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Searching for conservation solutions to stop the process of degradation of wall paintings in which vinyl polymer compounds, in particular polyvinyl alcohol and polyvinyl acetate, were used for reinforcement concealed injections.

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ABSTRACT

The dissertation is devoted to the problem of conservation of wall paintings in which vinyl polymer compounds, in particular polyvinyl acetate (PVA), were used for reinforcement concealed injections.

The aim of this PhD dissertation is to search for conservation solutions to stop the process of degradation of wall paintings in which vinyl polymer compounds, in particular polyvinyl acetate, were used for reinforcement concealed injections as well as getting to know and understanding the problem of vinyl injections inherent in the structure of wall paintings, determining the scale of this phenomenon in Poland and the risks associated therewith.

In Poland, in the conservation of wall paintings from the 1970s to the end of the 1990s, injections based on polymeric vinyl resins were commonly used for reinforcement concealed injections. These resins naturally undergo aging processes that change their physical properties. The aging of vinyl resins, in particular polyvinyl alcohol and polyvinyl acetate, causes the loss of properties for which these substances have been used. As time goes by, the vinyl binders and fillers used in the form of injections begin to pose a threat to the monuments. They do not fulfill the role of "binders" / adhesives, but only exert stress on build-up, accelerating the degradation of the historic polychromes. A conservator struggling with such a situation in practice is helpless. Contemporary scientific and technological knowledge does not give them the possibility of using low-invasive procedures that will save the wall painting.

The dissertation consists of seven basic parts. The first is an introduction to the subject matter of the dissertation. Part two is devoted to the procedure of concealed reinforcement

injections conducted during conservation works. The causes, objective and methodology of the procedure have been discussed, and materials used for injections in the second half of the 20th century in Poland have been reviewed. This part also includes objects selected for research as part of the PhD thesis. The third part of the dissertation pertains to injections based on polyvinyl acetate. It comprises analysis of the unusual popularity of vinyl resins, used in the procedure of wall painting injections in the second half of the 20th century in Poland, of the properties of vinyl resins, selected commercial products based on polyvinyl acetate, as well as of the awareness of the conservation community regarding the use of polyvinyl acetate in this procedure. The fourth part is devoted to the ageing process of vinyl resins, the aging process of injections with PVA films, and consequences of using injections based on PVA into the structure of wall paintings and sgraffito decorations. The fifth part of the work deals with the possibility of locating and imaging historical injections and detachments of wall paintings. This part is also a discussion of methods of diagnosing detachments and injections of wall paintings and a presentation of the results of the research testing the effectiveness of thermovision methods in imaging historical injections. The sixth chapter is devoted to conservation solutions which could support art conservators struggling with the problem of PVA injections stuck in the structure of paintings. A chemical method has been described, which involves regeneration of injections containing vinyl resins, as well as attempts to use microbiological methods. The seventh part contains a summary of the research and final conclusions. The dissertation contains a bibliography which was used in the course of the work, and a list of tables, figures and photographs. An integral part of the dissertation are appendices containing reports from the conducted research as well as a list of identified objects from the territory of Poland in which PVA was used for the procedure of concealed reinforcement.

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