

PREVENTIVE CONSERVATION FOR EXHIBITION DISPLAY AND STORAGE CONDITIONS OF CLASSICAL STRING INSTRUMENTS: THE CASE OF VIOLINS

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Introduction

This project aims to present the basic preventive measures to preserve classical string instruments and that are related to their keeping, display, transportation combined with the construction materials, techniques and the factors of corrosion.

Factors of corrosion on the structural materials of violins

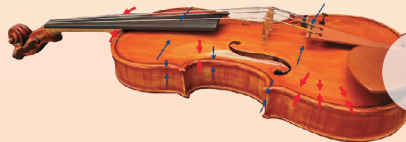
The wood's structural faults (Knots, colors irregularity e.t.c.) • The temperature & the relative humidity (RH%) variations • The air pollution and the noise • The light (visible, IR, UV) • The biological action.

Forms of deteriorations

Temperature and humidity variations (breakings into the joints, development of microorganisms, successive swelling and wrinkling, oxidation of the violin's metallic parts e.t.c.) • Air pollution (Fade and stains to the violin surface) • Noise (loss of mechanical resistance etc.) • Light (photochemical reactions to the woods substances, colour changes etc.) • Human action
Biological action (colour changes, decrease of mechanical resistance, changes of its smell, variation of pH e.t.c.).



Biological attack in the sound board of an Italian violin.



Humidity effect in violin surface. The blue arrows indicate the radius shrinkage and the red ones indicate the tangent shrinkage (that is more intense).

Preventive measures for display – storage area

Building: Windows and doors, if they almost exist, should have proper size & good quality ex. thermolux window glasses, double glasses etc.

Environment conditions:

Temperature & humidity (18 - 21 °C, ± 1,5 °C, RH%: 50% - 60%, ± 5%): • Passive control: Hydro - insulation, placement of instruments into display cases, double glass windows, creation of air conditioned zones ("building in a building") • Active control: Central unit (HVAC), self - powered local units (humidifiers - dehumidifiers).

Air pollution: • Active control: installation of a central or local unit • Passive control: Watertight of the windows - doors, portable units that detain the pollutants.

Acoustic climate (35 - 45 db): • Use of rows of trees or bushes around the museum • Use of soundproof materials in the building construction.

Light: • Exposure level 100 - 150 lux • Illumination (lux) max.: 200 lux = 18,6 footcandles.

Display cases: • Stable & airtight • Materials that cannot react with the object • Three discernible parts (Middle one for exhibiting musical instruments, upper one for lighting system, lower one for climate conditions control system).

Preventive measures for the transportation of musical instruments

Sealed wooden cases: • Use of dehumidifiers and thermo hygrograph in their interior • The strings should be loosened and the bridge with the sound post must be removed before the journey.

Violin special cases: • Manufactured by resistant materials • Resistant in extreme environmental conditions, in IR, UV radiation and have humidity controllers • Constructed from neutral & acid free materials and have vibration absorbers & double action safety locks

Conclusions

The prevention and not the treatment is undoubtedly the ideal confronting for the preservation of string musical instruments.

Some suggestions are: • Buildings with specifications for the proper storage conditions • Exhibition cases with proper equipment for stable and safe display • Rules for the safe indoor - outdoor transportation.