

Investigation of Acid Deterioration in Leather

A. Lama^{1*}, P. Antunes², Y. Fletcher¹, J. Guthrie-Strachan² and K. Vidler¹

1:The Leather Conservation Centre, Boughton Green Road, Northampton, NN2 7AL, UK

2:The University of Northampton, Boughton Green Road, Northampton, NN2 7AN, UK



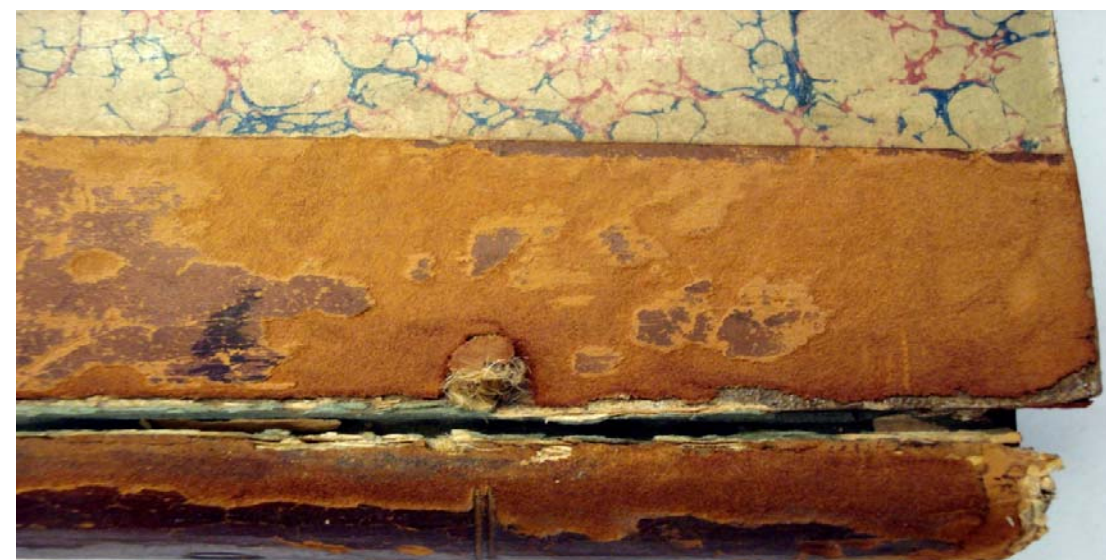
ICOM-CC
International Council
Of Museums
Committee for Conservation



ISCR
Ministero per i Beni
e le Attività Culturali
Istituto Superiore per la
Conservazione e il Restauro

Introduction

Acid deterioration in leather, commonly known as red rot, occurs in vegetable tanned leather predominantly manufactured from the mid 19th 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^{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 Leather³

- 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

1. Thomson, R. S. (2000) Bookbinding Leather: Yesterday, Today and Perhaps Tomorrow: Wolstenholme Memorial Lecture 2000. *Journal of the Society of Leather Technologists and Chemists*, **85**: 66-71.
2. Hulme, E. W. Parker, J. G. Seymour-Jones, A. Davenport, C. and Williamson, F. J. (1905) *Leather for Libraries*. The Library Supply Co. London. www.harmatan-leather.co.uk.
3. Environment Leather Project (1997) Deterioration and Conservation of Vegetable tanned leather. Coordinator R. Larsen. European Commission, Protection and Conservation of The European Culture Heritage, Research report no. 6. Denmark: L. P. Nielsen Offset Desktop Bogtryk.

*Corresponding Author: Email: anne.lama@northampton.ac.uk; Telephone : (+)44 (0)1604 892659



'Conserve & Care'

The Leather Conservation Centre
www.leatherconservation.org
Email: lcc@northampton.ac.uk
Telephone: (+)44 (0)1604 719766

MULTIDISCIPLINARY CONSERVATION
A HOLISTIC VIEW FOR HISTORIC INTERIORS

Rome, 23- 26 March 2010 Compleso Monumentale di S. Michele a Ripa

