

European Technical Approval**ETA 09/0250****Trade name**

MASTERBOARD®

Approval holderPromat International NV
Bormstraat 24, B-2830 Tiselt
Belgium**Website**www.promat-international.com**Generic type and use
of construction system**

Fire protective board

Validity from:

2013-06-27

To:

2018-06-26

Manufacturing plants :

03

**This European Technical
Approval replaces:**ETA 09/0250, valid from 02/12/2009 until
01/12/2014**This ETA contains :**13 pages including 2 annexes (Annexes 2.0 and
2.1) which form an integral part of the
document.European Organisation for Technical Approvals
Organisation Européenne pour l'Agrément Technique
Europäische Organisation für Technische Zulassungen

I. Legal bases and general conditions

1 This European Technical Approval is issued by UBAtc, in accordance with :

- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹, modified by the Council Directive 93/68/EEC² and regulation (EC) N° 1882/2003 of the European Parliament and of the Council³
- Belgian law of 25 March 1996 concerning the adaptation of legislative and administrative provisions of Member States to the Construction Products Directive (89/106/EEC) for construction products⁴ and Belgian Royal Decree of 18 August 1998 concerning construction products⁵
- Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC⁶.
- Guidelines for Fire protective products Part 1: "General" and Part 4: "Fire protective board, slab and mat products and kits", guidelines Nr. 018-1 and 018-4

2 The UBAtc is authorized to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.

3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1, or manufacturing plants other than those laid down in the context of this European Technical Approval.

4 This European Technical Approval may be withdrawn by UBAtc, in particular pursuant to information by the Commission according to article 5(1) of Council Directive 89/106/EEC.

5 Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of UBAtc. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.

6 Subject to the application introduced, the European Technical Approval is issued by the approval body in its official language. These versions correspond fully to the English version circulated in EOTA. Translations into other languages have to be designated as such.

7 The ETA holder confirms to guarantee that the product(-s) to which this approval relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This approval is issued under the condition that the aforementioned guarantee by the ETA holder is continuously observed.

8 Compared with the previous version, no changes have been introduced.

¹ Official Journal of the European Communities L40, 11.2.1989, p.12

² Official Journal of the European Communities L220, 30.08.1993, p.1

³ Official Journal of the European Communities L284, 31.10.2003, p.1

⁴ Belgian Law Gazette, 21.05.1996

⁵ Belgian Law Gazette, 11.09.1998

⁶ Official Journal of the European Communities L17, 20.01.1994, p.34

II. Specific conditions of the European Technical Approval (ETA)

1 Definition of product and intended use

1.1 Scope

This ETA covers fire protective boards intended for

- internal use (ETAG 018-4 type Z₂)
- internal use high humidity (ETAG 018-4 type Z₁)
- external use semi-exposed (ETAG 018-4 type Y).

MASTERBOARD® is intended to protect elements or to be used in assemblies as specified in table 1.

Protection of	ETAG 018-1 reference
Horizontal membrane protection incl. suspended ceilings acc. to EN 13964	Type 1
Vertical membrane protection	Type 2
Load-bearing concrete elements	Type 3
Load-bearing steel elements	Type 4
Load-bearing flat concrete profiled sheet composite elements	Type 5
Load-bearing concrete filled hollow steel columns	Type 6
Load bearing timber elements	Type 7
Fire separating assemblies with no load-bearing requirements	Type 8
Technical services assemblies in buildings	Type 9
Uses not covered by types 1-9	Type 10

Table 1 shows the possible intended uses of the boards. Not all of these have been assessed within the framework of this ETA with regard to fire resistance performance. Annex 2 shows a list of the uses for which fire resistance assessment was carried out. This ETA covers assemblies installed in accordance with the provisions given in Annex 2.

With regard to fire resistance performance, the other intended uses are supported by other means at national level (as specified in the note in paragraph 2.2.1.2 of this ETA).

The assumed working life of the product for the intended use is 25 years⁷, provided that the assembled product is subject to appropriate use and maintenance, in accordance with paragraph 5.2 of this ETA.

⁷ The indications given as to the working life of the products cannot be interpreted as a guarantee given by the ETA-holder or the approval body. It should only be regarded as a means for the specifiers to choose the appropriate criteria for fire protective board in relation to the expected, economically reasonable working life of the works.

1.2 Identification of the product

1.2.1 General

MASTERBOARD® is a fire protective calcium silicate board, composed of a calcium silicate matrix, cement and mineral fillers. The board is off-white in colour and has a smooth upper surface and an embossed or sanded reverse face.

1.2.2 Dimensions and density

Dimensions and density of the boards are given in table 2.

Density (dry 105°C): 975 kg/m ³ ± 12,5%	
Density (23°C, 50%RH): 1050 kg/m ³ ± 12,5%	
Length x width (mm x mm)	Tolerances
2440 x 1220	+3/-3 mm
2400 x 1200	+3/-3 mm
2500 x 1200	+3/-3 mm
2500 x 1250	+3/-3 mm
Thickness (mm)	
6, 8 and 9	+ 0.5/ -0.5 mm
10, 12 and 15	+1/-1 mm
20 and 25	+ 1.5/ -1.5 mm

1.2.3 Ancillary products

Ancillary products referred to in this ETA, as a part of installation provisions or in the framework of determining performances (e.g. fire resistance test), are not covered by this ETA and cannot be CE-marked on the basis of it.

2 Characteristics of product(s) and methods of verification

2.1 Evaluation of ancillary products

Ancillary products used in test assemblies are specified in the installation provisions of the fire resistance test described in annex 2 of this ETA.

For ancillary products referred to in this ETA specifically (by trade name), the composition of the product (if manufactured by the ETA holder) or its properties/characteristics (if supplied to the ETA holder) are laid down in the confidential ETA file held by the approval body. The ETA holder shall inform the approval body if any of this information is no longer correct.

For ancillary products referred to in this ETA generally (by minimum requirements), compliance with these minimum requirements of products tested as part of test assemblies has been verified in the framework of approval testing.

In the intended end use conditions, assemblies in which fire protective boards are used, should meet all works related requirements (e.g. related to safety in use).

2.2 Characteristics and methods

2.2.1 Safety in case of Fire

2.2.1.1 Reaction to fire

The MASTERBOARD® boards have a reaction to fire classification A1 according to EN 13501-1.

2.2.1.2 Fire resistance

The resistance to fire performance according to EN 13501-2 of assemblies incorporating MASTERBOARD® boards is presented in annex 2.

NOTE: In accordance with ETAG 018-4 (foreword), until 10 years after the initial issuing of this ETA, or until the withdrawal of relevant national test and classification standards, CE marking will cover a limited number of assemblies subjected to fire resistance assessment. As time progresses, the performance declaration for fire resistance covered by CE marking should gradually be enlarged by the ETA-holder and incorporated in this ETA by amendment or revision. In the meantime, and taking into account the transitional arrangements for test and classification standards and the corresponding national legislation (see EC Guidance paper J), the ETA-holder shall be permitted to maintain and be able to use - on a national basis - his portfolio of test data for this characteristic, based on relevant national standards, next to the performance declaration covered by the CE marking based on this ETA.

2.2.2 Hygiene, Health and the Environment

2.2.2.1 Water impermeability

In accordance with EN 12467, the MASTERBOARD® boards are impermeable to water.

2.2.2.2 Release of dangerous substances

2.2.2.2.1 General

The fire protective boards comply with all relevant European and national provisions⁸ applicable for the uses for which it is brought to the market.

In addition to this ETA clause relating to dangerous substances, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.2.2.2.2 Release of formaldehyde

The fire protective boards have no formaldehyde containing components.

2.2.3 Safety in Use

2.2.3.1 Flexural strength

In accordance with EN 12467, MASTERBOARD® boards have a modulus of rupture (MOR) of $\geq 4,5$ MPa (95% confidence level).

The boards have sufficient strength to support their own mass. The boards are not intended to support additional loads.

⁸ Known at the date of issuing.

2.2.3.2 Dimensional stability

The boards, tested in accordance with EN 318, are dimensionally stable.

2.2.3.3 Resistance to impact and eccentric load

No Performance Determined.

2.2.4 Energy Economy and Heat Retention

2.2.4.1 Thermal conductivity

No performance determined.

2.2.4.2 Water vapour permeability

No performance determined.

2.2.5 Protection against noise

No performance determined.

2.2.6 Aspects of Durability and serviceability

2.2.6.1 Resistance to deterioration caused by water

In accordance with EN 12467, the boards are resistant to water deterioration.

2.2.6.2 Resistance to soak/dry

In accordance with EN 12467, the boards are resistant to soak/dry cycles.

2.2.6.3 Resistance to freeze/thaw

In accordance with ETAG 018-4 annex E, the boards are resistant to freeze-thaw cycles for the intended use Y (external, semi-exposed).

2.2.6.4 Resistance to heat/rain

This characteristic is not relevant for the intended use Z₂ (internal use), Z₁ (internal use high humidity), Y (external use semi-exposed).

2.2.6.5 Basic durability assessment

Product performances confirm a working life of 25 years for the intended use Z₂ (internal use), Z₁ (internal use high humidity), Y (external use semi-exposed).

2.2.7 Identification

2.2.7.1 2.2.7.1 Product properties

See §1 of this ETA

2.2.7.2 2.2.7.2 Compressive strength

The compressive strength of the boards, based on approval testing in accordance with ETAG 018-4 and EN 826, is 9,3 MPa. This value is a guidance value, and does not reflect a statistical evaluation, nor a minimum guaranteed value.

2.2.7.3 Tensile strength

The perpendicular tensile strength of the boards, based on approval testing in accordance with ETAG 018-4 and EN 1607, is 77,9 kPa.

The parallel tensile strength of the boards, based on approval testing in accordance with ETAG 018-4 and EN 1608, is 989 kPa.

These values are guidance values, and do not reflect a statistical evaluation, nor a minimum guaranteed value.

3 Evaluation of Conformity and CE marking

3.1 Attestation of Conformity

3.1.1 For fire protective uses

The system of attestation of conformity is specified in the EC Decision 99/454/EC (system 1).

For initial type testing of the product (see Annex III.1.a of the CPD) the tasks for the approved body are limited to the following characteristics:

- Reaction to fire
- Resistance to fire
- Mechanical resistance and stability
- Release of dangerous substances

For initial inspection of the factory and of FPC (see Annex III.1.f) of the CPD), and for continuous surveillance, judgment and assessment of the FPC (see Annex III.1 g) of the CPD), parameters related to the following characteristics are of interest to the approved body:

- Reaction to fire
- Mechanical resistance and stability

3.1.2 Uses subject to reaction to fire regulations

The system of attestation of conformity is specified in the EC Decision 99/454/EC, as amended by EC Decision 2001/596/EC, is system 1, 3 or 4 described in Council Directive (89/106/EEC) Annex III, depending on the classes declared.

For Fire protective Products under systems 1 and 3, regarding the initial type testing of the product [see Annex III.1.a) of the CPD], the task for the approved laboratory is limited to the assessment of the Euroclass characteristics for reaction to fire, as indicated in the Commission Decision 94/611/EC.

For Fire Protective Products under system 1, for initial inspection of the factory and of FPC [see Annex III.1.f) of the CPD], and for continuous surveillance, assessment and approval of the FPC [see Annex III.1.g) of the Construction Products Directive], parameters related to the Euroclass characteristics for reaction to fire, as indicated in the Commission Decision 94/611/EC are of interest of the approved body.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

3.2.1.1.1 General

The ETA-holder exercises permanent internal control of the production. All the elements, requirements and provisions adopted by the ETA-holder are being documented in a systematic manner in the form of written policies and procedures. This factory production control system ensures that the products are in conformity with the European Technical Approval (ETA).

The personnel involved in the production process have been identified, sufficiently qualified and trained to operate and maintain the production equipment. Machinery equipment is being regularly maintained and this is being documented. All processes and procedures of production are being recorded at regular intervals.

The ETA-holder maintains a traceable documentation of the production process from purchasing or delivery of raw or basic raw materials up to the storage and delivery of finished products.

The factory production control system for the product includes relevant design specifications, including adequate drawings and written instructions for:

- type and quality of all materials
- overall dimensions
- packaging and transport protection

The production control system specifies how the control measures are carried out, and at which frequencies.

Products that do not comply with requirements as specified in the ETA are being separated from the conforming products and marked as such. The ETA-holder registers non-compliant production and action(-s) taken to prevent further non-conformities. External complaints are also being documented, as well as actions taken.

3.2.1.1.2 In-coming material

When materials/products are delivered for incorporation into the production process, verification of conformity with specifications in the ETA takes place.

3.2.1.1.3 Maintenance, calibration of testing equipment

All testing equipment is being maintained, calibrated and/or checked against equipment or test specimens traceable to relevant international or nationally recognised reference test specimens (standards).

The ETA-holder ensures that handling, preservation and storage of test equipment is such that its accuracy and fitness for purpose is maintained. The calibration of all test equipment shall be repeated if any repair or failure occurs which could upset the calibration of the test equipment.

3.2.1.2 Other tasks of the ETA-holder

The following table specifies properties that should be controlled and minimum frequencies of control. The test method and threshold have been laid down in the control plan.

Property	Minimum frequency
Determination of organic content (reaction to fire)	1 per week ⁹
Determination of dimensional stability at high temperatures (fire resistance)	1 per week
Indirect test method (small oven test) ¹⁰	1 per year
Water impermeability	1 per 3 years
Dimensional stability	1 per year
Identification	1 per day ¹¹ , per dimension
- length, width	
- thickness	
- apparent density	
Flexural strength	1 sample per n-boards

3.2.2 Tasks of approved bodies

3.2.2.1 Initial type testing

The approval tests have been conducted by the approval body in accordance with chapter 5 of the ETAG 018, Parts 1 or 4, as relevant, and the approval body has assessed the results of these tests in accordance with chapter 6 of that ETAG, as part of the ETA issuing procedure. These tests shall be used for the purposes of Initial Type Testing and this work shall be validated by the approved body for Certificate of Conformity purposes.

⁹ A week represents 5 production days.

¹⁰ Production shall be subjected to a small oven test (test performed on one thickness).

¹¹ A day represents a 24h time period in which production is considered to be as usual for the production facility concerned.

3.2.2.2 Assessment of the factory production control system - initial inspection and continuous surveillance

Assessment of the factory production control system is the responsibility of the approved body.

An assessment shall be carried out of the production unit to demonstrate that the factory production control is in conformity with the ETA and any subsidiary information. This assessment shall be based on an initial inspection of the factory. The relevant production unit has been specified in the ETA.

Subsequently continuous surveillance of factory production control is necessary to ensure continuing conformity with the ETA. It is recommended that Surveillance inspections are to be conducted at least twice a year.

3.2.2.3 Certification

Once ITT (cf. 3.2.2.1) and the initial inspection of the FPC system (cf. 3.2.2.2) have been performed and if a favourable decision can be made on the basis of available information, the notified certification body shall issue an EC Certificate of conformity, permitting the ETA-holder to issue an EC Declaration of conformity, allowing CE Marking of the products.


3.3 CE marking

3.3.1 General

The CE marking shall be affixed to the board packaging. In accordance with ETAG 018, the required information to accompany the CE symbol is:

- identification number of the notified body
- name/address of the ETA-holder
- two last digits of year of affixing CE marking
- number of the EC Certificate of Conformity
- number of ETA
- reference to the ETAG 018, Parts 1 and 4
- indications to clarify the intended use:
 - exposure type(-s), cf. §1.1 of this ETA
 - type(-s) indicating the assembly the board is intended to protect, cf. §1.1 of this ETA
- designation code: nominal thickness (all performances can be derived from this info).

3.3.2 Example of CE marking

	"CE"-symbol
yyyy	Number of Notified Body
Promat International NV Bormstraat 24 B-2830 Tiselt Belgium 03	Name and address of the ETA-holder + Code of the manufacturing plant
09	Two last digits of year of affixing CE marking
yyyy-CPD-XXXX	Number of EC certificate of conformity
ETA N° 09/0250	ETA Number
ETAG 018 Parts 1 and 4 Fire Protective Board	ETAG Reference
MASTERBOARD®	Product identification
Exposure types Z ₂ , Z ₁ , Y Types 7, 8 and 10 XXX ¹² mm NNNN mm x NNNN mm	Use category related to weather exposure Use category related to intended use Nominal board thickness Nominal Dimensions

3.4 Other marking and/or information

Each board is marked with product name and traceability code. Each package is marked with product name, traceability code, thickness of the boards, and dimensions of the boards.

4 Assumptions under which the fitness of the product(s) for the intended use was favourably assessed

4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with the approval body, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the approval body before the changes are introduced. The approval body will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alterations to the ETA, shall be necessary.

The raw materials are mixed in water and combined in a slurry. The boards are shaped on a forming drum, cut and stacked for curing. The board is autoclaved under saturated steam pressure and dried. Edges are trimmed and the reverse surface sanded to the desired thickness. Each board is marked in accordance with paragraph 3.4 of this ETA. Boards are examined for visual defects and non-compliant boards are rejected.

4.2 Installation

4.2.1 General

4.2.1.1 Supporting structure

The distance between supports shall be in accordance with the information provided in the assemblies described in annex 2.

4.2.1.2 Cutting and machining

The fire protective boards shall be cut and machined using conventional woodworking equipment. The use of saw blades with hardened teeth or with tungsten carbide tipped blades is recommended. When machining the fire protective board with power tools, dust extraction shall take place and inhalation of dust should be avoided.

A safety data sheet is available from the manufacturer upon request.

¹² The thickness in mm is specified on the label, attached to the packaging, on which the CE-marking is presented.

4.2.1.3 Joints

The fire protective boards shall be butt jointed.

The boards can have square or beveled edges. The type of edge shall be in accordance with the assemblies described in annex 2.

Joints in adjacent boards, where possible, shall be staggered over a minimum distance of 300 mm.

The use and type of joint filler shall be in accordance with the assemblies described in annex 2.

4.2.1.4 Mechanical fasteners

Fastening of the fire protective boards onto the support structure shall be in accordance with the assembly information provided in annex 2.

When applied in more than one layer, the boards, may be attached to each other by staples or equivalent fasteners (screws, nails) without an adverse affect on the mechanical properties of the assembled system.

4.2.1.5 Surface treatment

The board surface allows most types of decoration. When applying a surface treatment, the absorption capacity and alkalinity of the boards have to be taken into account.

Assessment of the influence of surface treatment (such as plastering, paints, tiles, wallpaper), on the performance of the boards, has not been performed in the framework of this ETA.

4.2.1.6 Assembly

The boards shall be applied as specified in the assemblies in annex 2.

5 Recommendations

5.1 Recommendations on packaging, transport and storage

During transport and storage, the boards shall be stacked on a flat underground and covered. Storage shall take place on pallets, in a sheltered and well-ventilated space.

5.2 Recommendations on use, maintenance and repair

Future modifications to the building should not adversely affect the fire protective properties of the system in which the boards are used. Care should be taken to prevent any reduction of fire performance as a result of increased applied load to protected elements of the works (e.g. beams, columns, ceilings, floors, or walls).

The assessment of the fitness for use is based on the assumption that damaged boards, for example due to accidental impact, are replaced. It is further assumed that replacement of components during maintenance/repair will be undertaken using materials specified by the ETA.

ANNEX 1: References

Reference number ETAG 018-1 (edition 2004)

Document title Fire protective products - Part 1: General.

Reference number ETAG 018-4 (edition 2004)

Document title Fire protective products - Part 4: Fire protective board, slab and mat products and kits.

Reference number EN 13501-1:2002

Document title Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests

Reference number EN 13501-2:2003

Document title Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services

Reference number EN 12467:2004

Document title Fibre-cement flat sheets - Product specification and test methods

Reference number EN 318:2002

Document title Wood based panels - Determination of dimensional changes associated with changes in relative humidity

Reference number EN 12524

Document title *Building materials and products - Hygrothermal properties - Tabulated design values*

Reference number EN 826:1996

Document title Thermal insulating products for building applications - Determination of compression behaviour

Reference number EN 1607:1996

Document title Thermal insulating products for building applications - Determination of tensile strength perpendicular to faces

Reference number EN 1608:1996

Document title Thermal insulating products for building applications - Determination of tensile strength parallel to faces

Reference number prEN 14566 (September 2002)

Document title Mechanical fasteners for gypsum plasterboard systems – Definitions, requirements and test methods.

NOTE: The editions of reference documents given above are those which have been adopted by the UBAtc for its specific use when establishing this ETA. When new editions become available, these supersede the editions mentioned only when confirmed by the UBAtc.

ANNEX 2: Fire resistance performances and assembly methods for uses of boards covered by this ETA

Annex 2.0: Overview of fire resistance performances for MASTERBOARD® assemblies

The fire protective assemblies in Table A.2.0.1 have been assessed within the framework of this ETA. Assemblies installed according to the provisions given in this annex are covered by this ETA.

Assembly assessed within the framework of this ETA	Classification according to EN 13501-2	Test standard	Intended use type according to ETAG 018	Installation details	Date of addition to this ETA
Covering consisting of MASTERBOARD® fire protective boards (nominal thickness 8 mm)	K ₁ 10 K ₂ 10	EN 14135:2004	Type 10	Annex 2.1	2009-12-02

Annex 2.1: Specification of a covering (intended use type 10), composed of MASTERBOARD® fire protective board (thickness 8 mm), and contributing to the fire protection ability of a substrate

A.2.1.1 Date of addition to this ETA

This annex was added to ETA 09/0250 on 2009-12-02. This assembly was not covered by this ETA prior to the addition of this annex.

A.2.1.2 Classification

The assembly described in this annex has been tested according to EN14135:2004 and classified K₁ 10 and K₂ 10 in accordance with EN 13501-2.

A.2.1.3 Installation requirements

Installation requirements in paragraph 4.2 of this ETA shall be taken into account.

A.2.1.4 Supporting structure

The protected substrate shall meet the specifications listed in Table A.2.1.1.
The covering shall be mounted directly on the substrate. A cavity is not necessary.
The covering can be as well in horizontal, vertical or in sloped application..

Element	Requirement	Characteristic of substrate
Substrate	K ₁ 10	Density ≥ 300 kg/m ³
Substrate	K ₂ 10	All substrates

A.2.1.5 Covering by fire protective boards

The MASTERBOARD® fire protective boards (thickness 8 mm) are fixed to the substrate with galvanized steel screws (gypsum board screws for use in wet rooms) with minimum dimensions of Ø 4,2 x 41 mm at ≤ 300 mm centers in the longest direction; distance from the edge ca 50 mm and at ≤ 580 mm centres in the shortest direction; distance from the edge ca 20 mm. The boards are butt jointed.

Specifications for the components are given in Table A.2.1.2.

Element	Identification	Characteristics	Mounting and fixing
Boards	Fire Protective board MASTERBOARD®	Width: 1200 mm Height: 2500 mm Thickness: ≥ 8 mm	Fixed directly to the substrate
Screws	Galvanized steel screws according to pr EN 14566 or equivalent	≥ Ø 4,2 x 41 mm	Used for fixing of the boards at ≤ 300 mm centres in the length and ≤ 580 mm centres in the width.

A.2.1.6 Joints

No finishing of the joints is necessary;

A.2.1.7 Details

All details (connections) shall be executed as presented in the figures A.2.1.

A.2.1.8 Figures

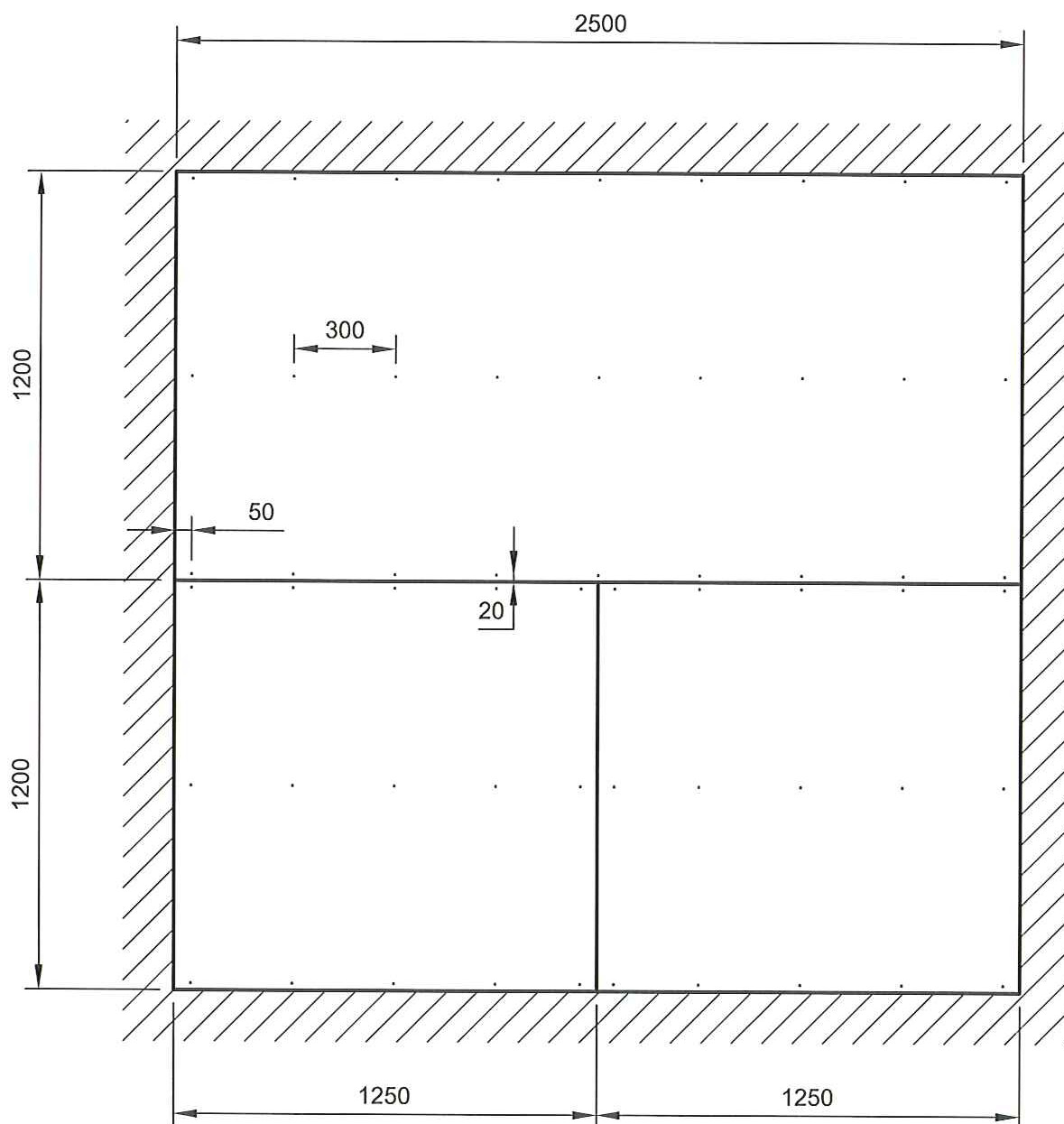


Figure A.2.1

Key

MASTERBOARD® boards, $th \geq 8 \text{ mm}$