I. Select of Light Stud and Components

1. Light gauge steel partition frame usually contains Ceiling U-track, Floor U-track, Cross Channel/Track, and Vertical C-Stud.

   The main accessory contains wedge bolt (or shot nail, or cement nail), self-tapping screw, rivet. specification according to requirements.

<table>
<thead>
<tr>
<th>Light Steel Stud Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>U-Track (Ceiling &amp; Floor track)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>C-studs</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cross channel/Track</td>
</tr>
<tr>
<td>Clip</td>
</tr>
<tr>
<td>Expansion screw(nail, cement nail)</td>
</tr>
<tr>
<td>Self-tapping screw</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>rivet</td>
</tr>
</tbody>
</table>

Note: fixing of TRACK-TRACK/TRACK-STUD/STUD-STUD can be done by Special Joist clamp.
Q50, Q75, Q100, is commonly used light gauge steel Stud. Which one to Choose should be carry out according to engineering and drawing requirements. Selected standard as flowing table:

**Limited height of light gauge steel**

<table>
<thead>
<tr>
<th>Type</th>
<th>Thickness</th>
<th>Center Distance of C-studs</th>
<th>C-stud Height Limit</th>
<th>high people density place</th>
<th>low people density place</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q50</td>
<td>O.6mm (standard thickness)</td>
<td>600mm</td>
<td>2800mm</td>
<td>3300mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>3300mm</td>
<td>4300mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥0.8mm</td>
<td>600mm</td>
<td>3500mm</td>
<td>4500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>4000mm</td>
<td>5500mm</td>
<td></td>
</tr>
<tr>
<td>Q75</td>
<td>O.6mm (standard thickness)</td>
<td>600mm</td>
<td>3500mm</td>
<td>4500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>4000mm</td>
<td>5000mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥0.8mm</td>
<td>600mm</td>
<td>4500mm</td>
<td>5500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>5000mm</td>
<td>6000mm</td>
<td></td>
</tr>
<tr>
<td>Q100</td>
<td>O.6mm (standard thickness)</td>
<td>600mm</td>
<td>4000mm</td>
<td>5000mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>4500mm</td>
<td>5500mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>≥0.8mm</td>
<td>600mm</td>
<td>5000mm</td>
<td>6000mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>400mm</td>
<td>5500mm</td>
<td>6500mm</td>
<td></td>
</tr>
</tbody>
</table>

Such as meeting room, class room, exhibition room, department store etc.  
Such as residence, office, ward etc.
**Installation Instructions of Perlite Protect Board**

### Note:

**I. Standard thickness stud**

1) If wall Height > 2440mm, there should be cross channel at horizontal joint seam.

2) If wall height > 5000mm, There should be cross channel every 1/2 board length and steel beam every 5000mm; or adopt profile steel stud, or double the stud frame;

3) If wall span > 5000mm, there should be composed stud every 3 board width, or steel post every 5000mm, or adopt profile steel(square hollow section) stud frame.

**II. Stud Larger than standard thickness**

1) If wall height > 6000mm, there should be Steel Beam every 5000mm and cross channel every 1/2 board length, or adopt profile steel frame or double the stud frame;

2) If wall span > 5000mm, there should be composed stud every 3 board width, or steel post every 5000mm, or adopt profile steel(square hollow section) stud frame.

**III. For super tall/span wall or special wall (such as firewall, sound proof wall, impact resistant wall) please contact with us.**

**IV. When calculate the span or distance, do not forget the board seam tolerance.**

---

**II. Perlite Board Size**

Mesh Embedded Board

- 1.2mx2.0mx10mm/12mm/14mm/20mm
- 1.2mx2.4mx10mm/12mm/14mm/20mm
- 1.2mx2.6mx10mm/12mm/14mm/20mm

Paperfaced Perlite Board

- 1.2mx2.0mx10mm/9.5mm/12mm
- 1.2mx2.4mx10mm/9.5mm/12mm
- 1.2mx2.6mx10mm/9.5mm/12mm

**III. Design and Construction Instruction**

1) Light gauge steel wall is mainly used as interior partition wall. For different wall please choose the board correspondingly.

2) The continuous length of the wall is better controlled under 25m, If exceed, there should be expansion Joint Seam.

3) Wall Height and stud type please refer to table above.

4) Joint between track and wall should be hard. Joint of the two can be done by Wedge Bolt or Shot nail
Installation Instructions of Perlite Protect Board

with a distance of each point less than 800mm. Cross channel distance should not be over 1500mm. Joint for Vertical stud and horizontal stud can be rivet with diameter 4mm, length 8mm or by special Joist Clamp.

5) Board was fixed to stud/track by Self-tapping screw, usually the size of screw is diameter:3.5~4mm, length: 25~35mm.

6) Joint Between Wall and Beam/ Wall/Post should be hard and seamless, and Filled /Finished with corresponding plaster and anti crack mesh.

7) If there is special requirement of waterproof, wall should do water proof treatment, and make a 100mm concrete water proof foot.

IV. General Process for Wall Building

Line Making → U-track/C- Stud Installation(leave doors, windows and openings) → cross channel/track Installation → water and electricity pipes → one side board installation → install fixing component for pipes → Filling for the wall(only if needed) → another side Board installation → joint seam treatment → wall finishing work

V. Installation of light gauge stud frame

1) Clean the base for installation of the frame.
2) Mark on the base according to stud width, At the same time also mark the location of window, door, pipes and other facilities.
3) Cut stud as wall size.
4) Install U-track according to line marked, Longitudinal direction joint should be smooth and straight. Distance between Anchor Point and end should not be over 150mm; Distance between two anchor point should not be over 800mm.
   Note: at the intersection of the different direction wall, there should be interspace of one board thickness preserved between two ceiling U-Tracks or floor U-tracks.
5) Install side steel C-stud according to line marked, Fasten Method do as the same as U-track
   Note: If there is higher requirement on the sound insulation, Sound proof pad or sealant should be installed or filled between side C-stud and base.
6) Put middle C-stud between ceiling U-track and Floor U-track, middle C-stud should be perpendicular with it’s side at the same
Installation Instructions of Perlite Protect Board

Surface; distortion is not allowed. Length of C-stud should be 10mm shorter than height of ceiling to floor and span is 600mm (can be changed according to special design.)

Note:

a) Strengthen C-stud (composed with C-stud and U-track) should be installed at the place including windows and doors, free C-stud end, room corner and large hole on the wall. Installation of the Strengthen C-Stud should keep and not damage the span of 600mm.

b) Stud Clips are suggested for wall rigidity. Clip Installation should be at the open side of the C-stud with a distance of 600-800mm.

c) If need to hang heavy things (such as Closet, air conditioner, water heater or water tank), there should be more C-stud, or put wood plate/Steel plate between Stud to transfer the load to stud frame and avoid damaging board.

d) For special wall (bend or inclined wall), the installation should be done as design requirement.

7) Install Cross Channel at horizontal edge joint place of board.

8) Fasten the two studs or tracks by rivet or by special stud clamp.

9) After finished the frame, Pipe tracks, cables and accessories should be installed according to design requirement. Make hole on the related stud according to pipes location and dimension, but the hole diameter should not be over 3/5 stud width.

10) Before Board installation, flatness of frame, Façade verticality and stability should be confirmed.

Note: Stud Installation tolerance should do as provision below

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Tolerance</th>
<th>Checking Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Surface flatness</td>
<td>2</td>
<td>By 2m ruler and measuring wedge</td>
</tr>
<tr>
<td>2</td>
<td>Façade verticality</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

VI. Installation of perlite board

1. General installation requirement

1). Generally, Perlite board should be installed from bottom to top in vertical direction. That is to make the longitudinal side on the Stud.

2). Put board naturally near another without heavy press.

3). If there is no strict requirement for fire proof and sound insulation, Seam between two board can be not cross with another one.

on the opposite side of the wall; But if there is strict requirement, They should be cross each other on both side of the wall. That means the two joint seam should not be on one stud on both side of the wall.

4). If the wall height is over 3500mm, Seam between upper and lower board should do as above.
2. **Steps for Board Installation**

   1) Cut board or making hole according to Drawing or Installation requirement.

   Note: Longitudinal Direction edge was beveled and square edge in short direction, and when cutting board the edge should made into beveled for convenience of seam treatment

   2). Line and mark the screw point and also pretreatment to make it convenient for screw sink below board surface. Distance: to board edge: 15mm, to board corner: 50mm, point distance:200-250mm

   3).When fixed with self-tapping screw, should do from the center to side of the board and all screw head should be 1mm under board surface.

   Note: Board near window and door,, the seam between board should not be one the Jamb stud to avoid crack caused by open and close of the door/window.

3. **Pipes Installation**

   Install Pipes according to design. Do at the same time stud frame installation or before the second side board installation. During Installation, should avoid cutting off stud or track and also avoid putting pipes at the lower end of the wall.

4. **Treatment of Seam and Corner**

   1) Seam Processing Steps for flat seam

   ( 1 ) When install the board, leave a suitable seam(usually 3mm-6mm). Clean Dust in the seam and paint with 108 glue aqueous solutions for one time.

   ( 2 ) Fill the seam with seam plaster and finish the surface with knife, after dry, checking if there is crack.

   ( 3 ) Another 1mm plaster with fiberglass mesh, press and finish it.

   ( 4 ) When the plaster begin concreting but still wet, finish with another plaster to burry fiberglass mesh inside. And make the surface as smooth as possible.

   ( 5 ) Inside corner do as the same as flat seam
Installation Instructions of Perlite Protect Board

2) Outside corner do as below
   
   (1) Attach two layer fiber glass mesh with both side 100mm. and then finish. Coating method do as flat seam.

   (2) If there need steel corner plate, first finish the place with plaster for one time and then fix the steel corner with galvanized nail and finish with plaster.

3) When plaster dry, should checking if there is crack. If there is,, find the reason and take respond measure to solve it.

Vertical Wall sketch
Installation Instructions of Perlite Protect Board

VII. Wall structure Node Diagram

1. Joint with floor

2. Joint with ceiling

3. Joint with sidewall

4. Joint with Steel Structure

5. Joint with L wall

6. Joint with T wall

7. Free End of wall

8. Seam Treatment
9. Deformation joint

10. Acute angle wall

11. Obtuse angle wall

12. Sound Insulation wall
   For perlite board has excellent sound proof performance, to build a higher required sound proof wall, can only takes some structuring measure to reach the effect. For example, adopt thick board or asymmetry board(different thickness board on both side) or double the board, or twin steel stud frame structure with better sealant. Put soundproof pad at the joint of board/ stud with beam, wall, post and so on.
13. Impact resist wall
If there is higher requirement on the wall impact resistance, by shortening stud span, or adopting thick board, twin board can reach this. At the same time, this will increase the performance of sound proof, heat insulation and fireproof.

14. Masonry & light stud
Here Light stud wall is mainly for inner insulation. Frame can be fixed on the masonry wall.

15. Windows & doors open
1. Common Window (width ≤ 1500mm), there should be extra jamb stud on both side.
2. Common door (width ≤ 3000mm) or window (width ≤ 5000mm), there should be strengthen stud on both side of the open and keep the span 600mm without changing.
3. Larger door or window: door with ≥ 3000mm or heavy duty door, window width ≥ 5000mm, the frame of the open should be steel structure.

1) door frame
Installation Instructions of Perlite Protect Board

2. window frame

16. Pipes and Cable, Socket
1. When pipes cross through the stud, there should be open hole on the stud with a diameter less than 3/5 of stud width.
2. For Small Electric case, or socket, there should be extra stud one both side and top.
3. Middle Box (for example fire box), there should be wood or strengthen stud at the top and side of the open.
4. Large or heavy box, there should be profile steel for the open.
5. With higher sound proof or fire proof, there should be extra board behind the box or socket with a size 300mm larger in 4 directions.

17. Hanging Things on the wall
1) Light Hanging things
2) Heavy Hanging things

VIII. Materials Needed

<table>
<thead>
<tr>
<th>Name</th>
<th>Quantity for wall per square meter</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perlite Board</td>
<td>2 m²</td>
<td>The amount is calculated by 2.6m height, 100m length wall with perlite board 1200mmx2000mm, Span 600mm, cross channel distance 1200mm, without hole. It is the minimum amount for reference.</td>
</tr>
<tr>
<td>Ceiling/Floor U-track</td>
<td>0.67 m</td>
<td></td>
</tr>
<tr>
<td>C-stud</td>
<td>1.65 m</td>
<td></td>
</tr>
</tbody>
</table>
Installation Instructions of Perlite Protect Board

Cross Channel | 0.67 m
---|---
Accessories
- Stud Clips | 0.83 pcs
- Self-tapping screw | 35 pcs
- Rivet | 5 pcs
Rock wool (If need, not suggested) | 1 m²
Seam Plaster | 0.5 kg
Fiberglass mesh or perforated paper | 2.3 m

Note: There are a lot of Form of light gauge stud frame wall system. Forms appears in this instruction is just for reference. When install, should consider the requirement, height and length.

IX. Technical specifications

<table>
<thead>
<tr>
<th>№</th>
<th>Показател</th>
<th>Норматив</th>
<th>Результат</th>
<th>Заключение</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Radionuclide limited</td>
<td>Internal exposure index IRA ≤ 1.0</td>
<td>0.14</td>
<td>ok</td>
</tr>
<tr>
<td>2</td>
<td>Areal Density, kg/m²</td>
<td>≤ 9.5</td>
<td>7.63</td>
<td>ok</td>
</tr>
<tr>
<td>3</td>
<td>breaking load, N Perpendicular to Length</td>
<td>Average ≥ 400 Min. ≥ 360</td>
<td>≥ 401</td>
<td>ok</td>
</tr>
<tr>
<td>4</td>
<td>breaking load, N Parallel to Length</td>
<td>Average ≥ 160 Min. ≥ 140</td>
<td>≥ 345</td>
<td>ok</td>
</tr>
<tr>
<td>5</td>
<td>Hardness, N</td>
<td>≥ 70</td>
<td>256</td>
<td>ok</td>
</tr>
<tr>
<td>6</td>
<td>Impact Resistance</td>
<td>Should be without crack after impacted</td>
<td>Without cracks</td>
<td>ok</td>
</tr>
<tr>
<td>7</td>
<td>water absorption rate, %</td>
<td>≤ 10</td>
<td>7</td>
<td>ok</td>
</tr>
<tr>
<td>8</td>
<td>Formaldehyde emission, mg/L</td>
<td>-</td>
<td>Not detected</td>
<td>ok</td>
</tr>
<tr>
<td>9</td>
<td>Dry-shrinkage rate, %</td>
<td>≤ 0.50</td>
<td>0.06</td>
<td>ok</td>
</tr>
<tr>
<td>10</td>
<td>hygral expansion rate, 5</td>
<td>≤ 0.25</td>
<td>0.03</td>
<td>ok</td>
</tr>
<tr>
<td>11</td>
<td>Heat transfer coefficient</td>
<td>≤ 0.25</td>
<td>0.08</td>
<td>ok</td>
</tr>
<tr>
<td>12</td>
<td>Frost resistance</td>
<td>--</td>
<td>After 25 times freeze-thaw cycle, Without cracking and delamination</td>
<td>ok</td>
</tr>
<tr>
<td>13</td>
<td>Fireproof Class</td>
<td>noncombustible</td>
<td>Class A1 (noncombustible)</td>
<td>ok</td>
</tr>
</tbody>
</table>