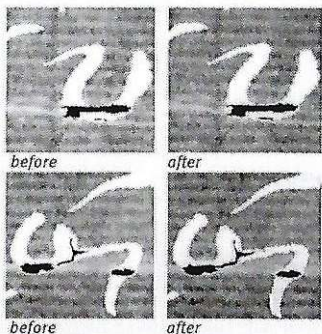


The new papersave swiss ICT process



The state of the art in ink corrosion treatment is aqueous treatment, usually in combination with calcium phytate to immobilise the ferrous ions. A major drawback of the aqueous treatment is swelling of the paper. The paper is often damaged already, and swelling can result in tearing and further damage to documents. In addition, only individual sheets can be treated, making the process very laborious and expensive.

The non-aqueous and gentle ‚papersave swiss‘ process does not result in any mechanical strain on the paper sheets due to swelling. Even with pre-existing damage and tears, the ‚papersave swiss‘ process does not result in any further deterioration of the documents (see figure 1).



Source: Diploma thesis, Carmen Effner, 2008: „Effect of mass deacidification on paper damaged by ink corrosion“.

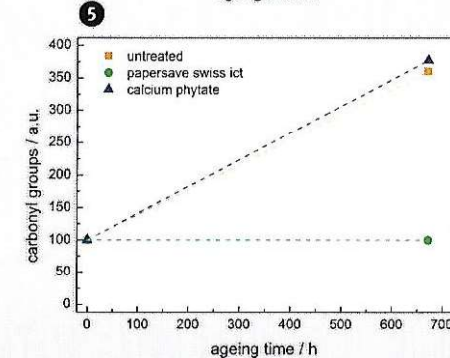
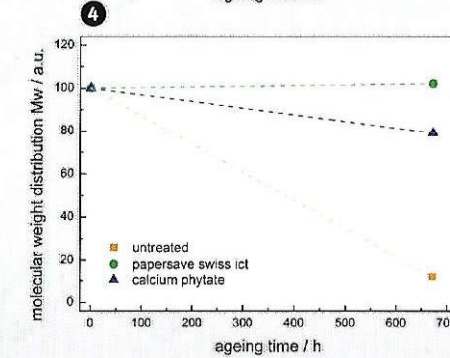
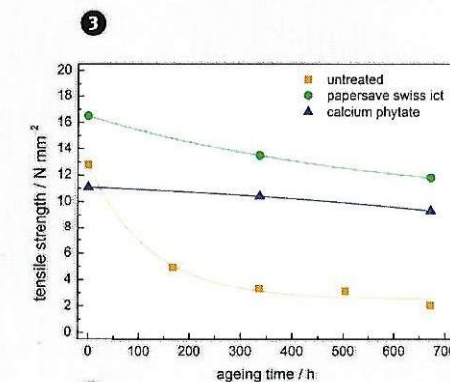
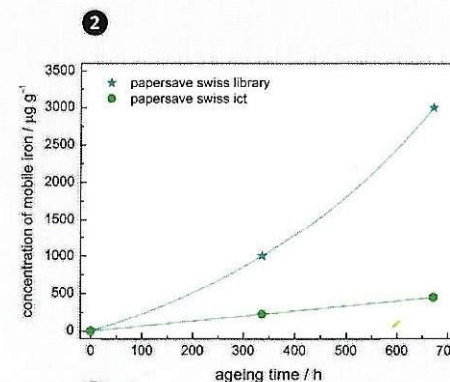
However, the effect of mass deacidification processes for the treatment of acidic papers is not sufficiently long-lasting for the treatment of the highly acidic iron gall inks, which cause ink corrosion. Thus after treatment with the ‚papersave swiss‘ library programme, the number of mobile ferrous ions (a measure of permanence) rises almost to the level of untreated inks after an artificial ageing time of 672 hours at 80 °C and 65 % r.H.

Only the development of the new papersave Swiss ict process (ict: ink corrosion treatment) immobilises ferrous ions that still remain in the ink, and effectively prevents damage caused by iron migration in the paper adjacent to ink strokes (see figure 2). Tear strength in the ink stroke is always higher after papersave Swiss ict processing than for a sample treated manually with calcium phytate, even after artificial ageing (see figure 3).

The molecular weight distribution of cellulose can be used as a measure of damage to the fibres in the paper. The greater the average molecular weight (MW), the „healthier“ the cellulose fibres. Comparing the papersave Swiss ict process with manual calcium phytate treatment showed that degradation of the molecular weight progresses faster with the manual treatment than with the papersave Swiss ict process (see figure 4).

While the manual calcium phytate treatment is almost ineffective with regard to degradation of the cellulose by atmospheric oxygen (increased concentration of carbonyl

groups with artificial ageing), paper treated with the papersave Swiss ict process receives lasting protection against oxidation (see figure 5).



Summary

- new papersave swiss ict process
- paper does not swell
- highly effective
- for single sheets and bound documents
- special small plant especially for treatment of paper damaged by ink corrosion (about 20 kg)