# Welcome to ROCKWOOL

## Our purpose

**Release the natural power of stone to enrich modern living**

**At the ROCKWOOL Group, we are committed to enriching the lives of everyone who comes into contact with our solutions.**

Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding.

Our range of products reflects the diversity of the world's needs, supporting our stakeholders in reducing their own carbon footprint along the way.

Stone wool is a versatile material and forms the basis of all our businesses. With approx. 10,500 passionate colleagues in 38 countries, we are the world leader in stone wool solutions, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibres for industrial use to insulation for the process industry and marine & offshore.



Firesafe insulation for all types of buildings and installations



Engineered stone wool solutions for global industries



Precision growing for the horticultural industry



Exterior cladding for buildings



Acoustic ceiling and wall solutions

# 38

countries in which we operate

- ▲ Stone wool factories
- ▲ Other factories
- ▲ Sales office

### North America

3 stone wool factories,  
2 ceiling grid plants

1,000 employees

### Europe

16 stone wool factories,  
3 ceiling tile plants,  
1 ceiling grid plant,  
1 facade panel plant,  
2 wall systems components plants

7,100 employees

### Russia

4 stone wool factories,  
1 ceiling tile plant

1,300 employees

### Asia

5 stone wool factories,  
1 ceiling tile plant

1,100 employees

# This is Lapinus

Lapinus is the world leader in precision-engineered stone wool solutions. We develop and supply versatile and innovative products that help global industries to improve quality of life.

Our products are used in a wide range of applications, including friction, water management, tracks, coatings, gaskets and fences.



Friction

Innovative fibre solutions for safe and comfortable braking performance



Tracks

Vibration control solutions for pleasant rail-side living conditions



Water management

Natural solutions for sustaining water resilience



Fences

Noise fences for quiet and peaceful living environment



Coatings

High performing mineral fibres for durable and fire protective coatings



Gaskets

Thermal resistant mineral fibres for high performance sealing solutions

With more than a quarter-century of expertise and experience, we work closely with customers to adapt to their ever-changing needs, from water management to fire safety, vibration isolation to noise and dust emission reduction.

Made from 100% stone, our sustainable products contribute to shaping a better world for today and tomorrow.

Lapinus is part of the ROCKWOOL Group.



## Release the natural power of stone to enrich modern living

At Lapinus, we are dedicated to provide solutions that will enable everybody to improve the future. Within the global industry we identify trends and challenges driving the development of tomorrow's products. Using our knowledge of stone wool we design solutions that have a positive impact on safety, emissions, noise, vibration, water management and will improve the quality of life. By developing and sharing our own knowledge and expertise we contribute to solving the challenges of our customers.



## Our contribution to a sustainable future.



### Ensure safety

All Lapinus products are made from natural stone and are biosoluble. They are safe for humans and the environment.



### Reduce fine dust emissions

Friction formulations reducing wear of car brakes contribute to a reduction of fine dust emissions.



### Control vibration

Rail tracks with reduced ground-borne vibrations have a positive influence on a comfortable living environment.



### Reduce noise

Car brakes that produce less noise and fences that reduce ambient noise result in a healthier society.



### Manage water

Water management systems that actively regulate water contribute to a resilient infrastructure and sustainable modern living.



### Disseminate knowledge

We generate knowledge and share it with our stakeholders to help solve their challenges.

To address the global challenges, the UN has identified **17 UN Sustainable Development Goals**:



As part of the ROCKWOOL Group, we actively contribute towards achieving **10** of the 17 goals.

Together with our group, we are **committed** to the **sustainable goals by 2030**:

#### Health, Safety and Wellbeing:

- Driving a zero accident culture

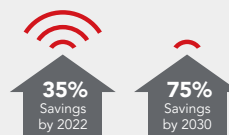
**10%** reduction in LTI per year    **0** fatalities per year

#### CO<sub>2</sub> Emissions and Energy:

- Reduce CO<sub>2</sub> from factories (t CO<sub>2</sub>/t Wool)

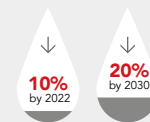
**10%** by 2022    **20%** by 2030

- Improve energy efficiency in own (non-renovated) building stock kWh/m<sup>2</sup>



#### Water Management:

- Reduce water consumption in factories (m<sup>3</sup>/t Wool)



#### Circular Economy:

- Increase the number of countries where we offer reclaiming of products from the market

**15** countries by 2022    **30** countries by 2030

- Reduce landfill waste



# Lapinus fibres create strong and durable gaskets and heat shields

Lapinus is the world's leading supplier of engineered fibres for inclusion in gaskets and for other applications such as heat shields. Lapinus fibres increase strength, temperature resistance and improve compression set. The intelligently engineered Lapinus® RS fibres, specially developed for the Gasket industry, benefit all kinds of applications, from petrochemical to industrial to automotive.

## Lapinus fibres for

- High fibre index
- High temperature and pressure performance
- Improved compression set and creep resistance
- Improved mechanical strength
- Prolonged gasket life
- Recyclability

## Some applications of Lapinus gasket & paper products

- Heat shields
- Reinforced rubber coatings
- Petrochemical gaskets
- Industrial gaskets
- Rubber coated steel shims, back plates and gaskets
- Transmission papers and torque converters
- Automotive gaskets



## Heat shields

As components are packed more closely together, the need is growing for more effective heat shields. Manufactured at approx. 1500 °C, Lapinus fibres are incombustible and have excellent high-temperature performance. This makes them ideal for creating heat-resistant papers with far better performance than cellulose and glass, and lower cost than ceramic fibres.

Heat shields made with Lapinus papers easily meet the growing requirements for recycling.

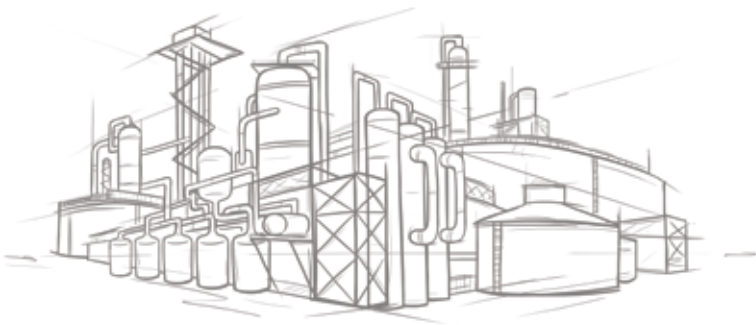
## Friction papers

Another growing area for Lapinus is friction papers. These are widely used in automotive transmission systems. The use of mineral fibres combines cost reduction and product improvement by replacing cotton, aramid or carbon fibres. Mineral fibres have a small diameter and high tensile modulus resulting in flexible fibres that perform well in a high temperature, high pressure fluid environment and making them ideal for the newly developed continuous torque transmission systems. These have high energy requirements, making durability and heat resistance the most important properties.

**Automotive and industrial gaskets** The applications of gaskets using mineral fibres are wide. Anywhere where high temperatures are involved and a seal needs to be made. Static flanges are an obvious example, but other applications include compressors and pumps.

Lapinus fibres give gaskets excellent high temperature and pressure performance and improve compression set and creep resistance. Even when the rubber in a gasket starts to fail, the fibres will continue to support it, prolonging gasket life and reducing maintenance.

Lapinus fibres can also increase the strength and durability of rubber coated metal gaskets in automotive applications.



# Lapinus in Gaskets

Lapinus RS fibres are specially developed for the gasket industry where fibre length and a high inorganic fibre index are very important. They have a strictly controlled chemical composition and are heat-resistant up to 1000 °C, making them suitable for many gasket and heat shield applications. Lapinus RS performance at elevated temperatures easily surpasses other materials such as cellulose, slag, glass and aramid. No ignition loss/no oxidation means a low porosity of the gasket resulting in improved durability and long term sealing properties.

Lapinus RS fibres are available in various fibre lengths. The L:D ratio ranges between 25 and 125, resulting in superior reinforcement properties over fillers. With their small diameter, they can also be used in areas where glass fibres are not suitable due to their size. The fibre length and diameter distribution of Lapinus RS fibres contribute to an improved compression set and creep resistance for the rubber based compounds used in a gasket.

Lapinus RS fibres can be supplied with various surface treatments, such as amino- and sulphur-silane, cationic surfactant and rubber, to suit any particular binder material. Silanised Lapinus RS fibres can be used to improve the cross links with all the rubbers in the matrix, creating a closed fibre matrix network. This results in improved mechanical strength for the gasket and gives it high creep resistance.

Lapinus RS permits high fibre loads since its affinity with rubber/solvent mixtures enables fibre contents of up to 95% to be used, allowing higher compression resistance and lower creep/relaxation. Higher fibre loads also ensure sealing even when the rubber is already deteriorating, prolonging the life of the gasket.

Lapinus RS offers easy dispersion in a rubber/solvent/aqueous medium due to the different possible surface treatments of the fibre that exhibit a very strong affinity with water, rubbers and solvents. This results in a very short mixing time and yields a highly homogeneous mixture.

Lapinus RS is inorganic. Unlike organic fibres such as cellulose, it does not deteriorate, nor will it support the growth of fungi or bacteria.



# Health & Safety

Health & Safety is a vital concern to any company, as it is to us. The high-alumina low-silica fibres, set new standards in bio-solubility and safety and comply with European Union regulations by an ample margin. In tests according to Note Q (EU directive 97/69/EC) at independent laboratories such as the RCC and Fraunhofer ITEM, the fibres have proven their high bio-solubility and may justifiably be exonerated from carcinogenicity classification. The international Agency for Research on Cancer (IARC) also excludes our products from any carcinogenicity classification.







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All Lapinus products are biosoluble  
and safe for human and environment

