

KOMO®

Technical Approval with Product

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DuraClad® vezelcementplaten **Fetim Professional**

STATEMENT BY KIWA

This Technical Approval with Product Certificate was issued on the basis of Evaluation Guideline 4101 deel 9 "Vlakke vezelcementplaten voor gevelbekleding", dated 2005-07-01, in conformity with the Kiwa Regulations for Product Certification.

Kiwa declares that:

- the products manufactured by the certificate holder may be relied upon to meet the technical specifications laid down in this Technical Approval with Product Certificate, provided such products have been provided with the KOMO® mark in the manner stated in this Technical Approval with Product Certificate.;
- the building components composed from the certified products may be relied upon to deliver a performance laid down in this Technical Approval with Product Certificate, provided
 - the building components have been manufactured in accordance with the processing methods laid down in this Technical Approval with Product Certificate;
 - the application conditions set out in this Technical Approval with Product Certificate have been met.

Within the framework of this Technical Approval with Product Certificate Kiwa does not carry out any inspection of the production of the other parts of the building component or of the manufacture of the building component itself.

Kiwa declares that name of product in its applications subject to the above-mentioned conditions meets the applicable requirements of the Dutch Building Decree (Bouwbesluit). For the acknowledgment of this certificate by the Dutch Minister of Housing, Regional Development and the Environment (VROM) and the Dutch Minister of Transport and Public Works, reference is made to the "Overview of quality declarations for the construction industry" on the website of the Dutch Building Quality Foundation Stichting Bouwkwaliteit (SBK): www.bouwkwaliteit.nl.

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Advice: consult www.kiwa.nl in order to ensure that this certificate is still valid.

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Dutch Building Decree Dutch Building Materials Decree bears CE

The following has been assessed: quality system product product performance in the application Periodic inspection
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DuraClad[®] flat fibre cement boards

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1. BUILDING DECREE TABLE

No.	Section	Limiting value/ method of determination	Performance in accordance with quality declaration	Notes relating to application
2.1	General strength of construction	Ultimate limit state, calculations in accordance with NEN 6702	Table 5 shows the areas of use for the various types of fixing	
2.11	Limiting fire hazards	Fire class A1 in accordance with NEN-EN 13501-1	Uncoated fibre cement boards, both front and back, meet class A2.	The (coated) fibre cement boards may not be used in the vicinity of a flue, and in accordance with NEN 6062 If the material will reach a temperature of more than 363 K (90°C).
2.12	Limiting the spread of fire	At least class D in accordance with NEN-EN 13501-1	Fire class A2	
2.13	Limiting the spread of fire	WBDBO > 30 minutes in accordance with NEN 6068	No fire resisting properties may be attributed to the boards regarding fire movement between spaces.	Flat fibre cement boards form part of the external wall structure. For determining the WBDBO the total structure must be assessed.
2.15	Limiting the formation of smoke	Smoke density at least class s2 in accordance with NEN-EN 13501-1	Smoke class s1	
3.1	Protection against external noise	Characteristic sound damping = 20 dB(A) in accordance with NEN 5077	No sound damping properties may be attributed to the boards	Flat fibre cement boards form part of the external wall structure. For determining the WBDBO the total structure must be assessed.
3.6	Preventing water penetration from outside	Watertight in accordance with NEN 2778	The boards are a watertight	When flat fibre cement boards are used as external compartment walls, the watertightness must be ensured by of a water resistant substructure.
3.7	Preventing water penetration from inside	Temperature factor > 0.5 or 0.65 in accordance with NEN 2778	Temperature factor > 0.5 or 0.65	Depending on use/function
3.15	Restricting the use of hazardous materials	In accordance with the provisions of Ministerial Ruling	Meet the regulations	
3.17	Protecting against rats and mice	Combating entry of rats and mice	The entry of rats and mice is prevented	Assembly and detailing to be done in accordance with section 3
5.1	Thermal insulation	Thermal resistance of the construction = 2,5 m ² K/W, determined in accordance with NEN 1068	No insulating properties may be attributed to the boards. The entire structure must be assessed.	When flat fibre cement boards are used as external compartment walls of the thermal installation must be ensured by an insulating substructure.
5.2	Limiting air permeability	Air volume flow of the total of all areas and rooms < 0.2 m ³ /sec, in accordance with NEN-EN 1027	Boards are airtight	When flat fibre cement boards are used as external compartment walls the air tightness must be ensured by using a sufficiently airtight substructure.

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2. TECHNICAL SPECIFICATION

2.1 SUBJECT

Façade cladding system conforming to the assessment directive 4101 part 1 'Façade cladding systems with panels. General requirements' and conforming to assessment directive 4101 part 9 Flat fibre cement boards for façade cladding'. DuraClad[®] fibre cement boards are suitable for use as decorative and moisture resistant facade cladding of external compartment walls, roof windows, gable ends, edges of roofs or side boards, eaves, façade cladding. Additionally the panels are suitable for garden fencing.

Conditions of use:

1. Processing must be carried out in accordance with the conditions as stated in section 3 of this 'attest with product certificate'.
2. The supporting wall must be sufficiently strong and stiff and connected to the foundations such that the stability of the construction is ensured and the loads on them can be transferred to the foundations.
3. Impacts with a kinetic energy = 0.5 kNm must be avoided. At locations where impacts above this level might be expected additional measures must be taken.

2.2 GENERAL

2.2.1 Form and composition

DuraClad(r) fibre cement boards are cement and cellulose fibre based boards with properties that conform to category A of NEN-EN 12467. The surface has a subtle and natural-looking wood-grain structure that can be coated. DuraClad[®] fibre cement boards are available rebated or as boards and are suitable for use as decorative and moisture resistant external wall cladding. DuraClad[®] planks can be fixed horizontally, vertically or diagonally to the supporting structure. DuraClad[®] rebated can be used horizontally and diagonally.



Figure 1: DuraClad[®] board



Figure 2: DuraClad[®] rebated

2.2.2 Dimensions and tolerances

Dimensions (nominal, l x b x t)

- DuraClad[®] plank : 4000 x 200 x 8 mm
- DuraClad[®] rebated : 4000 x 130¹⁾ x 10 mm

1) Working width.

Dimensional tolerances

The tolerances on length and width comply with NEN-EN 12467 level I, see table 1. Table 1: Tolerances on length and width

Nominal dimensions a ¹⁾	Level I	Level II
a = 600 mm	± 3 mm	± 4 mm
600 mm < a = 1000 mm	± 3 mm	± 5 mm
1000 mm < a = 1600 mm	± 0.3% a	± 0.5% a
1600 mm < a	± 5 mm	± 8 mm

¹⁾ a is the nominal length or width

The tolerance on thickness meet the requirements of NEN-EN 12467 table 2. Additionally the maximum difference over eight measurements per board amounts to not more than 15% of the maximum measured deviation.

Table 2: Thickness tolerance of textured boards

Nominal thickness (e)	Tolerance
E = 6 mm	- 0.6 mm + 0.9 mm
6 mm < e = 20 mm	- 10% d + 15% d
20 mm < e	- 2mm + 3mm

The straightness and squareness tolerances meet the requirements of NEN-EN12467 level I, see table 3.

Table 3: Straightness and squareness tolerances

Aspect	Level I	Level II
Squareness ¹⁾	± 0.1%	± 0.3%
Squareness	2 mm/m	4 mm/m

¹⁾ tolerance expressed as a percentage of the length of the relevant dimension (length or width).

2.2.3 Colours

DuraClad[®] fibre cement boards are available in the following colours:

- Primed version that can be coated;
- Almond;
- Green;
- Sand.

Other colours are available on a project basis.

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2.2.4 Material properties

Table 4: material properties

Property	Value
<i>Strength class:</i>	2
<i>Bending strength (wet conditions):</i>	
- longitudinally	15.0 N/mm ²
- transversely	6.3 N/mm ²
<i>E-modulus:</i>	
- longitudinally	> 6000 N/mm ²
- transversely	> 3200 N/mm ²
<i>Density:</i>	
- Duraclad [®] plank	± 1400 kg/m ³
- Duraclad [®] rebated	± 1385 kg/m ³
<i>Fire classification:</i>	
Contribution to fire propagation class	class A2 (NEN-EN 13501-1)
Smoke generation class	s1 (NEN-EN 13501-1)
<i>Building materials decree:</i>	
Composition	DuraClad [®] fibre cement boards do not contain asbestos

2.3 MARKS

The products are marked with the KOMO[®] quality mark.



K40976

Location of the mark:

- one label is fixed to each packaging unit.

Obligatory information on the label:

- KOMO[®] mark;
- number of the quality declaration K40976;
- name of factory and/or registered trademark;
- production code enabling manufacturing details to be traced (date, machine and/or shift number);
- tolerance level (I);
- strength class (2);

3. PROCESSING

3.1 GENERAL

3.1.1 Transport

Flat stable pallets that must be at least as big as the boards shall be used for transport. To prevent surface damage due to abrasive particles the boards must not be allowed to move against each other. During handling such as loading and unloading the boards must be lifted one by one.

3.1.2 Storage

Warping of the boards must be prevented during storage and the boards must also be protected from moisture, large temperature variations, contamination and mechanical damage. The boards should preferably be stored in a closed room with a relative humidity between 45 and 70% and at normal ambient temperature. On the construction site the boards must also be protected against rising damp. The boards must be stored horizontally, supported over their entire surface. The topmost boards must be protected by a cover plate and/or covering layer.

3.2 DESIGN SPECIFICATIONS

3.2.1 Design

Static calculations, in connection with panel dimensioning, must be carried out in conformance with the current versions of NEN 6700 and NEN 6702. The following criteria apply:

- The cladding must be capable of accepting the entire wind loading and subsequently transferring this to the wall behind via the supporting construction and anchorages.
- The value calculated for static wind loading (P) is obtained from: $P = 1.2 Ct \times Pw$ (kN/m²) where:
Ct = combination of the occurring wind flow factors in accordance with NEN 6702.
Pw = thrust as a consequence of the wind loading.
- The Ct factor is not used when determining the deflection and the wind loading (Pw) may be multiplied by 0.7.
- The deflection of the wall boards must be less than or equal to 1/200 x the span and/or the distance between the fixings.
- Distance from the edge and the number of fixings are stated in section 3.4.3.

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Static calculations relating to the dimensioning of the supporting structure must be carried out in conformance with NEN 6760. The values used for the loadings relating to the ultimate limit states for the fundamental loading combinations must be derived from section 6.2 of NEN 6702.

Dimensions of timber constructions

Timber structures must be so detailed that during the reference period no ultimate limit states or limiting conditions are exceeded as a consequences of changes in geometry.

Note:

When determining the dimension of the timber cross-section/s, account must also be taken of the presence of a required ventilation column of at least 20 mm deep and with the thickness of any insulation layer that might be present.

Fixings

The structural engineer shall establish the number of anchorage and fixing points, the dimensioning and assembly sequence. The engineer shall also calculate the fixings for wind forces (pull). The distance between fixings for the panels shall be a maximum of 400 mm.

3.2.2 Detailing

The detailing must be done in conformance with current standard practice. A few principal details are given in section 7 of this KOMO[®] 'attest-with-product certificate'.

Instructions for the supporting structure

If timber is used with a face moisture content of more than 20% (determined in accordance with NEN 5461) suitable measures must be taken to prevent rot. Threatened damage to timber may also be prevented by using timber preservation materials based on salts.

Note:

Machining of treated timber may lead to a reduction in its durability.

Instructions for detailing

- Fitting pieces shorter than 0.30 m must not be used.
- At locations where mechanical effects can be expected, special provisions must be fitted (e.g. fitting special profiles for sunshades, ladders, etc in some places).

Instructions for sealing joints

The type of sealant chosen will depend on the manner in which the panels will be processed (see also section 3.4.4).

Note:

Insulation material should preferably be provided with a waterproof layer. If an open joint system is used the insulation must be provided with a waterproof layer.

3.3 PROCESSING INSTRUCTIONS

When working with DuraClad[®] fibre cement boards the instructions below must be followed:

- DuraClad[®] fibre cement boards can be sawn and milled to any desired shape using normal woodworking machines.
- For this work saws and chisels with hardened metal cutting services and/or diamond segments without teeth are advised.
- When sawing the face of the board should be to the top. When using a jigsaw that cuts in the upwards direction the decorative side should be underneath.
- Preferably use machines with stationary (slow) rotating tools and moving tables.
- Make use of paper layers or boards underneath for protection and make sure that that these do not contain any sawing splinters if they are reused.
- Internal corners of cut-away areas for example shall have edges rounded to a minimum of 5 mm radius.

3.4 ASSEMBLY SYSTEM

3.4.1 General

The assembly system relates to panels fixed to a timber supporting structure that is anchored to a wall. Several systems (visible and invisible) are available for fixing the panels to the supporting structure. This KOMO[®] attest-with-product certificate relates only to the fixing types and methods described in this section.

3.4.2 Supporting structure

Shape and composition

The supporting structure consists of continuous vertical uprights, where the open ventilation space between the panels and wall behind must be a minimum of 20 mm. For flat cladding it is essential that the supporting structure is aligned accurately. Timber is the most frequently used material for the horizontal laths. The timber must be in good condition and shall preferably be treated. The centre-to-centre distance of the horizontals shall be a maximum of 400 mm. The laths must have a minimum width of 44 mm.

The laths can be placed:

- at the joint locations;
- at the end of panels;
- at an intermediate lath.

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Timber and laminated timber

Structures must be made of rectangular timber sections, not plywood, that at the least meet the following conditions:

1. timber must be classified in a strength class in accordance with 9.1.2 of NEN 6760;
2. the moisture content of the timber shall be 16 to a maximum of 20%;
3. the timber shall not be subject to active attack/decay and not have been attacked by worms, insects and/or fungi;
4. the timber sections shall be classified in one of the durability classes I to V in accordance with appendix G of NEN 6760;
5. if sawn softwood is used BRL 2301 quality class C applies.

Fixings for supporting structure

The fixings used for the supporting structure must at least meet the requirements of NEN 6762 class I sections 5.2 and 5.3 regarding allowable tolerances and basic requirements.

3.4.3 Fixing methods and means

Fixing methods

DuraClad[®] boards can be fixed in the following ways:

1. Overlapping where fixing takes place in the overlap. Each part is fixed with one (blind) screw to the upright behind (see detail 1, section 7).
2. Overlapping where fixing takes place in the overlap and at approximately 1/3 of the distance from bottom of the board. Each board is fixed to the upright behind using two screws (see detail 2, section 7).
3. Overlapping where fixing takes place in the overlap. Each part is fixed to the upright behind using one screw. Additionally at the overlap at the top of the boards there is a sealant joint (see detail 3, section 7).

DuraClad[®] rebated boards can be fixed as follows:

1. Fixing in the overlap of the rebate. Each board is fixed to the upright behind using one screw (see detail 4, chapter 7).
2. Fixing in the overlap of the rebate at approximately 1/3 of the distance from the bottom of the board. Each board is fixed to the upright behind using two screws (see detail 5, chapter 7).
3. Fixing in the overlap of the rebate. Each board is fixed to the upright behind one screw. Additionally sealant joint is placed at the top of the rebate, at the tongue and groove (see detail 6, section 7).

Conditions of use

1. The distance from the fixings to the edges of the boards must be at least 20 mm.
2. The temperature to which the timber structure is continuously exposed must not exceed 60°C.

Fixings

DuraClad[®] fibre cement boards shall be fixed using DuraClad[®] stainless steel (A2) self-tapping Torx screws, type M3.2-1.3x40/24. Pre-drilling is not necessary. DuraClad[®] FC Silicon sealer can be used during assembly to prevent subsequent 'rattling' and for joint sealing.

3.4.4 Instructions for joint connections

General

The dimensions of the panels can change due to variations in temperature and relative humidity. Changes in relative humidity are a determining factor.

To ensure effective use of the product, take account of notes below:

- The maximum expansion of the board between -15 and +90°C is 2.0 mm/m¹ longitudinally and 2.5 mm/m¹ transversely. If multiple panels and/or strips are used next to/above each other, joints must be used that allow for the maximum expansion.
- A minimum joint width of 8 mm is advised to handle the board, application and construction tolerances.
- Damage to the structure and insulation material behind the boards due to residual moisture remaining must be prevented. This must be taken into account during the design of the panel joints.
- Pests, such as rats and mice must be prevented from nesting behind wall cladding. Therefore there must be no openings larger than 0.01 m¹ in the facade.

Open joints

If a vertical and/or horizontal opened joint system is used a grade of installation material must be specified. If required a breather foil can be used immediately behind the boarding to provide additional waterproofing. The specification must also consider the durability of the supporting structure. If a timber supporting structure is to be used it is preferable that this is treated with preservative.

Closed joints

A closed joint system can be obtained by the use of various types of sealing sections, such as DuraClad[®] FC Silicone sealer colour and vertical and horizontal synthetic profiles. If metal or rigid synthetic profiles are used these must not impede the normal movement of the panels.

When DuraClad[®] rebated panels are used it is important that the normal movement of the panels is not included in any way.

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3.4.5 Instructions for ventilation

For successful use of the panels in a curtain wall construction, good ventilation behind the panels is absolutely essential. This can be achieved by sticking to the following guidelines:

- Always use a vertically ventilated cavity of at least 20 mm deep behind the panels.
- Ventilation openings must be present at the top and bottom of the facade cladding system. These must open directly to the outside air. This applies equally well to cut-aways such as windows and doors.
- The size of openings per running metre of facade shall be:
 - 20 cm² per m¹ for facade cladding heights up to 1 m;
 - 50 cm² per m¹ for facade cladding heights above 1 m.
- Ventilation openings may be reduced to 5 mm locally.
- Rats and mice must be prevented from getting behind the cladding and nesting. This is because such animals can spread illness. There must be no openings wider than 0,01 m¹ in the facade surface.

3.4.6 Instructions for thermal insulation

Installation material in the form of boards or blankets, which may or may not be provided with a waterproof layer, shall be processed in accordance with current standard practice or in accordance with the instructions in a valid quality declaration issued by an institution recognised by the Accreditation Board. The type of installation and its thickness must meet the requirements of the Building Decree.

Note:

Reference is made to the existence of the KOMO[®] product certificates that include specifications for insulation materials.

3.4.7 Accessories

Aluminium, PVC or EPDM-rubber sealing profiles for sealing the joints between the panels (the most common sealing profiles are in the schematic details). The sealing profiles must be tightly fitted into the correct locations. They must not be stapled into position, but shall be fixed using adhesive or mechanical fixing systems.

External window sills, drip stones and the like must be fitted with drop ends.

3.5 REPAIRS

Repairs may only be carried out by the manufacturer or at the manufacturer's responsibility.

3.6 MAINTENANCE

The boards can be cleaned using normal household cleaning materials. Abrasives and cleaning agents based on strongly alkaline components are not allowed. Nitrocellulose thinners are not advised because these can lead to marking on the boards.

4. PERFORMANCE

4.1 SAFETY INSTRUCTIONS

4.1.1 General strength of the structure, Building Decree section 2.1

DuraClad[®] fibre cement boards can be used in the locations stated in table 5. The strength and stability are adequate to withstand the fundamental loading combinations in accordance NEN 6702 during a 15 year reference period.

Table 5: Uses

Fixing methods (in accordance with § 3.4.3)	Use:
Boards, all methods	Up to a building height of 20 m, independent of wind speed area, in an urban environment
Rebated, method 1, one screw	Up to a building height of 14 m, wind speed area I, in an urban environment
Rebated, method 2: two screws	Up to a building height of 130 m, independent of wind speed area and local environment
Rebated, method 3: one screw & sealant	Up to a building height of 20 m, wind speed area I, in an urban environment

Conditions of use

1. *Static calculations for the wall cladding system must be carried out in conformance with NEN 6702 taking account of the following points:*
 - *the strength calculations for the facade boards are to be carried out by or on behalf of the manufacturer, or in accordance with the manufacturer's written instructions;*
 - *fire loadings need not be calculated;*
 - *the representative values and the material factor Y_m for the supporting structure, are to be derived from the applicable TGB standard;*
 - *for panels and for fixings are material factor Y_m of 2.0 applies.*
2. *Connections, fixings and anchorages must be constructed in accordance with a method such as that described in section 3.*
3. *Additional provisions must be made, in consultation with the manufacturer, for hanging heavy objects and for use at locations that are subject to extra mechanical loading.*

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4.1.2 Limiting fire hazards, Building Decree section 2.11

The incombustibility of DuraClad[®] fibre cement boards has not been determined. Near fireplaces and/or in the vicinity of a flue, provisions must be made to ensure that the requirements of the Building Decree are met.

4.1.3 Limiting the development of fire, Building Decree section 2.12

The contribution to fire propagation is Euro class A2, determined in conformance with NEN-EN 13501-1.

4.1.4 Limiting fire spread, Building Decree section 2.13

No fire resisting properties relating to fire movement between spaces may be attributed to DuraClad[®] fibre cement boards.

4.1.5 Limiting the creation of smoke, Building Decree section 2.15

The smoke density generated by a single board is Euro class s1, determined in conformance with NEN-EN 13501-1.

Conditions of use

1. Where there is a requirement for 'incombustibility' DuraClad[®] fibre cement boards may not be used.
2. An external wall of a building must consist of combinations of construction materials that at the least meet class 4, or Euro-class D of the contribution to fire propagation, providing that the side facing the emergency exit meets at least class 2 or Euro-class B.
3. An external wall of living accommodation of more than two stories must consist of building material combinations on the outside that at least meet class 1 or Euro-class B contribution to fire propagation to 2.5 m above the adjacent plot.
4. An external wall of a building that is not living accommodation must consist on the outside of construction material combinations that at least meet class 2 or Euro-class B of the contribution to fire propagation from a height of 13 m above the adjacent plot.
5. Materials and material combinations for parapets lower than 1.5 m from the floor surface must be at least class 4 or Euro-class D for contribution to fire propagation.
6. (Timber) supporting structures and if relevant insulation materials must be assessed for fire safety on a case-by-case basis.

4.2 HEALTH INSTRUCTIONS

4.2.1 Protection from external noise, Building Decree section 3.1

No sound damping properties may be attributed to a single layer of wall boards.

Conditions of use

1. On a case-to-case basis the external construction must be checked by calculation or testing in accordance with NEN 5077, or checked as per NPR 5070 to show that sound damping properties are at least 20 dB(A).
2. When determining sound damping DuraClad[®] fibre cement boards must be considered to be absent.

4.2.2 Resistance to moisture from the outside, Building Decree section 3.6

The wall boards are waterproof. The joint and connection details (section 3.4.4) are in principle watertight. Account must be taken of the fact that powder snow and rain may occasionally penetrate through the ventilation provisions to the cavity behind the wall boards. The substructure must be water resistant.

Conditions of use

The materials used must meet the system specifications (section 3) laid down in this KOMO[®] attest-with-product certificate.

4.2.3 Resistance to moisture from the inside, Building Decree section 3.7

No unacceptable moisture buildup as a consequence of condensation can occur on the inside of external wall constructions that have been built in accordance with schematic details given in attest-with-product certificates.

Conditions of use

1. A ventilated cavity at least 20 mm wide must be present behind the wall boards (see also section 3.4.5).
2. The temperature factor for the internal surfaces of the external wall is determined in accordance with NEN 2778 or NPR 2878 at least 0.65 for houses and living accommodation and at least 0.50 for buildings not intended for living accommodation.
3. The calculation value for the coefficient of conductivity (I) of the materials used must be determined in accordance with NEN 1068.

4.2.4 Limitations on the use of harmful materials, Building Decree section 3.15

DuraClad[®] fibre cement boards do not contain asbestos.

4.2.5 Protection against rats and mice, Building Decree section 3.17

The protection against rats and mice for the construction in accordance with the schematic details is adequate.

Conditions of use

Joint, connections and ventilation openings that a wider than 0.01 m must be provided with closable ventilation grilles.

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4.3 INSTRUCTIONS RELATING TO ENERGY EFFICIENCY

4.3.1 Thermal insulation, Building Decree section 5.1

DuraClad[®] fibre cement boards provide no contribution to the thermal resistance (Rc) of the total external wall. If there are thermal resistance requirements for the total external wall structure, please must be achieved by the structure that lies behind.

Conditions of use

1. The thermal resistance (Rc) of the total external wall must be determined in accordance with NEN 1068.

4.3.2 Restricting air permeability, Building Decree section 5.2

DuraClad[®] fibre cement boards are in principle airtight. The schematic details in this attest-with-product certificate ensure air tightness in accordance with NEN 2686.

4.4 IMMISSION IN GROUND AND WATER, BUILDING MATERIALS DECREE

The average immission in in the ground and surface water of the flat fibre cement boards meet the requirements of appendix 2 of the That Building Materials Decree and the Temporary Exemption Rules for Building Materials 2004 for category 1B applications. This means that within the framework of the Building Materials Decree there are no limitations on the use of fibre cement boards for external wall cladding.

4.5 OTHER PROPERTIES

4.5.1 Stiffness/deflection, BRL 4101 part 1 section 4.1

The anticipated deflection for a fundamental loading combination in accordance with NEN 6702 will be less than 1/200 x the distance between two supporting points. If construction is carried out in accordance with the schematic details there will be no defamation that will affect the aesthetics or the functionality of the panels.

Conditions of use

1. The edges of the board must not stand in water for long periods.
2. The boards must be free to expand both longitudinally and transversely. In this respect a free joint width of at least 3 mm/m¹ is required with a minimum van 8 mm being present along the board edges.

4.5.2 Climatological durability, BRL 4101 part 9

DuraClad[®] fibre cement boards have been tested under cycling temperatures and relative humidity. The fibre cement boards may be used at locations where they are exposed to heat, high humidity and severe frost.

5. TIPS FOR THE USER

5.1 Following delivery inspect products falling under the 'technical specification' for:

- that what has been delivered is what was agreed;
- that the mark and the manner of marking are correct;
- that the products exhibit no visible defects as a consequence of transport etc.

5.2 On delivery check that the product meets the technical specification mentioned in section 2.

5.3 If on the basis of the above you are considering rejecting the delivery, please contact:

- Fetim Professional
- and if necessary:
- Kiwa N.V.

5.4 Carry out storage, transport and processing in accordance with the stipulations stated in section 3.

5.5 Follow the conditions of use stated under 'performance' (section 4).

6. LIST OF DOCUMENTS CITED*

NEN 1068:2001	Thermische isolatie van gebouwen – Rekenmethoden, inclusief wijzigingsblad NEN 1068:2001/A4:2005 Thermal insulation of buildings - Calculation methods, including alteration sheet NEN 1068:2001/A4:2005
NEN 2686:1998	Luchtdoorlatendheid van gebouwen – meetmethode Air leakage of buildings - Method of measurement
NEN 2778:1991	Vochtwerking in gebouwen – bepalingmethoden, inclusief wijzigingsblad NEN 2778:1991/A3:2004 Moisture control in buildings - Determination methods, including alteration sheet NEN 2778:1991/A3:2004
NEN 5077:2006	Geluidswering in gebouwen - Bepalingmethoden voor de grootheden voor geluidswering van uitwendige scheidingsconstructies, luchtgeluidisolatie, contactgeluidisolatie, geluidniveaus veroorzaakt door installaties en nagalmtijd Noise control in buildings - Determination methods for performances concerning airborne sound insulation, impact sound insulation, sound proofing of partitions and sound levels caused by technical services

DuraClad[®] flat fibre cement boards

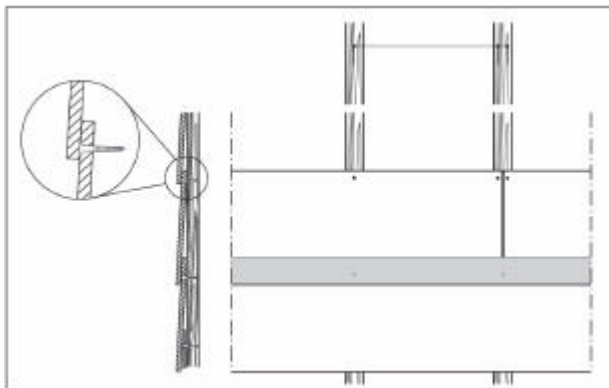
NEN 5461:1999	Kwaliteitseisen voor hout (KVH 2000) - Gezaagd hout en rondhout - Algemeen gedeelte, inclusief wijzigingsblad NEN 5461:1999/A1:2004 Requirements for timber (KVH 2000) - Sawn timber and round wood - General part, including alteration sheet NEN 5461:1999/A1:2004
NEN 6062:1991	Bepaling van de brandveiligheid van rookafvoorzorgingen, inclusief wijzigingsblad NEN 6062:1991/A1:1997 Determination of the fire safety of flues, including alteration sheet NEN 6062:1991/A1:1997
NEN 6064:1991	Bepaling van de onbrandbaarheid van bouwmaterialen, inclusief wijzigingsblad NEN 6064:1991/A2:2001 Determination of non-combustibility of construction materials, including alteration sheet NEN 6064:1991/A2:2001
NEN 6065:1991	Bepaling van de bijdrage tot brandvoortplanting van een bouw materiaal (combinaties), inclusief wijzigingsblad NEN 6065:1991/A1:1997 Determination of the contribution to fire propagation of building products, including alteration sheet NEN 6065:1991/A1:1997
NEN 6066:1991	Bepaling van de rookproductie bij brand van bouw materiaal (combinaties), inclusief wijzigingsblad NEN 6066:1991/A1:1997 Determination of the smoke production during fire of building products, including alteration sheet NEN 6066:1991/A1:1997
NEN 6068:2004	Bepaling van de weerstand tegen branddoorslag en brandoverslag tussen ruimten, inclusief wijzigingsblad NEN 6068:2004/A2:2005 Determination of the resistance to fire movement between spaces, including alteration sheet NEN 6068:2004/A2:2005
NEN 6700:2005	Technische grondslagen voor bouwconstructies - TGB 1990 - Algemene basiseisen Technical principles for building structures - TGB 1990 - General principles
NEN 6702:2001	Technische grondslagen voor bouwconstructies -TGB 1990- belastingen en vervormingen, inclusief wijzigingsblad NEN 6702:2001/A1:2005 Technical principles for building structures - TGB 1990 - Loadings and deformations, including alteration sheet NEN 6702:2001/A1:2005
NEN 6760:2001	Technische grondslagen voor bouwconstructies - TGB 1990 - Houtconstructies - Basiseisen - Eisen en bepalingmethoden, inclusief wijzigingsblad NEN 6760:2001/C1:2002 TGB-1990 - Timber structures - General principles - Requirements and determination methods, including alteration sheet NEN 6760:2001/C1:2002
NEN 6762:1997	Stalen stiftvormige verbindingsmiddelen voor dragende houtconstructies Dowel type fasteners for use in load bearing timber structures
NEN-EN 1027:2000	Ramen en deuren - Waterdichtheid – Beproevingmethode Windows and doors - Watertightness - Test method
NEN-EN 12467:2004	Vlakke vezelcement platen - Productspecificaties en beproevingsmethoden, inclusief wijzigingsblad NEN-EN 12467:2004/A1:2005 Fibre-cement flat sheets - Product specification and test methods, including alteration sheet NEN-EN 12467:2004/A1:2005
NEN-EN 13501-1:2003	Brandclassificatie van bouwproducten en bouw delen - Deel 1: Classificatie op grond van resultaten van beproeving van het brandgedrag Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests
NPR 2878:1991	Uitwendige scheidingsconstructies van gebouwen - Vereenvoudigde berekeningsmethode voor de binnenoppervlaktetemperatuurfactor External partition constructions of buildings - Simplified method for the calculation of the temperature factor at the inner surface
NPR 5070:2005	Geluidwering in woongebouwen - Voorbeelden van wanden en vloeren in steenachtige draagconstructies Noise control in dwellings - Examples of partition walls and floors
BRL 2301:2004	Naaldhout Softwood
Bouwbesluit 2003:	Bouwbesluit 2003 Stb. 2001, 410; Stb. 2002, 203, 516, 518; Stb. 2005, 1, 368, 417, 528; Stb. 2006, 148 en de Ministeriële Regeling Stcrt. 2002, 241, Stcrt. 2003, 101 en Stcrt 2005,163 en 249. Building decree 2003 Bulletin of Acts and Decrees 2001, 410; Bulletin of Acts and Decrees 2002, 203, 516, 518; Bulletin of Acts and Decrees 2005, 1, 368, 417, 528; Bulletin of Acts and Decrees 2006, 148 and the Ministerial Ruling Government Gazette 2002, 241, Government Gazette 2003, 101 and Government Gazette 2005,163 and 249.
Bouwstoffenbesluit:	Bouwstoffenbesluit bodem- en oppervlaktewaterenbescherming Staatscourant 1995, 567, 614; Staatscourant 1997, 525, 686; Staatscourant 2000, 352, Staatscourant 2002, 203, 516 en 582 en Staatscourant 2005, 610 en de Ministeriële Regelingen Stcrt. 1998, 20, 203; Stcrt. 1999, 126; Stcrt. 2000, 66, 210; Stcrt. 2004, 40, 68, 209, 217 en Stcrt 2005,163. Building Materials Decree - ground and surface water protection Government Gazette 1995, 567, 614; Government Gazette 1997, 525, 686; Government Gazette 2000, 352, Government Gazette 2002, 203, 516 and 582 and Government Gazette 2005, 610 and the Ministerial Ruling Government Gazette 1998, 20, 203; Government Gazette 1999, 126; Government Gazette 2000, 66, 210; Government Gazette 2004, 40, 68, 209, 217 and Government Gazette 2005,163.

* For the correct version of the standards shown above references made to the latest alteration sheet in BRL 4101-1 and 4101-9.

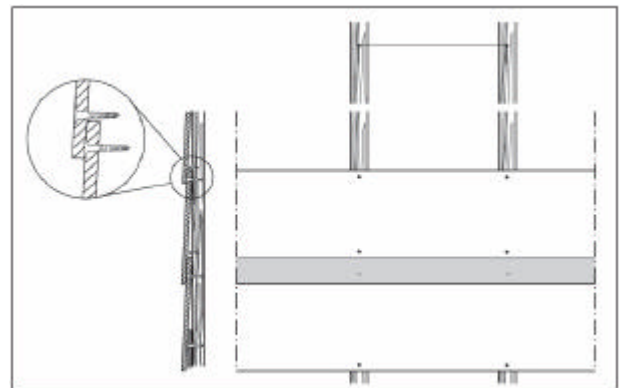
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7. DRAWINGS

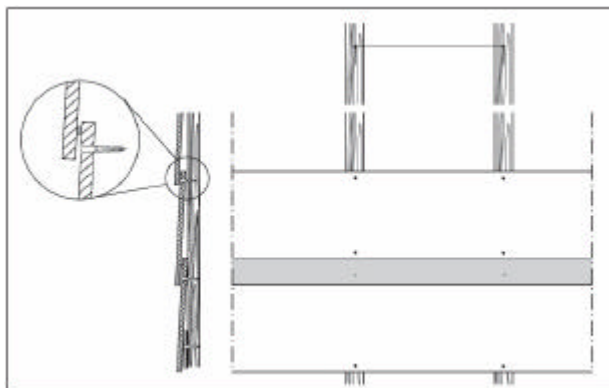
7.1 Elevations



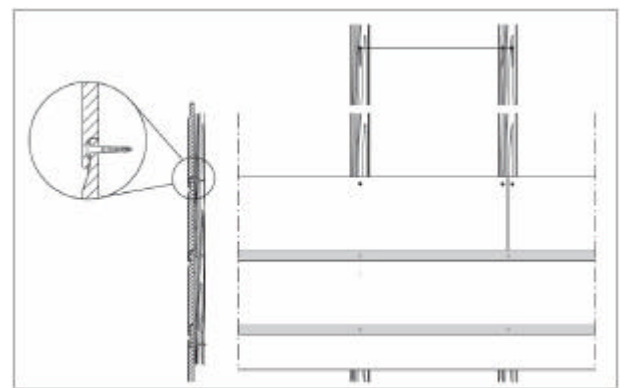
1. DuraClad[®] board, fixed blind



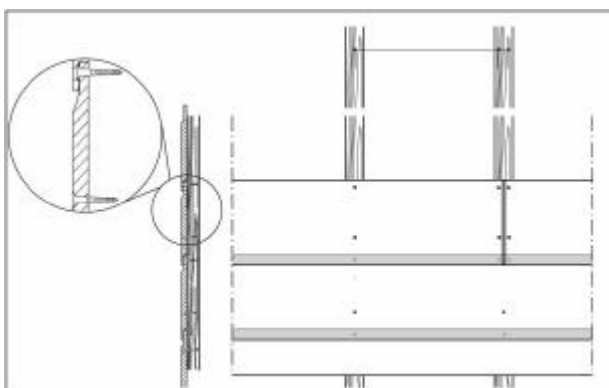
2. DuraClad[®] board, blind and visible fixings



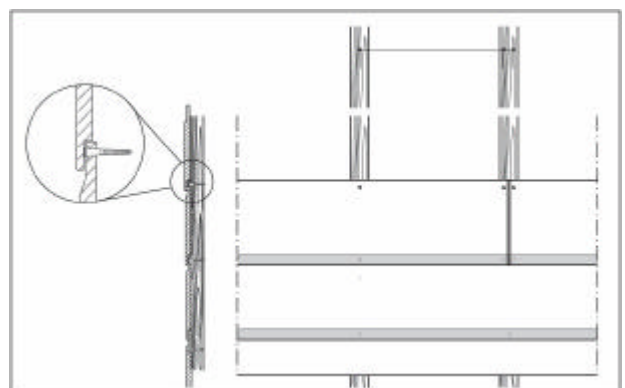
3. DuraClad[®] board, fixed blind with sealant joint



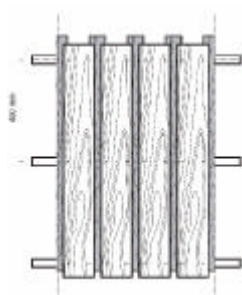
4. DuraClad[®] rebate, fixed blind



5. DuraClad[®] rebate, blind and visible fixings



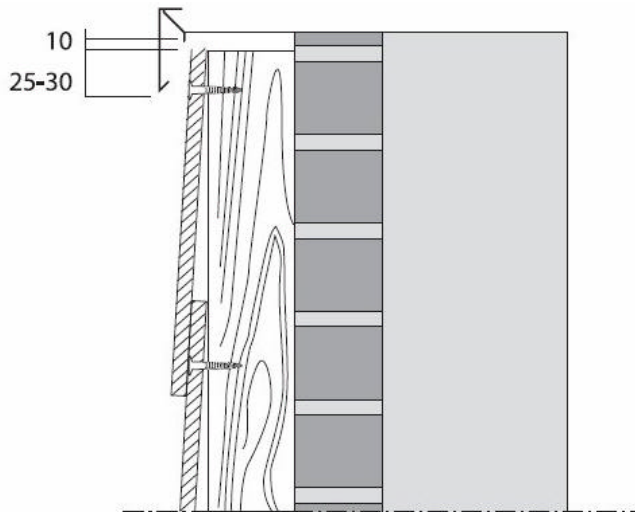
6. DuraClad[®] rebate, fixed blind with sealant joint



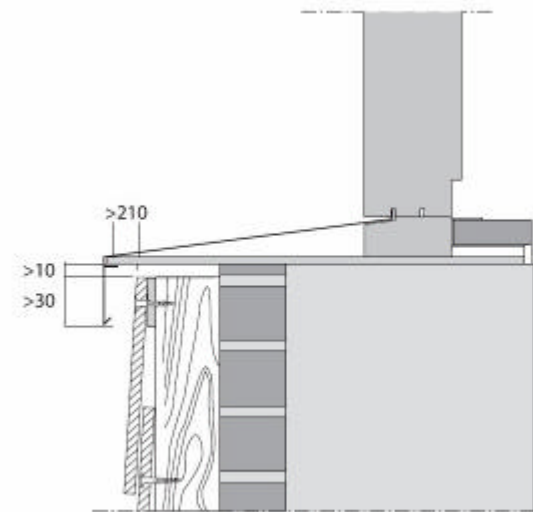
7. Front view of board, vertical

DuraClad[®] flat fibre cement boards

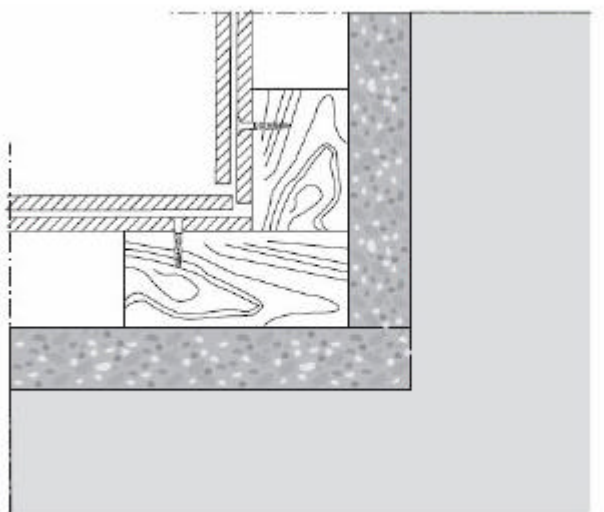
7.2 Detail drawings



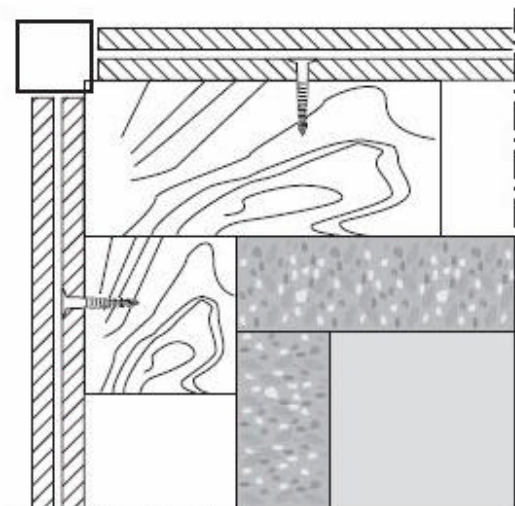
8. Connection to edging strip



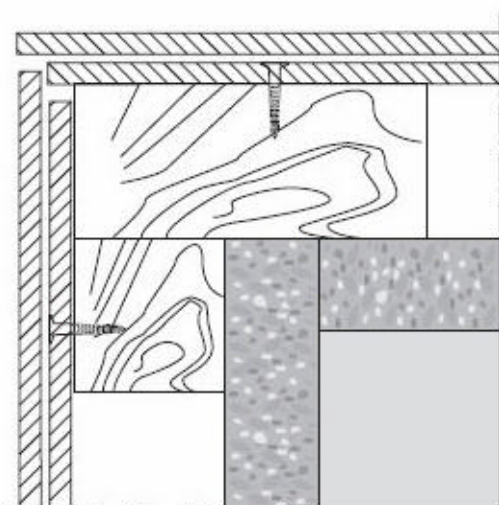
9. Connection to window frame



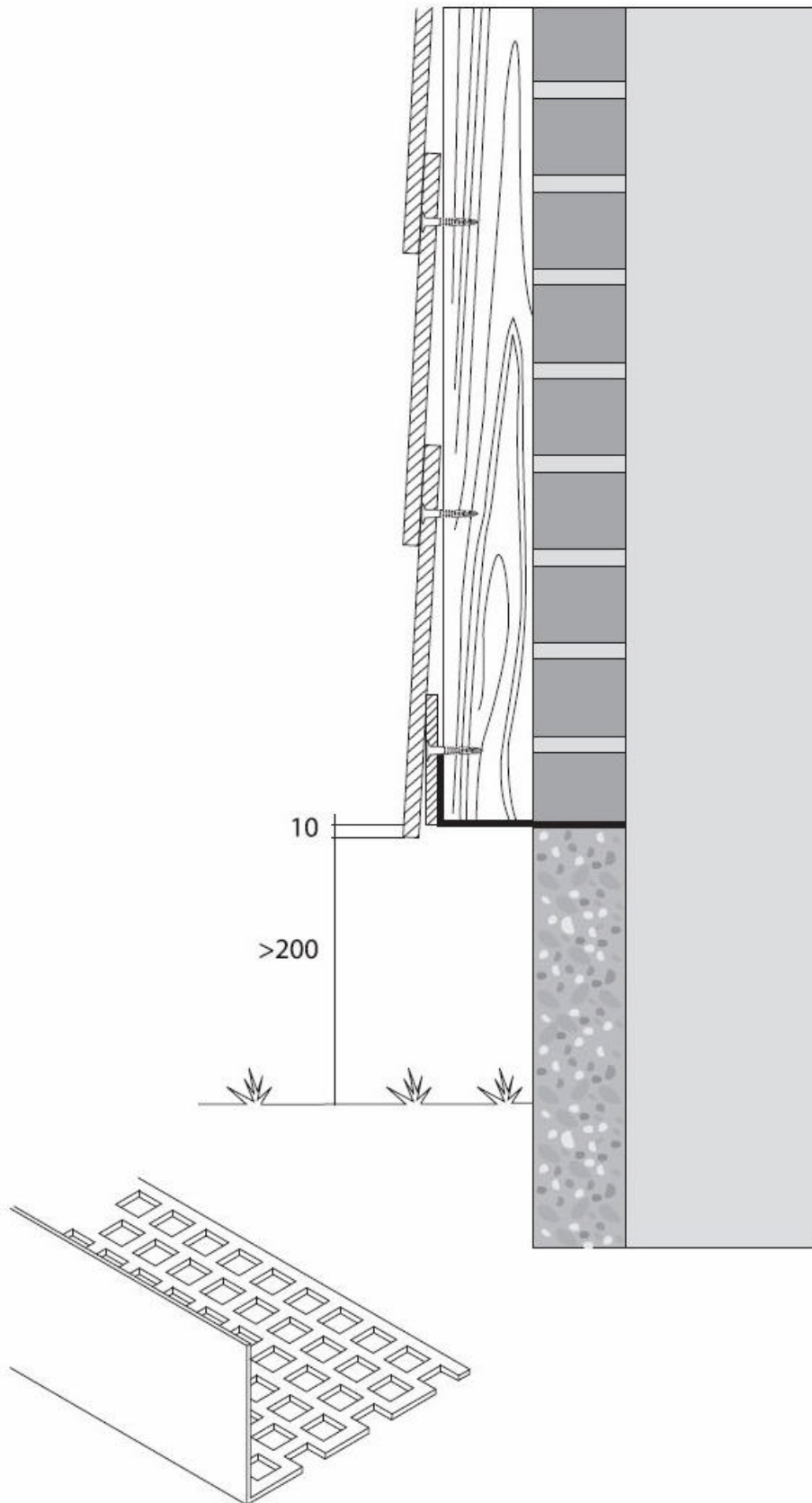
10. Internal corner detail without profile



11. Corner detail with profile



12. External corner detail without profile



13. Weatherboard detail underneath with vermin protection