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# Evaluation Report ETA-18/0528 of 18/07/2018

(English language translation; the original version is in Italian)

| | |
|---|---|
| Trade name of the construction product | **TAURUS in the versions "TAURUS" and "TAURUS dB"** |
| Product family to which the construction product belongs | **PAC 21: INTERNAL & EXTERNAL WALL AND CEILING FINISHES. INTERNAL PARTITION KITS.**<br>**Internal partition kits for use as non-loadbearing walls** |
| Manufacturer | **Centrufficio Loreto S.p.A.**<br>**Viale A. Doria 17**<br>**I - 20124 Milano (MI) – Italy** |
| Manufacturing plant | **Via R. Sanzio 22**<br>**I – 20090 Segrate (MI) – Italy** |
| This Evaluation Report contains: | **7 pages, including 1 Annex** |

**Introduction**

This Evaluation Report describes the results of the tests that have been carried out to assess the internal partition system (IPK) "Taurus" introduced by Centrufficio Loreto S.p.A., in accordance with the essential characteristics as specified in Chapter 6 of the ETA Guidance 003 Edition 2012 (called ETAG 003 Edition 2012 in the following text).

All the tests of this assessment have been carried out in accordance with the methods envisaged in ETAG 003 Edition 2012.

## 1 TECHNICAL DESCRIPTION OF THE PRODUCT

The kit "Taurus" realises internal partitions for use as non-loadbearing walls according to the definition given in § 3.2.1 of ETAG 003 Edition 2012; it consists of a zinc coated steel structure composed by perimetric profiles, vertical uprights and horizontal crosses to which both blind wood-based and double-glazed panels, with an aluminium frame with exteriorly aligned glasses, are fastened, and comprises the components described in § 1 of the related ETA, which are factory-produced by suppliers and placed on the market by the Manufacturer.

The total nominal thickness of the partition (partition wall) is mm 100.

## 2 SPECIFICATION OF THE INTENDED USE IN ACCORDANCE WITH ETAG 003 USED AS EUROPEAN ASSESSMENT DOCUMENT (EAD)

"Taurus" is intended to be used as a lightweight relocatable partition system for offices and public buildings (Table 1 ETAG 003, Categories A-B, C1-C4 and D1-D2), with an average air temperature range from 5° C to 35° C and an average daily air relative humidity range from 20% R.H. to 75% R.H.

## 3 PERFORMANCE OF THE PRODUCT AND REFERENCE TO THE METHODS USED FOR ITS ASSESSMENT

### 3.1 BWR 2: REACTION TO FIRE

The reaction to fire of the Internal Partition system "Taurus" in the layout composed by the elements detailed below was tested in accordance with § 6.2.1 of ETAG 003 Edition 2012, with reference to the following standards: EN ISO 11925-2, EN 13238, EN 13823.

The layout of "Taurus" subjected to test, composed by opaque units with:

- resin-bonded particleboards panels, melamine finished, mm 18 thick, with ABS edges
- PVC gaskets on vertical and horizontal structural elements
- in between opposite wood-based panels, mineral wool panels, unfaced, mm 40 thick with density 40 kg/m$^3$

obtained the results described in table 1.

| Test Method | Parameter | Number of the tested samples | Results | | Test report |
|---|---|---|---|---|---|
| | | | Continuous parameter mean (m) | Compliance parameters (Yes/No) | |
| **EN ISO 11925-2** | Fs≤150 mm | 12 | --- | Yes | 6226/RP/18 ITC dated 24/04/18 |
| Flame attack 30 s | | | | | |
| Dripping | Ignition of the filter paper | | --- | Yes | |
| **EN 13823** | $FIGRA_{0.2MJ}$≤750 W/s | 3 | 190.34 | Yes | 6227/RP/18 ITC dated 24/04/18 |
| | $THR_{600s}$≤15 MJ | | 16.38 | No | |
| | LSF<edge | | --- | Yes | |
| | SMOGRA≤180 m$^2$/s$^2$ | | 5.55 | Yes | |
| | $TSP_{600s}$≤200 m$^2$ | | 63.48 | Yes | |
| | f≤10 s | | --- | Yes | |

Tab.1: Reaction to fire: test results of the IPK "Taurus"

According to EN 13501-1:2007+A1 the IPK "Taurus" in the tested layout can be classified as follows (tab. 2):

| | Fire Behaviour | | Smoke production | | | Dripping | | Classification Report |
|---|---|---|---|---|---|---|---|---|
| Euroclass | D | - | s | 2 | , | d | 0 | 6228/RC/18 ITC dated 24/04/18 |

Tab.2: Reaction to fire: classification of the IPK "Taurus"

Annex 1 contains a set of tables in which for every kit component the respective reaction to fire class is given.

### 3.2 BWR 2: FIRE RESISTANCE
No Performance Determined.

### 3.3 BWR 3: RELEASE OF DANGEROUS SUBSTANCES
No Performance Determined.

### 3.4 BWR 3: WATER VAPOUR PERMEABILITY
No Performance Determined.

### 3.5 BWR 3: WATER PERMEABILITY
Not relevant.

### 3.6 BWR 4: RESISTANCE TO DYNAMIC LOADS
The resistance to dynamic loads of the IPK "Taurus" as for structural damage was tested in accordance with § 6.4.1 of ETAG 003, with reference to the following standards: ISO 7892, ISO/DIS 7893. The classification was carried out through reference to ETAG 003 Edition 2012 Use Categories.
Among the different configurations included in the Abacus and/or described in technical/installation terms by the Manufacturer, ITC-CNR chose a few configurations which were considered the weakest possible configurations with respect to this test. Under this initial assumption, the test results detailed below are applicable to all the units and layouts of "Taurus" up to mm 3100 height.
Heights in mm of "Taurus" partition samples subjected to tests are reported in Table 3.

| Resistance to Dynamic Loads | Resistance to structural damage from soft body impact load – 50 kg bag | Resistance to structural damage from hard body impact load – 1 kg steel ball | Test Report |
|---|---|---|---|
| Blind units cm 100 wide in a vertical layout<br>*H mm 3100* | IV a<br>400 Nm | IV a<br>10 Nm | 6224/RP/18 ITC dated 23/04/18 |
| Double-glazed units with aluminium standard profile cm 100 wide in a vertical layout<br>*H mm 3100* | IV a<br>400 Nm | IV a<br>10 Nm | |
| Double-glazed units with aluminium thin profile cm 100 wide in a vertical layout<br>*H mm 3100* | IV a<br>400 Nm | IV a<br>10 Nm | |

Tab. 3: Resistance to dynamic loads (structural damage): classification of the IPK "Taurus"

### 3.7 BWR 4: RESISTANCE TO ECCENTRIC VERTICAL LOADS
No Performance Determined.

### 3.8 BWR 4: RESISTANCE TO HORIZONTAL LINEAR STATIC LOADS
No Performance Determined.

### 3.9 BWR 4: SAFETY AGAINST PERSONAL INJURY BY CONTACT

The geometry of the IPK "Taurus" does not contain any sharp and cutting edges and there is no risk of abrasion or cutting people or people's clothing rising from the nature of the surfaces.

### 3.10 BWR 5: AIRBORNE SOUND INSULATION

The airborne sound insulation of the Internal Partition system "Taurus" was tested for two configurations in the version "Taurus dB" in accordance with § 6.5.1 of ETAG 003 Edition 2012, with reference to the following standards: EN ISO 10140-2; EN ISO 717-1. Test results are shown in Table 4.

| Measurement of sound insulation | $R_w$ dB | C dB | $C_{tr}$ dB | Test Report |
|---|---|---|---|---|
| "Taurus dB" blind units, cm 100 wide, with mm 18 thick wood based panels, melamine finished, internally provided with "ISHOLsint DUO massa" insulation product | 44 | -2 | -6 | 0003\DC\ACU\17_1 CSI dated 10/03/17 |
| "Taurus dB" double-glazed units, cm 100 wide, with acoustic laminated glass panes - 33.1 on one side and 33.2 on the other side - plus lateral blind infill wood based panels cm 40 wide, internally provided with "ISHOLsint DUO massa" insulation product | 43 | -2 | -7 | 0003\DC\ACU\17_2 CSI dated 10/03/17 |

Tab. 4: Airborne sound insulation: $R_w$, C and $C_{tr}$ of IPK "Taurus dB"

### 3.11 BWR 5: SOUND ABSORPTION

No Performance Determined.

### 3.12 BWR 6: THERMAL RESISTANCE

No Performance Determined.

### 3.13 BWR 6: THERMAL INERTIA

No Performance Determined.

### 3.14 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO DYNAMIC LOADS

The resistance to dynamic loads of the IPK "Taurus" as for functional failure was tested in accordance with § 6.7.1 of ETAG 003, with reference to the following standards: ISO 7892, ISO/DIS 7893. The classification was carried out through reference to ETAG 003 Edition 2012 Use Categories.

Among the different configurations included in the Abacus and/or described in technical/installation terms by the Manufacturer, ITC-CNR chose a few configurations which were considered the weakest possible configurations with respect to this test. Under this initial assumption, the test results detailed below are applicable to all the units and layouts of "Taurus" up to mm 3100 height.

Heights in mm of "Taurus" partition samples subjected to tests are reported in Table 5 in the following page.

| Resistance to Dynamic Loads | Resistance to functional failure from soft body impact load – 50 kg bag | Resistance to functional failure from hard body impact load – 0,5 kg steel ball | Test Report |
|---|---|---|---|
| Blind units cm 100 wide in a vertical layout<br>*H mm 3100* | IV<br>120 Nm | IV<br>6 Nm | 6224/RP/18 ITC dated 23/04/18 |
| Double-glazed units with aluminium standard profile cm 100 wide in a vertical layout<br>*H mm 3100* | IV<br>120 Nm | IV<br>6 Nm | |
| Double-glazed units with aluminium thin profile cm 100 wide in a vertical layout<br>*H mm 3100* | IV<br>120 Nm | IV<br>6 Nm | |

Tab.5: Resistance to dynamic loads (functional failure): classification of the IPK "Taurus"

Maximum deflections during impact and maximum residual deflections recorded in the test are shown in table 6.

| Maximum deflection in the test of resistance to functional failure from soft body impact load – 50 kg bag | | |
|---|---|---|
| | Max deflection during impact mm | Max residual deflection mm |
| Blind units | 37.6 | 1.5 |
| Double-glazed units with aluminium standard profile | 35.9 | 0.2 |
| Double-glazed units with aluminium thin profile | 39.1 | 0.5 |
| No functional failure | | |

Tab. 6: Resistance to dynamic loads (functional failure): maximum deflection

**3.15 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO ECCENTRIC VERTICAL LOADS**

No Performance Determined.

**3.16 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO POINT LOADS**

No Performance Determined.

**3.17 ASPECTS OF DURABILITY AND SERVICEABILITY: RIGIDITY OF PARTITIONS FOR CERAMIC TILING**

No Performance Determined.

**3.18 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO DETERIORATION CAUSED BY PHYSICAL AGENTS**

Test not required.

**3.19 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO DETERIORATION CAUSED BY CHEMICAL AGENTS**

Test not required.

**3.20 ASPECTS OF DURABILITY AND SERVICEABILITY: RESISTANCE TO DETERIORATION CAUSED BY BIOLOGICAL AGENTS**

Not relevant.

**Annex 1 to the Evaluation Report of European Technical Assessment 18/0528: Reaction to fire class of the IPK "Taurus" kit components**

| STRUCTURAL ELEMENTS AND ACCESSORIES (GASKETS AND FIXINGS) | Thickness | Material | Reaction to fire class |
|---|---|---|---|
| Vertical structural element (upright) | 1 mm | Zinc coated steel acc. to EN 10346 | A1 |
| Horizontal structural element (cross) | 1 mm | | |
| Upper pusher with compensation spring | 2,5 mm (plate) | Zinc coated steel sheet for cold forming DC03 (EN 10130) | A1 |
| Lower foot adjustable by screw | 2,5 mm (plate) | | |
| Upper perimetric profile (rail) | 0,6 mm | Zinc coated steel acc. to EN 10346. Coated with polyester varnish | NPD |
| Lower perimetric profile (rail) | 0,6 mm | | |
| Gasket with balloon-shaped section for vertical and horizontal structural members | | Rigid-plasticized co-extruded PVC | NPD |
| Hook for fastening crosses to uprights | 1,5 mm | Zinc coated steel sheet for cold forming DC03 (EN 10130) | A1 |
| Plugs for perimetric fixing of the partition | | Nylon plug mm Ø 6 x L 30 | NPD |
| Double sided adhesive for partition fixing to floor (max partition dimensions: L mm 4000, h mm 3000) | | Double coated adhesive tape: closed cell polyethylene foam with acrylic adhesive | NPD |

| FAÇADE PANELS, GLAZED FRAMES AND ACCESSORIES (GASKETS AND FIXINGS) | Thickness | Material characteristics | Reaction to fire class |
|---|---|---|---|
| Resin-bonded particleboards panels, overlaid (melamine finished) for opaque units | 18 mm | Formaldehyde class E1 (EN 13986) Content of Pentachlorophenol < 0,8 mg/kg (CEN/TR 14823) | D-s2,d0 |
| Resin-bonded particleboards panels, with addition of flame-retardant overlaid (melamine finished) for opaque units | 18 mm | Formaldehyde class E1 (EN 13986) Content of Pentachlorophenol < 0,8 mg/kg (CEN/TR 14823) CE Marked (Certificate 0987-CPR-198) | B-s2,d0 |
| Panel edges | | ABS | NPD |
| Adhesive for panel edge glueing | | Polyurethanic adhesive | NPD |
| "Standard" profile for double-glazed glass frame | | EN AW-6060 Aluminium alloy (EN 15088), anodized | A1 |
| Thin profile for double-glazed glass | | | |
| "Stratobel" glass panes for double-glazed glass frame | 33.1 | Laminated glass (EN 14449) CE marked | NPD |
| "Stratophone" and/or "Optiphon" acoustic glass panes for double-glazed glass frame | 33.1 33.2 | Laminated glass (EN 14449) CE marked | NPD |
| "Optifloat" glass panes for double-glazed glass frame | 5 mm | Thermally toughened soda lime silicate safety glass (EN 12150-1)– CE marked | A1 |
| Gasket with balloon-shaped section used with "standard" glass frame profile | | Rigid-plasticized co-extruded PVC | NPD |
| Gasket with balloon-shaped section used with thin glass frame profile | | Rigid-plasticized co-extruded PVC | NPD |
| Hook for fastening wood based panels to uprights | 1,3 mm | Zinc coated steel sheet for cold forming DC03 (EN 10130) | A1 |
| Double hook for fastening glazed frames to uprights | 0,9 mm | | |

| INSULATION PRODUCTS | Brand-name/thickness | Material characteristics | Reaction to fire class |
|---|---|---|---|
| Factory made mineral wool (MW) panels:<br>– unfaced<br>or<br>– enveloped in polyethylene bags | ISHOLrock 40<br>ISHOLrock 40 bag<br>Thickness mm 40<br>Density 40 kg/m$^3$ | MW-EN 13162<br>CE marked (unfaced panels) | A1 |
| – Polyester fibre panel to be coupled with plastic board<br>– Plastic material board to be coupled with polyester fibre panel | ISHOLsint DUO massa<br>Thickness mm 27 | Polyester fibre panel mm 25 thick and 50 kg/m$^3$ density with plastic material board interposed mm 2 thick with 4 kg/m$^2$ surface mass | NPD |

| GASKETS - ADHESIVES | Brand-name | Material characteristics | Reaction to fire class |
|---|---|---|---|
| Gasket/ adhesive gasket to be applied on upper/ lower perimetric profiles and along partition perimeter | Polistik EVA | Closed-cell EVA (ethylene vinyl acetate); with acrlic glue in the adhesive version | NPD |
| Adhesive gasket along glass pane perimeter | Kronstik | Self-adhesive EPDM rubber | NPD |

| PROFILES FOR PARTITION STARTING, ENDING AND FOR CORNER JUNCTIONS | Thickness | Material | Reaction to fire class |
|---|---|---|---|
| Profile for partition starting | mm 1,2 | EN AW-6060 Aluminium alloy (EN 15088), coil coated Reynolux® | NPD |
| Profile for partition ending | mm 1,2 | | |
| Tubular profile and adjusting profile for corner junctions identified as follows:<br>– variable corner junction<br>– 90° corner junction<br>– three ways corner junction | | EN AW-6060 Aluminium alloy (EN 15088), anodized | A1 |

| DOORS, PROFILES AND GASKET FOR DOORS | Thickness | Material/Material characteristics | Reaction to fire class |
|---|---|---|---|
| Glazed door with glass door leaf (with bevelled edges) | 10 mm | Soda Lime Silicate glass CE marked (EN 572-9) thermally toughened according to EN 12150 | A1 |
| Honeycomb panel blind door leaf, vertically edged with aluminium profiles | MDF mm 4 + internal panel mm 28 | Composite panel: two MDF panels, overlaid (laminate finish), and a cardboard honeycomb panel interposed, with fir tree hardwood frame.<br>MDF panels: formaldehyde class E1 (EN 13986) | NPD |
| Vertical profiles for blind door leaf panel edging | | EN AW-6060 Aluminium alloy (EN 15088), anodized | A1 |
| Door rabbet frame | | | |
| Rabbet gasket with balloon-shaped section | | PV Rigid-plasticized co-extruded PVC | NPD |