

LIGHTWEIGHT STRUCTURES

DEFINITION AND ROLE

We use the term "framework" to refer to all of the elements that constitute a roof-supporting structure and the term "frame" to refer to the set of horizontal and vertical load-bearing parts of a construction.

The framework supports the roofing, using the various elements it consists of: tie beams, rafters, puncheons, hinges, purlins, etc. We differentiate traditional solid timber assembled frameworks from industrial frameworks consisting of thin calibrated boards assembled using metal connectors.

The frame generally consists of: beams, posts, joists, ledger boards, bracing, etc.

STRESSES

Stresses are essentially mechanical. The structure directly supports vertical loads (own weight, roofing, etc.), as well as overloads inherent to its function and its position within the construction (usage, climatic overloads, etc.). Although generally sheltered, light structures are subject to slight or occasional moisture (condensation, sprays, etc.).

REQUIRED PROPERTIES

Mechanical resistance is classified according to the "CE marking" requirements described in standard EN 14081. In addition to the mechanical classification established when the parts are to be selected, the timber must demonstrate good cuttability and have a good resistance/density ratio.

Depending on the usage situation and the risk of exposure to biological degradation agents, an insecticidal fungicide treatment is required if the natural durability of the selected species is insufficient.

PRINCIPLES OF IMPLEMENTATION

Lightweight structures are assembled mechanically on site. For species with insufficient durability, cuts and trims on construction sites must be retreated. Industrial frameworks (small farmhouses) are assembled at the factory and simply positioned on site. Traditional frameworks use timber-timber assemblies (tenons-mortise, joins, dowels, etc.) or metallic parts (nails, screws, bolts, pins, plates, saddles, etc.). Timber-framed walls are assembled using metal parts.

USAGE CLASS

Usage class 2 is required in most cases. More severe exposure levels may require better risk coverage. Due to their natural durability, many species can easily meet the required usage class.



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