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**REPORT**

# Classification of the fire resistance according to EN 13501-2:2007+A1:2009 of a non-loadbearing glazed partition with AGC glazing, type Pyrobelite 10, mounted in a timber window frame

| | |
|---|---|
| Report no. | 2014-Efectis-R000958 |
| Sponsor | AGC GLASS EUROPE<br>4, Avenue Jean Monnet<br>B-1348 Louvain-la-Neuve<br>BELGIUM |
| Prepared by | Efectis Nederland BV |
| Notified body no. | 1234 |
| Author(s) | L. Schimmer - Herder BBE<br>Dr. G. van den Berg, M.Sc. |
| Project number | 2014405 |
| Date of issue | January 2015 |
| Number of pages | 15 |

## 1. INTRODUCTION

This classification report defines the classification assigned to a non-loadbearing glazed partition, consisting of 6 glass panes of type Pyrobelite 10, from AGC mounted in a timber window frame in accordance with procedures given in:

- EN 13501-2:2007+A1:2009: Fire classification of construction products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

## 2. SPONSOR AND MANUFACTURER

| **Sponsor and manufacturer glass panes** | **Manufacturer window frame** |
|---|---|
| AGC Glass Europe<br>4, Avenue Jean Monnet<br>B-1348 Louvain-la-Neuve<br>Belgium | Husniaux et Fils SPRL<br>Rue Chausteur 138<br>6042 Lodelinsart<br>Belgium |

## 3. DETAILS OF CLASSIFIED PRODUCT

### 3.1 GENERAL

The investigated construction was a glazed partition consisting of:

- Meranti timber window frame from Huniauw & Fils SPRL;
- Glass panes of type “Pyrobelite 10” from AGC Glass Europe.

### 3.2 SUPPORTING CONSTRUCTION

The supporting construction was an aerated concrete wall with a thickness of 150 mm (density 650 kg/m$^3$). The dimensions of the aperture were: 3000 x 3000 mm (w x h).

### 3.3 PARTITION

#### 3.3.1 Fixing of partition in supporting construction

| **Specifications** | |
|---|---|
| Location of fixing | Around the perimeter of the window frame |
| Fixing of partition with | Screws, steel |
| Dimensions of fixings | ∅ 10 x 112 mm |
| Position of fixings top and bottom | c.t.c. distance 445 - 450 mm<br>120 mm from the corners |
| Position of fixings vertical edge | c.t.c. distance 445 - 450 mm<br>135 mm from the corners |

### 3.3.2 Supporting blocks of timber window frame

| **Specifications** | |
|---|---|
| Location of supporting blocks | On bottom of window frame only, between timber window frame and concrete inner frame |
| Type | Promatect-H |
| Dimensions | 65 x 100 x 30 mm (w x l x t) |
| Position | c.t.c. distance 0.8 m, 0.2 m from the corners of the window frame |

### 3.3.3 Insulation

| **Specifications** | |
|---|---|
| Location of insulation material | At the perimeter of the window frame, between timber window frame and concrete inner frame |
| Manufacturer | Promat |
| Type | Promaglaf HTK 1100 |
| Density | 96 kg/m$^3$ |
| Thickness | 19 mm |

| **Specifications** | |
|---|---|
| Location of insulation material | Free edge |
| Manufacturer | Rockwool |
| Type | SL 970 |
| Density | 115 kg/m$^3$ |
| Thickness | 40 mm |

3.3.4 Timber window frame

| **Specifications** | |
|---|---|
| Overall dimensions timber frame | 2940 x 2960 x 71 mm (w x h x t ) |
| Manufacturer timber frame profiles | Husniaux & Fils SPRL |
| Material | Meranti timber, density 550 kg/m$^3$ |
| Dimensions profiles | 71 x 33 mm (w x h) |
| Type of assembly | Screws |
| Type | R2 Plus Flachsenkkopf TX 25 |
| Dimensions of screws | ∅ 5 x 60 mm (w x l) |
| Position screws | Joints between mullions and transoms and in horizontal joint between framing members |
| c.t.c. distance screws in framing members | 150 mm, staggered |
| Edge cover of glass panes | 22 mm |

3.3.5 Glass panes

| **Specifications** | |
|---|---|
| Manufacturer | AGC Glass Europe |
| Type | Pyrobelite 10 |
| Total thickness | 11.0 ± 1 mm |
| Dimensions glass panes | Glass pane 1: 2864 x 1000 mm (w x h)<br>Glass pane 2: 1000 x 1808 mm (w x h)<br>Glass pane 3 and 5: 800 x 876 mm (w x h)<br>Glass pane 4 and 6: 952 x 876 mm (w x h) |

| | |
|---|---|
| Weight glass panes | Glass pane 1: 71.5 kg<br>Glass pane 2: 45.25 kg<br>Glass pane 3 and 5: 17.5 kg<br>Glass pane 4 and 6: 20.75 kg |
| Stamp Pyrobelite 10 | Stamps positioned at the right bottom corner or left upper corner (seen from the exposed side). The stamps are readable on the exposed side. |

3.3.6 Glass make-up (seen from the exposed side)

| **Specifications** | |
|---|---|
| 1st Layer: glass | Float glass, 3 mm |
| 2nd Layer: intumescent layer | Intumescent layer, 1.95 mm ± 0.5 mm |
| 3rd Layer: glass | Float glass, 6 mm |

3.3.7 Glazing beads

| **Specifications** | |
|---|---|
| Location of glazing beads | Both exposed side and unexposed side |
| Material | Meranti, density 550 kg/m$^3$ |
| Dimensions | 25 x 27 mm (w x h) |
| Mounting of glazing beads | Screws, steel |
| Dimensions screws | ∅ 4.5 x 50 mm (w x h) |
| C.t.c. distance screws, horizontal beads | 215 mm, 290 mm from the corners of the window frame |
| C.t.c. distance screws, vertical beads | 240 mm, 285 mm from the corners of the window frame |

3.3.8 Glass supports

| **Specifications** | |
|---|---|
| Location: setting blocks | Bottom of glass panes |
| Material | Timber |
| Dimensions | 11 x 70 x 5 mm (w x l x t) |
| Position | 90 mm from the corners of the window frame |

### 3.3.9 Sealing materials

| **Specifications** | |
|---|---|
| Location: ceramic tape | Between glazing beads and glass panes, at both the exposed and unexposed side |
| Manufacturer | Superwool |
| Type | X607 |
| Dimensions | 20 x 5 mm (w x t) |

| **Specifications** | |
|---|---|
| Location: sealant | At both exposed and unexposed side, between glazing beads and glass panes, around the perimeter of the glass pane |
| Manufacturer | Dow Corning |
| Type | Firestop 700 |

## 4. MANUFACTURING OF THE CONSTRUCTION

| | |
|---|---|
| Efectis Nederland BV | • Supplying test frame |
| AGC Glass Europe | • Production of the fire resistant glass panes<br>• Mounting of the window profiles and glass panes |
| Husniaux & Fils SPRL | • Production of timber window frame |

The materials and components used were inspected during assembly on the basis of the supplied drawings and data. Efectis Nederland BV was not involved in the production and sampling of the components.

## 5. TEST REPORT & TEST RESULTS IN SUPPORT OF CLASSIFICATION

### 5.1 TEST REPORTS AND EXAP REPORTS

| **Name of laboratory** | **Name of sponsor** | **Report no.** | **Test method** |
|---|---|---|---|
| Efectis Nederland BV | AGC GLASS EUROPE<br>4, Avenue Jean Monnet<br>B-1348 Louvain-la-Neuve<br>Belgium | 2014-Efectis-R000957<br>Test date: 10.11.2014 | EN 1364-1:1999 |
| Efectis Nederland BV | AGC GLASS EUROPE<br>4, Avenue Jean Monnet<br>B-1348 Louvain-la-Neuve<br>Belgium | 2014-Efectis-R001057<br>Date: January 2015 | EN 15254-4:2008 +A1:2011 |

### 5.2 TEST RESULTS

| Criterion | Time of reaching a criterion acc. to EN 1364-1, measured from the start of the test | |
|---|---|---|
| | Time [minutes] | Test result |
| Integrity (**E**)<br>- Cotton pad<br>- Gap gauges<br>  - Ø 6 mm<br>  - Ø 25 mm<br>- Flames longer than 10 sec | <br>45<br><br>45<br>45<br>45 | <br>Not applied*<br><br>Failure<br>Not applied*<br>No failure* |
| Heat radiation (**W**) | | No failure (5.8 kW/m$^2$ at 45 minutes) |
| *End of integrity *E* because of a gap appeared > 6 mm, length > 150 mm. | | |
| The heating was terminated after 45 minutes after consulting the client. | | |

### 5.3 EXAP RESULTS

| **Maximum sizes according to EN 15254-4:2008+A1:2011 for the following classifications** | | | | |
|---|---|---|---|---|
| **Classification** | | **Extended glass size (portrait)** | **Extended glass size (landscape)** | **Extended element size** |
| **EW 30** | Area ($m^2$) | ≤ 2.19 | ≤ 3.47 | endless |
| | Width (mm) | ≤ 1200 | ≤ 3436 | endless |
| | Height (mm) | ≤ 2169 | ≤ 1200 | ≤ 3552 |

## 6. CLASSIFICATION

### 6.1 REFERENCE OF CLASSIFICATION

This classification has been carried out in accordance with:

- clause 7 of EN 13501-2:2007 + A1:2009.

### 6.2 CLASSIFICATION

A non-loadbearing partition consisting of 6 glass panes of type Pyrobelite 10, from AGC, mounted in a Meranti timber window frame is classified according to the following combinations of performance parameters and classes as appropriate. No other classifications are permitted based on the test evidence mentioned in clause 4.1.

**Fire resistance classification:**

**E 30**

**EW 30**

## 7. FIELD OF DIRECT APPLICATION

This report details the method of construction, the test conditions and the results obtained when the specific element of construction described herein was tested following the procedure outlined in EN 1363-1, and where appropriate EN 1363-2. Any significant deviation with respect to size, constructional details, loads, stresses, edge or end conditions other than those allowed under the field of direct application in the relevant test method is not covered by this report.

### 7.1 PERMITTED CHANGES

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability. Other changes are not permitted.

- Decrease in the linear dimensions of panes;
- Change in the aspect ratio of the panes, provided that the largest dimension of the pane and its area are not increased;
- Decrease in the distance between timber mullions;
- Decrease in distance between fixing centres;
- Increase in the dimensions of the framing members;
- Allowances for expansion if none were incorporated in the test specimen;
- Change in the angle of installation of up to 10° from the vertical.

### 7.2 EXTENSIONS OF HEIGHT

Increase of the element height above the tested height is not allowed.

### 7.3 EXTENSIONS OF WIDTH

Increase of the element width above the tested width is allowed.

### 7.4 SUPPORTING CONSTRUCTIONS

The result of a fire resistance test of a glazed wall tested directly mounted in the test frame, is applicable to any other supporting construction, within the same type (high density rigid) that has a greater fire resistance.

## 8. LIMITATIONS

This classification report does not represent any type approval or certification of the product.

L. Schimmer - Herder BBE
Project leader fire resistance

Dr. G. van den Berg M.Sc.
Senior project leader fire resistance

## 9. FIGURES

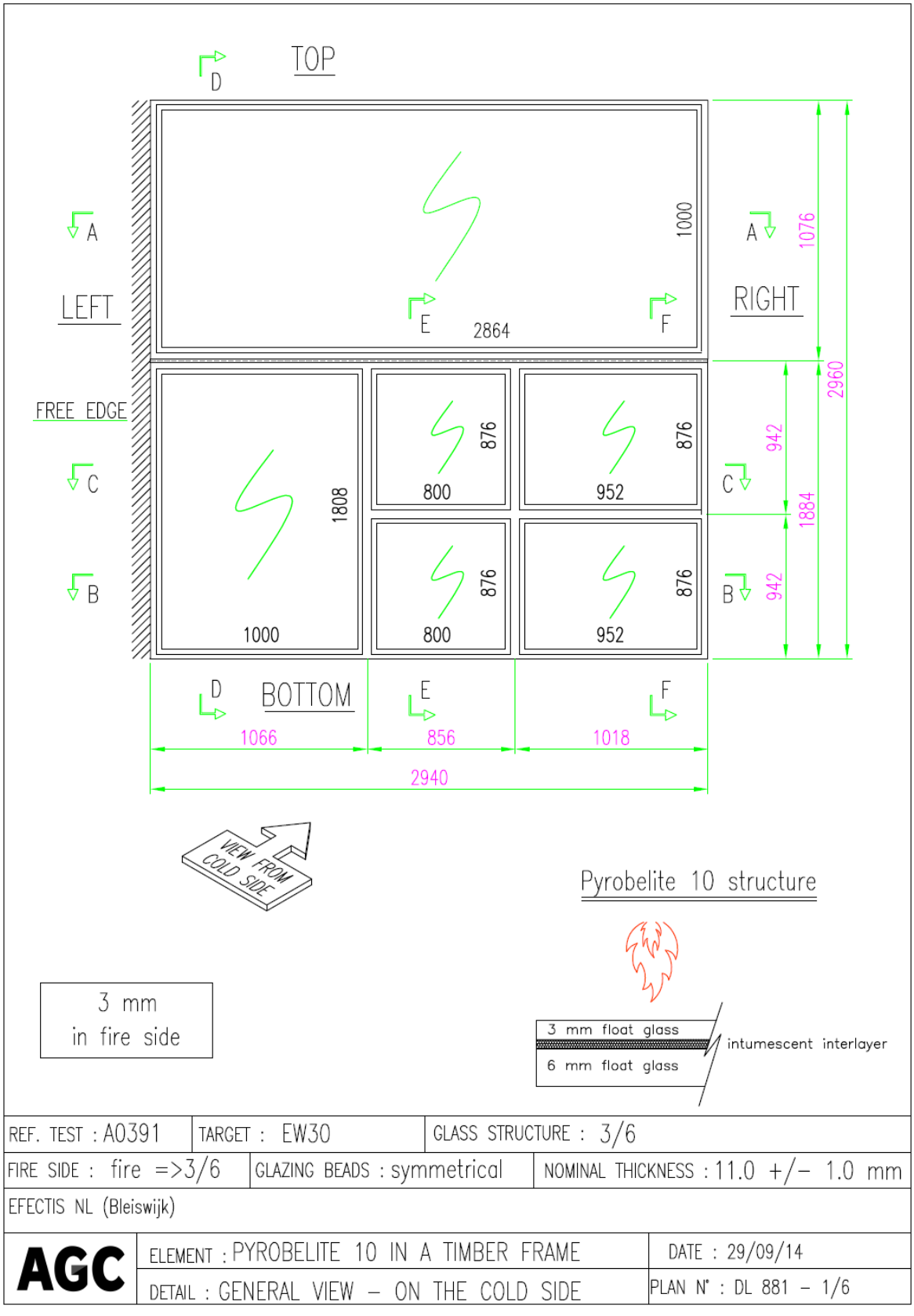


Figure 1 Overview (seen from unexposed side of test specimen)

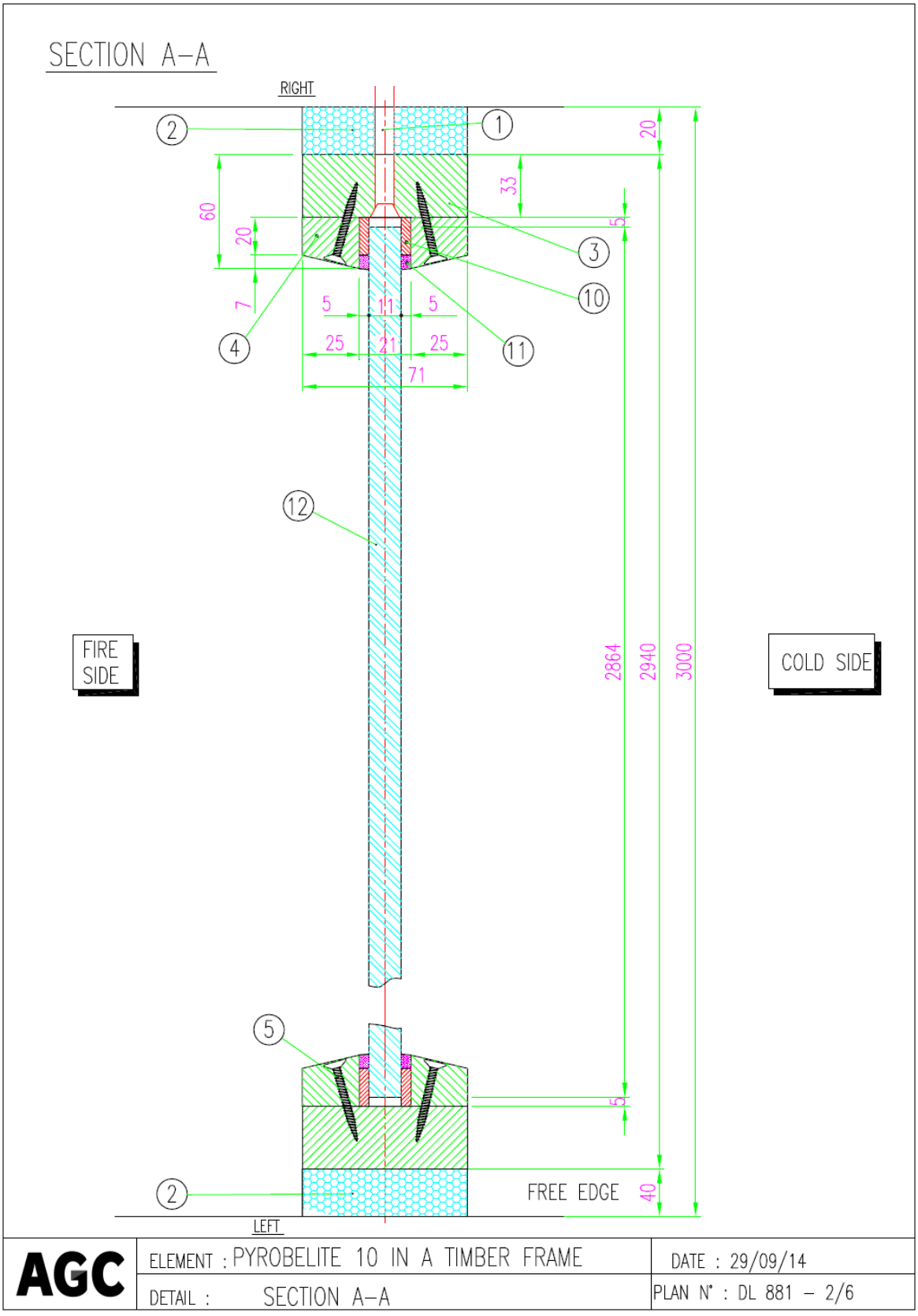


Figure 2 Horizontal section A-A

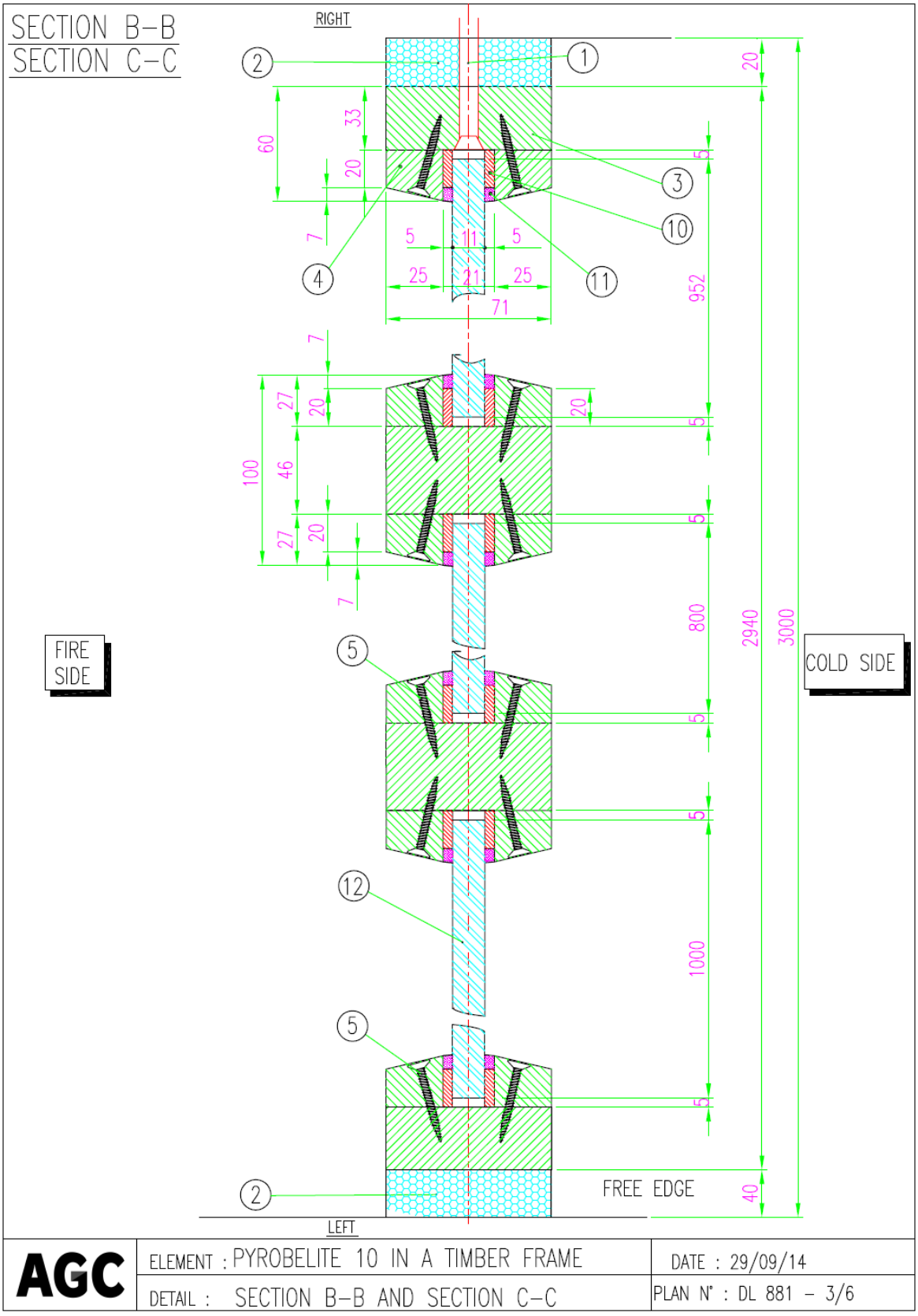


Figure 3 Horizontal section B-B and section C-C

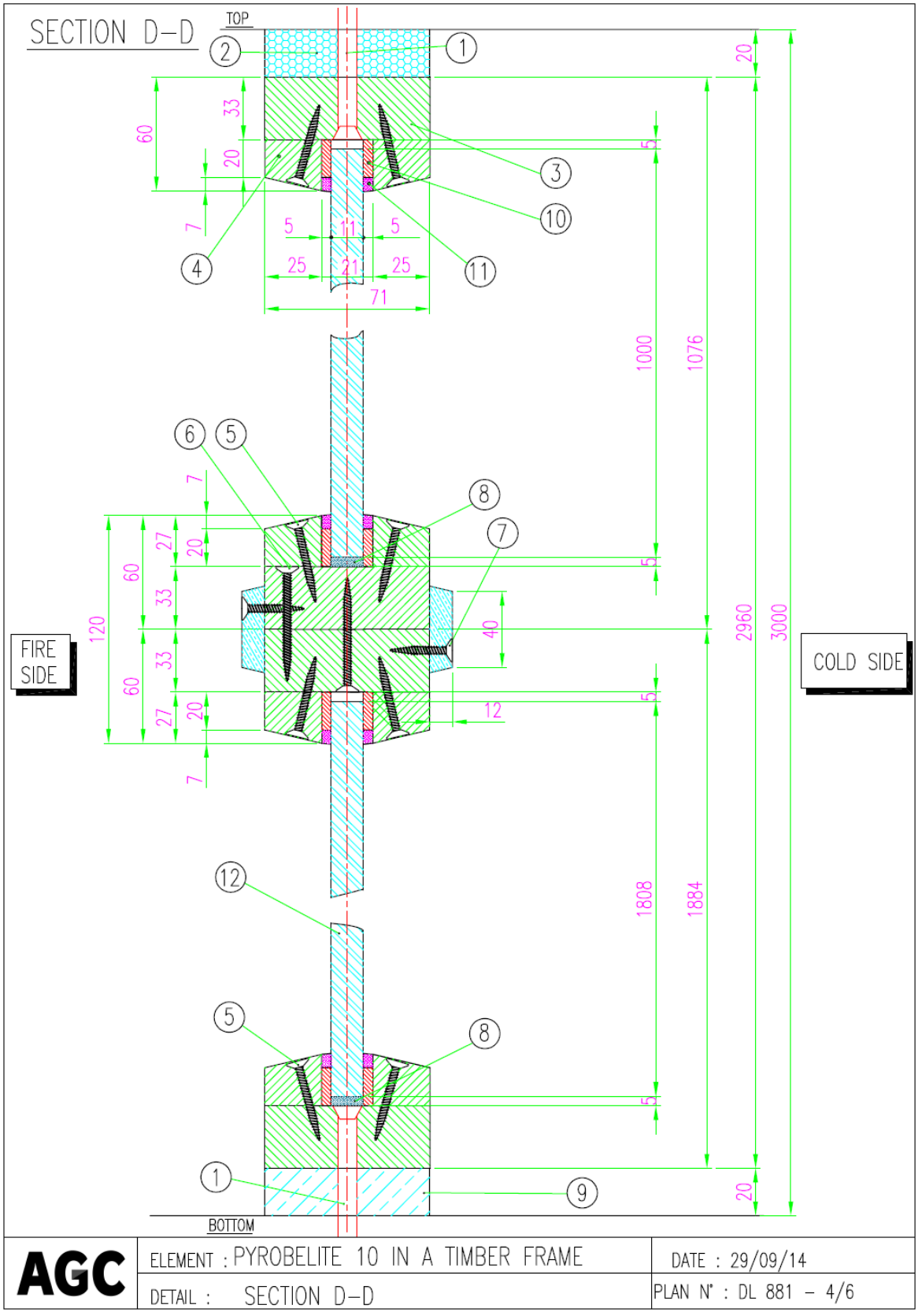


Figure 4 Vertical section D-D

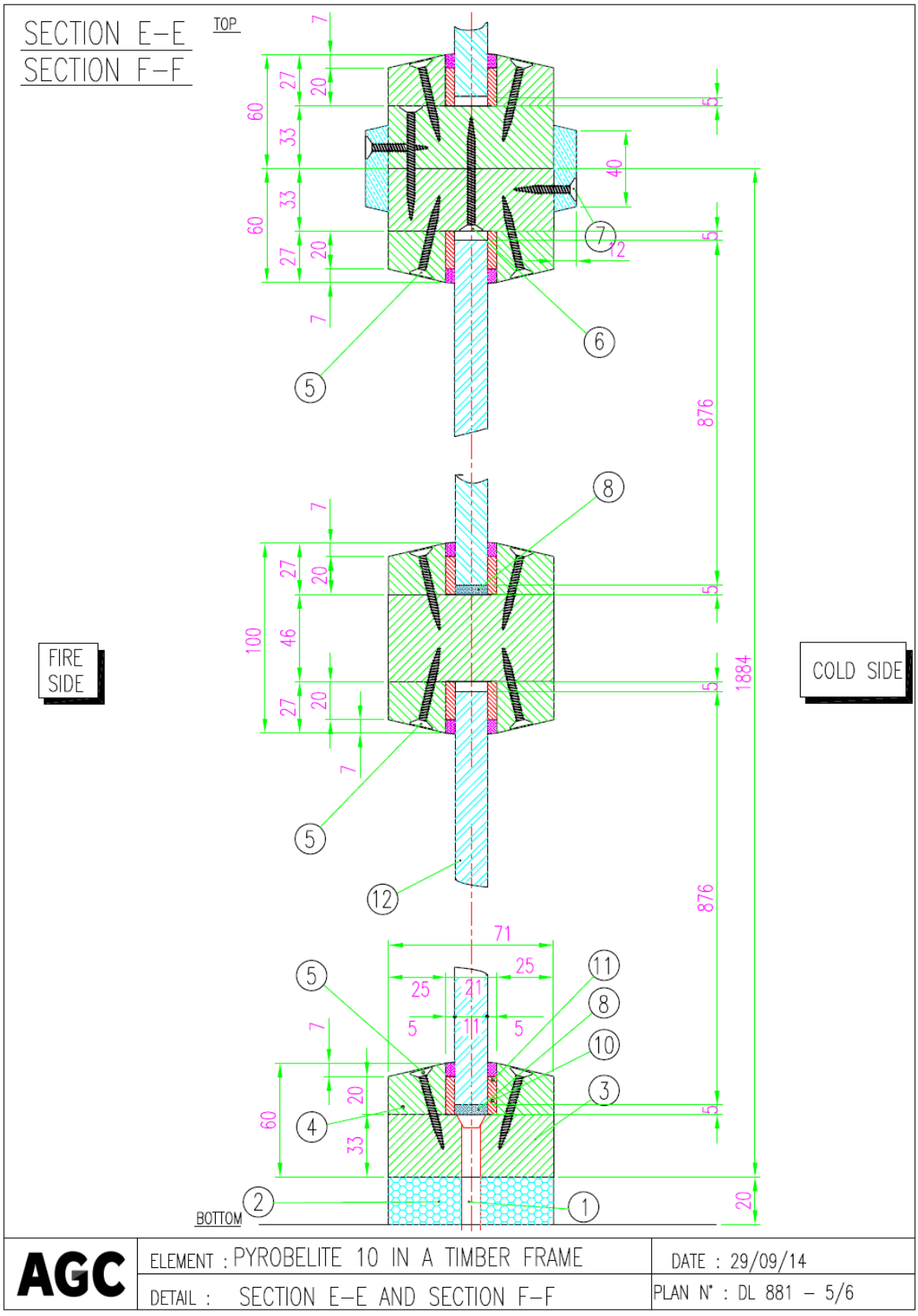


Figure 5 Vertical section E-E and section F-F

| ITEM | COMPONENT |
|---|---|
| 1 | Fixing : Hilti 100 HT – Ø10x112 mm |
| 2 | Thermal Insulation Promat Promaglaf HTK1100 – 96 kg/m3 |
| 3 | Hardwood frame : Meranti |
| 4 | Hardwood glazing beads : Meranti |
| 5 | Steel screw Ø4.5x50 mm |
| 6 | Steel screw Ø5x60 mm – Fixing for modules |
| 7 | Steel screw Ø3.5x35 mm |
| 8 | Setting Block : (L)70 mm x (W)11mm x (H)5 mm |
| 9 | Setting Block : (L)100 mm x (W)71mm x (H)20 mm |
| 10 | Ceramic paper : 20x5 mm – Superwool X607 |
| 11 | Neutral Silicone : Dow Corning – Firestop 700 |
| 12 | PYROBELITE 10 (3/6) |
| | |
| | |

| AGC | ELEMENT : PYROBELITE 10 IN A TIMBER FRAME | DATE : 29/09/14 |
|---|---|---|
| | DETAIL : DESCRIPTION OF COMPONENTS | PLAN N° : DL 881– 6/6 |

Figure 6 Parts list