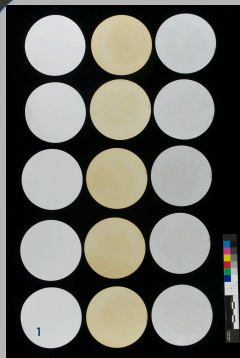




The Removal of Polymerized Linseed Oil and Aged Olive Oil from Paper

by Emily Turgeon-Brunet



INTRODUCTION

Previous research has shown that there are few successful methods for reducing linseed oil stains on paper. Removing oil stains can be both a stabilization treatment as well as an aesthetic treatment.

The efficacy of of SC Johnson's Shout® Triple Acting Trigger Stain Remover, two prepared detergents and an alkaline poultice of boric acid and methylcellulose, to reduce aged linseed oil and olive oil stains from Whatman cotton filter paper was examined.

Fig. 1: Samples after aging. 1st column is unstained Whatman paper; 2nd column is stained with linseed oil; 3rd column is stained with olive oil. Fig. 2: Samples tied onto glass in preparation for artificial aging

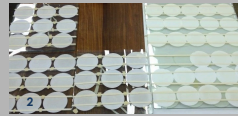
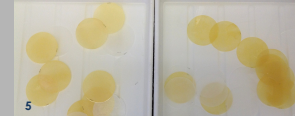


Fig. 3: Olive oil, Linseed Oil, plastic syringe and Whatman paper. Fig. 4: Shout Stain Remover and three prepared solutions. Fig. 5: Samples being washed in a basin of distilled water after treatment.



EXPERIMENTAL

MATERIALS

- Whatman 41 Ashless Quantitative Filter Paper
- Gamblin's Refined Linseed Oil
- Colavita Extra Virgin Olive Oil
- SC Johnson's Shout Triple Acting Stain Remover
- Boric Acid, Triethanolamine, Deoxycholic Acid, Abietic Acid, Sulfonic JL 80- X, distilled water
- Despatch Artificial Aging Oven, 54613 set to 50°C 80% RH for one week

METHODS OF ANALYSIS

- Print Council of America Paper Sample Book
- Incandescent Reflected Light, and Transmitted Light; Ultraviolet Reflected Light
- Nicolet, Avatar 320 ATR-FTIR using Nicolet Smart Golden Gate
- Konica Minolta CM-700d Spectrophotometer
- BYK Gardner 420, Glossmeter

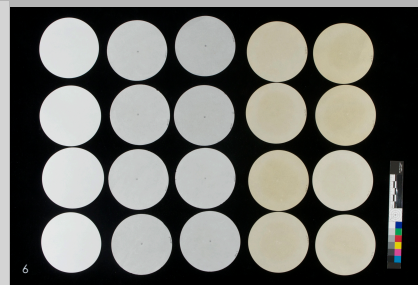
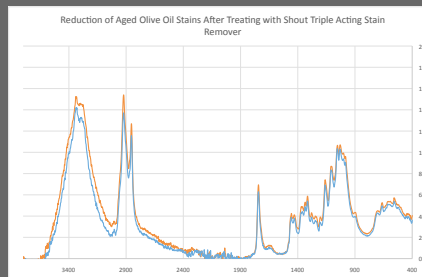
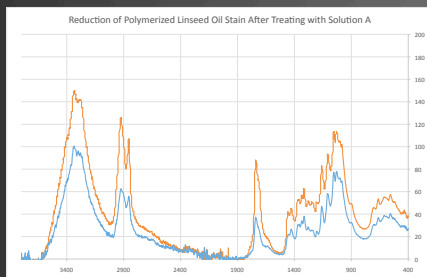


Fig. 6: After treatment samples. 1st column untreated unstained; 2nd and 3rd columns treated olive oil stains; 4th and 5th columns treated linseed oil stains

CONCLUSION:

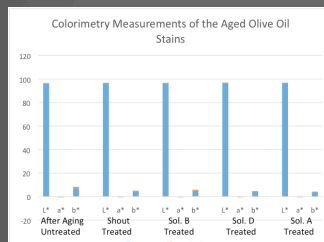
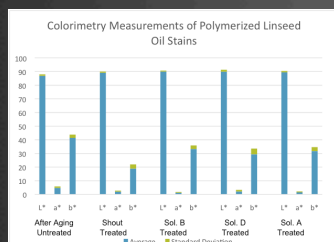
1. Solution A successfully reduced half of the concentration of polymerized linseed oil from the Whatman filter paper.
2. Shout was the most successful solution to reduce aged olive oil; however, because olive oil is not a drying oil, the amount of reduction could not be quantified.
3. There was not a definitive difference between the change in colour amongst the treated samples. This could imply that Solution B and Solution D provide a bleaching effect on the paper.

ATR-FTIR RESULTS



Legend
 Aged Sample, Before Treatment
 Aged Sample, After Treatment

SPECTROPHOTOMETER RESULTS



ACKNOWLEDGMENTS

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