VTT EXPERT SERVICES LTD

Kemistintie 3, Espoo
P.O.Box 1001, FI-02044 VTT, FINLAND
www.vttexpertservices.fi

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
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European Technical Assessment + Evaluation report

ETA 01/0002
of 28.11.2016

I General Part

Technical Assessment Body issuing the ETA	**VTT Expert Services LTD**
Trade name of the construction product	**Eltete cubical partition systems for sanitary applications**
Product family to which the construction product belongs	**Partition wall kit for sanitary applications**
Manufacturer	**Eltete Oy/Ab** **P.O. Box 94** **FI-07901 Loviisa**
Manufacturing plant	**Eltete Oy/Ab** **P.O. Box 94** **FI-07901 Loviisa**
This European Technical Assessment contains	13 pages including 2 Annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	Guideline for European technical approval of Internal partition kits for use as non-loadbearing walls», ETAG 003, edition December 1998, Amended April 2012 used as European Assessment Document (EAD)
This ETA replaces	ETA 01/0002 issued January, 2012

II Specific Part

1 Technical description of the product

The ELTETE partition wall kit comprises tooled side- and front partition wall sheets, door leaves, door handles, hinges, locks and legs, either in standard or customer- specified dimensions. The wall sheets and door leaves are made of either 10 or 13 mm thick compact high pressure laminate (EN 438-1) or 24 mm thick board, which comprises of damp proof particle board (class P5 according to the standard EN 312 -5) or moisture resistant plywood (EN 636-3) coated with high pressure laminates on both sides. Door hinges, door handles, locks and turning knobs as well as their fastening screws are included in the system. The walls are framed with anodised or sometimes powder coated aluminium alloy profiles which are used in fastening walls to each other and to the load bearing structure.

The standard sizes of the components are as follows:

- Door leaf 1947 x 602 x (wall panel thickness) mm, with three hinges (one in the middle, two 210 mm from the corners) and lock in the middle.
- Wall panel height 1980 mm (total thickness 10 or 24 mm)
- Total height of the partition wall including 120 mm legs about 2100 mm
- Total height of the partition wall including 170 mm legs about 2150 mm and when possible horizontal upper bearers 2229 mm
- Wall panel height 1830 mm (total thickness 13 mm)
- Total height of the partition wall including 170 mm legs and horizontal upper bearers, 2070 mm (2000 – 2150 mm)
- Cabin unit and door wall width typically 900 mm. The width of the whole system according to the order.
- Side wall width normally 1200 mm (900 - 1600 mm)

The ELTETE partition wall kit stands on its legs and the height of the wall kit is below room height. The partition wall kit is used to construct one - to twenty or more separate cabins in front of the load bearing structure.

The partition wall kit is fastened to the load bearing structure with vertically to the load bearing wall fastened aluminium profiles into which the side wall vertical edges are fastened. The side walls and front walls are fastened into each other with vertical aluminium profiles. The distance between the side walls is normally 900 +/- 100 mm. The distance between the load bearing back wall and the door wall vary between 900- 1600 mm.

Assessment

The manufacturer delivered technical specification of the product that corresponds to the scope of ETAG 003.

Conclusion

Requirements set in clause 2.1 of ETAG 003 are met.

2 Specification of the intended uses in accordance with the applicable EAD

Intended uses

The Eltete partition kit is used as non-load bearing walls. The purpose of the partition kit is to divide interior of the building like sanitary rooms e.g. public toilets. The primary function of the kit is to allow protection of the sight. The kit is not intended to be used for protection from noise, heat or fire. The partition kit is relocatable.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the partition kit of 25 years provided that the kit is subjected to appropriate use and maintenance[1].

Design

The partition wall systems have impact resistance classes according to the point 2. If the walls are designed with wider width dimensions than used in the evaluation the impact resistance classes are not valid.

The partition wall systems are normally installed indoors with normal indoor temperature and moisture conditions, with periodically higher moisture content typical to the sanitary spaces. When the products are used in spaces with continuous high air humidity the selected design of the wall system shall be according to the instructions of the manufacturer.

This European technical approval is based on the assumption that all plans needed have been made correctly according to the regulations valid on the building site.

Execution of construction works

It is the responsibility of the manufacturer to ensure that proper information for the use of the partition kit is enclosed to each delivery, including general guidance on the basis of this ETA and the specific installation instructions and construction details. With regard to the assumed working life regular maintenance is necessary. The manufacturer shall provide with written documents which contain descriptions about type and frequency of the maintenance.

The completed building (the works) shall comply with the building regulations (regulations on the works) applicable in the Member States in which the building is to be constructed. The procedures foreseen in the Member State for demonstrating compliance with the building regulations shall also be followed by the entity held responsible for this act. An ETA for a partition kit does not amend this process in any way.

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[1] This means that it is expected that when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements of the works. The indications given as to the working life of a partition kit cannot be interpreted as a guarantee given by the producer or the approval body. They should only be regarded as a means for the specifiers to choose the appropriate criteria for partition kits in relation to the expected, economically reasonable working life of the works.

Assessment

Information was given by the manufacturer regarding intended uses, substructure, design and installation of the partition kit.

Conclusion

Requirements set in clause 2 ETAG 003 are met.

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

Table 1. Basic requirements for construction works and essential characteristics

Basic requirement and essential characteristics	Performance
BWR 1. Mechanical resistance and stability	NPA
BWR 2. Safety in case of fire	
Reaction to fire of materials and components	NPA
Resistance to fire	NPA
External fire performance of roof covering	NPA
BWR 3. Hygiene, health and the environment	
Vapour permeability and moisture resistance	NPA
Watertightness	NPA
Content, emission and/or release of dangerous substances	Clause 3.1
BWR 4. Safety and accessibility in use	
Slipperiness of floors	NPA
Impact resistance	Clause 3.2
BWR 5. Protection against noise	
Airborne sound insulation of walls, floors and roof structures	NPA
Sound absorption	NPA
BWR 6. Energy economy and heat retention	
Thermal resistance	NPA
Thermal inertia	NPA
BWR 7. Sustainable use of natural resources	
Sustainable use of natural resources	NPA
General aspects	
Robustness and rigidity:	Clause 3.3
Resistance to deterioration:	Clause 3.3

3.1 Hygiene, health and the environment, BWR 3

Content, emission and/or release of dangerous substances

Release of formaldehyde, asbestos, pentachlorophenol and other dangerous substances:

- Release of formaldehyde from wall/door sheets are according to the following:
  - Damp-proof particle board without coatings, EN 120: ≤ 8 mg HCHO/100g dry board (class E1)
  - plywood, EN 120: ≤ 2 mg HCHO/100g dry board (class E1)
  - plywood, EN 717-2: ≤ 0,5 mg/ h m²
  - High pressure laminate 10 and 13 mm sheets, EN 717-2: ≤0,04 mg/h m²
  - High pressure laminate (0,7 mm) ENV 717-1: ≤0,05 mg/m³

- Release of asbestos, pentachlorophenol and other dangerous substances:
  - Not determined
- In addition of the specific clauses relating to dangerous substances contained in this European Technical Approval, 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 Construction Products directive, these requirements need also to be compiled with, when and where they apply.

ETA holder will submit a written declaration whether or not the product contains dangerous substances according to the regulations when and where relevant in the member states of destination, and shall list these substances.

Assessment

Chemical composition of the materials used in partition kit has been submitted to the Approval Body.

Conclusion

Requirements set in clause 4.3.1 of ETAG 003 are met.

3.2 Safety and accessibility in use, BWR 4.

Impact resistance

Resistance to horizontal loads:

- Resistance to structural damage from soft body impact load - 50 kg bag: ISO 7892:1988, ISO/DIS 7893:1990 and annexes B and C of the guideline, according to the table below.
- Resistance to structural damage from hard body impact load - 1kg steel ball: ISO 7892:1988 and ISO/DIS 7893:1990 and annexes B and C of the guideline, according to the table below.
- Resistance to structural damage from eccentric vertical loads:
  Not relevant, no performance determined
- Safety against personal injuries by contact
  Assessment of the geometry, edges and surfaces has been done with satisfactory results.

The evaluated use categories – Structural damage - are as follows:

Product type	**Use category**
10 mm thick compact high pressure laminate board	**Category I**
13 mm thick compact high pressure laminate board	**Category I**
22 mm thick damp proof particle board (class P5) and moisture resistant plywood coated with high pressure laminates on both sides, total thickness about 24 mm	**Category IVa**

Assessment

Impact resistance: Resistance to horizontal loads and durability: tests

Tests were performed with soft (50 kg bag) and hard body (1 kg steel balls) impact loads according to the standards ISO 7892:1998, ISO/DIS 7893:1990 and annexes B and C of the Guideline 003. Tests were performed with test samples described above, first with soft body and then with hard body.

The results are in the table 2.

Table 2a. Results from impact tests of 10 mm thick laminate structure (doors closed during the impact tests)

Test type	Class	Operations	Results
Hard body impact 1 kg steel ball	III - IV	10 Nm, impact height 1019 mm. Impact points 1500 mm from the floor level.	No failures on the surface of the structure.
Soft body impact load, 50 kg bag	I-III	100, 200 and 300 Nm, impact heights 204, 408, and 612 mm. Impact points 1500 mm from the floor level.	Impact point 1 in the middle: Deflection 10 mm, no permanent dimensional change (300 Nm/612 mm) Impact point on the wall beside the door lock: Deflection 20 mm, permanent dimensional change 5 mm, permanent bending of upper profile (300 Nm/612 mm)

Table 2b. Results from impact tests of 13 mm thick laminate structure (doors closed during the impact tests)

Test type	Class	Operations	Results
Hard body impact 1 kg steel ball	III - IV	10 Nm, impact height 1019 mm. Impact points 1500 mm from the floor level.	No failures on the surface of the structure.
Soft body impact load, 50 kg bag	I-II	100, and 200 Nm, impact heights 204 and 408 mm. Impact points 1500 mm from the floor level.	Impact point on the wall beside the door lock: Permanent breakage of the fastenings of the vertical edge near the impact point. Permanent bending of 0,5 mm of upper profile (200 Nm/ 408 mm)

Table 2c. Results from impact tests of 24 mm thick particle board structure (doors closed during the impact tests)

Test type	Class	Operations	Results

Hard body impact 1 kg steel ball	III - IV	10 Nm, impact height 1019 mm. Impact points 1500 mm from the floor level.	No failures. Permanent indentation on the surface 0,02 mm.
Soft body impact load, 50 kg bag	I - IVa	100, 200, 300 and 400 Nm, impact heights 204, 408, 612 and 816 mm. Impact points 1500 mm from the floor level.	Impact point 1 in the middle: No deflection or permanent dimensional change (400 Nm/816 mm). Impact point on the wall beside the door lock: No deflection or permanent dimensional change (400 Nm/ 816 mm)

Influence of geometry and surface

According to the visual examination, there were no sharp or cutting edges. The only risk lies on the unwanted and most probably impossible passage through the gap between the partition legs. Surfaces of the profiles partition sheets are smooth so there is no risk of cutting clothing.

Conclusion

Requirements set in clause 4.4 ETAG 003 are met.

3.3 Aspects of durability

Robustness and rigidity:

- Resistance to functional failure from soft body impact load - 50 kg bag: ISO 7892:1988, ISO/DIS 7893:1990 and annexes B and C of the guideline. According to the table below.
- Resistance to functional failure from hard body impact load - 0,5 kg steel ball: ISO 7892:1988 and ISO/DIS 7893:1990 and annexes B, C and D of the guideline. According to the table below.
- Resistance to functional failure from eccentric vertical load: ISO/DIS 8413:1990 Influence of eccentric vertical load caused by door leaves tested.
- Resistance to functional failure from point loads parallel or perpendicular to the surface: ISO/DIS 8413:1990: No performance determined. No objects are installed and supported by the partition boards.
- Rigidity of partitions to be used as a substrate for ceramic tiling: No performance determined. Partitions are not used as a substrate for ceramic tiling.
- Resistance of door hinges: Door hinges resist of at least 1000 N vertical load when door is open and load is directed to outer and upper corner of the door.

The evaluated use categories - Functional failure – are as follows:

Product type	**Use category**
10 mm thick compact high pressure laminate board	**Category III**
13 mm thick compact high pressure laminate board	**Category III**

22 mm thick damp proof particle board (class p5) and moisture resistant plywood coated with high pressure laminates on both sides, total thickness about 24 mm.	**Category III**

Resistance to deterioration:

- Physical agents
  Hygrothermal conditions: No performance determined. Surface materials of the kit resist influence of short term condensing water. The temperatures and humidity conditions are similar on both sides of the wall kit.

- Chemical agents: No performance determined. Surface materials (high pressure laminates and anodised aluminium) resist influence of neutral cleaning agents.

Biological agents: No performance determined. Regular cleaning takes place normally in the sanitary spaces.

Assessment

Robustness and rigidity: tests

Tests were performed with soft (50 kg bag) and hard body (0,5 kg steel balls) impact loads according to the standards ISO 7892:1998, ISO/DIS 7893:1990 and annexes B and C of the Guideline 003. Tests were performed with test samples described above, first with soft body and then with hard body.

In addition door leaves were loaded with eccentric vertical load according to the principles of the standard ISO/DIS 8413 and annexes B, C and D of the ETAG 003. Loading took place from the upper and outer corner of the door leaf, when the door was opened 60°.

The results are in the table 3.

Table 3a. Results from impact tests of 10 mm thick laminate structure (doors closed during the impact tests)

Test type	Class	Operations	Results
Hard body impact 0,5 kg steel ball	IV	6 Nm, ten impacts, impact height 1223 mm. Impact points 1500 mm from the floor level.	No failures on the surface or on the structure, one impact done to 7 points (accuracy 0,01 mm)
Soft body impact 50 kg bag	II-IV	3x120 Nm, impact height 245 mm. Impact points 1500 mm from the floor level.	No failures. 3 impacts done to each three impact points. Maximum deflection 8,0 mm. No permanent dimensional changes.
Loading test of the door		Increased loading with stops	Screw head penetrate hinge leaf when the load was 1250 N starting from the upper hinge.

Table 3b. Results from impact tests of 13 mm thick laminate structure (doors closed during the impact tests)

Test type	Class	Operations	Results
Hard body impact 0,5 kg steel ball	IV	6 Nm, ten impacts, impact height 1223 mm. Impact points 1500 mm from the floor level.	No failures on the surface or on the structure, one impact done to 7 points (accuracy 0,01 mm)
Soft body impact 50 kg bag	II-IV	3x120 Nm, impact height 245 mm. Impact points 1500 mm from the floor level.	No failures. 3 impacts done to each three impact points. No deflection. No permanent dimensional changes.
Loading test of the door		Increased loading with stops	Permanent dimensional changes in hinges when the load was 1800 N in spite of the changes, door can be opened and closed.

Table 3c. Results from impact tests of 24 mm thick particle board structure (doors closed during the impact tests)

Test type	Class	Operations	Results
Hard body impact 0,5 kg steel ball	IV	6 Nm, ten impacts, impact height 1223 mm. Impact points 1500 mm from the floor level.	No failures on the surface or on the structure, one impact done to 7 points (accuracy 0,01 mm)
Soft body impact 50 kg bag	II-IV	3x120 Nm, impact height 245 mm. Impact points 1500 mm from the floor level.	No failures. 3 impacts done to each three impact points. Deflection below 2 mm. No permanent dimensional changes.
Loading test of the door		Increased loading with stops	Screws penetrate through particle board when the load is 1960 N starting from the upper hinge.

Protection against deterioration

The partition system is not allowed to be used in extreme conditions and is intended to be used indoors. The kit is used in normal room conditions in the temperature range from 5 to 35 °C and relative humidity range 20 % - 75 % RH.

The metallic parts are zinced or anodized or coated. High pressure laminate surfaces resist well normal cleaning chemicals. Abrasive materials or wxx shall not be used. Manufacturer gives instruction on cleaning and maintenance and handling of components before and during the installation.

Harmful influence of biological agents can be avoided with regular cleaning.

Conclusion

Requirements set in clause 4.7 of ETAG 003 are met.

Overall conclusion

Assessment has been conducted in accordance with ETAG 003 used as an EAD.

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

systems of Assessment and Verification of Constancy of Performance (AVCP) specified by the European Commission in mandate Construct 98/213/EC, Annex 3 as amended are as follows:

System 3
- For uses subject to regulations on dangerous substances
- with safety in use category IV

System 4
- For all other partitions

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at VTT Expert Services Ltd.

Documentation

Test reports presented by the manufacturer and other material used as basis for the assessment are presented in Annex 2.

Documents available to the notified body responsible for the evaluation of constancy of performance (AVCP) include:

- - The ETA
- - Basic manufacturing process
- - Product and materials specifications
- - Control plan

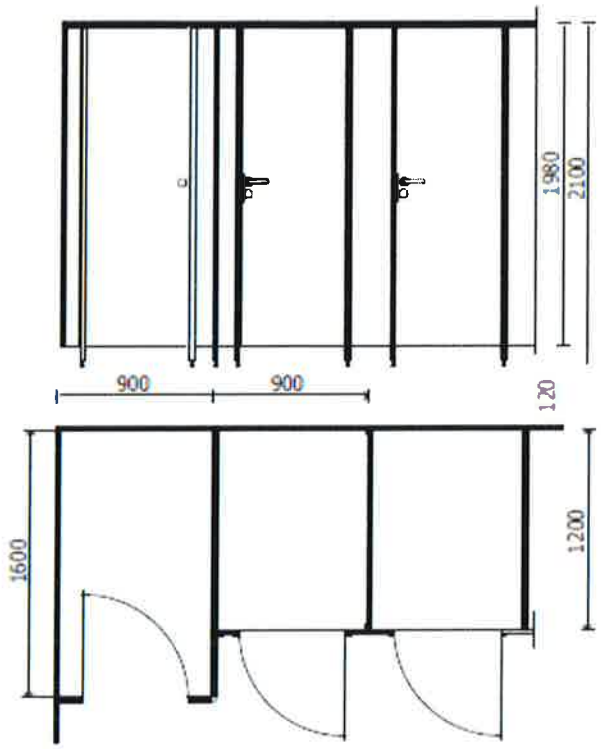
Issued in Espoo on November 28, 2016
by VTT Expert Services Ltd

Tiina Ala-Outinen
Business Manager

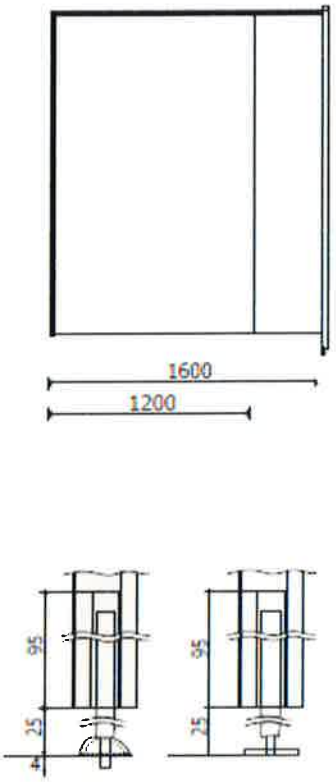
Pertti Jokinen
Product Manager

ANNEX 1

An example of the ELTETE partition kit



The design of the partition walls with doors



Drilled to the floor Glued to the floor

ANNEX 2
MATERIAL USED AS BASIS FOR THE ASSESSMENT

Ref. No.	Author or institution	Report No.	Date	Title / Issue
1	VTT	RTE3519/01	29.9.2001	Evaluation of properties of ELTETE partition wall kit according to the ETAG 033, 1998