



HIGH PERFORMANCE MICROPOROUS INSULATION



Lextherm®

INDEX

INTRODUCTION

MICROPOROUS ENABLING A SUSTAINABLE FUTURE

ENGINEERING SERVICES

WORKSHOP ACTIVITIES

MICROPOROUS TECHNOLOGY

Definition of heat transmission & thermal conductivity
Microporous principles

MATERIAL PROPERTIES & CHARACTERISTICS

MARKETS & APPLICATIONS

Sustainable energy
Transportation
Heavy industry
Fire rated applications
Home appliances
Oil & gas

GET TO KNOW PROMAT MICROPOROUS

Manufacturer

Lextherm® is an international construction and industrial materials manufacturer. Lextherm materials are used for passive fire protection as well as for high performance insulation applications. Next to our wide range of calcium silicate and intumescent products Lextherm microporous is one of the core technologies of the brand.



Promat NV - Sint Niklaas, Belgium

Facilities

Microporous products are manufactured at our sites in Xiamen. All manufacturing facilities are certified to ISO 9001, ISO 14001 and ISO 45001. Workshop services and engineering, including full 3D transient thermal analysis based on our CAD-modeling are brought together in these sites.

Safety

Safety and health are core values of our Brand. Lextherm® microporous complies with REACH. Additional it is free of respirable fibres classified by the world health organization.(2)



Nippon Promat
Tsu, Mie, Japan



Promat Inc.
Maryville, Tennessee, USA



(1) Acc. to iSustain Recycling
(2) Defined in the European Dangerous Substances Directive Amendment 97/69/EC

MICROPOROUS ENABLING A SUSTAINABLE FUTURE

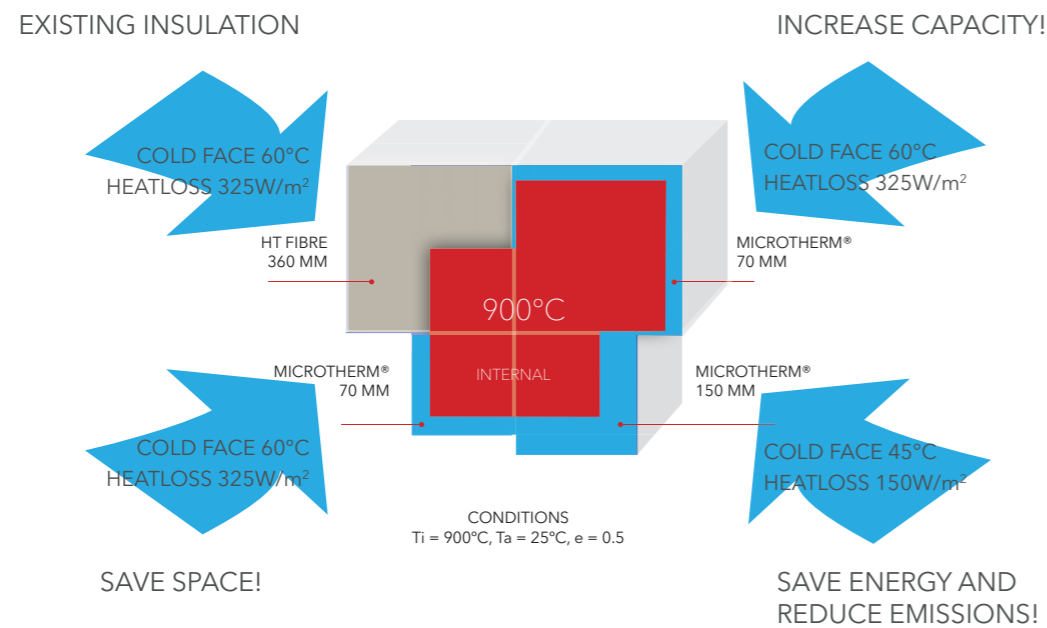
Save space - save energy - increase capacity - be more sustainable

These are the most important advantages of Lextherm® microporous insulation.

- Reduce casing temperatures while maintaining an acceptable lining thickness
- Save space where space is limited
- Meet specified heat loss requirements (W/m^2)
- Reduce lining thickness to increase internal capacity

Lextherm is committed to providing the very best thermal insulation solutions.

Often, combinations of microporous materials with conventional insulation materials offer the best technical-economical solution. The unbeatable performance of Lextherm® microporous products can help in any application.



Benefits at a glance:

- Lowest thermal conductivity in a wide range of temperature grades (1000 - 1200°C)
- Best thermal insulation for different temperature limits (up to 1200°C)
- Low shrinkage
- Thermal shock resistance at high temperature
- Non-combustible
- Hydrophobic versions available
- Resistant to most chemicals
- Environmentally friendly, free of organic binders
- No harmful respirable fibres
- Wide range of standard and custom made products, coverings, versions, ... are available
- Clean & easy to install
- Simple to cut & shape
- Highest sustainability levels for equipment installed with microporous

With the advantages of having an unbeatable combination of the most versatile product range backed by the best service and support package in the industry, Lextherm's high performance insulation is successful in a varied and extensive selection of markets all over the world:

Petrochemicals



- All categories of refining and petrochemical manufacturing plants
- Industrial process piping & equipment
- Offshore sub-sea "pipe-in-pipe" applications

Furnaces



- Heat treatment furnaces
- Forging furnaces
- Holding/Melting furnaces
- Induction furnaces

Ferrous and non-ferrous metals



- Ladles, torpedo ladles and tundishes
- Aluminium launders
- Reduction cells
- Anode bake furnace

Transportation



- Maritime, road, rail, and commercial aviation
- Thermal protection
- Exhaust systems
- Auxiliary power units
- Voyage Data Recorders (VDR) & black boxes
- Aerospace & defense

Glass



- Forehearths and feeder bowls
- Melting furnaces and recuperators

Chimney



- Fireplaces
- Stoves

Energy



- Coal, oil, and gas fired conventional power stations
- Nuclear power generation
- Fuel cells (SOFCs, MCFCs) and reformers
- Concentrated solar power
- Energy storage

Home appliances



- Storage heating
- Domestic ovens

ENGINEERING SERVICES

Engineered solutions

All of our microporous products, when integrated together with the full product range of Lextherm high performance thermal insulation, are the foundation of our “engineered solutions”, which are tailor made to customers’ specific needs.

From analysis and 3D modeling to production and assembly

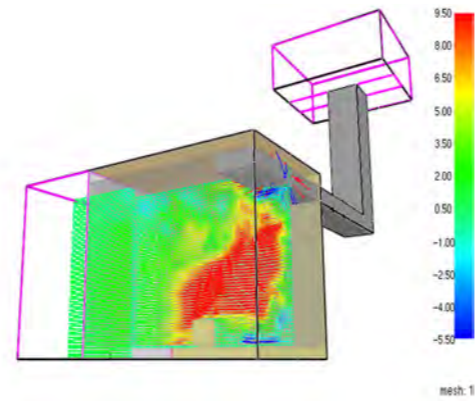
We offer professional, technically and commercially competent support and advice at every stage of your project, no matter how complex and challenging your project may be.



Simulations

Our simulations team supports the strategic development of systems and applications of our customers with numerical models. With these numerical models we can provide technical support to the customers towards specific development projects. Our main research areas are:

- Passive fire protection
- High temperature insulation
- Acoustics



Analysis

Problem analysis, IR thermal imaging (before & after), thermal calculations, ...

Products

Product selection & design from Promat’s wide product range, including other technologies such as bio-soluble fibres, calcium silicate materials, refractory firebricks and cementitious sprays

Design

Design of customer focused solutions, product testing, installation support, IR verification, ...



WORKSHOP ACTIVITIES

We can provide prototypes or fully pre-installed solutions, and deliver small batches or set up high-volume production according to your specific requirements.

As part of Lextherm’s service commitment we have established several workshops that specialise in the conversion of our high performance insulation and fire protection products to achieve the full specifications and requirements of our customers. This unique service has allowed many of our clients to develop products, systems, and processes that may not have otherwise been realised. All our workshops are ISO certified, meeting or exceeding industry standards in quality.



Materials conversion

We can provide everything from a **simple cutting service** to a complete design service to meet the **specifications and requirements**.

Our **workshop activities** include CNC routing and cutting, water jet and laser cutting, coating, shrink-wrapping, heat sealing under vacuum, hand manipulation, and cutting and stamping of laminates.

Workshop services

Lextherm’s workshops have a wealth of engineering experience, providing guidance and support from concept and design, through to prototyping, build and installation. If you are dealing with a challenging temperature or fire protection problem, our workshops are able to machine or manipulate our full range of products to meet any specification and provide the required solution.

Our workshop teams can support manufacturers in developing new and innovative designs, applications and solutions to the most challenging of high temperature and fireproofing problems.



MARKETS AND APPLICATIONS

Sustainable Energy

Transportation

Heavy Industry

Fire Rated Applications

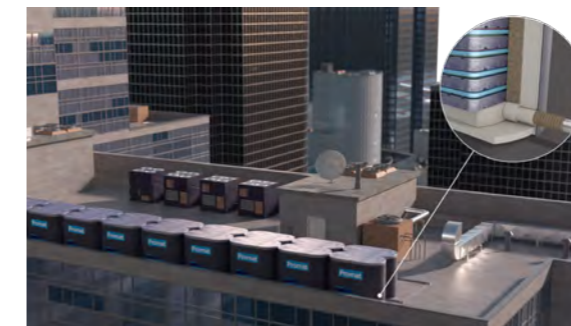
Home Appliances

Oil & Gas



MARKETS AND APPLICATIONS

Sustainable Energy



For applications in renewable power generation, Lextherm's engineered solutions can tackle any thermal or fireproofing challenge. Our products are easy to install and enable us to provide customers with cost effective solutions that save time.

Specific advantages

- Applicable for Fire proofing and thermal challenges
- Easy to install and to handle
- Thin insulation, low impact on space

Transportation



In the transportation industry Lextherm's microporous is applicable in aerospace, railway, automotive and marine applications. The products improves the performance and the energy efficiency. At the same time it enhances passengers safety and acoustic comfort.

Specific advantages

- Very low impact on weight and space
- Use in extreme temperature conditions
- Aesthetic value
- Reduces carbon intensity
- Extremely robust

Applications - Sustainable energy

- Fuel cells (SOFCs, MCFCs)
- Batteries
- Concentrated solar power
- Energy storage systems

Applications - Marine

- Bulkheads, walls, and ceilings
- Hulls
- Fire doors
- Engine rooms
- Scrubbers
- Voyage data recorders
- Galleys

Applications - Aerospace

- Turbofan engines
- Nacelles
- Exhausts
- Hydraulics
- APUs
- Batteries
- Wings
- Radomes
- Galley ovens
- Guiding systems
- Electronics
- Weight sensitive applications
- Cockpit Voice Recorders (CVR) & Flight Data Recorders (FDR)

Applications - Rail

- Fire barriers
- Floors
- Structural and partition walls
- Doors
- Exhausts
- Event recorders
- Electronic cabinets
- Cable trays
- Roofs

Applications - Automotive

- Thermal runaway
- Battery fire protection
- Exhaust systems
- Refrigerated vehicles
- Heat shields

Heavy industry



Applications - Ferrous metal production

- Ladles
- Tundishes
- Blast furnaces
- Electric arc furnaces
- Annealing/heat treatment furnaces
- Coke oven batteries

Applications - Non-ferrous metal production

- Carbon bake furnaces
- Electrolytic reduction cells
- Tapping and transport ladles
- Melting and holding furnaces
- Induction furnaces
- Aluminum transfer, refining, and casting

Applications - Glass

- Forehearths
- Feeder bowls and covers
- Orifice rings
- Hot air recuperator furnaces
- Float glass manufacturing

Applications - Ceramics

- Tunnel kilns
- Periodic kilns
- Batch kilns
- Laboratory kilns

Applications - Industrial furnaces

- Induction furnaces
- Walking beam furnaces
- Top-hat kilns
- Annealing furnaces
- Tempering furnaces
- Conveyer ovens
- Batch furnaces
- Crackers and petrochemical furnaces

- Dryers
- Fire test furnaces
- Regenerative thermal oxidation systems

The high-performance microporous products from Lextherm **reduce heat loss** at each stage of the heavy industry production processes. These **ultra-thin and lightweight systems** are designed for both continuous high temperature operation and regular thermal cycling. Their **long service life** enables you to increase the number of production cycles and optimize **process efficiency**. We are continuously exploring new ways to make steel manufacturing **more sustainable** and provide steel workers with a **safer work environment**.

In glass and ceramics applications a high-performance insulation system from Lextherm allows for **more precise temperature control** at every stage of the production process. Not only do our systems **reduce energy loss**, they also make your processes more **efficient, cost effective and safe**. We are committed to saving energy in production processes and reducing heat loss by **optimizing the application design** while reducing the cost of our customers' production processes thanks to both significantly lower energy loss and carbon footprint.

Lextherm's insulation solutions **reduce energy loss** and maintain a **homogeneous temperature** inside the whole furnace during the heating cycle. Their excellent thermal and mechanical properties enable you to **increase efficiency** and **reduce temperatures at the cold face** of your furnace. The reduced weight and compact size of our materials require **thinner and fewer insulation layers**, allowing for a more **compact design** and more **efficient use of space** inside your industrial complex.

We have a role to play in sustainability, specific in "heavy industry" or "Thermal Process Industries"

Construction market

Applications

- Flat roofs
- Terraces
- Floors

The construction market is rapidly evolving and the renovation of old houses becomes more and more important. With a 5 - 7 times better insulation than traditional insulations Lextherm® microporous contributes to more sustainable energy consumption of old houses.

Oil & Gas



Applications - Oil & Gas

- Coal, oil, and gas fired conventional power stations
- Nuclear power generation
- Petrochemical piping and equipment

Lextherm's solutions for on-shore, mid- and downstream in oil and gas, petrochemical and chemical applications drastically enhance fire safety, is ideal to use when faced with limited space, and optimize process efficiency. Our solutions have a long service life, require low or even no maintenance and ensure a fast payback time. For some microporous products we can also offer hydrophobic grade. They are tested and certified to the most stringent international standards and are backed by full design support from concept to project realisation.

For applications in conventional and renewable, Lextherm's engineered solutions can tackle any thermal or fireproofing challenge. Our products are easy to install and enable us to provide customers with cost effective solutions that save time and provide design flexibility, while maintaining the highest level of thermal & passive fire protection.

Home Appliances



Applications

- Night storage heaters
- Domestic ovens
- Boilers
- Refrigerated transport

Fire Rated Applications



Applications

- Elevator doors

Lextherm offers the most complete microporous product range for thermal insulation and fire protection in the market. Our **extensive technical knowledge** and **expertise** enable us to develop customer-specific systems in a wide range of industries. All our products are **internationally certified** and **extensively tested** in-house and at internationally recognized facilities. As part of our services we can **offer extensive fire testing** and **thermal and acoustic simulations**.

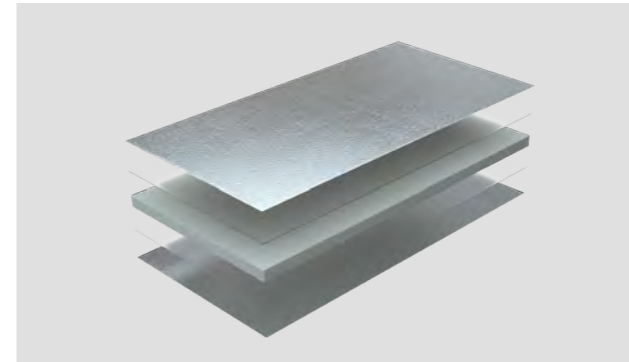
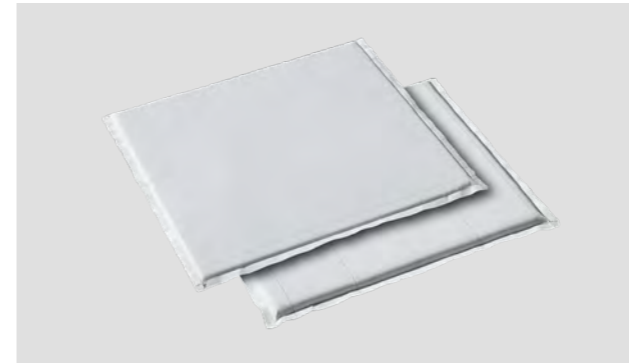
PRODUCT PORTFOLIO

Overview by key properties

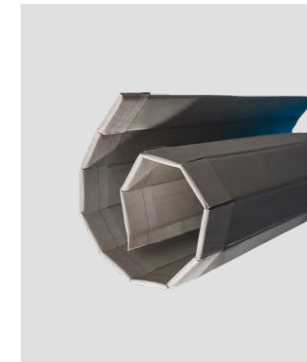


PRODUCT PORTFOLIO

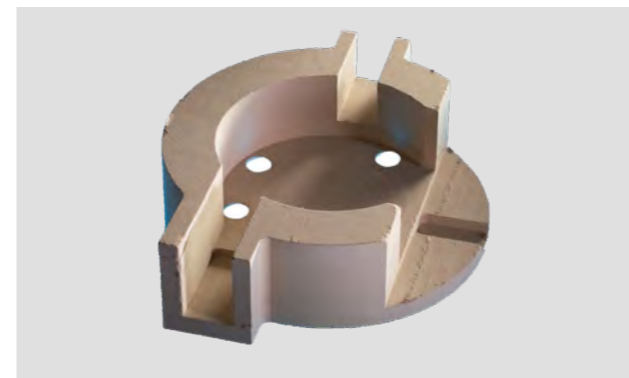
Rigid panels



Flexible panels



Board products



Mouldable products



Pourable products



WE'RE LOOKING FORWARD TO ADVISING YOU ON YOUR PROJECT



**Contact your
Promat specialist today!**

info@lextherm.com
www.lextherm.com

Sustainable high-performance solutions

Lextherm is the leading reference in passive fire protection and high-temperature and sound insulation. For over 20 years we have been perfecting our products and systems, developing reliable, thin and lightweight solutions to fit your commercial and technical requirements. We specialise in high-performance solutions based on our comprehensive range of proven and certified calcium silicate and microporous boards and panels, intumescent fire stopping seals, cementitious fireproofing sprays, high-temperature wools and textiles, gypsum boards and sound insulation materials. Lextherm is proactively reducing its manufacturing footprint on the environment and meeting evolving customer needs by conducting life cycle assessments and attaining Environmental Product Declarations on a range of products, including our microporous range.

Promat Vacuum Insulated Panel materials have an extended service life and require low or even zero maintenance. We are developing new products based on recycled and repurposed high-performance insulation and fire protection materials. At our manufacturing plants and workshops, we are continuously looking for ways to optimise our production processes, to reduce our energy water consumption, and to cut down waste and recycle where possible.