

MUSICAL INSTRUMENTS

DEFINITION AND ROLE

In a musical instrument, the timber contributes to the acoustic quality and the sound, especially for guitars and pianos. In a guitar, it is a part of many elements in the form of solid timber or veneering. For the manufacture of the body, the bottom and the sides, lighter timber species are generally used, while heavier, denser and aesthetic timber species are sought for the manufacture of handles, heads, easels and keys.

STRESSES

The timber must provide the instrument with a certain sound quality. It is sought for its homogeneity and for its ability to reproduce a sound in a balanced manner within a broad spectrum of frequencies. In terms of guitars, hard timber species must be able to resist friction and the effects of sweating.

REQUIRED PROPERTIES

The aesthetic aspect is essential. The timber's density and grain are also important criteria in the choice. The timber must also have a good drying ability and demonstrate high stability during its use.

The CIRAD's technical sheets provide two characteristics to facilitate the choice of a species for a musical instrument:

- the resonance frequency, which is the main frequency of the material's audible sound
- the musical quality factor, Q , which is associated with the duration of the audible sound. The higher the quality factor, the more the sound is sustained over time (low damping).

PRINCIPLES OF IMPLEMENTATION

The timber that is used is obtained by fine sawing or by slicing. Implementation is carried out using techniques specific to these instruments. Implementation must be carried out in perfectly

controlled climatic environments. The shaping and adjustment of each element requires a high degree of precision.

USAGE CLASS

Durability is not a selection criterion characterizing mark for this usage.



Photo: Piano keys © Africa Studio



Photo: Guitar body and bracing © Luciano Queiroz