

# ADHESIVE BASED GAP-FILLING MATERIALS

## The future of ceramic stabilisation and loss compensation?



Fig. 1: A detail of a restored object from the City Museum Sibenik, Croatia, Prof. Dr. phil. Alexandra Jeberien.

Despite modern techniques for reassembling fragmentary objects, for instance 3D-digital technology, the in-situ gap-filling and reconstruction of ceramic objects is a long-standing and frequently used method in archaeological conservation (fig. 1). Besides aesthetic aspects, it serves as a stabilisation. Gap-filling materials and methods used in Germany are usually applied directly to the object in a pasty state resulting in strong but hardly reversible fills [1] [2]. However, the possibility of reversibility is



Fig. 2: Example of reversible paste preparation.

an important requirement for conservation and restoration, allowing the removal and the replacement of old restorations with possible new methods and materials [3]. According to survey results in preparation of a Master's thesis at HTW Berlin, plaster and plaster-based mixtures are predominantly used in German-speaking countries (fig. 3). Questions about past restorations revealed that plaster was already used for reconstruction since the beginning of the 20th century [1]. Although signs of ageing on the adhesions and applied retouching often pose the more pressing conservation problem, the removal of plaster - if necessary - remains problematic. So why should conservators not work with an alternative that, in addition to long-term stability, flexible application and adequate aesthetic properties, meets the requirement of reversibility in particular? Removable gap-filling materials are already used worldwide (fig. 2), but are hardly

discussed in German-speaking countries. The master's thesis aims to raise awareness for alternative gap-filling materials and methods to stabilize and reconstruct ceramic objects. Under the consideration of general and ethically defined requirements, binder-based pastes are selected, analysed and compared with common plaster materials in terms of suitable properties for ceramic objects. Suitable properties refer to both, the gap-filling material itself and equally to the interaction between paste and ceramic, since the conservation material should not affect further decay of the historic object. Therefore it includes adequate hardness and stability, fracture strength, flexible applicability and long-term durability. In this context, gap-filling materials will be prepared and tested regarding cohesive and long-term stability using mechanical (fig. 3) and chemical analysis. Finally, applicable reversible gap-filling materials will be mounted on case study ceramics, while evaluating handling procedures.

### References

- [1] GÜRSCHNER VIDART 2022: Ana Gürschner Vidart, Questionnaire for gap-filling methods used on ceramic objects, conducted June-July, Berlin 2022, may be requested via author.
- [2] GESCHKE 2019: Rainer Geschke, Keramik Restaurierung - Theorie und Praxis der Konservierung und Restaurierung von Porzellan, Steinzeug, Steingut und Irdenware, Berlin 2019, 5, 130.
- [3] AIC Code of Ethics and Guidelines for Practice, Nashville 1994, Art. 23.

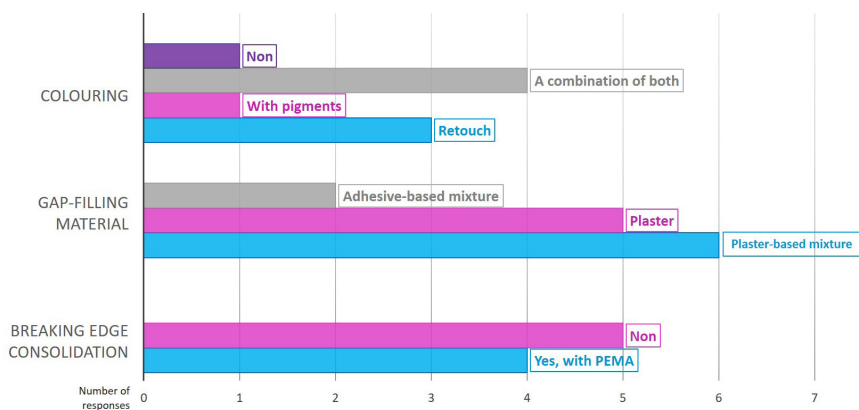


Fig. 3: Survey results indicating materials and methods for ceramic gap-fillings in Germany.