

## Abstract

The leather binding were studied in this research, is in possession of personal museum of Pabdeh of Fuladshahr, Darius Pabdani. This cover belongs to Quran that calligraphy in 1206 AH by Muhammad Ibn Qasim Karamali Mohammadabadi Jarghoye. The only date on the cover is on the endpaper dedicated to birthday of Guhar Beygom on Wednesday, in 1298 AH. Dimensions of this cover are  $26.5 \times 16 \times 3$  cm and approximately is alike octavo in range of  $24 \times 16$  cm. the cover is made of three different layer of leather, cardboard and paper joined together. The decorations of this cover are a "Toranj" pattern and two "Sartoranj" patterns. Studies on this decorations have shown that in "Toranj" pattern, two ducks are flying (besides of flower and plants) and in patterns of "Sartoranj" there is amaryllis flower. In addition of these decorations, there is tabulation. It has to be mentioned that decorations of on the cover are the same of the back. In the presented research, technical studies are in two parts of comparative and structural studies. First in comparison of duck pattern with 25 safavid artworks that have this pattern too, it seems this pattern belongs to safavid period. In structural section, leathern parts of the cover, paints, cardboard and endpapers were identified. In experimental studies, to prove the cover is from leather, biuret test and to identify the kind of leather cross section and capillary pore order were accomplished. The results have shown leather used for cover, back and "Toranj" patterns are cow leather, calf leather and goat leather respectively. To identify cardboard and paper fibers, Neokarmin test and Graf, Herzberg and Selleger reagents were used. Results of these tests have shown cover fibers are cotton, and endpapers are cotton and linen. Molish, nin-hydrin and logul tests were carried out to diagnose size and glues in the cover and the size is a kind of starch and the glues are from carbohydrates. For characterizing of paints some chemical tests, FTIR and AAS were accomplished. Paints used to decorate "Toranj" and "Sartoranj" are verdigris and brass particles and cochineal for borders of them. In this research, pathology studies are done by observation, microscopic observation, physical tests, chemical test and fungus cultivation. Damages were recognized are lack of leather and paper, acidification of leather and cardboard, frangibility of cardboard, insertion of additional parts to cover, vandalism, diffusion of ink in endpapers, water stain on endpaper, friability of leathern layers and biological damages. Treatment steps are cleaning (removing stains and fungi stat), moisturizing, reconstructing of shortage of leather and making new back cover with calf leather, restoration of cardboard and endpapers and retouching. Finally a method for transferring and displaying of this cover was presented.

**Keywords:** Conservation & Restoration of leatherbinding , stamped leather inlay, Duck, Muhammad Ibn Qasim Karamali Mohammadabadi Jarghoye, Museum of Pabdeh of Fuladshahr