

Beehive panel paintings: Material characterisation

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Four different painted beehive panels dating from the beginning of the 19th to the second half of the 20th century were selected for this study. This type of paintings was predominantly created by the lower (rural) classes and as such represents a variety of folk art [1]. This panels were traditionally placed on the front side of the hives. They were exposed outdoors, subjected to exterior environmental factors and therefore experienced degradation, which resulted in fading, loss of paint strata, etc. Although beehive panel paintings are specific and unique for Slovene ethnic territory, in-depth analytical studies regarding their material composition has not yet been published.

Due to restrictions of the sampling, majority of the investigation on material composition within this study was performed in a non-invasive manner utilising reflection infrared and Raman spectroscopy. For a more detailed investigation micro-transflection FTIR spectroscopy on a diamond-coated metallic stick was employed on several areas of the paintings. On two panels, where sampling was allowed, we performed a more detailed study on samples' cross-sections, which contained all stratigraphically present layers (wooden support, decorative layers). Paint layers are composed of historically commonly available pigments such as iron oxides, cinnabar/vermilion, lead white, carbon-based black, Prussian blue, etc. The main binder was determined to be composed of lipids which correspond with written archive texts stating that this type of paintings was usually done in oil. Two of the panels were also coated with a triterpenic resin. The main differences in the composition were observed for the panel from second half of the 20th century, where the presence of synthetic organic red pigment PR3 and zinc white was determined. Furthermore, the presence of beeswax at the back of the panels was also detected, as well as some of the degradation products, such as carboxylates and oxalates.

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References

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