


The Promat logo is displayed in white text on a blue rectangular background. The background of the entire page is a blurred industrial scene featuring a large cylindrical structure with a grid pattern and other industrial components.

Promat

PROMAT'S HIGH-TEMPERATURE INSULATION FOR FUEL CELLS

No compromise on design
or performance

A row of dark grey, cylindrical insulation blocks is shown in the foreground. Each block has a blue label with the word 'Promat' in white. The blocks are arranged in a grid pattern on a concrete surface.

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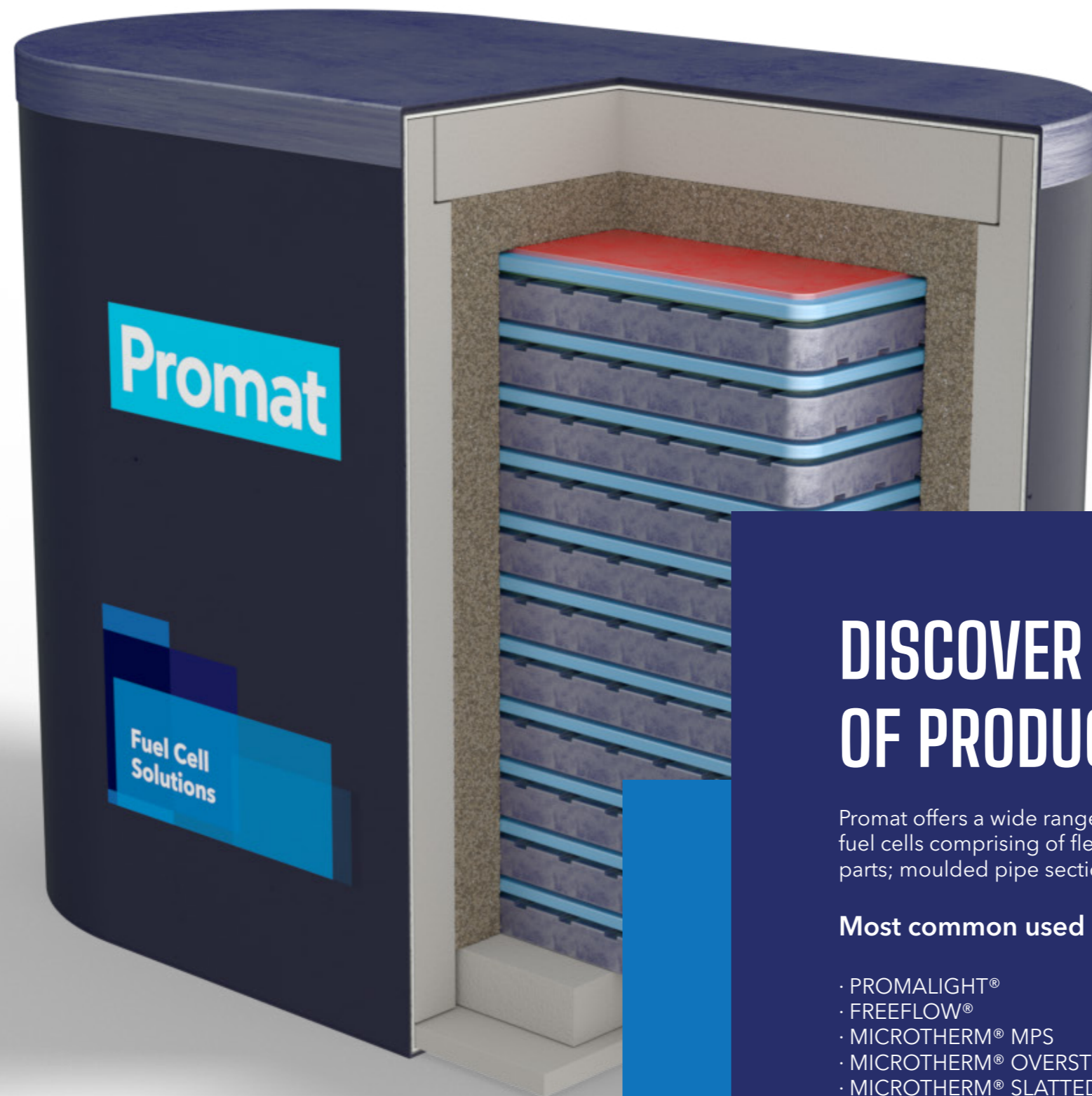
PROMAT IS YOUR PERFECT FUEL CELLS PARTNER

Ultra-thin, efficient and lightweight high-temperature insulation

Promat is a pioneer and global expert in high-temperature insulation and passive fire protection for fuel cell applications. Our innovative systems are used for several major types of fuel cells (SOFC, SOEC, MCFC and PEMFC) and are the industry benchmark. We have deep fuel cell expertise across three continents: Asia, Europe and North America.

In fuel cells for residential, commercial or industrial use, a purpose-designed insulation solution from Promat maximises energy and process efficiency, whilst at the same time minimising the loss of space and ensuring design flexibility. Whether for high-temperature fuel cells or low-temperature fuel cells using reformers, we can support you throughout all phases of your project, from designing a prototype to improving your established solution.

Promat is committed to fostering a sustainable energy market by actively working to reduce our customers' carbon footprint. As part of this, we invest in Environmental Product Declarations (EPDs), which includes microporous materials. If you have any inquiries about our EPDs, please feel free to reach out to us.



DISCOVER OUR RANGE OF PRODUCTS

Promat offers a wide range of microporous products ideally suited for fuel cells comprising of flexible panels; rigid boards and machined parts; moulded pipe sections (MPS) and granular products.

Most common used products are:

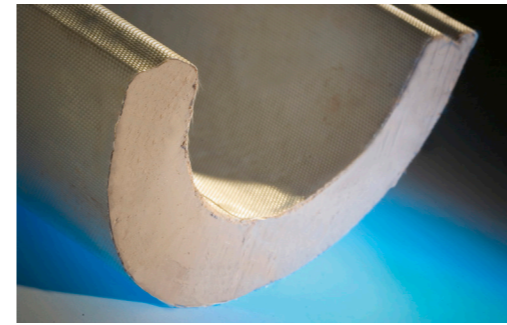
- PROMALIGHT®
- FREEFLOW®
- MICROTHERM® MPS
- MICROTHERM® OVERSTITCHED
- MICROTHERM® SLATTED

PROMALIGHT®

PROMALIGHT® are thin and lightweight microporous insulation boards. They combine an excellent thermal and mechanical performance and are ideally suited for high temperature applications with severe space limitations.

These materials can be delivered in standard sizes or as a custom-made solution.

The PROMALIGHT® range of insulation boards are available with a classification temperature of up to 1200°C.



MICROTHERM® MPS

MICROTHERM® MPS (Moulded Pipe Sections) are pre-shaped microporous insulation shells for industrial piping that can withstand temperatures of 1000 °C. MICROTHERM® MPS shells and elbows are available in standard pipe sizes or can be delivered tailor-made to customer specifications.

FREEFLOW®

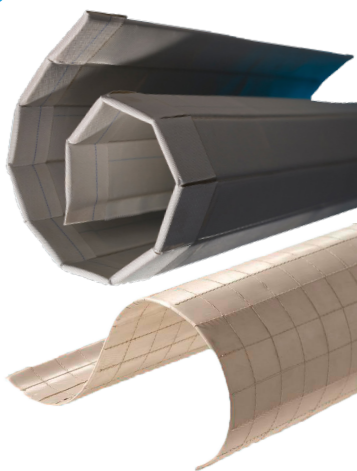
FREEFLOW® is a pourable microporous insulation granules with excellent thermal properties, engineered to withstand peak temperatures of 1000 °C.

FREEFLOW® is the material of choice for demanding high temperature applications with complex shapes and cavities. It provides you with a reliable and sustainable solution for applications for which standard insulation materials are insufficient.



MICROTHERM® OVERSTITCHED & MICROTHERM® SLATTED

MICROTHERM® OVERSTITCHED and MICROTHERM® SLATTED are custom-made, flexible microporous insulation panels, ideally suited for high temperature applications with complex 2D and 3D (MICROTHERM® OVERSTITCHED) shapes and limited available space.



PROPERTIES

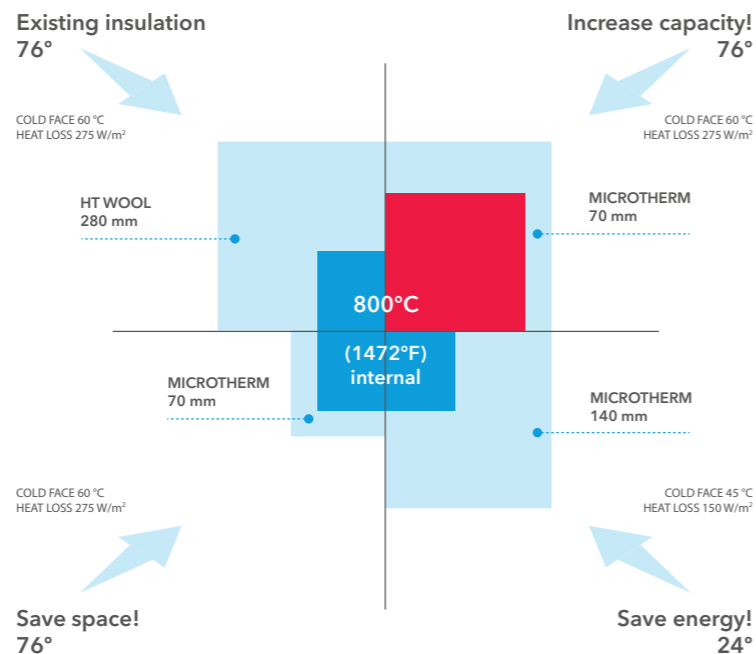
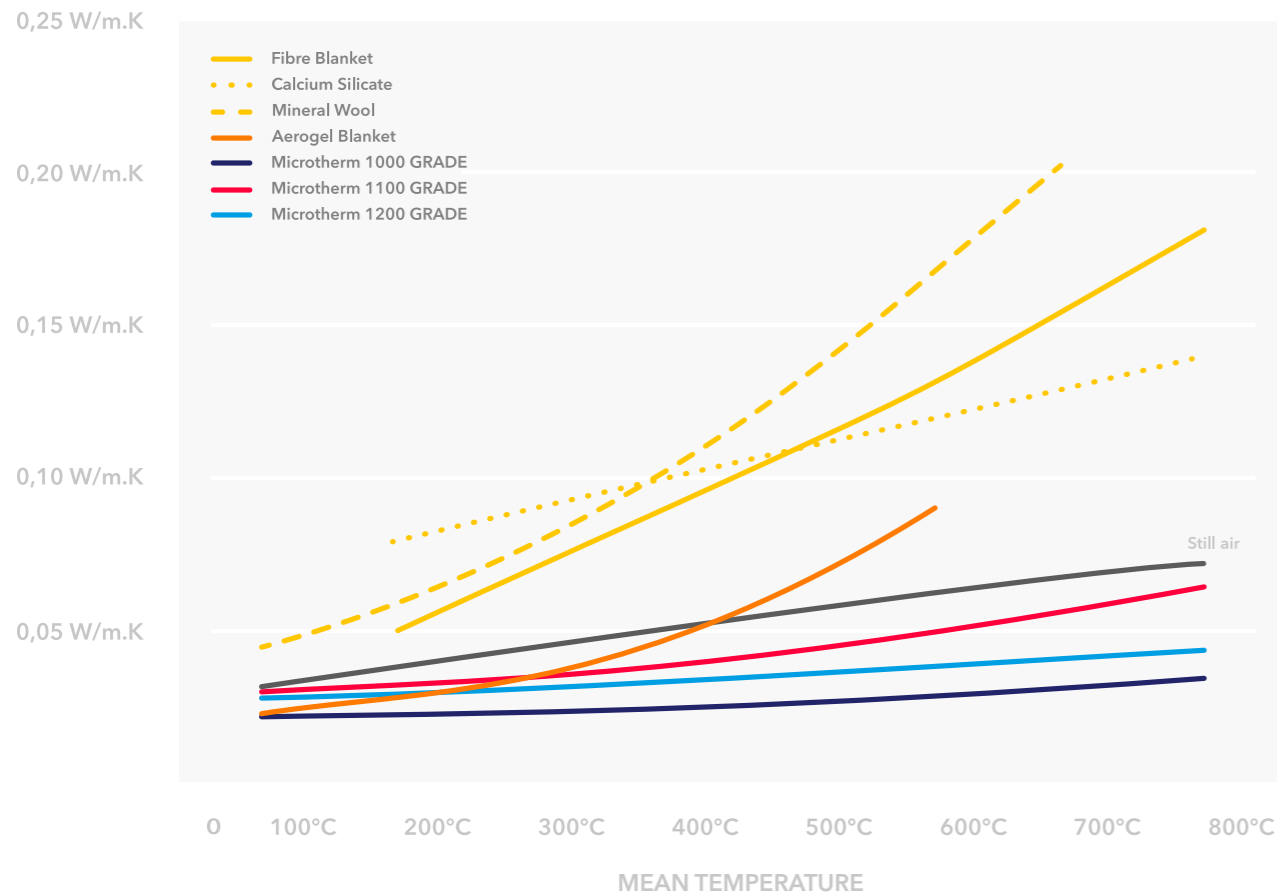
- Formulations based on pyrogenic silica and alumina with a mineral oxide opacifier and glass filament reinforcement
- Capable of continuous exposure up to 1200°C
- Mostly silica free ultra-high temperature version also available capable of withstanding 1200°C (2192°F)
- No known health hazards when used within prescribed working temperature limits
- Non-combustible
- Environmentally safe
- Very low thermal conductivity
- Materials are resistant to thermal shock
- Can be used in different gases and pressures
- Easy machinable

BENEFITS

- Typically one quarter the thickness of conventional insulations at high temperature
- High compressive strength
- Save space
- Custom-made parts
- Widest product range includes moulded products, flexible quilted overstitched and slatted panels, pourable free flowing granules
- No ageing
- Easy to install

All these microporous products have a thermal conductivity that is close to the lowest theoretically possible (an insulation with a thermal conductivity even lower than still air) across a broad range of temperatures right up to 1200°C making them 4 to 5 times better performing than conventional insulation materials.

This very low thermal conductivity is also remarkably stable over the temperature range thanks to the inclusion of an opacifier to effectively block the transmission of infra red radiation.



FUEL CELL APPLICATION – THE DIFFERENT PARTS

Fuel cell outer casing

Promat is used around the world to insulate the outer casings of SOFC and MCFC fuel cells. These fuel cells operate at high temperatures starting from 600°C going up to around 900°C.

PROMALIGHT® and FREEFLOW® are the products mostly used to insulate this part of the fuel cell. Using this insulation enables the fuel cell to reduce the external shell surface temperature down to just 50°C and minimizes overall heat loss, optimizing stack performance. Our FREEFLOW® product can be used to fill the remaining empty space between the insulation and the fuel cell.

Reformers

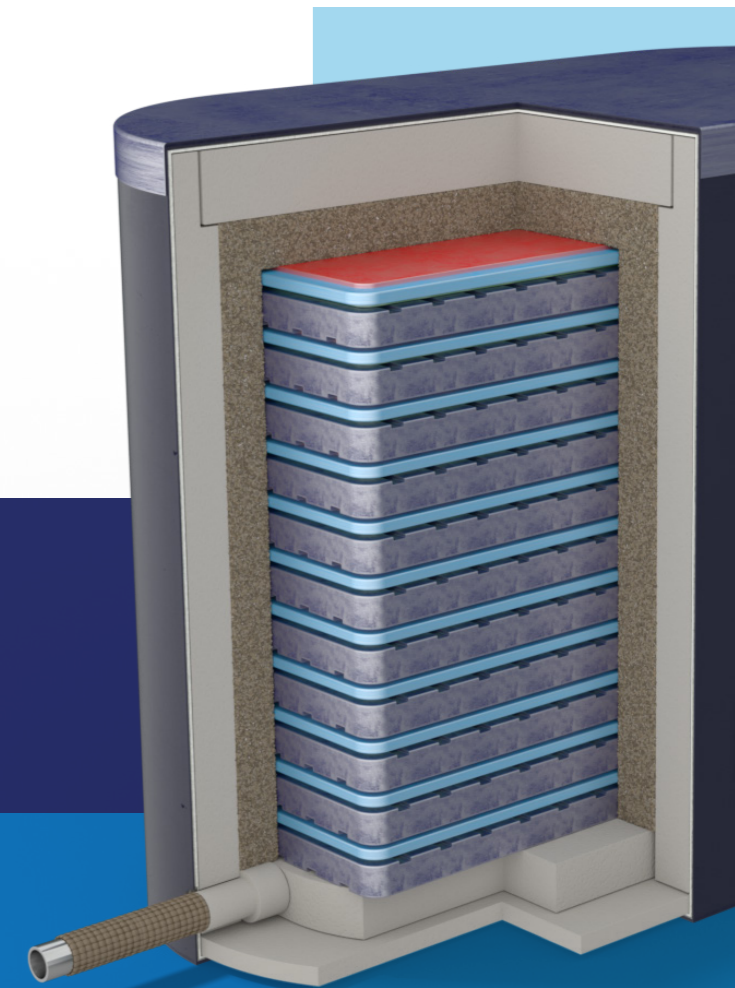
Promat is also used to insulate reformers. This poses a notable challenge when it comes to small residential PEMFC units. In such cases, the design often comprises a complex three-dimensional shape that is virtually impossible to insulate using conventional insulation materials.

For these complex shapes Promat offers FREEFLOW® and PROMALIGHT®.

Thanks to our wide range of products and our deep expertise, we can find solutions for the most challenging insulation problems.

Balance-of-plant

Promat products for pipes and component shapes such as Microtherm® MPS, Microtherm® Slatted Panel, Microtherm® Overstitched, and Quilted Panel enhance the efficiency of balance-of-plant systems. These products combine the outstanding performance of microporous insulation coupled with easy shaping and fast, simple fitting. Additionally, these products can be supplied in preshaped kits for fast, cost-effective high-volume assembly.



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Enjoy Promat's complete service package

Our team of experts will help you design the most effective solution for improved thermal and energy efficiency, higher yields and durable protection of your assets and employees. We can also support you with the practical application and installation of our products in your fuel cell solutions. With Promat as your preferred partner you benefit from more than 60 years of experience and know-how in high-temperature insulation in a wide range of industries.

Etex, our parent company, has recently been awarded a silver EcoVadis rating and received an ESG rating from Sustainalytics.

Choose Promat as your partner to build a safe and sustainable world together.



www.promat.com/industry