

Development of a Consolidation Technique for Silver Gelatin Photographs: The Conservation of Water and Mould Damaged Photographs at the Buchenwald Memorial

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The use of aerosols for the consolidation of water and mould damaged black and white silver gelatin prints using diluted aqueous adhesive solutions was investigated. Water damaged photographs show various forms of degradation. The gelatin in the emulsion may depolymerise due to biological deterioration. As a result, the remaining image is endangered and should be consolidated. For the consolidation of degraded gelatin emulsions, aqueous adhesives are preferred. Problems with the consolidation of biologically degraded gelatin emulsions are based on hydrolytic and enzymatic deterioration which cause increased water sensitivity. The technique of aerosol application enables a consolidation treatment using a low amount of moisture. The consolidation involved the use of aerosols to apply diluted solutions of gelatin, methyl cellulose and funori. Different concentrations were tested. The wetting capabilities of the consolidants can be improved by pre-humidification using a GORE-TEX[®] sandwich and by adding up to 30 % of ethanol. Visual alterations of the surface after the consolidation treatment could not be observed. Mechanical tests were used to evaluate the extent of consolidation. Results show that the use of aerosols ascertains adequate stability of degraded emulsions. A gelatin solution of 1 % applied four times lead to the best results. A methyl cellulose solution of 0.5 % is satisfactory. The extent of consolidation achieved with the application of funori to pre-humidified photographs is comparable to methyl cellulose. Photographs may be stabilized to the extent that they can be used as historic source without detrimental changes to their visual appearance, and that they can be stored in paper envelopes.