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# European Technical Assessment

# ETA 23/0944
## of 12/12/2024

*English version prepared by Itecons*

## General Part

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|---|---|
| **Technical Assessment Body issuing the European Technical Assessment:** Itecons - Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade | |
| **Trade name of the construction product** | Painel divisória Fractus |
| **Product family to which the construction product belongs** | Internal & External Wall and Ceiling Finishes.<br>Internal Partition Kits.<br><br>Product area code: 21 |
| **Manufacturer** | FRACTUS<br>Avenida Cidade Maringá, Edifício D. João III, Nº 34<br>2400-118, Leiria<br>Portugal |
| **Manufacturing plant** | FRACTUS<br>Estrada Nacional 356-1, 40<br>2405-003 Leiria<br>Portugal |
| **This European Technical Assessment contains** | 11 pages |
| **This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of** | EAD 210005-00-0505 – *Internal Partition Kits for use as Non-Loadbearing Walls* |

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## Specific parts

### 1. Technical description of the product

This European Technical Assessment applies to the internal partition kit Painel divisória Fractus for use as non-loadbearing walls. The main components of the partition kit are:

- Gypsum plasterboard with 12.5 mm of thickness with CE marking according EN 520;
- Polyurethane rigid foam with 95 mm of thickness;
- Gypsum plasterboard with 12.5 mm of thickness with CE marking according EN 520.

In Annex A, the technical characteristics of the constituent materials of the kit are presented.

The partition kit under assessment does not contain supporting elements such as studs. The kit has a male-female fitting system that ensures the stability of the system. In the fitting zone, an OSB reinforcement is applied along the entire height. The maximum height of the partition kit Painel divisória Fractus is 2500 mm. In Annex B, schematic drawings of the kit are presented.

### 2. Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

#### 2.1. Intended use

The internal partition kit Painel divisória Fractus is intended to be used as non-load bearing partitions in the following ways:

- Fastened to structures capable of giving adequate support and adequate possibilities for fixing;
- Environmental conditions:
    - mean air temperature in the range from 5 °C to 35 °C, with a minimum of 0 °C and a maximum of 50 °C;
    - mean daily air relative humidity in the range from 20 % to 75%, with a maximum air relative humidity only exceeding 85% for short periods of time;
- Use category IV, which corresponds to area category C5 and area categories A, B, C1 to C4 and D1 to D2 where the partition has the function of a barrier;
    - Use categories and area categories according to EAD 210005-00-0505 and EN 1991-1-1 – Eurocode 1, respectively;
    - Area categories correspond to:
        - A: Areas for domestic and residential activities;
        - B: Offices areas;
        - C1 to C4: Areas where people may congregate;
        - C5: Areas susceptible to large crowds;
        - D1 to D2: Shopping areas.
- Zones where surface requirements with respect to hygiene, air quality, static electricity, etc. are of the same nature and magnitude as those in dwellings, offices, schools, institutions, etc..

The provisions made in this European Technical Assessment are based on an assumed working life of 25 years as minimum according to the EAD, provided that the conditions lay down for the installation, packaging, transport and storage as well as appropriate use, maintenance and repair are met. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but

are to be regarded only as a mean for choosing the right product in relation to the expected economically reasonable working life of the works.

## 3. Performance of the product and references to the methods used for its assessment

The assessment of the Painel divisória Fractus according to the Basic Work Requirements (BWR) was carried out in compliance with EAD 210005-00-0505. The characteristics of the components shall correspond to the respective values laid down in the technical documentation of this ETA, checked by Itecons.

### 3.1. Performance of the assembled system (kit)

#### 3.1.1. Mechanical resistance and stability (BWR 1)

Not relevant.

#### 3.1.2. Safety in case of fire (BWR 2)

##### 3.1.2.1. Reaction to fire

No performance assessed.

Information regarding the reaction to fire of the main components of the kit is provided in Annex A.

##### 3.1.2.2. Resistance to fire

No performance assessed.

#### 3.1.3. Hygiene, health and the environment (BWR 3)

##### 3.1.3.1. Content, emission and/or release of dangerous substances

The content, emission and/or release of dangerous substances was assessed taking into account the release scenarios applicable:

- IA1: Product with direct contact to indoor air.

The emission of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) of the Painel divisória Fractus was assessed according to EN 16516. The loading factor considered was L = 1,0 $m^2/m^3$. The results are presented in Table 1.

**Table 1:** Emissions of volatile organic compounds (VOC) and semi-volatile organic compounds (SVOC) after 28 days of exposure of the Painel divisória Fractus

| Compound | CAS | Concentration (µg/m³) | Compound | CAS | Concentration (µg/m³) |
|---|---|---|---|---|---|
| 1,1,2,2-Tetrachloroethane | 79-34-5 | < 1 | Cyclohexane | 110-82-7 | 4 |
| 1,1,1-Trichloroethane | 71-55-6 | < 1 | Cyclohexanone | 108-94-1 | < 3 |
| 1,1,2-Trichloroethane | 79-00-5 | < 1 | Dibromochloromethane | 124-48-1 | < 1 |
| 1,2,4-Trichlorobenzene | 120-82-1 | < 1 | Ethyl acetate | 141-78-6 | < 1 |
| 1,2,4-Trimethylbenzene | 95-63-6 | < 1 | Ethylbenzene | 100-41-4 | < 1 |
| 1,2,4-Trimethylbenzene | 526-73-8 | < 1 | Formaldehyde | 50-00-0 | < 2 |
| 1,2-Dibromoethane | 106-93-4 | < 1 | Hexachloro-1,3-butadiene | 87-68-3 | < 1 |
| 1,2-Dichlorobenzene | 95-50-1 | < 1 | Methyl iso-butyl ketone (MIBK) | 108-10-1 | < 1 |
| 1,2-Dichloroethane | 107-66-2 | < 1 | Methyl n-butyl ketone | 591-78-6 | < 1 |

| Compound | CAS | Concentration (µg/m³) |
|---|---|---|
| 1,2-Dichloropropane | 78-87-5 | < 1 |
| 1,3,5-Trimethylbenzene | 108-67-8 | < 1 |
| 1,3-Dichlorobenzene | 541-73-1 | < 1 |
| 1,4-Dichlorobenzene | 106-46-7 | < 1 |
| 1,4-Dioxane | 123-91-1 | 2 |
| 1-Ethyl-4-methyl benzene | 622-96-8 | < 1 |
| 2-Butoxyethanol | 111-76-2 | < 1 |
| Acetaldehyde | 75-07-0 | < 3 |
| Benzene* | 71-43-2 | < 1 |
| Benzyl chloride | 100-44-7 | < 2 |
| Bromodichloromethane | 75-27-4 | 4 |
| Bromoform | 75-25-2 | < 1 |
| Butylacetate | 123-86-4 | < 1 |
| Carbon tetrachloride | 56-23-5 | < 1 |
| Chlorobenzene | 108-90-7 | < 1 |
| Cis-1,2-Dichloroethene | 156-59-2 | < 1 |
| Cis-1,3-Dichloropropene | 10061-01-5 | < 1 |
| Cloroform | 67-66-3 | 6 |

| Compound | CAS | Concentration (µg/m³) |
|---|---|---|
| m-Xylene | 108-38-3 | 2 |
| n-Hepthane | 142-82-5 | < 2 |
| n-Hexadecane | 544-76-3 | < 1 |
| n-Hexane | 110-54-3 | < 1 |
| o-Xylene | 95-47-6 | < 1 |
| Phenol | 108-95-2 | < 5 |
| p-Xylene | 106-42-3 | 2 |
| Styrene | 100-42-5 | < 1 |
| Tetrachloroethene | 127-18-4 | < 1 |
| Tetrahydrofuran | 109-99-9 | < 2 |
| Toluene | 108-88-3 | 1 |
| trans-1,3-Dichloropropene | 10061-02-6 | < 1 |
| Trichloroethylene* | 79-01-6 | < 1 |
| TVOC | --- | 65 |
| Bis(2-ethylhexyl)phthalate* | 117-81-7 | < 1 |
| Dibutylphthalate* | 84-74-2 | < 1 |
| TSVOC | --- | < 5 |

* CRM - Carcinogenic, mutagenic and reprotoxic substances

#### 3.1.3.2. Water vapour permeability

The water vapour permeability of the components of the Painel divisória Fractus is as follows:

- Gypsum plaster board (values taken from the DoP of the component):
  - $\mu_{dry}$ = 10;
  - $\mu_{wet}$ = 4;
- Polyurethane (tabulated values obtained from EN ISO 10456):
  - $\mu_{dry}$ = 60;
  - $\mu_{wet}$ = 60.

### 3.1.4. Safety and accessibility in use (BWR 4)

#### 3.1.4.1. Sill height

The sill height was assessed at 1.5 m according to section 2.2.5 of the EAD 210005-00-0505.

#### 3.1.4.2. Resistance to damage and functional failure from horizontal loads

##### 3.1.4.2.1. Resistance to damage and functional failure from soft body impact load – 50 kg bag

The resistance to damage and functional failure from a large soft body was performed as described in Annex E, with amendments and modifications as described in Annex A and B of the EAD 210005-00-0505. The results are presented in Table 2.

**Table 2:** Resistance to damage and functional failure from soft body impact load – 50 kg bag – of the Painel divisória Fractus

| Soft body impact (50 kg bag) | |
|---|---|
| **Resistance to damage (Use category)** | **IV b)** |
| **Resistance to functional failure (Use category)** | **IV** |
| Use category IV and IV b): "Zones readily accessible to public and others with little incentive to exercise care. Risk of accidents occurring and misuse. In case of failure, risk includes the fall to a floor at lower level". | |

#### 3.1.4.2.2. Resistance to damage and functional failure from hard body impact load – 0.5 kg and 1 kg steel ball

The resistance to damage and functional failure from hard body impact was performed as described in Annex E, with amendments and modifications as described in Annex A and B of the EAD 210005-00-0505. The results are presented in Table 3.

**Table 3:** Resistance to damage and functional failure from hard body impact load – 1.0 kg and 0.5 kg steel ball – of the Painel divisória Fractus

| hard body impact (1.0 kg steel ball) | |
|---|---|
| **Resistance to damage (Use category)** | **IV b)** |
| **hard body impact (0.5 kg steel ball)** | |
| **Resistance to functional failure (Use category)** | **IV** |
| Use category IV and IV b): "Zones readily accessible to public and others with little incentive to exercise care. Risk of accidents occurring and misuse. In case of failure, risk includes the fall to a floor at lower level". | |

### 3.1.4.3. Resistance to damage and functional failure from eccentric vertical loads

No performance assessed.

### 3.1.4.4. Resistance to horizontal linear static loads

The resistance to horizontal linear static load was determined by testing according to Annex B.5 of the EAD 210005-00-0505. The results are presented in Table 4.

**Table 4:** Resistance to horizontal linear static load of the Painel divisória Fractus

| Load failure [kN] | Safety factor | Characteristic resistance [kN/m] |
|---|---|---|
| 9.494 | 5 | 0.79 |

### 3.1.4.5. Resistance to functional failure from point loads parallel or perpendicular to the surface

No performance assessed.

### 3.1.4.6. Rigidity of partitions to be used as a substrate for ceramic tilling

No performance assessed.

#### 3.1.4.7. Safety against personal injuries by contact

When properly installed, the Painel divisória Fractus internal partition does not contain sharp or abrasive components liable to cause personal injury.

#### 3.1.4.8. Resistance to deterioration

No performance assessed.

### 3.1.5. Protection against noise (BWR 5)

#### 3.1.5.1. Airborne sound insulation

The airborne sound insulation of the Painel divisória Fractus internal partition was tested according to EN ISO 10140-2 and EN ISO 717-1. The test specimen nominal dimensions were 3145 x 3145 $mm^2$. The perimeter of the test specimen was sealed with mineral wool and silicone sealant. The lateral union between panels was carried out using male-female joints coated with plaster for gypsum plasterboard joints and paper tape for joints on both faces. The test area had the standardized value of 10 $m^2$ (3160 x 3160 $mm^2$).

The weighted apparent sound reduction index of the Painel divisória Fractus is $R_W$ (C; $C_{tr}$) = 28 dB.

#### 3.1.5.2. Sound absorption

The sound absorption of the Painel divisória Fractus internal partition was tested according to EN ISO 354. The result is declared according to EN ISO 11654.

The assessed build up consisted of a test specimen with nominal dimensions of 3145 mm x 3145 mm with thickness of 120 mm. The panels of Painel divisória Fractus internal partition were placed on the reflective floor of the reverberant chamber. The lateral union between panels was carried out using male-female joints coated with plaster for gypsum plasterboard joints and paper tape for joints on both faces. The assembly class considered was type "A," in accordance with EN ISO 354.

The weighted sound absorption coefficient $\alpha_w$ according to EN ISO 11654 is 0.10.

### 3.1.6. Energy economy and heat retention (BWR 6)

#### 3.1.6.1. Thermal resistance

The thermal resitance of the Painel divisória Fractus was calculated according to EN ISO 6946 and EN ISO 10211.

The λ values of the materials that compose the Painel divisória Fractus considered in the calculation were as follows:

- $\lambda_{PU}$ = 0.026 W/(m.K). Value experimentally determined according to EN ISO 10456;
- $\lambda_{gypsum}$ = 0.20 W/(m.K). Value obtained from de DoP of the product;
- $\lambda_{OSB}$ = 0.13 W/(m.K). Tabulated value obtained from EN ISO 10456.

The thermal resistance of the Painel divisória Fractus without surface thermal resistances is $R_{panel}$ = 3.53 $m^2$.K/W.

#### 3.1.6.2. Thermal inertia

The thermal inertia of the Painel divisória Fractus was calculated according to section 2.2.16 of the EAD 210005-00-0505, considering the following equation:

$$I = \sqrt{UHM}$$

The parameters considered in the calculations were as follows:

- $c_{PU}$ = 1400 J/(kg.K). Value obtained according to EN ISO 10456;
- $c_{gypsum}$ = 1000 J/(kg.K). Value obtained according to EN ISO 10456;
- Heat capacity of the materials used in the kit, H = 1088 J/(kg.K);
- Total mass per unit area for the assembled kit, M = 53.76 kg/m$^2$;
- Thermal transmittance of materials used, U = 0.26 W/m$^2$.K.

Applying the equation presented above, the thermal inertia of the Painel divisória Fractus is I = 123 j.m$^{-2}$.K$^{-1}$.s$^{-1/2}$.

## 4. Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the Decision 1998/0213/EC of European Commission the system of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) applicable is 3.

## 5. Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

The ETA is issued on the basis of agreed data/information, deposited at Itecons, which identifies the product that has been assessed and judged. It is the manufacturer's responsibility to make sure that all those who use the kit are appropriately informed of specific conditions laid down in this ETA.

Changes to the kit or the components or their production process should be notified to the Itecons before the changes are introduced. Itecons will decide whether or not such changes affect the ETA and if so whether further assessment or alterations to the ETA shall be necessary.

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By

Technical Assessment Unit of

Itecons – Instituto de Investigação e Desenvolvimento Tecnológico para a Construção, Energia, Ambiente e Sustentabilidade

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Senior Official

Validated document

(*Technical Assessment Unit Coordinator*) (Administration)

## Annex A | Technical characteristics of the components of the internal partition kit Painel divisória Fractus

**Table A1:** Technical characteristics of the gypsum plasterboards

| Characteristic | Values |
|---|---|
| **Thickness [mm]** | 12.5 |
| **Length [mm]** | 2500 |
| **Width [mm]** | 1200 |
| **Weight [kg/m$^2$]** | 8.0 |
| **Density [kg/m$^3$]** | 640 |
| **Bending strength [N] – long./Transv.** | 550/210 |
| **Reaction to fire** | A2-s1,d0 |
| **Thermal conductivity [W/mK]** | 0.20 |
| **Water vapor resistance [-]** | $\mu_{dry} = 10$ / $\mu_{wet} = 4$ |

**Table A2:** Technical characteristics of the polyurethane rigid foam

| Characteristic | Values |
|---|---|
| **Density [kg/m$^3$]** | 38-42 |
| **Reaction to fire** | E |
| **Thermal conductivity [W/mK]** | 0.026 |

**Table A3:** Technical characteristics of the OSB

| Characteristic | Values |
|---|---|
| **Density [kg/m$^3$]** | 620±40 |
| **Moisture content [%]** | 9±3 |
| **Thermal conductivity [W/mK]** | 0.026 |
| **Bending – min [MPa]** | |
| Longitudinal modulus | 4600 |
| Transversal modulus | 1900 |
| Longitudinal bending strength | 28 |
| Transversal bending strength | 14 |
| Bending strength V313 | 12 |

| Characteristic | Values |
|---|---|
| **Internal bond – min [MPa]** | |
| Tensile strength | 0.50 |
| Tensile strength V313 | 0.18 |
| Tensile strength V100 | 0.15 |
| **Thickness swelling (24h) – max [%]** | 15 |
| **Formaldehyde – max [mg/100g]** | 5 |

**Annex B | Standard modular unit**

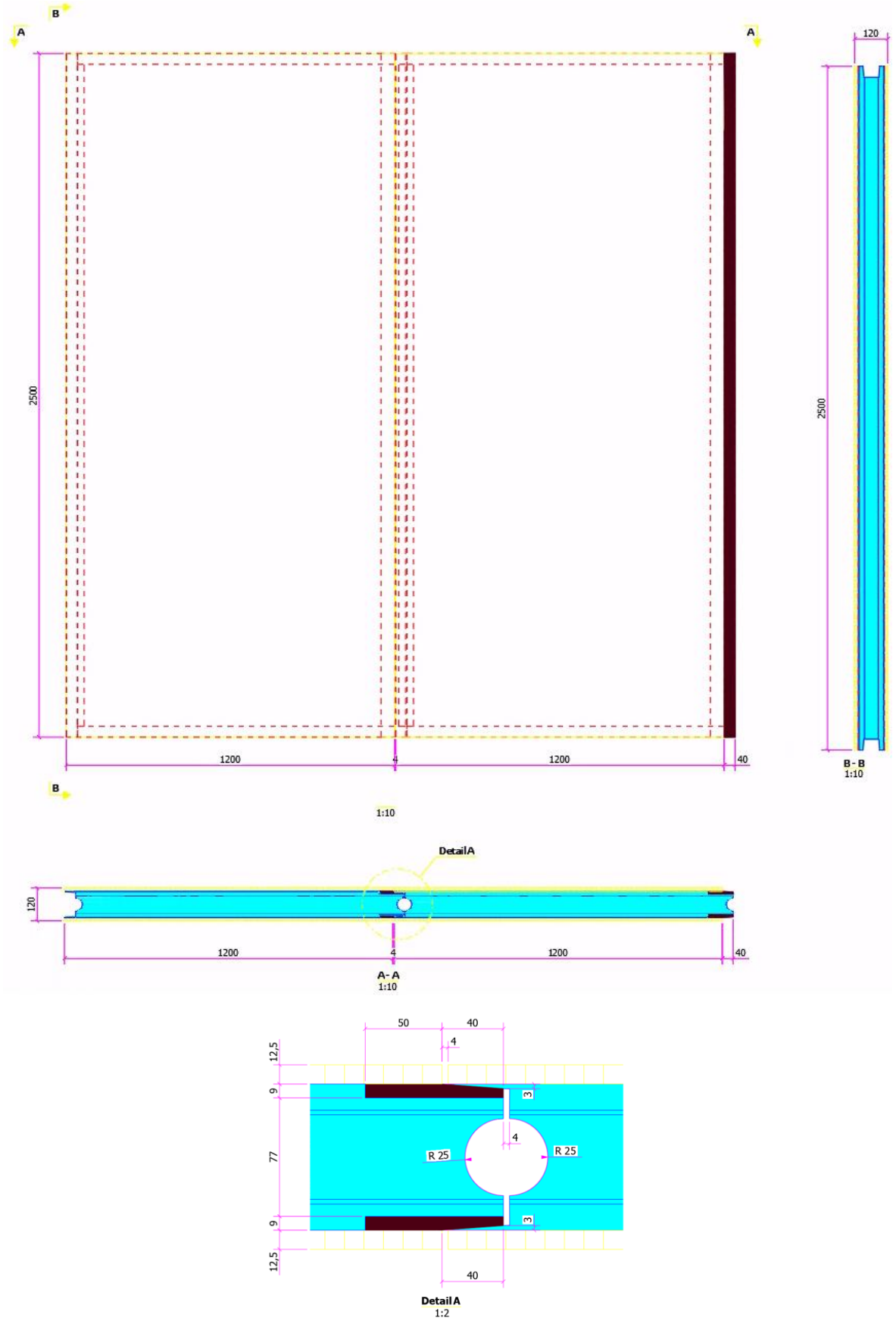


**Figure B1:** Drawing of the standard unit of the internal partition kit Painel divisória Fractus