grenamat®

Fire-resistant,
non-combustible,
refractory and insulation
materials

grena® a.s.

WE'RE ON FIRE
FOR NON-COMBUSTIBILITY

Company history

1941 establishment of the plant for initial flax processing

1961 first manufacture of bullen boards

1992 commissioning of impregnated foil application line (i.e. FFB technology)

1994 first manufacture of furniture

1997 manufacturing of boards with a higher fire resistance - grenamat® B, C boards

1998 termination of flax processing, board manufacturing only from wood material,
commissioning of laminating line,
manufacturing of non-combustible and fire-resistant grenamat® A, AS boards

1999 manufacturing of flat milled MDF board kitchen door

2001 acquisition of the international ISO 9001 certificate

2005 line for vermiculite exfoliation

2006 manufacturing of vermiculite shaped parts and boards grenamat® AS

2009 manufacturing of high gloss furniture doors
line for the manufacturing of high gloss grenagloss® MDF boards,

2012 the manufacturing of non-combustible heat-insulation grenaisol® boards
high gloss wall panels for kitchen SPLASHBACK,

2013 new line for grenamat® AS, grenaisol®

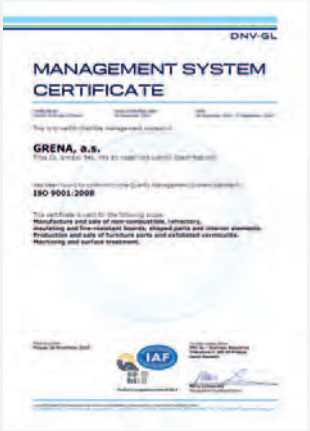
2014 instalation of the sorting device for vermiculite

2015 installation of two new drying ovens
non-combustible boards,
manufacturing of light insulation grenalight®

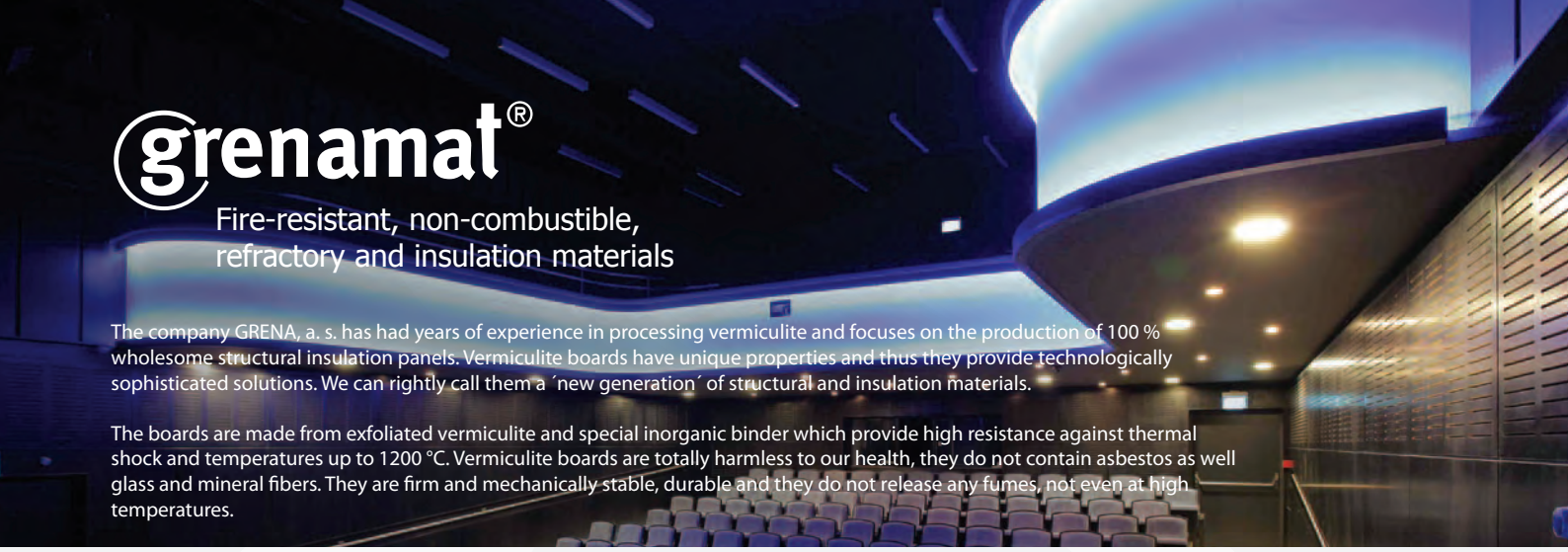
2016 manufacturing of grenamat® HTI insulation boards for high-temperature applications, manufacturing of grenatherm® radiant structural boards

Manufacturing programme

Fire-resistant, non-combustible, refractory and insulation materials with a optional surface finish
Vermiculite exfoliation
Furniture door
Laminated boards
Foliated boards


DNV·GL
MANAGEMENT SYSTEM CERTIFICATE
GRENA, a.s.
ISO 9001:2008

Certificate ISO 9001:2008



grenamat®

Fire-resistant, non-combustible, refractory and insulation materials

The company GRENA, a. s. has had years of experience in processing vermiculite and focuses on the production of 100 % wholesome structural insulation panels. Vermiculite boards have unique properties and thus they provide technologically sophisticated solutions. We can rightly call them a ´new generation´ of structural and insulation materials.

The boards are made from exfoliated vermiculite and special inorganic binder which provide high resistance against thermal shock and temperatures up to 1200 °C. Vermiculite boards are totally harmless to our health, they do not contain asbestos as well glass and mineral fibers. They are firm and mechanically stable, durable and they do not release any fumes, not even at high temperatures.

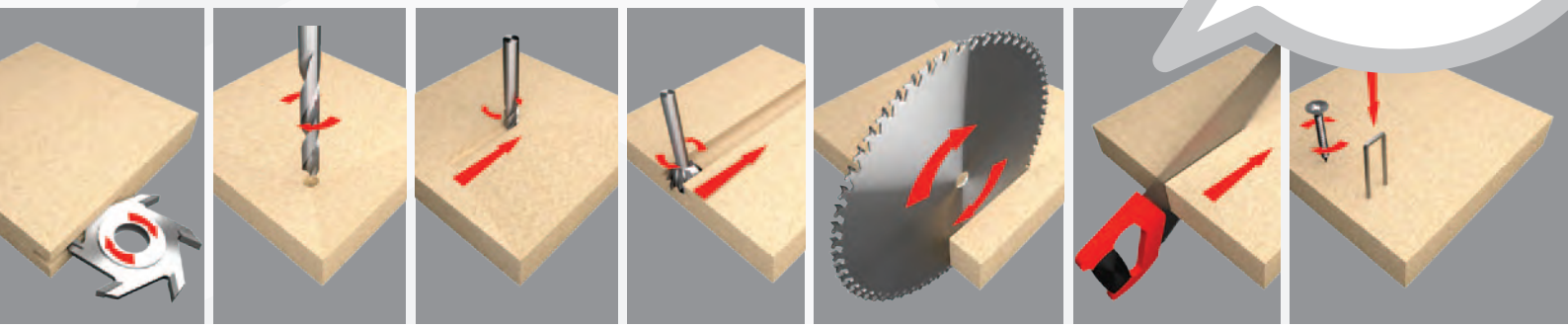
Properties of vermiculite boards

- Ecological
- Easy machinable
- Recyclable
- Natural
- Non-combustible
- Insulation
- Dustless
- Wholesome
- Durable
- Asbestos free
- Tested and certified

Machinable by common woodworking tools

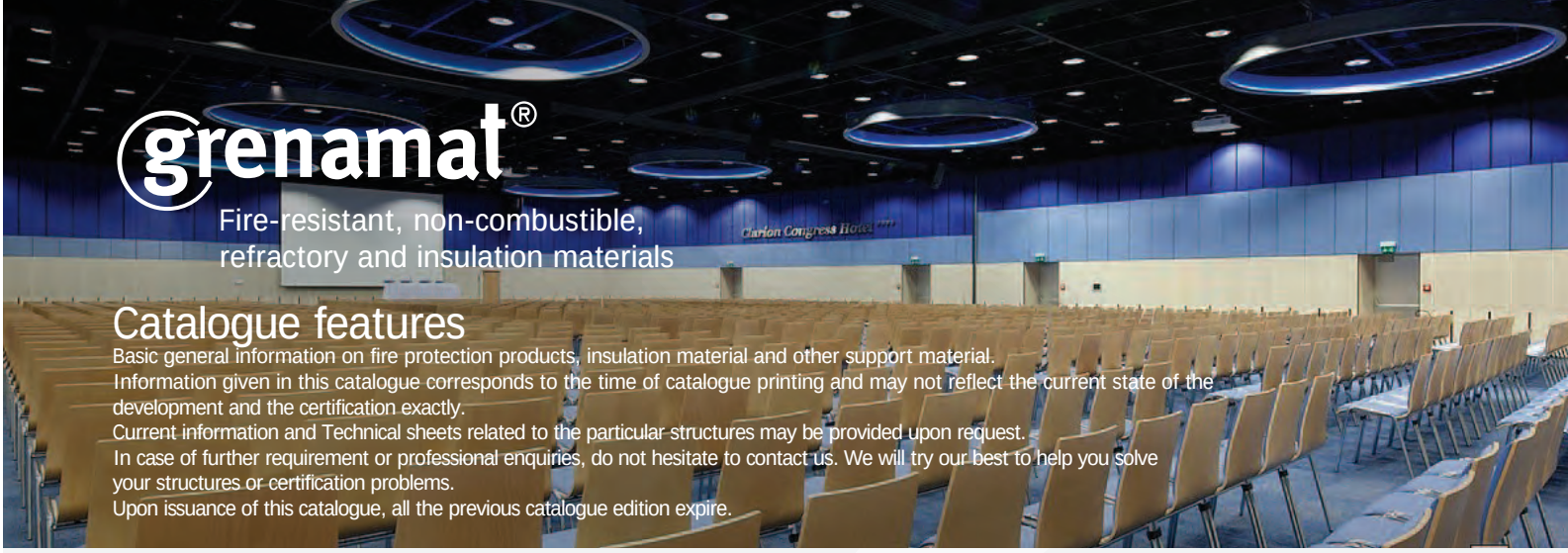
The machining and processing

is the same for all types of vermiculite boards:



Grooving | Drilling | Milling | Profile milling | Cutting | Hand cutting | Coupling

grena® a.s.



grenamat®

Fire-resistant, non-combustible,
refractory and insulation materials

Catalogue features

Basic general information on fire protection products, insulation material and other support material.
Information given in this catalogue corresponds to the time of catalogue printing and may not reflect the current state of the development and the certification exactly.
Current information and Technical sheets related to the particular structures may be provided upon request.
In case of further requirement or professional enquiries, do not hesitate to contact us. We will try our best to help you solve your structures or certification problems.
Upon issuance of this catalogue, all the previous catalogue edition expire.

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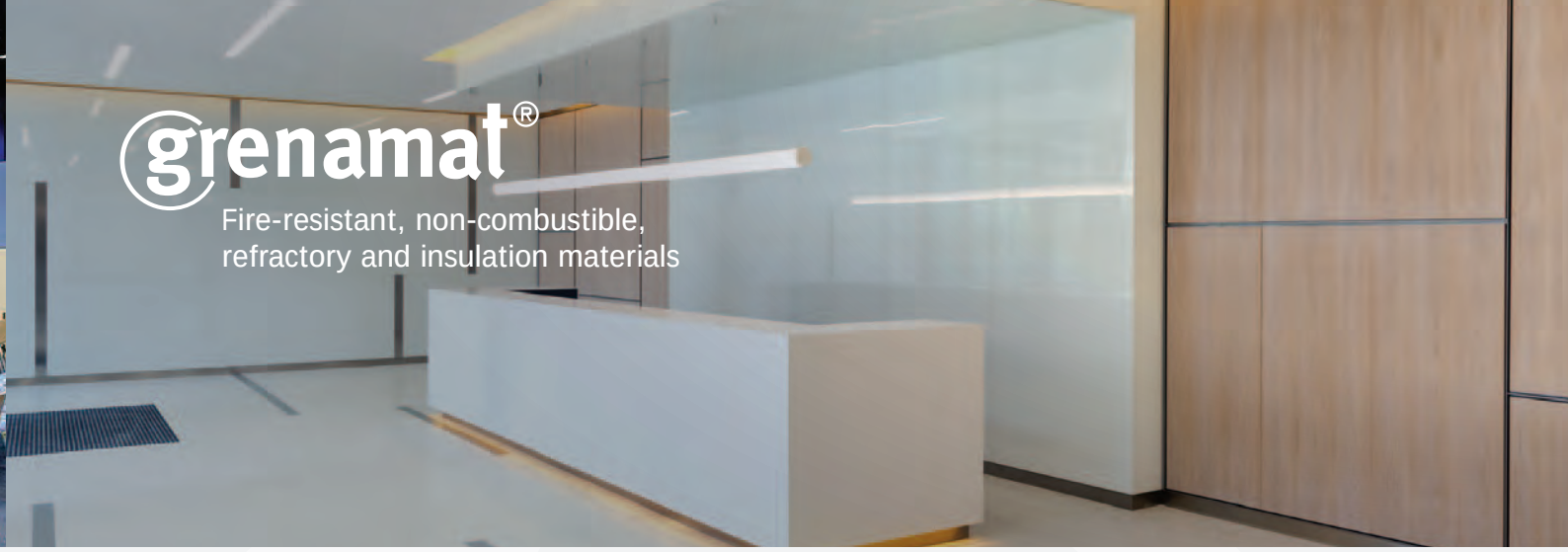

grenamat®

Fire-resistant, non-combustible,
refractory and insulation materials

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grena® a.s.

vermiculite
Exfoliated vermiculite

Vermiculite

Vermiculite is a mineral from the phyllosilicate group as well as the flaky silicate group. The exfoliation process is a special heat expansion process in which crystal water in the interlaminar space changes into vapour that multiplies this space by a number of times and separates laminar layers which is how particles increase their volume and acquire their characteristic features (insulation features, hygroscopicity, etc.) and appearance.

In 2005, the company GRENA a.s. was the first and only one to commission technology for vermiculite exfoliation in the Czech Republic and Slovakia. This is why GRENA a.s. is capable of supplying and expanding all types (fractions) of vermiculite.

Technical data

	Granularity (mm)	Bulk weight (kg/m^3)
Micron	0,250 - 0,710	110 - 130
Superfine	0,355 - 1,000	110 - 130
Fine	0,710 - 2,000	100 - 120
Medium	1,400 - 4,000	80 - 100
Large	2,800 - 8,000	70 - 90

100% harmless mineral

grena® a.s.

vermiculite

Exfoliated vermiculite

GRENA, a. s.: Exfoliation line

Application

- manufacturing of fire-resistant and insulation products for building purposes and building construction protection (see GRENAMAT® A, AL, B, C products)
- manufacturing of insulation material for fire places, ovens, boilers, chimneys and other sources of heat (see GRENAMAT® AS)
- manufacturing of material for high-temperature insulation in metallurgic and foundry devices and moulds (see GRENAMAT® HTI)
- construction industry - an admixture for lightweight and insulation concrete, admixture for special plastering, admixture for low density floor and roof paints, loose insulation for building construction cavities
- automotive industry - production of vehicle friction lining
- metallurgy - insulation of metallurgy and foundry liquid alloy
- agriculture - farmland enhancement (lightening and improving hygroscopicity), carrier medium for fertilizers and biopesticide agents
- gardening - an admixture for garden moisture retention substrates, growth medium for seed germination and cultivation, hydroponics support
- breeding - bedding for domestic animals and reptiles (incl. reptile hatchery litter), drug carrier medium in feed mixtures

Advantages of vermiculite boards

Vermiculite boards are made solely from **natural material** - exfoliated vermiculite and a special anorganic binder. Thanks to this, vermiculite boards are not only **non-combustible** but also serve as **radiant heat insulation**. Boards made of exfoliated vermiculite have a **long-term durability, sufficient firmness** and mechanical stability. They do not contain asbestos, mineral or glass fibre, which makes them **harmless to the health**. Working with vermiculite boards creates **very little dust** so they can be worked using common wood-working tools.

Vermiculite mine

grena® a.s.

grenamat® A

Non-combustible vermiculite boards for ship construction

MED Certified

Properties

The non-combustible GRENAMAT® A board is used in protecting ship constructions against fire, for building ship crossbars, walls, ceilings, interior components and furniture.
GRENAMAT A is certified for application in the shipbuilding industry worldwide:
Bulkhead B-0 & B-15
- Ceiling B-0 & B-15
- Ceiling B-0
- Non - Combustible material

Technical data

Board formats [mm]	1220 x 2440, boards can be extended up to 3,050 mm upon request
Density [kg.m^{-3}]	480 - 800
Thickness [mm]	8 - 40

Fire protection in ship constructions

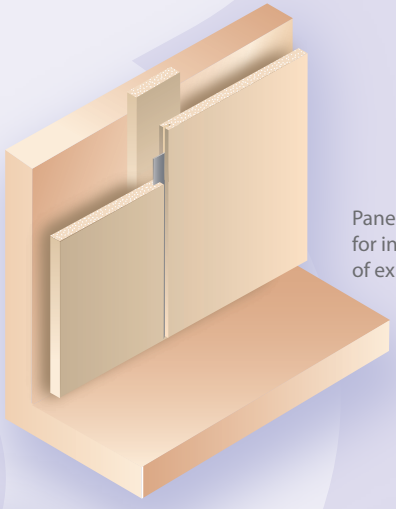
grena® a.s.

grenamat® A

Non-combustible vermiculite boards for ship construction

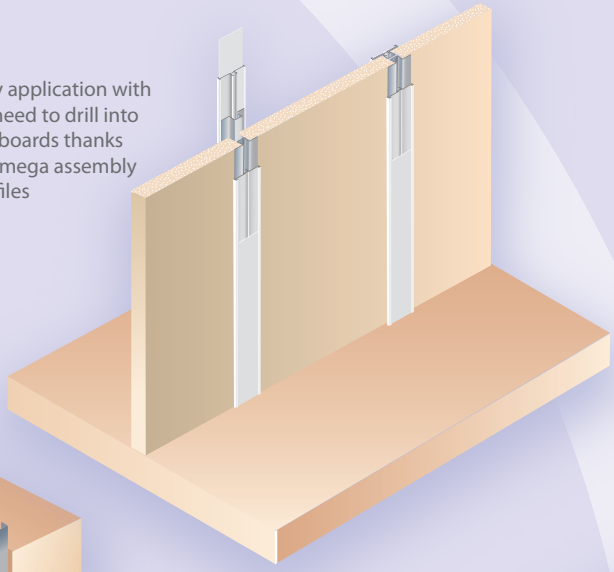
Ship interior

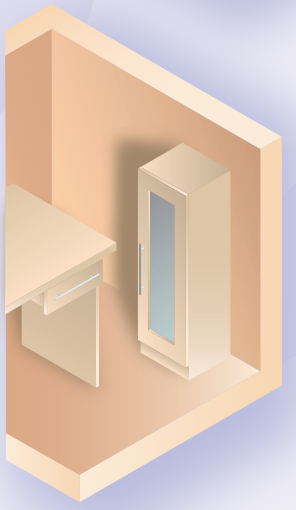
Examples of possible application



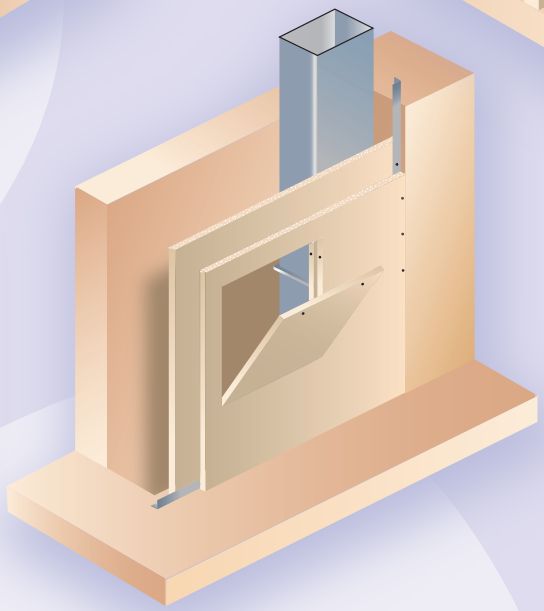
Panelled fire-resistant walls for increased fire resistance of existing structures

Easy application with no need to drill into the boards thanks to omega assembly profiles

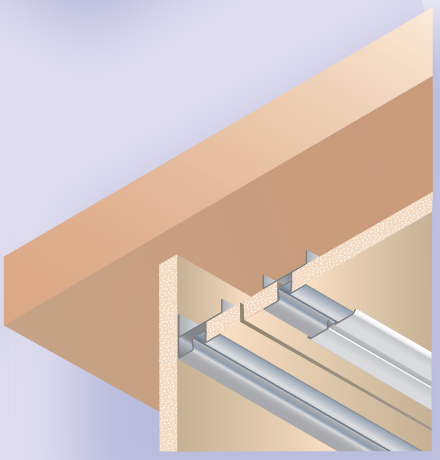




Furniture manufacturing



Fire-resistant door and valves



Construction of fire-resitant ceiling and walls in ship cabins

For more information on GRENAMAT® A boards refer to the GRENAMAT® Marine catalogue.

grena® a.s.

grenamat® AL

Non-combustible vermiculite boards for ground constructions

Properties

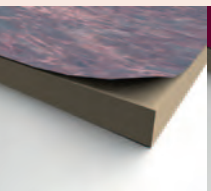
The GRENAMAT® AL non-combustible board is suitable for fire protection in building constructions - smoke and heat extraction devices, carbon plates protection, anti-flammable crossbars, aforeplaced walls, air ventilation piping protection, wall cladding in emergency areas, fire cladding in lift and installation shafts, durability enhancement in existing constructions, etc.
For special constructions: internal filling of steel fire-resistant valve, internal filling of the safe and vault walls etc.

Technical data

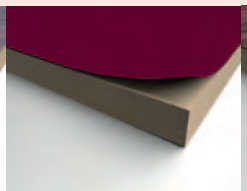
Board formats [mm]	1220 x 2440, other formats available upon request
Density [kg.m $^{-3}$]	500 - 800, other density available upon request
Thickness [mm]	10 - 80
Fire reaction class	A1 (with proving surface finish A2-s1,d0) Group 1 (AS/NZS 3837-1998 in accordance in AS 5637.1-2015)

Surface finish

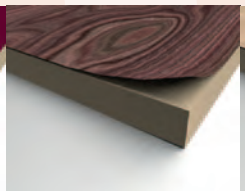
GRENAMAT® AL boards come in various surface finishes.



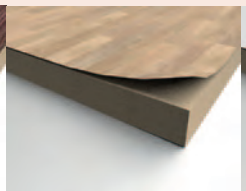
HPL



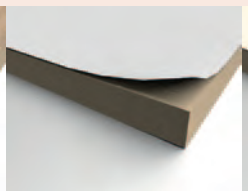
CPL



Natural veneer



Natural veneer with transparent melamine resin



Paper

Paint

Plaster

Versatile non-combustible construction boards

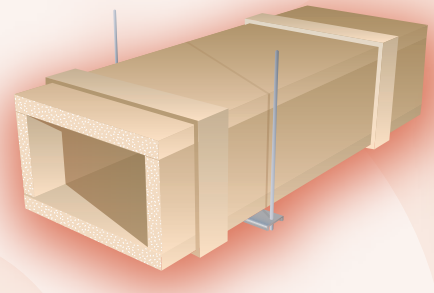
grena® a.s.

grenamat® AL

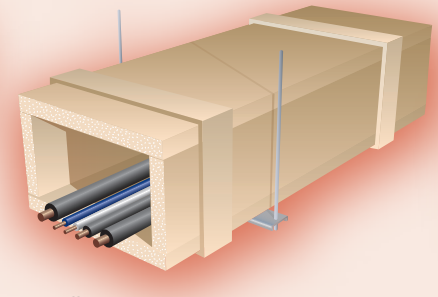
Non-combustible vermiculite boards for ground constructions

Harfa Gallery, Praha

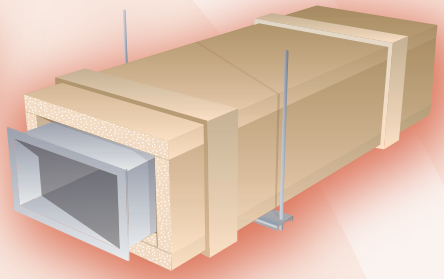
Examples of possible application



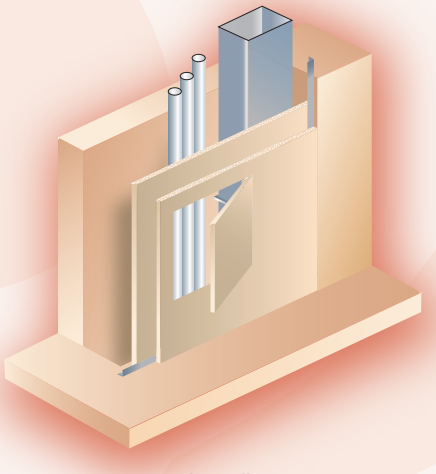
Horizontal smoke and heat extraction piping



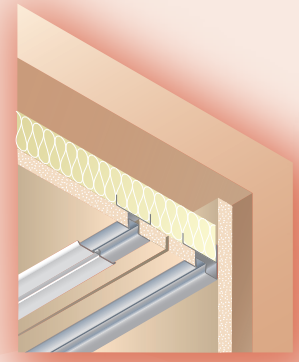
Installation piping



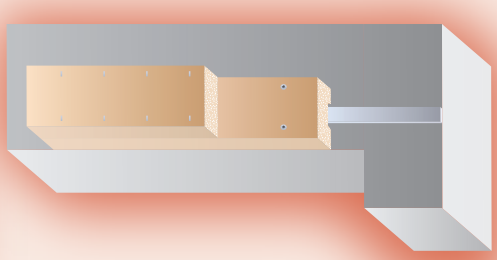
Increasing the fire resistance of metal piping



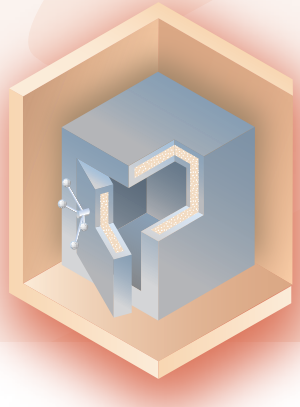
Vertical installation piping and valve



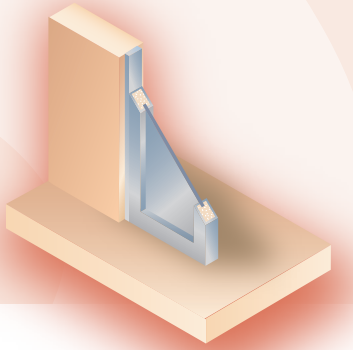
Increasing the fire resistance of walls and ceilings



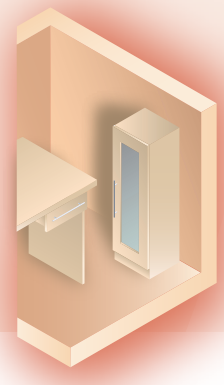
Fire protection of Carbon CFRP lamellas



Safe and safe lockers filling



Steel and glass non-combustible valves filling



Furniture manufacturing

grena® a.s.

grenamat® AL

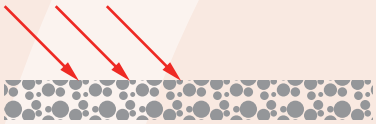
Non-combustible vermiculite boards for ground constructions

Acoustic Panelling of Walls and Ceilings

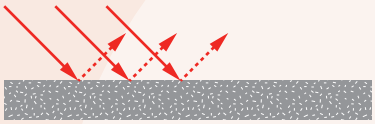
Acoustic panneling effectively absorb, reflect or disperse noise. Using acoustic panels it is possible to reach the required acoustic quality in confined spaces, especially by decreasing the echo and improving listening conditions. They are combined from individual acoustic features and materials which create their own room interior cladding in the designed sets.

Perfect sound reflection:
Sound absorption coefficient α (alfa) = 1

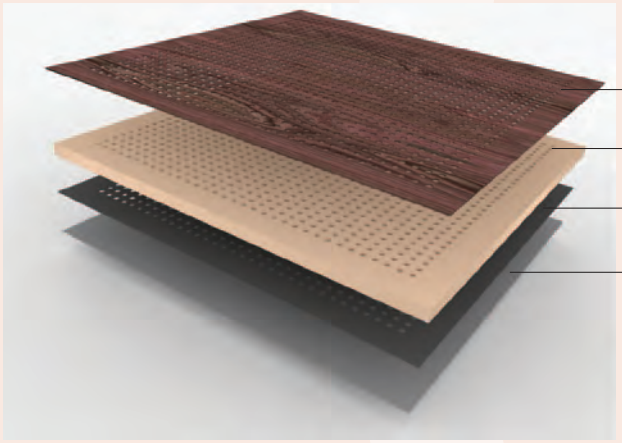
Perfect sound absorption:
Sound absorption coefficient α (alfa) = 0



Part sound reflection:
Sound absorption coefficient: α (alfa) = between 0 and 1



Standard composition of acoustic panels made of GRENAMAT® boards



GRENA a.s. specializes in supplying and assembling acoustic cladding for various types of concert halls, studios, theatres and cinemas.

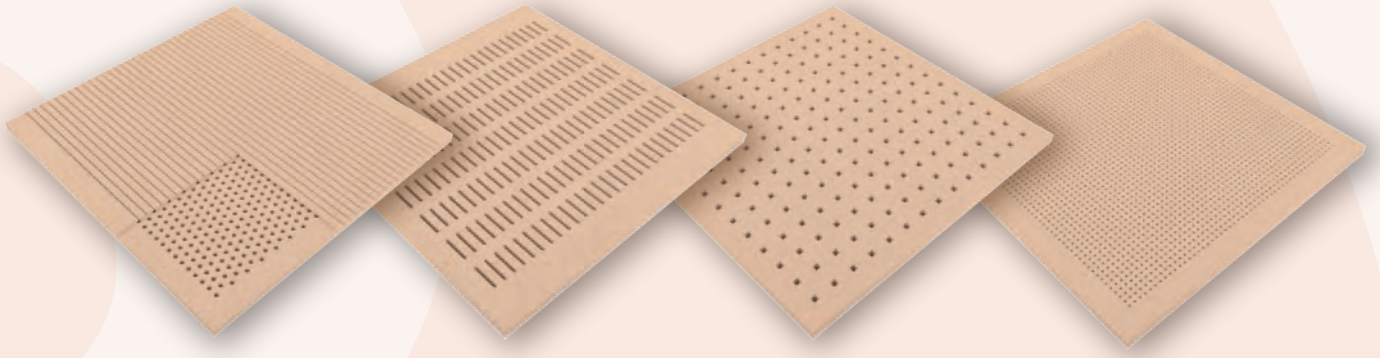
The materials can be delivered in various fire reaction classes A1, A2, B, C and Group 1 as per AS/NZS 3837-1998 in accordance in AS 5637.1-2015

Optional surface finishes

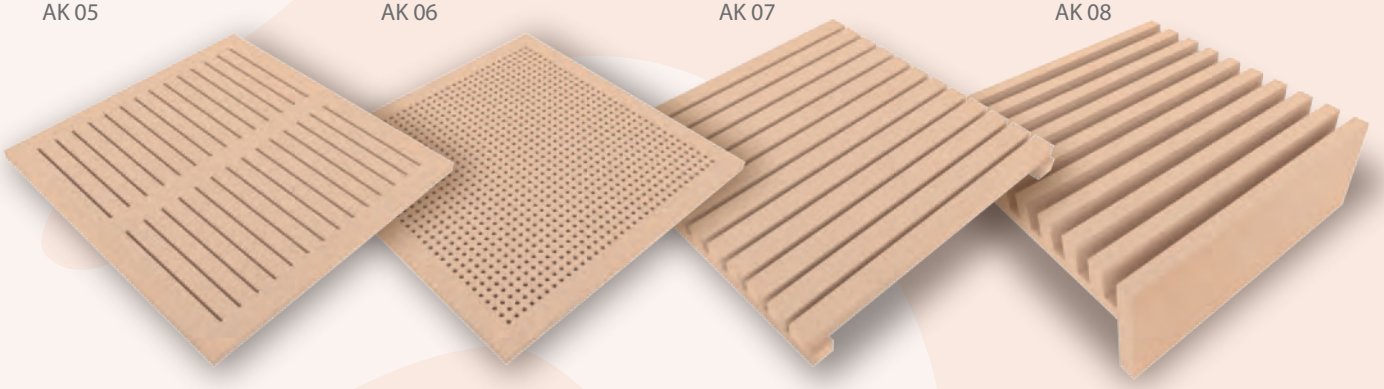
VŠE Praha

Types of acoustic panels

AK 01 AK 02 AK 03 AK 04



AK 05 AK 06 AK 07 AK 08



For more information on GRENAMAT® AL acoustic panels - refer to the catalogue
Non-combustible and Fire-resistant Boards Options and Planning

grenamat® AS

Refractory insulation boards and parts

GRENAMAT® AS refractory boards and shaped parts are made of exfoliated vermiculite and a special anorganic binder. They are designed for high-temperature constructions in fire places for temperatures up to 1 200 °C. They are used for direct contact with fire in stoves, fire places, boilers and chimneys. GRENAMAT® AS boards deflect heat back to the fire place, which increases the temperature, the fire place then works more efficiently creating less pollution.

Technical data

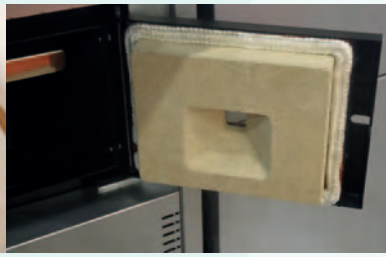
Basic formats [mm]	600 x 800	610 x 1000	1220 x 2440
Density [kg.m^{-3}]	430 - 1050	430 - 900	450 - 800
Thickness [mm]	10 - 100	10 - 100	10 - 40
Classification temperature [°C]		1150	

IInformation on the width tolerance and format tolerance listed in the Technical sheet.

Fire reaction class	A1





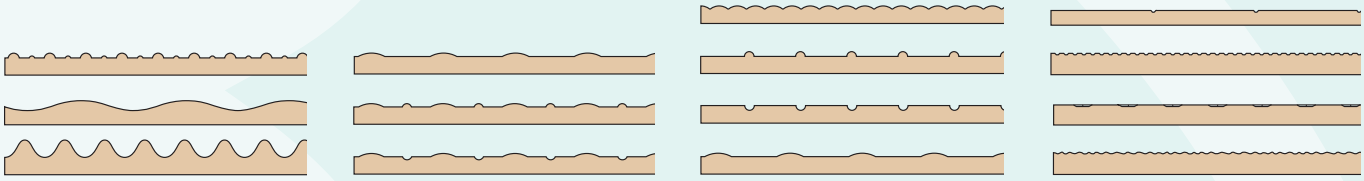


Light and firm recyclable material

grenamat® AS

Refractory insulation boards and parts

Apart from smooth fire-resistant boards and compacted parts, we also offer 15 basic patterns for board surfaces of 600 x 800 mm and 610 x 1000 mm boards.



Furthermore, we offer compacted shaped parts for special applications or parts for shape milling based on the customer's request.

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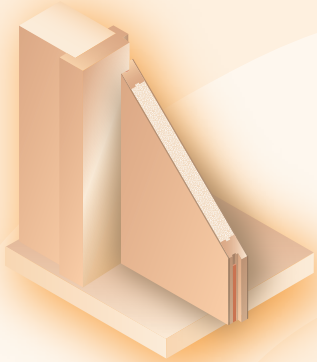
grenamat® B,C

Fire-resistant boards
for doors and door frames

Fire-resistant door frames

Construction
of fire-resistant door



Diagrammatic drawing
of a simple construction
of wooden fire-resistant door
using GRENAMAT® C boards
as internal filling

GRENAMAT® B board is manufactured from exfoliated vermiculite, wooden materials and organic bonding agents. The board belongs to reaction to fire class C-s1,d0 and Group 1 (AS/NZS 3837-1998 in accordance in AS 5637.1-2015) and is normally used as a filling or cover in fire-resistant doors or interior cladding based on the reaction to fire requirements.
GRENAMAT® C board is manufactured from exfoliated vermiculite, wooden materials and organic bonding agents. The board belongs to reaction to fire class C - s1,d0 and is similar to chipboard due to its mechanical characteristics. However, even with the higher content of wood, it maintains its high fire resistance. It is mainly used in DP3 type constructions such as fire protection doors, fire-resistant door frame lining and similar constructions.

Application

- fire-resistant wooden door with fire resistance of 15 - 45 minutes
- fire-resistant door frames
- replicas and reconstruction of historical doors with fire resistance requirements

Technical data

grenamat® B

Formats of boards [mm]	1220 x 2440, other formats available upon request
Density [kg.m^{-3}]	550 - 750
Thickness [mm]	12 - 40
Fire reaction class	B - s1, d0 A1 (with proving surface finish A2-21,d0) Group 1 (AS/NZS 3837-1998 in accordance in AS 5637.1-2015)

grenamat® C

Formats of boards [mm]	1220 x 2440, other formats available upon request
Density [kg.m^{-3}]	550 - 750
Thickness [mm]	12 - 40
Fire reaction class	C - s1, d0

grenamat® HTI

Vermiculite insulation boards
for high-temperature applications

CE

GRENAMAT® HTI are insulation boards suitable for the external insulation of production equipment exposed to high temperatures. In some cases, they can be used in places where they are exposed directly to a high temperature source. They withstand a standard operation temperature of up to 1 150 °C, but they are able to withstand up to a 1 200 °C one-time temperature. The boards' density may range from 400 to 1,050 kg/m^3, which enables the combination of high-level insulation and high firmness.

GRENAMAT® HTI is the ideal choice for industrial applications, for instance in glass-making, metallurgy, foundries, industrial chimneys, power plant boilers, incineration plants, etc.

	Formats [mm]	Thickness [mm]
GRENAMAT® HTI 400	610 x 1000	20 - 80
	600 x 800	20 - 80
GRENAMAT® HTI 500	610 x 1000	20 - 100
	600 x 800	20 - 100
GRENAMAT® HTI 600	610 x 1000	15 - 100
	600 x 800	15 - 100
GRENAMAT® HTI 750	610 x 1000	10 - 40
	600 x 800	10 - 40
GRENAMAT® HTI 850	610 x 1000	10 - 30
	600 x 800	10 - 30
GRENAMAT® HTI 1050	600 x 800	10 - 30

It is possible to make other widths, densities and dimensions upon request.

For more information on GRENAMAT® HTI boards refer to the GRENAMAT® HTI catalogue.

Decrease of production costs thanks to energy saving

grena® a.s.

Jointing and Assembly Materials

grena® klebepaste

Universal glue for high temperatures up to 1200 °C

GRENA® KLEBEPASTE is inorganic glue which can be used in high temperatures and does not release any fumes.
The glue has been developed to be used in direct fire.
The glue is water soluble.
Any types of material can be glued providing that one of the glued surfaces is absorbent.
Soiled tools can be washed in water.

Stove fabric mesh

It has been designed and tested for fireplace surrounds and thermal insulation along with GRENAISOL®, GRENALIGHT® and GRENATHERM® boards and other materials.
Unlike other commonfabric stove a stove fabric mesh is resistant to high temperatures. This guarantees no cracks on the surface.
Packaging: Roll 50 x 1 m

Stove plaster

Shaping stove plaster fraction 0 - 0.6 mm enables to apply a layer up to 50 mm and form not only a smooth surface but also different structures.
A new layer can be applied to older and dry plaster without any visible joint therefore it is suitable for minor surface corrections as well.
Stove plaster is stable up to 190 °C, does not degrade, does not change a colour, is scentless, does not influence heat circulation.
The plaster is applied to the mortar foundation.
Packaging: 25 kg/5 kg

Stove mortar

A supporting layer together with stove fabric mesh. Developed for gluing of the second layer as a foundation for plaster or ceramic tiles.
The mortar is very smooth, flexible and resistant to sudden temperature changes.
Good mortar workability. The mortar is hardened in approx. 40 minutes depending on the environment and applied thickness (max. 20 mm).
Maximum operating temperature is 600 °C.
Packaging: 25 kg

Smooth stove plaster

Fine, snow white, design stove plaster.
To reach a nicely smooth surface use fine emery cloth.
A new layer can be applied to an older plaster layer thus it is suitable for corrections, too.
This stove plaster does not change colour, does not degrade, is scentless, does not influence heat circulation.
It is stable up to 190 °C.
The plaster is applied to the mortar foundation.
Packaging: 20 kg/ 5 kg

Coarse stove plaster

It contains a filler - size 1.5 mm which enables to form a surface with a coarse structure.
It can also be used outside (for adjustments of outdoor fireplaces, smokeries, grills, etc.).
It does not require final coating as it is white.
The plaster does not degrade, does not change colour, is scentless, does not influence heat circulation, is stable up to 200 °C.
It is applied to the mortar foundation.
Packaging: 25 kg/ 5 kg

Complete verified system

grena® a.s.

grenaboard®

Non-combustible boards
for the protection of ceiling constructions

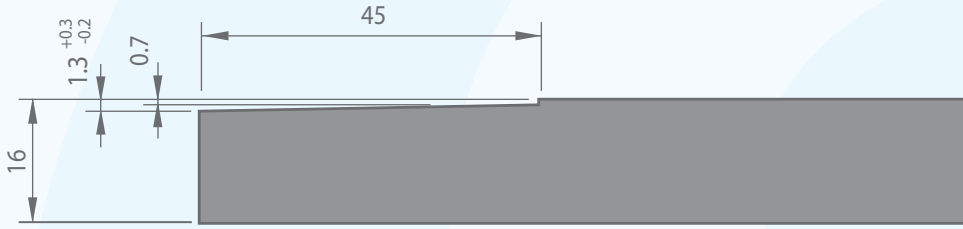
CE

Parameters

Vermiculite board, 16 mm wide,
density 480 kg/m^3
Covered with paper on both sides
1200 x 2400 mm format
Board weight 7.7 kg/m^2; cca 22.1 kg/board

Properties

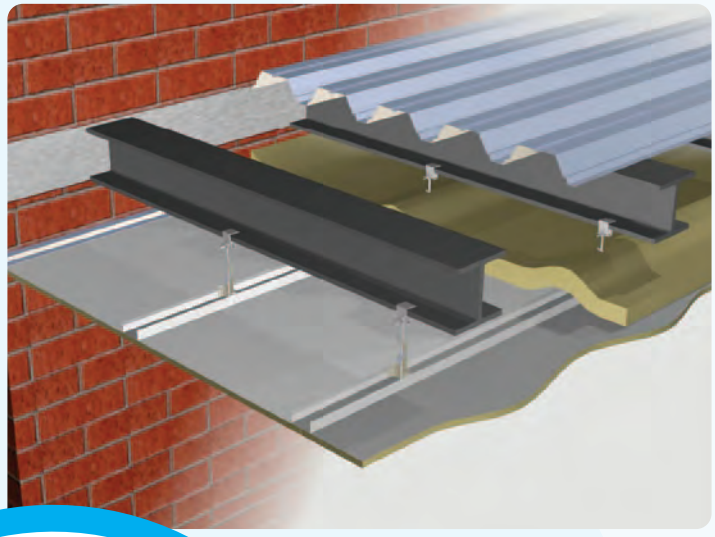
A very light and firm non-combustible board made of vermiculite and an anorganic binder, covered with paper on both sides, depressions on all four edges for easy joint filling.



The dimensions of the profiled edge of the panel

Suspended board ceiling on steel bearing features

(applies to all types of steel features I, IPE, HEB, HEA, rod features, etc., from 20 mm dimension)



For all types of suspended ceiling

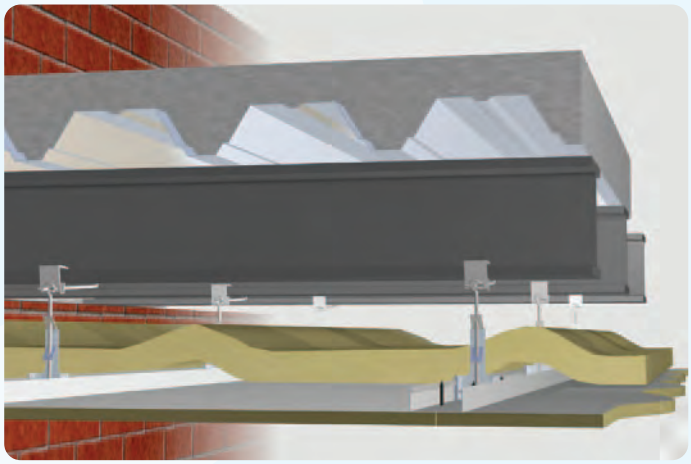
grena® a.s.

grenaboard®

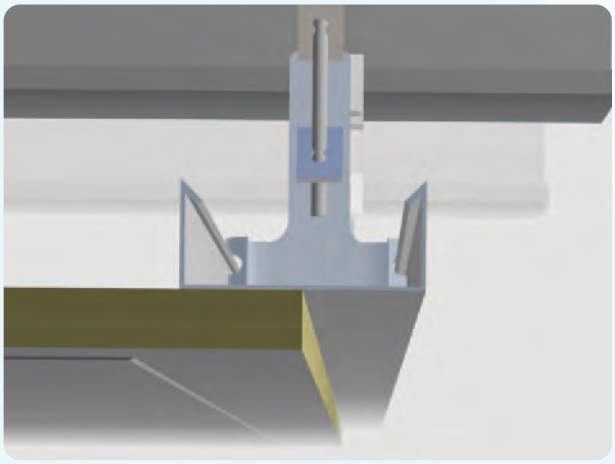
Non-combustible boards
for the protection of ceiling constructions

Screw assembling, spacing 250 mm

Gaps between boards and their covering



Details of placement of CD supporting profiles, only one direction.
It is not necessary to cross the CD profiles.



Tested and approved ceiling light 600x600 mm

For more information on GRENABOARD® boards
refer to the GRENABOARD® catalogue

grena® a.s.

AWTA PRODUCT TESTING

Australian Wool Testing Authority Ltd - trading as AWTA Product Testing
A.B.N 43 006 014 106
1st Floor, 191 Racecourse Road, Flemington, Victoria 3031
P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

Group Number Assessment

(In accordance with AS 5637.1-2015)

This is to confirm that the product as described below has been tested by AWTA Product Testing .

Testing was performed in accordance with AS/NZS 3837-1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.

Test Sponsor : Green Resources Material Australia Pty Ltd
Unit 2
74 - 80 Helen Street
Sefton NSW 2161

Test Number : 19-005452
Issue Date : 8/10/2019
Print Date : 10/10/2019

Sponsor Product

Clients Ref : "Biowood Natural Oak with Vermiculite Panel"
Engineered timber - Biowood with veneer both sides
Colour : Timber effect
End Use : Soffits, Wall Panelling and Cladding
Nominal Composition : 70% Wood/23% UPVC/Vermiculite
Nominal Mass per Unit Area/Density : Approx 6kg/m2
Nominal Thickness : 16mm

Product Group Number Classification :	1	
Average Specific Extinction Area :	126.2	m²/kg

Fiona McDonald
Testing Technologist

39193

AWTA PRODUCT TESTING

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P.O Box 240, North Melbourne, Victoria 3051
Phone (03) 9371 2400 Fax (03) 9371 2499

Group Number Assessment

(In accordance with AS 5637.1-2015)

This is to confirm that the product as described below has been tested by AWTA Product Testing .

Testing was performed in accordance with AS/NZS 3837-1998 Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.

Test Sponsor : Green Resources Material Australia Pty Ltd
Unit 2
74 - 80 Helen Street
Sefton NSW 2161

Test Number : 19-001662
Issue Date : 2/05/2019
Print Date : 3/05/2019

Sponsor Product

Clients Ref : "Grenamat B"
Laminated Chipboard
Colour : Oak
End Use : Soffits, Wall Panelling/ Lining and Cladding
Nominal Composition : Vermiculite wilth Oak
Nominal Mass per Unit Area/Density : 650kg/m3
Nominal Thickness : 16mm

Product Group Number Classification :	1	
Average Specific Extinction Area :	3.0	m²/kg

Chris Campbell
Client Relations Manager

35075

vermiculite	grenamat® A	grenamat® AL	grenamat® AS	grenamat® B,C	grenamat® HTI	grenaboard®
Exfoliated vermiculite available in five fractions	Certified boards for walls and ceilings used for ship construction	Self-supporting air-condition pipeline Self-supporting smoke and heat extraction duct Fire protection of carbon lamellas (CFRP) Fire-resistant panels with a surface finish HPL, CPL, veneer or paper Fire-resistant acoustic panels	Refractory insulation boards and components for fireplaces and stoves	Boards suitable for fillings of fire-resistant safety doors	Vermiculite insulation boards for high-temperature applications	Fire-resistant light-weight boards for protection of ceiling structures

grena® a.s.

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GRM Global Pte Ltd
203 Hougang Street
21 # 03-91 Singapore (530203)

CE

QUALITY SYSTEM CERTIFICATION DNV·GL ISO 9001

WE'RE ON FIRE
FOR NON-COMBUSTIBILITY