EPS 3D panel system

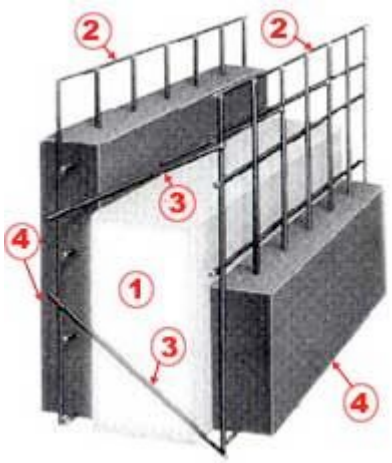


Fig. 1

1. Insulation core
2. Wire mesh
3. Diagonals
4. ShotCrete layers

What is 3-D panel?

3d panel is a prefabricated Three Dimensional Lightweight Structural panel consisting of a super-insulated polystyrene core sandwiched between two engineered layers of 10 ga Steel welded wire fabric mesh. To complete the panel form process a 10 ga Steel wire truss is pierced completely through the polystyrene core and welded to each of the outer layer sheets of 10 ga Steel welded wire fabric mesh.

Usage:

-Fast High Quality Construction Time saved 50% faster than standard construction Speed, occupancy - Saves money on construction loan dollars Due to easiness of installation; the terms are 10 times decreased!
-Enhanced resale and marketability value
-Reduces the need for heavy equipment on job fewer trades on job site.
-Strength Durability Greater Structural Integrity
-Monolithic design for superior Strength, Safety and Security
-Excellent performance in seismic zones (Earthquake Resistance)
-Noncombustible structure Savings of 18% to 30% on fire Insurance
-Excellent Hurricane protection-up to 225mph wind load
-Insect Termite Rodent Resistant to Mildew and Mold growth, fungi resistant.

General Info:

The 3D system is a complete wall and floor structure, combining the strength of steel, the installation of polystyrene and the durability of concrete. 3D provides a strong, low maintenance, highly insulated plaster building structure.

3D is a composite construction system of 3D polystyrene panels, encased on each side with steel mesh and concrete/plaster layers. I t can be used for structural and load – bearing walls

and floors in many building applications. After erection of the 3D panels a layer of special 3D concrete mix is sprayed, forming a solid concrete structure which is completed to desired finish, ego sponge, adobe drag or trowel led.

This surface is ready for compatible paint application e.g. electrometric acrylic Paint. The 3D panels consist of a three dimensional welded wire space frame with a built in expanded polystyrene insulation core.
Each panel is placed in position and a layer of concrete is applied to both sides. Strength and rigidity of the panels result from the diagonal truss wires welded to the cover mesh on each side of the panel.

For the 3D construction method, the EPS insulation core fulfils several important functions. Firstly, it serves as a shuttering for applying the concrete layers and secondly acts as a displacement body in the sandwich construction. In addition, the EPS core provides the excellent insulation property of the syst em.

The 3D construction system is intended to be used as a total construction system, but it can also be included in other construction systems as a component, i.e. steel frame or reinforced concrete construction such as curtain walls, partition walls an d as a core in precast elements, retaining walls, swimming pools, sound barriers and industrial application.
The 3D panels are produced on full automatic welding line, which assembles the 3 components welded mesh, truss spacer wires and insulation core Po lystyrene the insulation core is type 1 expanded polystyrene EPS having a low density (approximately 12 -20kg/m3) the 3D panels received their strength and rigidity from the diagonal spacer wires welded t o the wires welded to the wire fabric on each side. The standard 3D panels are produced with either 50mm EPS or 100mm EPS. Concrete layers on each side are normally 45mm thick inside and 55mm outside, giving a total thickness of the completed wall of 150mm (with50 EPS) OR 200mm with 100 EPS.

Steel mesh on each side of the panels is 3mm in diameter with 50x50mm openings. Diagonal galvanized spacer wires – trusses are 4mm in diameter.

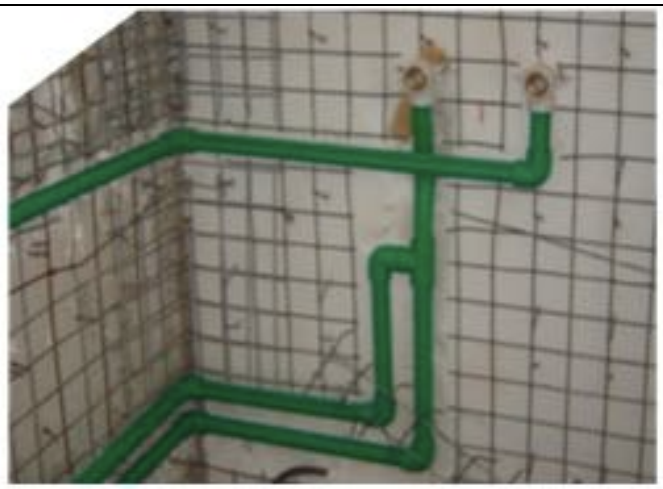
The number of diagonal trusses is normally 80 -220 pieces per m2, the standard width of 3D panels are 1200mm and their lengths are 2700-6000mm.

other configurations of the 3D panels can be produced for special construction requirements, a specific 3D concrete mix has been developed and created for the 3D construction system in order to meet the fast, cost effective spraying shot creating application, it has been designed so that only one coat of the concrete is applied, which meet several requirements for concrete mix design-strength of 20-30 Mpa, workability, pump ability, rebound factor, allowing the achievement of various plaster finishes.

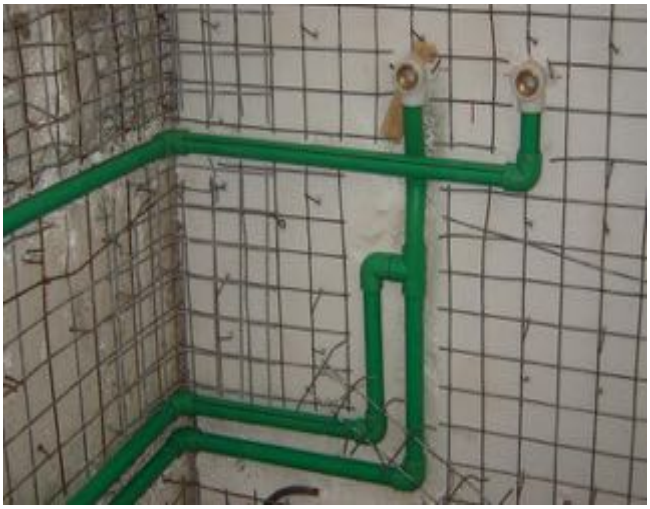
For installation we will follow about 8 steps:

Step 1:3D installation starts from the concrete slab, either a conventional or Unblock flooring system. Re-starter bars are "cast into the slab" according to engineering requi rements.

Step 2: Cutting and assembling to the 3D panels is carried out according to the engineering shop drawings and cutting schedule. The 3D lightweight panels are easily assembled forming the wall structure.



Step 3: Erection of the 3D panels starts in a corner to give the construction rigidity. The panels are tied together with a lap splice mesh on both sides suing a pneumatic fastener tool hog ring gun.



Step 4: The panels are held in place using appropriate bracin g. The type of bracing required will depend on site conditions. All bracing is located on the same side of the wall, opposite to the side which will receive the concrete first.

Step 5: Openings for doors and windows can be cut out before or after the panels are erected. Pre-cast lightweight concrete reveals are inserted into the openings providing extra screed lines for plastering and a Pre-finished return surface to fix the windows to

Stept6: 3D panels can be used for mid flooring and roof structures, using a simple connection system. Many other conventional concrete or timber flooring systems can also be incorporated into the 3D concrete wall structure.

Step 7: Before concrete application, all services such as electrical plumbing mesh, once all bracing and screed line are in place, the walls are sprayed with a special concrete mix and completed to the desired finish.

Step 8: There are various finishes available including sponge, smooth undulating adobe, and drag or trawled. For internal walls if a grid finish is preferred the walls are simply straight – edged and the gibe is glued directly to it, the exterior is painted with an electrometric acrylic paint system.