Investigation of Acid Deterioration in Leather

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Introduction

Acid deterioration in leather, commonly known as red rot, occurs in vegetable tanned leather predominantly manufactured from the mid 19\textsuperscript{th} Century onwards. Acid deterioration is observed in a variety of leathers including bookbinding, gilt, screens, wall hangings, upholstery and luggage.

Identification of Acid Deterioration

- Odour
- Lower pH (≥3)
- Lower hydrothermal stability
- Powdery surface
- Complete or partial loss of grain layer

Identified Causes of Acid Deterioration \textsuperscript{1, 2}

- Changes in the leather manufacturing process
  - Introduction of alternative tanning agents
  - Use of synthetic dyestuff
  - Use of imported raw materials from Indian subcontinent, Middle East or Africa
  - Increased use of acids, particularly sulfuric acid
- Environmental conditions
  - Environmental pollutants (eg sulfur dioxide and nitrogen dioxide)
  - Environmental conditions (eg temperature and relative humidity)

Past and Current Products used on Acid Deteriorated Leather\textsuperscript{3}

- Buffers
- Leather dressing
- Pliantex/Plexisol
- Cellugel/Klucel G and E
- Aluminium alkoxide

Aims

- Review the past and current products used for the treatment of acid deterioration
- Modify a current product if suitable to apply within the conservation field
- Potentially, design and develop a new product for the treatment of acid deterioration

References


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