CLEANROOM TECHNICAL DOCUMENTATION

HTL TEKNO ELEKTROMEKANİK A.Ş. :

- ✓ Designs and produces ;

    - ✓ Cleanroom panel,

    - ✓ False ceilings

    - ✓ Hinged and sliding doors,

    - ✓ Pass-boxes, hatch boxes,

    - ✓ Air showers,

    - ✓ Laminar flow units

    - ✓ Laboratory benches, lockers, etc.

- ✓ Makes turn-key applications including,

    - ✓ HVAC,

    - ✓ Automatic control,

    - ✓ Piping and plumbing

HTL TEKNO ELEKTROMEKANİK A.Ş. GIVES SERVICE FOR :

- ✓ Pharmaceuticals Industry

- ✓ Medical Industry

- ✓ Electronic Industry

- ✓ Glass industry,

- ✓ Nanoteknology

- ✓ High Patogene Virus Laboratories

- ✓ Dry rooms.

aqa INTERNATIONAL | ANAB ACCREDITED

ISO 9001:2000 CERTIFIED COMPANY

CLEANROOM TECHNICAL DOCUMENTATION

WE OFFER HPL SURFACES GENERALLY BECAUSE :

✓ HPL has excellent resistance to wear and scratching. Its surface may nevertheless be damaged by abrasive substances or tools such as sandpaper or steel/wire wool.

✓ Thanks to its resistance to heat, one of the most common applications working surfaces,

✓ HPL surfaces are approved for use in contact with foodstuff.

✓ HPL is non considered flammable. It only burns in presence of direct flame; even in this case, it has intrinsic properties of low flame propagation.

✓ HPL is resistant to cleaning mataerials and disinfectants. Only Strong acids and alkaline solutions may stain the surface.

✓ How I clean the surface :

    ✓ With a soft, clean cloth. Avoid any abrasive tool or cleaner.

    ✓ You can use Hot water. Cleaners and disinfectants without strong acids and bases.

HPL PRODUCTION PROCESS :

✓ High Pressure Laminates (HPL) consist of layers of cellulose fiberfiber (usually Kraft paper) impregnated in thermosetting resins and bonded through the combined action of heat (= 130°C) and high pressure (= 7Mpa).

✓ The process takes place in multi-daylight presses and consists in the poly-condensation of the thermosetting resins, which yields a non porous, homogenous material with strong internal cohesion (= 1,35 g/cm3).

✓ During the pressing process, metal plates impress a texture onto the laminate surface which, depending on the function and the desired scratch and wear resistance, ranges from high glossy to deeply structured.

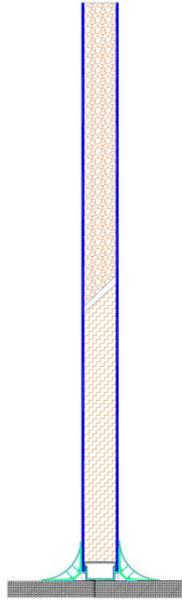## CLEANROOM TECHNICAL DOCUMENTATION

WE OFFER METALLIC SURFACES   :

✓ When we need stainless steell ,

✓ When we wash frequently,

✓ When electrostatic charges important,

✓ When fire resistance is important,

✓ When we need extra utility channels between the panels,

✓ When we need easy demountable structure.

✓ When we need very low humidity.

HTL ®

CLEANROOM TECHNICAL DOCUMENTATION

INDEX:
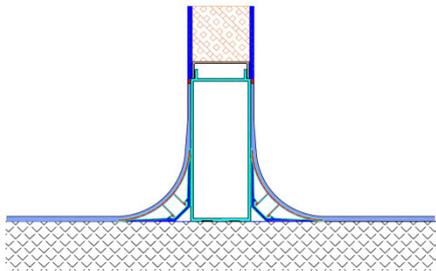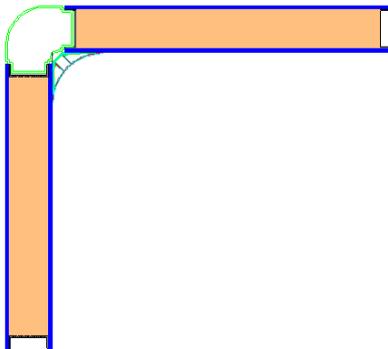
CLEANROOM TECHNICAL DOCUMENTATION

Pharma-Clean Cleanroom Panels:

✓ Surfaces

    ✓ 3 mm HPL

    ✓ 1 mm 304 grade stainless steell

    ✓ 1 mm 316 grade stainless steell

✓ Insulation

    ✓ 28-30 kg high density Polysyteren,

    ✓ P.I.R fire safe polyisosiyanurat,

✓ Perimeter covered with extruded aluminium profile

    ✓ Inner alu.profile thickness 1.5 mm,

    ✓ Connection-floor profile thickness is 2,3 mm

    ✓ Coving profile thickness is 1,5 mm

    ✓ Coving bracket profile thickness is 2 mm

✓ Pre-assembled cable passage on request,

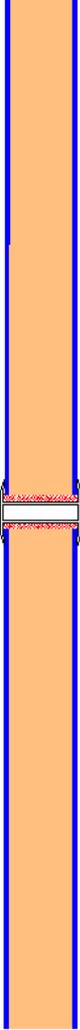✓ Standard width is 1200 mm, height up to 3000 mm, more heights is possible using extra panels,

Panel cross-section

Special raised connection for PVC application

Wall connection

ISO 9001:2000 CERTIFIED COMPANY
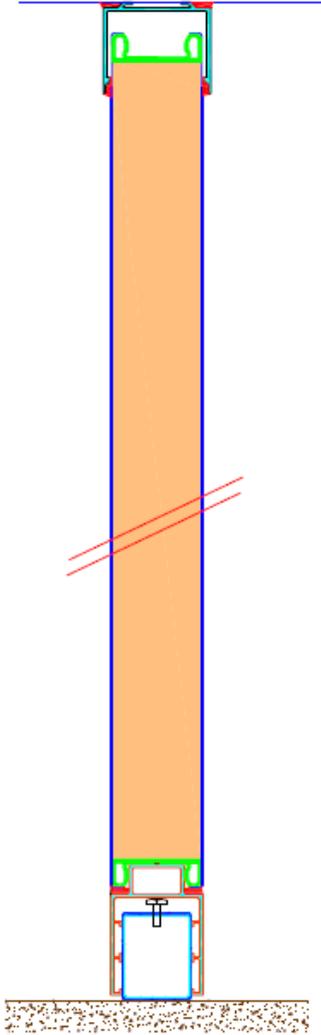
CLEANROOM TECHNICAL DOCUMENTATION

Eco-Clean Cleanroom Panels:

- ✓ Surfaces
    - ✓ 3 mm HPL
    - ✓ 1 mm 304 grade stainless steell
    - ✓ 1 mm 316 grade stainless steell
- ✓ Insulation
    - ✓ 28-30 kg high density Polysyteren,
    - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Connection with H formed extruded aluminium profile
    - ✓ Connection profile thickness is 1,5 mm
    - ✓ Coving profile thickness is 1,5 mm
    - ✓ Coving bracket profile thickness is 2 mm
- ✓ Standard width is 1250 mm, height up to 3000 mm, more heights is possible using extra panels,
- ✓ It is very flexible. Could be send as standard panels and could be cutted and assembled at site as necessary.
- ✓ More economical than Pharma-Clean or Nano-Clean series.

Wall connection

CLEANROOM TECHNICAL DOCUMENTATION
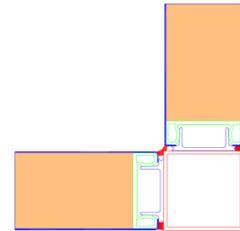
Meta-Clean Cleanroom Panels:

- ✓ Surfaces
  - ✓ 0,8 mm Prepainted steell
  - ✓ 0,8 mm 304 grade stainless steell
  - ✓ 0,8 mm 316 grade stainless steell
- ✓ Insulation - Optional
  - ✓ Rockwool,
  - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Special accessories for utility and removable panels.
- ✓ Adjustable floor rail.
- ✓ Very strong walkable ceiling
- ✓ Standard width is 1190 mm, height up to 4000 mm, more heights is possible using extra panels,
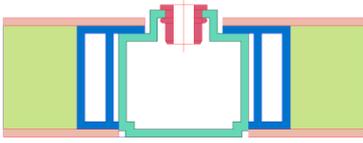- ✓ Thickness 50 mm.

Panel cross-section
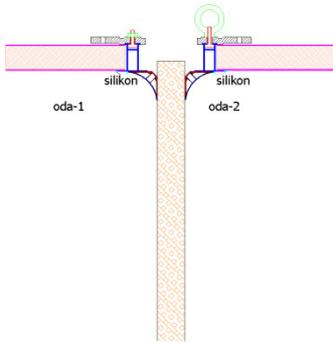
Utility chanel between the panels
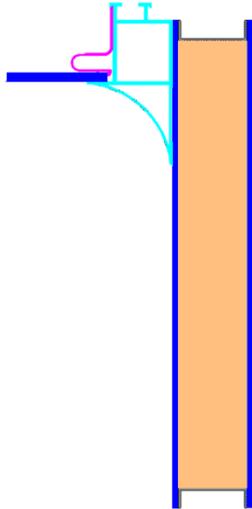
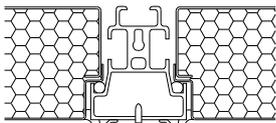Corner cross-section

CLEANROOM TECHNICAL DOCUMENTATION

Walkable ceiling cross-section – up to 100 kg/m2

Non-walkable , heat insulated ceiling cross-section – up to 50 kg/m2

Non-walkable ceiling-wall connection

Walkable Meta-clean ceiling

Walkable Ceiling:

- ✓ Surfaces 3 mm HPL
- ✓ Insulation
  - ✓ 28-30 kg high density Polysyteren,
  - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Perimeter covered with extruded aluminium profile
  - ✓ Inner alu.profile thickness 2 mm,
  - ✓ Connection-suspension profile thickness is 3 mm
  - ✓ Standard panel dim. is 1200 mm x 2400 mm,
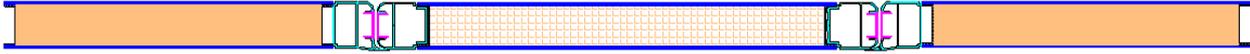
Non-walkable , heat insulated ceiling:

- ✓ Surfaces :
  - ✓ 1.5 mm HPL
  - ✓ 1 mm prepainted steell
- ✓ Insulation
  - ✓ 28-30 kg high density Polysyteren,
  - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Perimeter not covered with aluminium profile
  - ✓ Connection-suspension profile thickness is 2 mm
  - ✓ Standard panel dimensions
    - ✓ 1260 mm x 1260 mm,
    - ✓ 1260 mm x 630 mm,
    - ✓ 630 mm x 630 mm,

Non-walkable ceiling:

- ✓ Surfaces :
  - ✓ 5 mm HPL
  - ✓ 1 mm prepainted steell
- ✓ Connection-suspension profile thickness is 2 mm
  - ✓ Standard panel dimensions
    - ✓ 1260 mm x 1260 mm,
    - ✓ 1260 mm x 630 mm,
    - ✓ 630 mm x 630 mm,

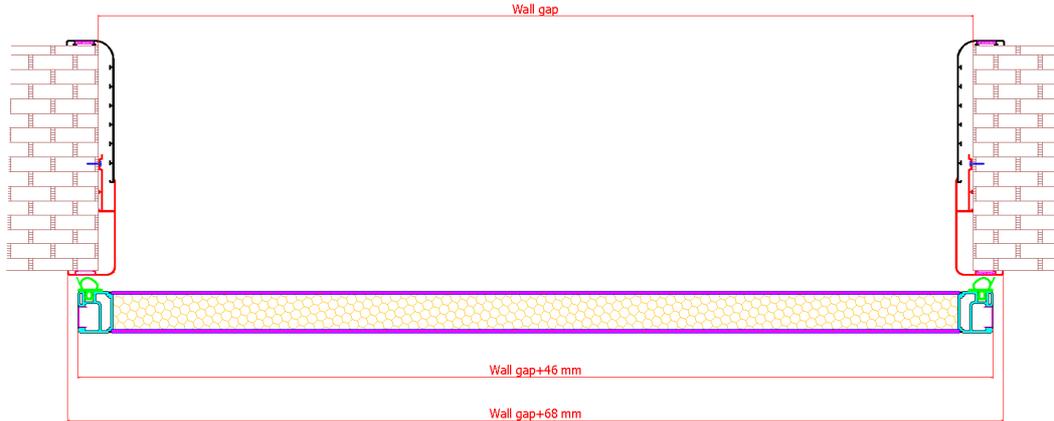# CLEANROOM TECHNICAL DOCUMENTATION

Hinged doors

Panel assembly

Concrete wall assembly

Hinged doors:

- ✓ Surfaces
    - ✓ 3 mm HPL
    - ✓ 1 mm 304 grade stainless steell
    - ✓ 1 mm 316 grade stainless steell
- ✓ Insulation
    - ✓ 28-30 kg high density Polysyteren,
    - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Perimeter covered with extruded aluminium profile
    - ✓ Inner alu.profile thickness 1.5 mm,
    - ✓ Outer frame profile thickness is 2,3/1,8 mm
    - ✓ Frame profile thickness is 2,3/1,8 mm
- ✓ Total thickness is 46 mm
- ✓ Window dim. 550x750 mm, 2x6 mm tempered glass
- ✓ Push-bar emergency exit on request
- ✓ Standard width is up to 1100 mm for single wing and 2000 mm for double wing, height up to 3000 mm,

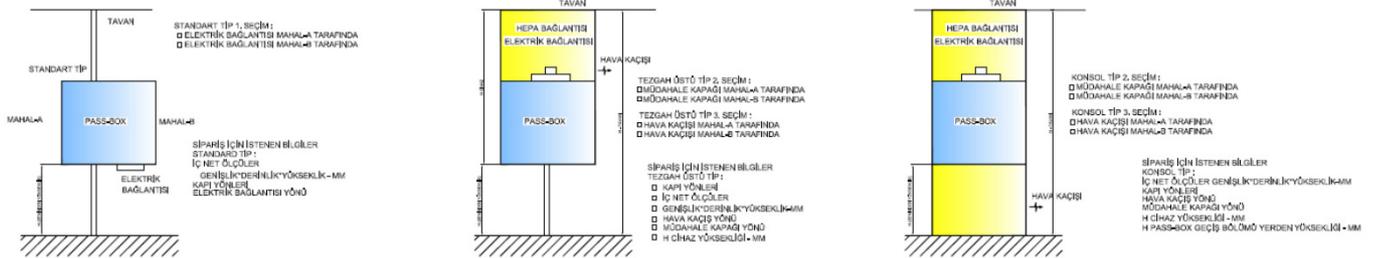# CLEANROOM TECHNICAL DOCUMENTATION

Hermetic sliding doors

Hermetic sliding doors:

✓ In the closing point the door has two action; in the same time it closes to the wall and floor (up to 7 mm) So it gives hermetic sealing.

✓ Surfaces

    ✓ 4 mm HPL

    ✓ 1 mm 304 grade stainless steell

    ✓ 1 mm 316 grade stainless steell

✓ Insulation

    ✓ 28-30 kg high density Polysyteren,

    ✓ P.I.R fire safe polyisosiyanurat,

✓ Perimeter covered with extruded aluminium profile

    ✓ Frame profile thickness is 3 mm

✓ Total thickness is 48 mm

✓ Window dim. 550x750 mm, 2x6 mm tempered glass

✓ May be manual or automatic.

✓ Control by radar, hand proximity switch, foot switch, switch, etc.

✓ Standard width is up to 1100 mm for single wing and 2200 mm for double wing, height up to 3000 mm,

CLEANROOM TECHNICAL DOCUMENTATION

Pass-boxes

Pass-boxes:

- ✓ Realised with pharma-Clean type panels and hinged doors.
- ✓ Surfaces
  - ✓ 3 mm HPL
  - ✓ 1 mm 304 grade stainless steell
  - ✓ 1 mm 316 grade stainless steell
- ✓ Insulation
  - ✓ 28-30 kg high density Polysyteren,
  - ✓ P.I.R fire safe polyisosiyanurat,
- ✓ Window 2x6 mm tempered glass

Optional features:

- ✓ 304 or 316 grade stainless steell surfaces
- ✓ Inner light
- ✓ UV-C sterilisation
- ✓ Programmable logic controller for different operation mode
- ✓ Welded, polished body
- ✓ G4+Hepa filtered air supply connection
- ✓ Exhaust connection
- ✓ Inner roller for material transfer