



DREAM HOUSE

HZMAAKANA

Our goal is to ensure that every Maldivian has the opportunity to build their dream home affordably and create a healthy, private space for their family. Hzmaakana is committed to making a lasting impact by providing durable, prefabricated steel houses that stand for 100 years at affordable rates. Everyone deserves a place to call home.

WWW.HZMAAKANA.COM



Our Source

Established in early 2019 with a registered capital of 50 million RMB, this privately-owned joint-stock construction and renovation enterprise operates under provincial supervision. It employs over 700 staff and holds qualifications for various engineering and construction projects, including building, municipal, steel structure, decoration, landscaping, curtain walls, environmental protection, lighting, highways, antique-style buildings, electrical, earthwork, fire protection, water conservancy, foundations, and intelligent building systems. Additionally, it is involved in mechanical and electrical equipment installation, machinery leasing, and construction labor subcontracting. It has earned multiple industry certifications and was recognized as an outstanding and advanced private enterprise in Hubei Province. In 2020, it contributed to the construction of Leishenshan and Huoshenshan Hospitals.

House Structure



Load-Bearing Structural System

The frame system is custom-built using cold-formed rectangular sections and hot-rolled H-beam steel, offering excellent load-bearing performance. Structural components are made from high-strength galvanized steel and treated with advanced anti-corrosion materials to effectively enhance durability. These steel components are prefabricated in the factory for quick and easy on-site assembly. The structure features lightweight yet high-strength properties, superior corrosion resistance, and excellent seismic and hurricane resistance.

External Wall Structure System

The structure is built using aerated concrete blocks. The general mass of aerated concrete blocks ranges from 500-700 kg/m³, which is only equivalent to 1/4 - 1/3 of clay bricks and sand-lime bricks and 1/5 of ordinary concrete, making it one of the lighter types of concrete. It is suitable for high-rise building infill walls and load-bearing walls in low-rise buildings.

The overall appearance of aerated concrete blocks is lightweight and porous. They possess excellent thermal insulation, sound absorption, and noise reduction properties, as well as Class A fire resistance. The material is nailable, drillable, cuttable, and has strong seismic resistance, making aerated concrete blocks an excellent new building material.



House Structure



Roof Structure System

The roof truss is composed of various light steel components, typically in triangular or T-shaped designs, allowing for the flexible creation of complex roof shapes. The roof is covered with colorful glazed tiles, offering excellent waterproofing performance while highlighting aesthetics and quality. Similar to the wall system, the roof can be customized with varying thicknesses and structural forms of waterproof and insulated materials to ensure warmth in winter and coolness in summer, depending on the regional climate and temperature.

Interior Wall Structure System

The interior walls are constructed using aerated concrete blocks, enhancing thermal insulation, fire resistance, and soundproofing. The lightweight nature of the materials significantly reduces the weight of the wall panels, further improving the overall seismic resistance of the building.





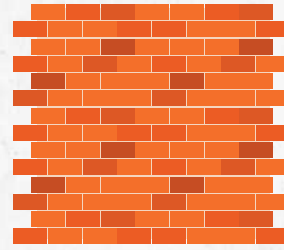
Seismic Safety, Aesthetic, and Durability

The building utilizes a prefabricated heavy steel structure with walls connected by high-strength bolts, grouting, and shear keys, ensuring seismic resistance up to magnitude 9. The energy-efficient composite insulation panels are molded in the factory and do not require on-site tiling. These panels are durable, long-lasting, and resistant to peeling.



Fire-Resistant and Flame Retardant

The IEC "embedded" wall panels prevent steel components from being exposed, enhancing the building's fire resistance and corrosion protection. The fire resistance of the building structure can reach up to 4 hours, ensuring the safety of both the building and its occupants.



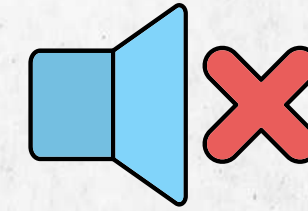
Thermal Insulation, Warm in Winter, Cool in Summer

The composite insulation exterior wall panels offer superior insulation with a low thermal conductivity of 0.220–0.330, providing six times the insulation efficiency of traditional brick walls. This results in over 70% better energy savings compared to conventional brick construction.



Waterproof and Moisture-Proof

The building features high-density components for water resistance, with MS waterproof sealant applied to joints to ensure the exterior walls are waterproof. The gutter system allows for smooth drainage, preventing water accumulation and seepage, keeping the interior dry and comfortable.



Soundproofing and Noise Reduction

Using patented closed-cell foam technology and a soundproofing structure layer, the 120mm thick energy-efficient insulation wall panels provide superior sound insulation, surpassing the performance of 370mm thick brick walls. The exterior wall achieves a soundproofing level of over 40dB.



Green and Energy-Efficient

Factory-prefabricated components save resources and are highly recyclable. The flexible design offers diverse appearances, focusing on safety, aesthetics, functionality, and environmental sustainability, resulting in a comfortable and livable space.

House Features

- **Seismic Resistance:** The structure can withstand rare earthquakes of up to magnitude 9 and is suitable for regions with high seismic intensity.
- **Wind Resistance:** It can resist hurricanes with wind speeds of up to 70 m/s, equivalent to a level 16 wind resistance.
- **Durability:** The main structure has a lifespan of over 100 years.
- **Fire Resistance:** The fire resistance time varies based on the design, but it can last between 1 to 4 hours, depending on the specific requirements.
- **Sound Insulation:** The external walls provide excellent sound insulation, reducing noise by up to 65 dB. The internal walls offer 45 dB of sound insulation.
- **Thermal Insulation:** The 200 mm thick composite walls have a thermal resistance value of 3.2 m²K/W, which is 11 times more effective than a similarly thick brick wall.
- **Environmental Protection:** Steel structure materials are fully recyclable, and most of the other materials used can also be recycled.
- **Energy Efficiency:** The use of new heat-insulating materials makes this building 65% more energy-efficient for heating and cooling compared to traditional buildings.
- **Space Efficiency:** Light steel integrated housing offers 5% to 15% more usable space compared to traditional buildings.
- **Faster Construction:** The modular design and standardized assembly process significantly speed up construction, reducing the building time by two-thirds compared to conventional methods.



Introduction of the construction process

Foundation Construction Process

Function:

The foundation is responsible for transferring the load of the walls or columns to the ground, ensuring the structure can meet the necessary bearing capacity and deformation requirements.

Features:

The foundation in light steel villas is significantly lighter compared to traditional brick and concrete structures, being about 1/5 the weight of a brick-and-concrete structure and 1/8 the weight of a concrete building. This lightweight design reduces both cost and construction time, making the process simpler and faster.

Classification:

The foundation type is chosen based on the geological conditions, with common types including strip foundation, plate foundation, and raft foundation. For most cases, a strip foundation is typically selected.

Construction Process:

- 1.Foundation Pit Layout: Marking and digging the foundation pit to prepare for the next steps.
 - 2.Grooving: Excavating and shaping the grooves as required for the foundation.
 - 3.Laying the Cushion: Pouring and curing a base layer (usually sand or gravel) for stability.
 - 4.Positioning and Layout: Marking exact positions for the foundation components.
 - 5.Red Brick Construction: Constructing brickwork or supports around the layout area.
 - 6.Steel Bar Construction: Installing the necessary reinforcement steel bars for strength.
 - 7.Formwork and Embedded Parts Installation: Installing formwork to shape the concrete and placing embedded components like pipes.
 - 8.Concrete Pouring and Formwork Removal: Pouring the concrete and removing the formwork once it has cured.
 - 9.Water and Electrical Pipeline Embedding: Installing necessary plumbing and electrical lines within the foundation.
 - 10.Indoor Ground Concrete Pouring: Pouring a 15 cm thick layer of concrete, with a polyethylene plastic film as a moisture-proof layer on top.
- This method ensures a solid and stable foundation that can support the rest of the structure.

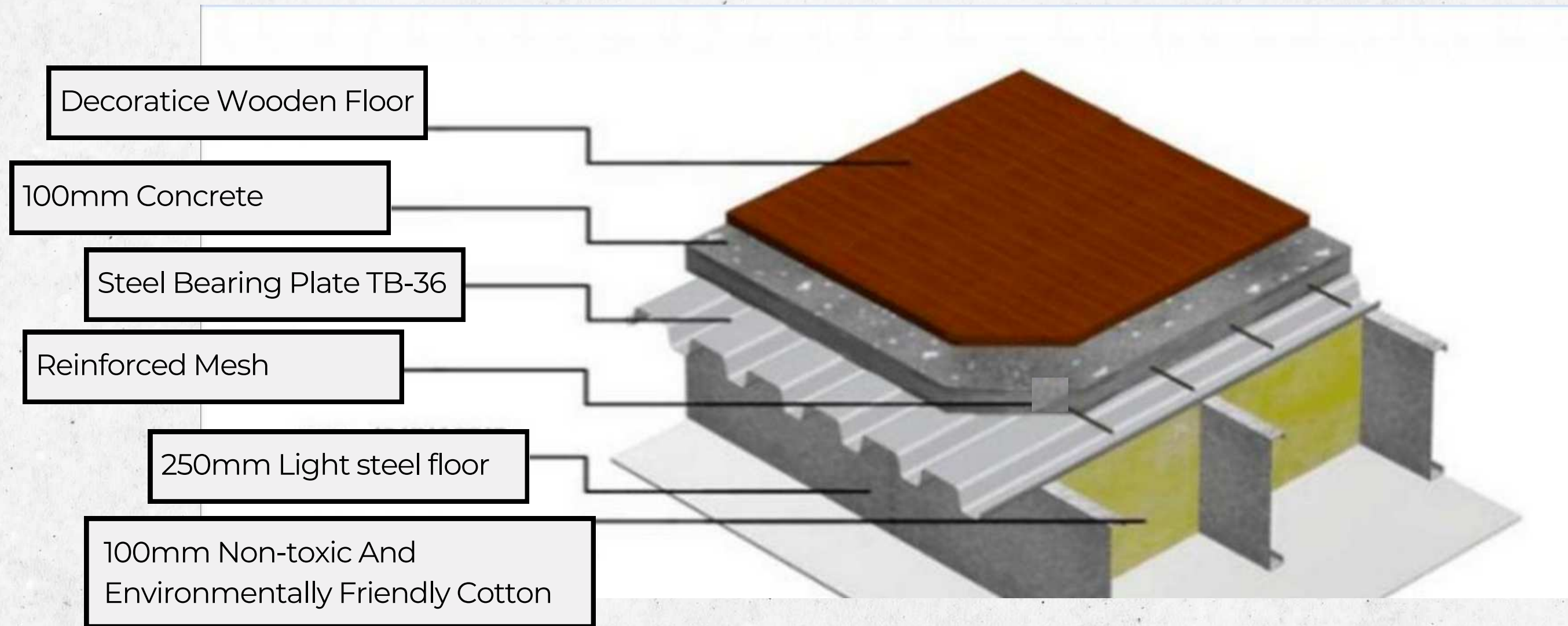
Review

The light steel house is a modern and efficient construction system made up of several components: the structural system, ground system, floor system, wall system, and roof system. Each of these systems consists of various unit modules, which are prefabricated in a factory and then assembled on-site.

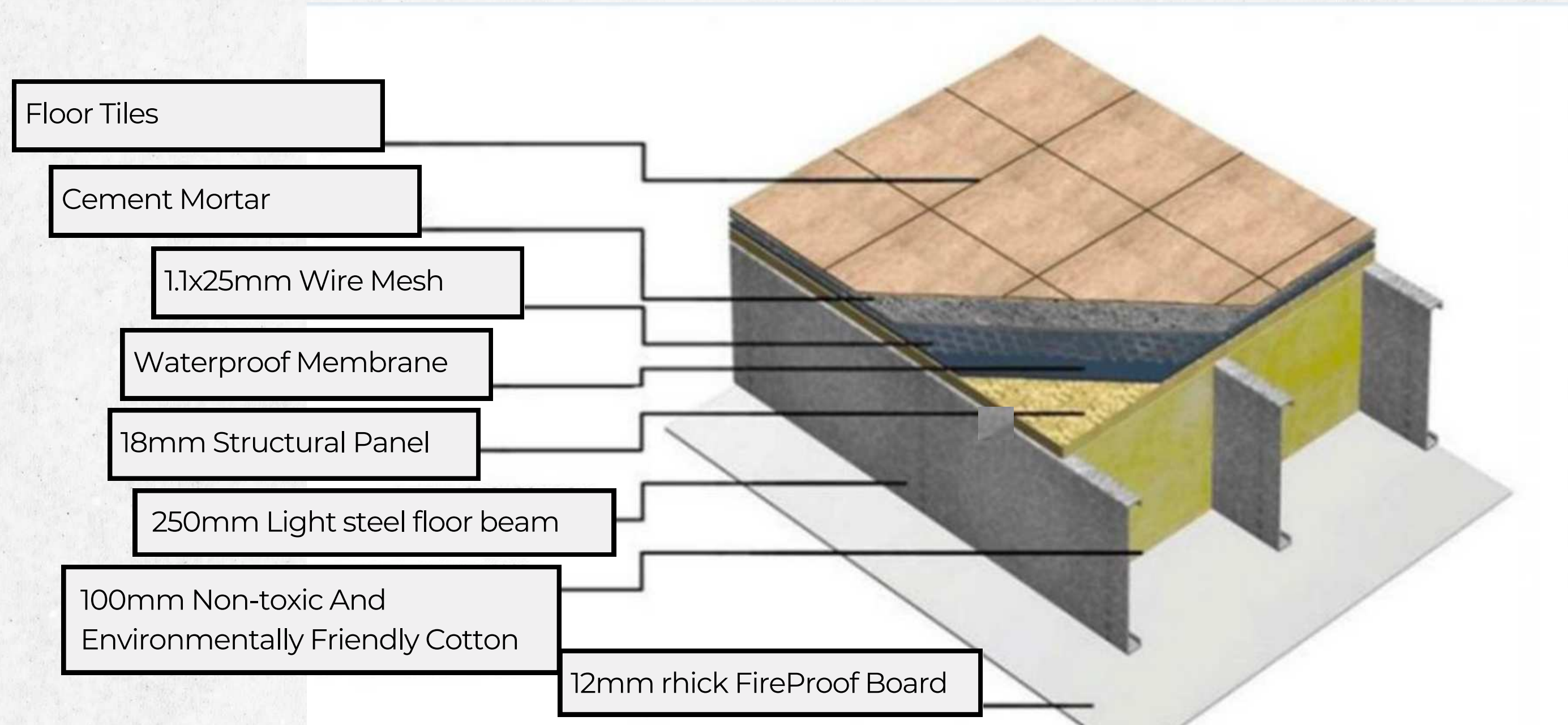
The main bearing structure of the light steel house is made from cold-rolled, hot aluminum-plated zinc thin-wall steel, ensuring a strong and durable framework. This structure is complemented by materials that provide insulation, soundproofing, waterproofing, and fire resistance, creating a well-rounded, energy-efficient, and environmentally friendly building.

The modular components of the house are produced in large quantities at the factory, and only the assembly process takes place on-site. This factory-prefabricated approach to construction allows for faster, more efficient building with reduced on-site labor, making it a modern and scalable solution for housing. This method has become a widely accepted practice and represents the future direction of residential construction.

Floor System



Floor System - Kitchen & Toilet



Floor System - Bedroom

