https://doi.org/10.53230/tgm.1310-912X.2024.1005.35

METROLOGICAL SELECTION OF WOOD FOR MAKING A HAND WEAVING LOOM WITH A SUSTAINABLE STRUCTURE

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Several requirements intersect in the design of a handloom: ergonomics, capabilities, and price. Above all, the loom must be comfortable for weaving.

The role of the weaver differs significantly from human intervention in industrial weaving.

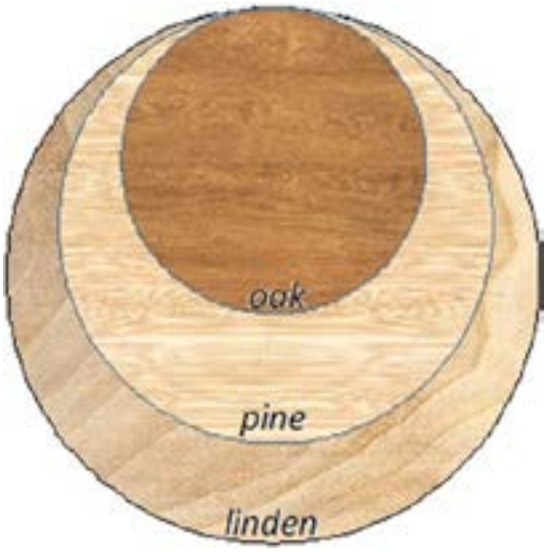
In hand weaving, the operator selects the crossings of each weft, drives the working elements, and ties up the broken threads. The hand weaver must have easy access to the working parts and put minimal effort into the drive.

Finally, the handloom should have an aesthetic design that conveys stability in the workplace.

The construction of the handloom consists of three groups of working elements.

The supporting frame is most often in the shape of a parallelepiped.

It carries the working elements, supports the tensioned weaving threads and stably dampens the vibrations and inertial forces generated.



The wood of the loom frame must be very dense and of great strength.

The working parts of the loom that experience direct contact with the weaving threads are the cross and the shuttle.

They are cylindrical in shape, on whose surface the weaving threads are pressed and rubbed.

The majority of the supporting working elements are movable and rotate at a low angular velocity.

The wood for the supporting working elements can be of medium density and strength, but with the possibility of a hard contact surface.

During the weaving cycle, three working bodies are in contact with the human feet and hands.

The weaver uses his feet and pedals to control the selection of the main threads, and uses his hands to drive the shuttle and the shuttle.

The shuttle carries the weft thread with minimal kinetic energy from the hands and tolerates little friction from the warp threads. The wood for the shuttle must have a minimum density, low strength and acceptable surface resistance.

Materials science in woodworking provides the following three woods with suitable properties and specific gravity from 3.50 to 8.3 kN/m³.

№	Wood	Volumetric weight, kN/m³	Compressive strength, MPa	Janka hardness, MPa
1	oak	6.90	12.00	47.00
2	pine	5.70	8.50	19.00
3	linden	4.10	3.80	18.00

Keywords: *weaving, hand looms, carpentry metrology*