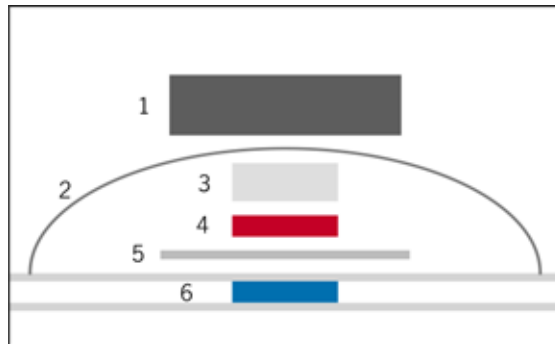


## Albertina poultice – application instructions

*Enzyme poultice for the removal of non-swellable starch based adhesives (amylase poultice)*



- 1 Weight
- 2 Polyester film (mylar)
- 3 Blotting board (moistening fleece material)
- 4 Amylase poultice
- 5 Interleaving silk tissue paper
- 6 Paper with adhesive

### General information:

Prefabricated amylase poultices have been developed to facilitate the local and simple enzymatic removal of non-swellable, starch-based adhesives with admixtures of alum and/or protein glue with the use of less moisture from paper supports.

### Enzymatic starch decomposition:

Enzymes are proteins with catalytical action which enable clearly determine decomposition reactions on natural materials. Amylases can in a specific way catalyse the decomposition of 1.4- $\alpha$ -glucosidic bonds in starch molecules. The decomposition and depolymerization of starch cause liquefaction of the adhesive resulting in the formation of oligo-saccharides as by-products. The decomposed starch loses its adhesive properties. The implemented bacterial amylase is not contaminated, thus the further decomposition of cellulose, proteins or other carbohydrates is not possible. Materials such as paper, parchment, leather and even textiles cannot be damaged.

### Mechanism of action:

The amylase poultice synthetic fleece material contains a water-swellable viscous medium enriched with methyl cellulose. The viscous medium also contains low contents of purified  $\alpha$ -amylase and other auxiliary components. By moistening with water the amylase poultice gets activated. Adjustment of its pH values by means of buffer substances is generally not required. The moisture content of the pre-fabricated amylase poultice as well as its ability to retain moisture throughout the dismounting procedure account for its high efficiency, which can only be achieved by proper application.

### Attention:

The application of enzymes and the enzymatic activity of the Albertina poultice is a highly specialized technique developed for use by experienced conservators.

For correct and successful application of the Albertina poultice particularly regarding moistening experience is required. We recommend to initially apply the technique first on sample materials. It is also important to make sure that the adhesive to be removed is starch-based.

## Necessary equipment:

- Water-proof film. We recommend polyester film. The film is required to cover the poultice and is also used as a base working surface while moistening the poultice material.
- Weight: An either too heavy or too light weight can prevent the correct functioning of the amylase poultice. Approximately 150 – 200 g weight is required for the 10 cm<sup>2</sup> treatment area.
- Demineralised water. We recommend to add 5 % ethanol to the water.
- Scissor, brush, tweezer, cotton swabs.
- Spatula: A narrow teflon spatula is well-suited to remove and separate the paper from the adhesive material.

*Please note: The weight and polyester mylar film not included in the set!*

## Cutting of material:

- Cut the poultice and blotting board moistening material to the size of the adhesive area.
- Interleaving silk tissue paper should be cut on each side 2 mm longer than the poultice.
- Cover the complete poultice with the polyester film (mylar foil) which is cut to size, each side at least 4 cm longer than the poultice itself!

## Moistening and application of the Albertina poultice:

- To assemble the poultice please follow the pattern illustrated on page 1. Use the polyester film as the work base surface and moisten all materials using a brush.
- In the case of wettable papers, moisten the substrate paper over the area of adhesion where the enzyme poultice should be placed. Soak the interleaving paper in water, use blotting board material to reduce moisture content and then apply to the adhesion area being treated.
- Evenly moisten the Albertina poultice (approx. 0.08 ml of water per 2 x 2 cm treatment area is necessary). Make certain no enzyme gel gets pressed out of the poultice on to the polyester film, which is used as the work base surface. Place the moistened poultice with the smooth side facing upwards onto the interleaving silk tissue paper.
- Soak blotting board moistening fleece material to provide even penetration of water and carefully remove excess water by using blotting board material. The lower limit of 0.4 ml water per 1 x 2 cm treatment area can be considered. Then place the moistened blotting board fleece (smooth side towards the surface under treatment) on the enzyme poultice.
- The Albertina poultice must immediately be covered with a piece of polyester film (mylar foil) and adequate weight put on top.

## Check and dismantling:

- After a short treatment time it is advisable to check whether the poultice materials are situated correctly enhancing even and homogenous penetration of the enzyme components throughout the adhesion area. Important is that the moistened paper is placed on the area being treated.
- The first attempt to detach the items glued together should be undertaken after 15-30 minutes depending upon the wettability of the papers.

- Whenever gentle detachment of the items is possible the residual liquified starch paste should be removed with cotton swabs.
- It is advantageous to wash the whole item after the treatment. This is not necessary if the Albertina poultice has been applied correctly, infact an after-treatment is also not required.

#### Important tips:

- Enzymes need humidity in order to begin chemical reactions. To prevent formation of water marks at the edges it is important to avoid superfluous moisture within the poultice. This can be obtained by adding 5 % ethanol to the applied water. Alcohol concentrations higher than 5 % lead to denaturing of the enzyme.
- Enough weight should be put on top of the poultice to guarantee the even distribution and migration of the enzyme. The poultice is ineffective if not evenly placed because of the lack of proper contact which prevents enzyme migration.
- Working at high room temperature enhances the reaction rate thus reducing the dismounting time. The amount of moisture used, the thickness and the penetration behaviour of the adhesive are more important than the influence of higher room temperature.
- In the case of papers that are difficult to wet re-moistening is recommended. The stated moistening values are the absolute minimal values, reducing the risk factor for water marks to a minimum.

#### Storage:

Keep the Albertina poultice well closed and stored under dry and cool conditions. In original packaging the poultice can be stored for a period of at least 12 months. After opening the packaging, store the enzyme poultice protected from direct light.

#### Precautions:

If properly used the Albertina poultice causes no danger of health since the enzyme substrate only decomposes carbohydrates (starch). In order to prevent any kind of allergic reactions, we recommend to avoid direct skin contact and to wash hands immediately after implemetation.

#### Literature/bibliography:

Schwarz, I.; Blueher, A.; Banik, G.; Maurer, K.-H.; Thobois, E.; The development of a „ready-for-use“ poultice for local removal of starch paste by enzymatic action. *Restaurator* 20 (1999) : 225–244. Hatton, M.; Enzymes in viscous medium, *Conservator* 2 (1997) : 9, Segal, J.; Cooper, D.: The use of enzymes to release adhesives, *The Paper Conservator* 2 (1997) : 47–50.

Further information, such as our „Quality Guarantee“, certificates of independent testing institutions and information regarding application methods and instructions are stated on our website [klug-conservation.com](http://klug-conservation.com).