

الملخص باللغة الإنجليزية

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Title of Thesis :

"STUDY ON THE USE OF POLYMERS IN THE TREATMENT AND
CONSERVATION OF HISTORICAL WOOD- WITH THE APPLICATION ON
CARRIAGE AT THE ROYAL CARRIAGE MUSEUM "

Summary

This thesis is divided into five chapters. The first chapter deals with the identification of epoxy and polyurethane, which are used in the wooden structures. The second chapter discusses the cases, in Which epoxy is used. The third chapter deals with the evaluation of the epoxy as an adhesive in the structural wood. The fourth chapter studies the relationship between the structural adhesive and wood. The fifth chapter deals with the application of epoxies on the Brake Carriage at the Royal Carriage Museum in Boulak, Cairo, Egypt

Chapter one "Identification of epoxy and polyurethane used in wooden objects" included study and identifying epoxies and polyurethane in addition to their physical and chemical properties also commercial polymers were tested and evaluated .The chemical characterization of three polymers was performed with a FTIR spectrometer of the type 6100 Jasco, Japan, with TGS detector using KBr method.

Chapter two " study for the royal carriages and conservation methods included the study of the royal carriage" its parts also examples for the use of epoxies in the treatment of carriages in different museums such as Minnesota museum and Candia science technology.

Chapter Three: "The evaluation of epoxy as adhesive in wooden Artifacts" included A number of factors determining the durability of the adhesives also the mechanical and chemical behavior of selected polymers had been monitored.

Chapter 4: "The relationship between the thermosetting adhesives 'epoxy' and wood" The relationship between the adhesive and wood is a very complex phenomena .Experimental study for the polymers as coating , fillers and the chemical reaction between the polymers and the wood .

Chapter 5 : " Break carriage the application study"

This chapter dealt with the application study on a brake carriage at the historical carriage museum located in 26th July street – Boulak – Cairo. We focused in our work on the cracks in the back wheel which had 5 cracks due to the load. The conservation methodology was as follows:

- 1- Historical documentation
- 2- Macroscopic documentation
- 3- Documentation of the dimensions
- 4- Calculation of the loads
- 5- The restoration steps for brake carriage included:
 - a- Treatment for the wood.
 - b- Treatment for the leather .