## Fire retardant wood based panels

Complete system for ceilings and walls


## Elam -range of products:

Elam -products involve a range of decoratively surfaced fire retardant wall and ceiling panels for mainly public buildings. Panel surfaces is usually covered with lacquered (and stained) or vaxed natural wood veneer. Other surface solutions are imitation foils, high pressure or real stone laminate or paint. Panels can be plain, perforated, slotted or grooved.

As a rule cement bonded particleboard, which is fireproof and strong, is used as core board. In locations where fire classification requirements are not applicable, conventional wood based panels as plywood, chipboard or MDF may be used for core boards.

Cement bonded particleboard consists of wood chips ( $30 \%$ dry weight) and portland cement ( $70 \%$ ). No organic binders, formaldehyde or asbestos included. The boards are sanded and thickness calibrated to make them suitable for surface coating.

Vanha Porvoontie 36
FIN-04600 MÄNTSÄLÄ
Phone: +358 (0)19 6871103
Fax: +358 (0)196871115
E-mail: elam@elam.fi
www.elam.fi

All the materials as glue, veneer and lacquer are chosen to keep the fire resistance on as high level as possible.

## Other Elam applications are:

Curved ElamForm panels, ElamTrellis, ElamInterior thin perforated decoration panels, Perfo-Linear, Linear and Mosaic grooved panels, through coloured cement- bonded particleboard Anhracite, fixing accessories and special wood profiles.

## CONTENTS:

| Dimesions, boards and surfaces | Page 2 |
| :--- | :--- |
| Edge types | Page3 |
| Acoustic perforation | Page 4 |
| Linear, Perfo-Linear and Mosaic | Page 6 |
| Special perforations and striping | Page 8 |
| Installation and details. | Page 9 |
| Walls | Page 9 |
| Ceilings | Page 14 |
| Fixing accessories (metallic) | Page 18 |
| Wood mouldings | Page 19 |



## Dimensions, boards and surfaces

| Std sizes (mm): <br> Std thicknesses 12 and 16 mm . Other sizes and thicknesses on request. | $2600 \times 1200 / 600 / 300 / 190$ $1200 \times 1200 / 600 / 300 / 190$ <br> $2400 \times 1200 / 600 / 300 / 190$ $600 \times 600 / 300$ <br> $1800 \times 1200 / 600 / 300 / 190$  |
| :---: | :---: |
| Core boards: | As a rule, strong cement bonded particleboard is used as core material, but conventional wood based panels as well, if no fire classification is required e.g. chipboard, MDF or plywood. Special "marine -boards" can be used for ships (IMO A 270, SOLAS). |
| Surface alternatives: <br> Unsurfaced panels: | All sizes, edge forms and perforations are available for raw panel as well as surfaced panel. |
| Wood veneered panels: <br> Lacquering: <br> Staining: <br> Wax or oil treatment: | All commercial wood species available. <br> Low emission acrylate lacquering, TVOC emission less than $<10 \mathrm{~g} / \mathrm{m}^{2} \mathrm{~h}$. Up to wish and sample of customer or up to given color code. Colorless or colored treatment. |
| Painted panels: | Painting on special paper coated board. Balance film on back side. Colour stains according to e.g. NCS -code. |
| Foil surfaced panels: | Wood imitation melamine and wall papers (small volumes not available). |
| High Pressure Laminated panels: | All well-known HPL accepted. |

## Edge types and coverings of panels and acoustic boards

Edge covering alternatives (combine the code number after edge type number as shown below):
0. Unsurfaced edge
a. Wood or other imitation band
b. Real thin wood veneer, lacquered as surface
c. $2,0 \mathrm{~mm}$ thick wood veneer, lacquered as surface
d. 10 mm thick wood batten under surface veneer (edge type 8)


## Acoustic perforations:

The next models are standard types, others available on request. Type S means "slotted" and P perforated (round hole). The back side of the panel can be coated with black or white fabric.

Std panel sizes are $600 \times 600$ ja $1200 \times 600 \mathrm{~mm}$ :

Type S


Type $P$

$\underline{\text { Bold }}=$ std diameter

| a | b | c | d | Holes/row | Rows | Holes |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| mm | mm | mm | mm | pcs | pcs | pcs |
| 79 | 72,5 | 78 | 202 | 14 | 4 | 56 |
| 59 | 72,5 | 78 | 202 | 14 | 2 | 28 |
| 79 | 72,5 | 78 | 202 | 12 | 4 | 48 |
| 59 | 72,5 | 78 | 202 | 12 | 2 | 24 |
| 38,5 | 37,5 | 32 | 53 | 16 | 12 | 192 |
| 38,5 | 37,5 | 32 | 53 | 16 | 6 | 96 |
| 38,5 | 37,5 | 32 | 53 | 14 | 12 | 168 |
| 38,5 | 37,5 | 32 | 53 | 14 | 6 | 84 |
| 30 | 30 | 60 | 90 | 28 | 8 | 224 |
| 30 | 30 | 60 | 90 | 28 | 4 | 112 |
| 30 | 30 | 60 | 90 | 20 | 8 | 160 |
| 30 | 30 | 60 | 90 | 20 | 4 | 80 |
| 40 | 30 | 32 | 40 | 28 | 16 | 448 |
| 28 | 30 | 32 | 40 | 28 | 8 | 224 |
| 76 | 30 | 32 | 40 | 24 | 12 | 288 |
| 64 | 30 | 32 | 40 | 24 | 6 | 144 |
| 40 | 28 | 32 | 40 | 18 | 16 | 288 |
| 28 | 28 | 32 | 40 | 18 | 8 | 144 |
| 30 | 30 | 20 |  | 28 | 58 | 1624 |
| 30 | 30 | 20 |  | 28 | 28 | 784 |
| 30 | 30 | 20 |  | 28 | 52 | 1456 |
| 30 | 30 | 20 |  | 28 | 26 | 728 |
| 30 | 30 | 20 |  | 26 | 52 | 1352 |
| 30 | 30 | 20 |  | 26 | 26 | 676 |
| 50 | 50 | 20 |  | 20 | 40 | 800 |
| 50 | 50 | 20 |  | 20 | 20 | 400 |
| 30 | 30 | 20 |  | 28 |  | 616 |
| 30 | 30 | 20 |  | 28 |  | 384 |
| 24 | 28 | 32 |  | 18 | 37 | 666 |
| 28 | 28 | 32 |  | 18 | 18 | 324 |
| 32 | 28 | 16 |  | 35 | 72 | 2520 |
| 28 | 28 | 16 |  | 35 | 35 | 1225 |
| 24 | 28 | 16/32 |  |  |  | 1278 |
| 28 | 28 | 16/32 |  |  |  | 613 |
| 30 | 30 | 10/20 |  |  |  | 3163 |
| 30 | 30 | 10/20 |  |  |  | 1513 |






S3a




S4a

 111111111111111111
S4c

| 1111111 | 1111111 | 111111 |
| :--- | :--- | :--- |
| 111111 | 111111 | 111111 |
| 1111111 | 111111 | 111111 |
| 1111111 | 1111111 | 111111 |
| 111111 | 111111 | 111111 |
| 1111111 | 1111111 | 111111 |


P3

P1e
P2
P1b

P1a


P4b


## Linear-, Perfo-Linear- and Mosaic- panels:


"Linear", "Perfo-Linear" and "Mosaic" are panels made of MDF- or cement bonded particleboard with grooved surface.
Basic idea is to give the designer "free hands" when choosing groov distance and panel size. Breadth of groove is 3,6 (or 8 ) mm . The surface can be wood veneered, painted or laminated with white



Perfo-Lineaari D6 K30 S60/40


Perfo-Lineaari D3 K32 P16


Perfo-Lineaari D3 K32 P32

Panel sizes e.g.: $600 \times 600 / 300 \mathrm{~mm}$ $1200 \times 600 / 300 \mathrm{~mm}$ $1800 \times 600 / 300 \mathrm{~mm}$ $2400 \times 600 / 300 \mathrm{~mm}$ $2600 \times 600 / 300 \mathrm{~mm}$ breadth with round perforations $\mathbf{4 1 3}$ and $\mathbf{3 8 1} \mathbf{~ m m}$

Stripe share e.g.:
15 mm (in the egde 20 mm if edge form 3-6)
$\begin{array}{ll}20 \mathrm{~mm} & 60 \mathrm{~mm} \\ 30 \mathrm{~mm} & 100 \mathrm{~mm} \\ 40 \mathrm{~mm} & 300 \mathrm{~mm}\end{array}$
$50 \mathrm{~mm} \quad$ or special

## Linear- and Perfo-Linear joint principles

Parallel joint to stripes of Linear, Perfo-Linear and Mosaic will be made with PI-3510 -profile, which is painted to colour of core board making the panelling to look even and continuous. Crossing joint can be made with invisble tongue of plywood or painted PI-profile.

## Joint parallel to stripes

## Joints perpendicular to stripes

## Linear and Perfo-Lineari with $\mathbf{6 m m}$ groove. Fixed installation:



Linear, Mosaiq or Perfo-Linear with $\mathbf{3 ~ m m}$ groove. Fixed installation:


Demountible ceiling panel 600x600 (edge type 7):



Or (e.g. cc30 nominal share)


Special perforations can be made according to clients wishes.


Wave Big


Square $12 \times 12 \mathrm{kk} 32$


Wave Small



Square 12 x 12 kk 32



Special striping can be made up to wishes of the client. Board material e.g. through-colored MDF.

$\square$
$\square$

## Installation of Elam-panels Installation with PI-profiles:

## Joint types:



## Type A:

Concealed installation with PI-3510 profile. $1,2 \mathrm{~mm}$ open gap between panels. Unpainted profile may reflect in joint.

## Type B:

Butt joint. No gap or very small gap between panels. Unpainted profile may reflect in joint. If the height of the wall lining is over 3 m , special solution is required to prevent situation that the whole weight of the wall lining lays on the lowest profile line. See the page 12 in more detail.

## Type C:

10 mm open joint, fixing with aluminium profile PI4510 , which can be painted, anodised, covered with wood imitation or lacquered veneer.

## Type D:

3-6 mm open joint, fixing with aluminium profile PI3510 , which can be painted, covered with wood imitation or lacquered veneer. The desired gap between panels can be achieved by putting a filling piece of e.g. mdf- or plywood inside the profile as shown in the drawing.

Wood veneered panels are for indoor use only. Before installation check that the room is dry and ventilated and the temperature preferably over $18 \mathrm{C}{ }^{\circ}$. The RH of the air preferably between $30-60 \%$, absolutely not over $80 \%$.
Because the colour and figure of natural wood can vary, try to avoid to install divergent panels on the same wall.
PI-profiles are screwed to e.g. wooden battens. Screw distance between $400-600 \mathrm{~mm}$. If shorter panel dimension is over 600 mm , additional support is needed to prevent bending of the panel.

Wooden battens behind the panels are normally used on the concrete or brick wall for easier installation and straightening the construction. On the well made plasterboard wall with steel frame the horizontal fixing profiles can be screwed directly to frames through plasterboard.


In sports and similar halls where higher strength often is needed, it is necessary to use extra support betveen the panel edge and the batten if concealed joint with PI-profiles is absolutely desired. Additional strenth is reached by using 16 mm panel thickness as well.
 Dense perforation, Perfo-Linear and Linear are not suitable in lower parts of sports wall linings.

## Visible fixing:

For example by means of hat profile or different screws to wooden battens or steel frame directly. If necessary $1,8 \mathrm{~mm}$ loose plywood tongue can be used in the edge groove to prevent possible stepping of the joint.


## Upper end of wall paneling:



Det S1:
EL-30 profile


Det S2:
Gluing with polyurethane mastic.

with modified PI-3510 profile (can be sawn at work site).


Det S4:
Fixing a starting profile with screw or polyurethane mastic.

Starting and ending wall paneling, examples:


Det S6


Det $S 7$


Det S10


Det S8

Det S11


## Junction to floor:



Det S12 b


Det S12d


Junction to door frame:


Det S13d

Det Sl3 b


Det S13e


The use of wall cover board:



Det S13 c


Det S13f

## Outer corners of wall paneling



Gluing with polyurethane based mastics. Lifting with 4-5 mm plywood or hard board strip.


Outer corners without wooden profiles (gluing):


Det S24 b
Veneered bevelled edge




Veneered edge with "pencil rounded arris"


Det S24 e
Veneered edge with "pencil rounded arris"


## Det S24 c

 10 mm wooden edge with pencil rounded arris or 2 mm bevel

Det S24 d 10 mm wooden edge with pencil rounded arris or 2 mm bevel

NOTE: detail numbering changed 22.5.2012
Det S24 g
10 mm wooden edge with pencil rounded arris or 2 mm bevel

Outer corners with metal profiles:


Det S24 k
30x30 mm edge profile in brushed stainless steel or anodised


Det S24 l 4 mm stainless steel profile

Inner corner details:

Det S25
Det S26


Det S28


## Joints with wood profiles:



Det S31

## 20 mm open joint:

20 mm open joint can be made by fixing with aluminium profile PI-4510. Profile can be painted, covered with wood imitation, lacquered veneer or e.g. strip of brushed stainless steel or laminate.
The desired gap between panels can be achieved by putting a filling piece of e.g. mdf- or plywood inside the profile as shown in the drawing.
When loose band on profile is used, the edges shall have
Det S14 special groove depth to prevent Det S14 $\begin{aligned} & \text { special groove depth to } \\ & \text { the band to fall down. }\end{aligned}$

## Edge for 6 and high wall linings:

To prevent all the weight of the wall lining to lay on the lowest horizontal fixing profile, special arrangement is needed, if the height of the wall lining exceeds 3 m . The upper horinzontal edge of the wall panel has to be type 6 and the lower edge type 3. The horizontal PI-3510 profile has to be placed very carefully to carry a part of the load and so that there will be no gap between panels according to adjacent Det S32 drawing.

## Folded installation:



PI-profiles allows fold of about $6^{\circ}$. By moulding the profile it is possible to get greater angles.
12 mm thick panel can be bent to radius $10-12 \mathrm{~m}$ at the work site.

## Det S34

## Demountable wall panel:



Demountable perforated panel can be installed between fixed panels with screws as shown above.

At the corners of the panel 4 mm black painted plywood plates are glued. Acoustic fabric (if any) is cut off in this place to ensure proper gluing. Fixing screws with small head to fit into hole. The screw can be black in color.

of the panel and modifying the aluminium profiles as shown in the drawing above.Note: Installation requires highest carefulness.


## Suspended ceilings:

## T-profile hanging:


Accessories and their consumption:

|  | Fixing distance (mm) |  |
| :---: | :--- | :---: |
| 1. | T-profile, galvanized or stove enamel steel, L 3000 mm | $600 / 590 / 290 / 190$ |
| 2. | Distance bar, galvanized steel, L 600 and 1200 mm | $1200 \ldots 1300$ |
| 3. | Joint tongue, galvanized steel |  |
| 4 a$).$ | L- wall edge trim, stove enamel steel, optional NCS-colours. |  |
| $4 b)$. | Double L- wall edge trim, stove enamel steel, optional NCS-colours. |  |
| 4 c). | Wooden quadrant edge trim. |  |
| 5. | Wire hanger with loop. L 150 to 2500 mm. |  |
| 6. | Adjustable clip TJ-200. | 1200 |
| 7. | Wall clip (if necessary) DCC-8. |  |

## Consumption of accessories in average:

| Panel size (mm): |  |  | $600 \times 600$ | $1200 \times 600$ | $2590 \times 590$ | $2590 \times 290$ | $2590 \times 190$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $1190 \times 1190$ |  |  |  |  |  |  |  |
| T-profile | $\mathrm{m} / \mathrm{m} 2$ | 1,7 | 1,7 | 1,7 | 3,5 | 5,3 | 1,7 |
| Distance bar | $\mathrm{pcs} / \mathrm{m} 2$ | 1,4 | 1,4 | 1,4 | 1,4 | 1,4 |  |
| Joint tongue | $\mathrm{pcs} / \mathrm{m} 2$ | 2,8 | 1,4 | 0,7 |  |  | 2,8 |
| Edge trim | $\mathrm{m} / \mathrm{m} 2$ | $0,5 \ldots 3$ | $0,5 \ldots 3$ | $0,5 \ldots 3$ | $0,5 \ldots 3$ | $0,5 \ldots 3$ | $0,5 \ldots 3$ |
| Wire hanger | $\mathrm{pcs} / \mathrm{m} 2$ | 1,4 | 1,4 | 1,4 | 2,8 | 4,4 | 1,4 |
| Adjustable clip | $\mathrm{pcs} / \mathrm{m} 2$ | 1,4 | 1,4 | 1,4 | 2,8 | 4,4 | 1,4 |

## Installation:

Elam -panels can be used as removable or solid suspended ceilings by using conventional suspension system.

## Solid installation:

Solid ceiling can be hanged with concealed T-profiles by grooves of panel edge as shown in picture above. Profiles are suspended to beams or similar. Under 600 mm broad panels require no distance bars. PI-profiles can be used as well for fixed installation.

## Removable installation:

Access to cavity can be met with specially formed opposite edges of the panel (edge type 7). Perpendicular edges are without profiles.

The recommended panel size $600 \times 600 \mathrm{~mm}$ can have the grain direction parallel or across the T-profile.

The installation can be started from the middle of the ceiling or from the edge. Wall connection profiles are fixed with screws c 400 mm .
Hangers for T-profile fixed to ceiling c 750-1200 mm , next to wall 300 mm from the end of profile.
The line of panels are mounted on the profiles which are bound together with distance bars. It's possible to glide the whole panel line on the T-profiles.

Minumum free height above panels is abt. 100 mm to ensure access to cavity.

If the panels are made of cement bonded particleboard, the weight of construction is abt. $15 . .17 \mathrm{~kg} / \mathrm{m} 2$.

It is possible to install std light fittings on the T-profiles as well.


By combining perforated and plain and eventually arched panels, it is possible to provide many decorative and visual effects.

Examples of some ceiling forms:


## Wall connections:



Det AK 5

Alternative connection to side wall.
Main T perpendicular to wall.


## Demountable ceiling panel (edge type 7):



Edge type 7


Edge type 7
The order of wood grain direction to slots and edge type 7 .
Panel size $600 \times 600$ or smaller only.


DIMENSIONS for Chicago Metalic Z 151 profile


Det AK 13 b

## Demountable ceiling panel with visible profile:

## T-24 profile

587
$6 \uparrow$


Dimensions without wooden edge:


T-15 profile


Det AK 15 a

Dimensions without wooden edge:


Det AK 15 b


Det AK 15 c


Det AK 15 d

Fineline or Chicago 3500 profile


## Removable inspection panel:

Inspection panels can be done according to the drawing by sawing the other lap off from one edge and fix with screws. Perforated panels can be fixed through the hole by gluing a plywood list on the rear side of the panel.


Det AK 7


Det AK 8

## Removable inspection panel with wood battens:

T-profile will be cut 100 mm before the edge of the removable panel, and it will be replaced with U-profile. The wooden hanging battens are ready-fixed to the back side of the removable panel.


D


## Over-size panels:

If the hanging distance exceeds 600 mm , the panels have to reinforced some way to prevent bending. The reinforcement can be made for example with wooden profiles screwed and glued behind
 the panel.

## Example of hanging panel size $1190 \times 1190 \mathrm{~mm}$ :



Installation of lighting:


Det AK 11

Panel direction in sloping ceiling:


This edge down

Fixing accessories in metal:


Wood mouldings:
KLT-system: Fixing with PI-aluminium profiles. Requires exact dimensioning and straightness of wall constructions.
KRL-system: Fixing with screw or glue. Allows to use of sawn edges making the installation work easier.


