The Impact of Lead Soap Formation on the Treatment of *Still Life with Copper Pot, Cheese and Eggs* by Jean Siméon Chardin

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American Institute for Conservation and Canadian Association for Conservation of Cultural Property Joint Annual Meeting and Conference, April-May 2026

Introduction

Still Life with Copper Pot, Cheese and Eggs (c. 1730-1735) by Parisian artist Jean-Baptiste-Siméon Chardin (1699-1779) in the Mauritshuis collection illustrates a dialogue between Dutch and French old master paintings. One of Chardin's kitchen still lifes, the signed oil on canvas (33 x 41 cm) underwent technical research and conservation treatment at the Mauritshuis as part of a still life cataloging project. The glue-paste lined canvas exhibited aesthetic disfigurements and is characterized by a bumpy, granular surface texture due to the extensive formation of lead soaps and inclusion of large quartz particles in the ground. The wide presence of lead soap protrusions throughout the paint layer influenced decisions for treatments including varnish removal and varnishing, the processes of which are highlighted in this poster.





Figs. 1-2: Before treatment (left) and after treatment (right), front, normal light.



Fig. 3: Detail in raking light.



Fig. 4: Micrograph of lead soap protrusion.



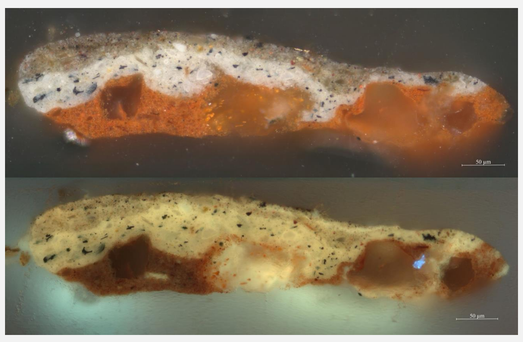
Fig. 5: Micrograph of lead soap protrusion.



Fig. 6: Micrograph of varnish removal test.

Technical Analysis Results

- Infrared reflectography, X-radiography, X-ray fluorescence spectroscopy, cross-section microscopy, scanning electron microscopy-energy dispersive X-ray spectroscopy, and automated thread counting identified materials and construction consistent with Chardin's working method and technical studies of Chardin paintings[1-4]
- IRR and X-ray showed minor compositional changes and absence of preparatory drawings, which are characteristic of Chardin
- XRF, cross-sections, and SEM-EDX indicated:
  - Lower red ground contains red earth, quartz, lead white and/or red lead + formation of lead soaps in this layer; upper grey ground contains lead white and charcoal black
  - Orpiment, Prussian blue, vermilion, lead white, iron oxide pigments, red lake, smalt, and Cassel earth; possible addition of chalk into paint



Figs. 7-8: Cross-section micrographs in darkfield (top) and UV (bottom). Sample from grey-brown area in top right corner. Two thin paint layers, upper grey ground, lower red ground with lead soap in center and silicate inclusions.

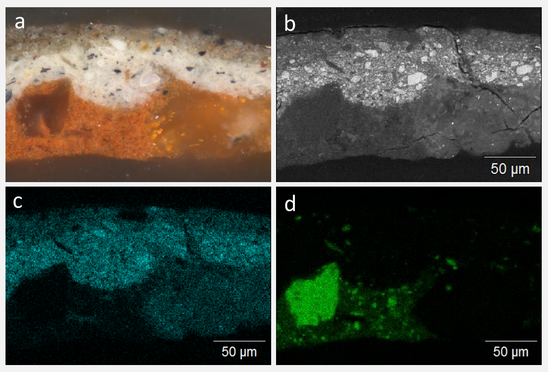


Fig. 9a-d: Darkfield cross-section micrograph (a), SEM backscattered-electron image (b), SEM-EDX map for lead (c), and SEM-EDX map for silicon (d).

Treatment Summary

Removed varnish with solvent-saturated Evolon CR; removed varnish residues by swabbing 1:1 ethyl acetate:isopropanol through Evolon CR; mechanically removed insoluble surface residues; brush varnished with Paraloid B-72; filled with Flügger; inpainted with stable dry pigments and Mowilith 20; spray varnished with Laropal A81.

Varnish Removal Using Evolon CR

- Due to extensive amount of lead soap protrusions, varnish removal using Evolon CR + controlled solvent loading was selected to eliminate mechanical action and apply a minimal amount of solvent in a controlled manner (following thorough testing)
- Procedure & solvent loading calculations derived from Tauber, Gwen et al. "Evolon CR: Its Use from a Scientific and Practical Conservation Perspective," AIC Paintings Specialty Group Postprints, vol. 31 (2018): 45-49
- Evolon CR loaded at 60.5% capacity with 2:1 acetone:ethanol and applied for contact time of 1.5 minutes while covered with Melinex (Mylar); surface contact established with wall-papering brush and gentle pressure applied with balled-up cotton gloves; cleaning tests and signature masked with Melinex



Figs. 10-15: Solvent-loaded Evolon CR varnish removal tests in normal light (top left) & UV (bottom left), after varnish removal in normal light (top center), after treatment in UV (bottom center), Evolon CR used for varnish removal in normal light (top right) & UV (bottom right).

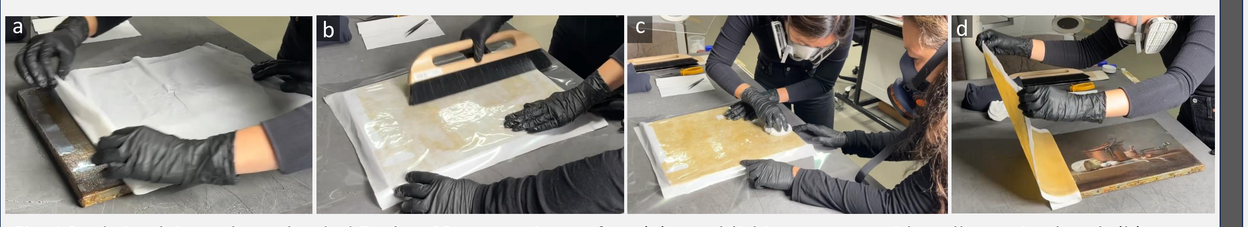


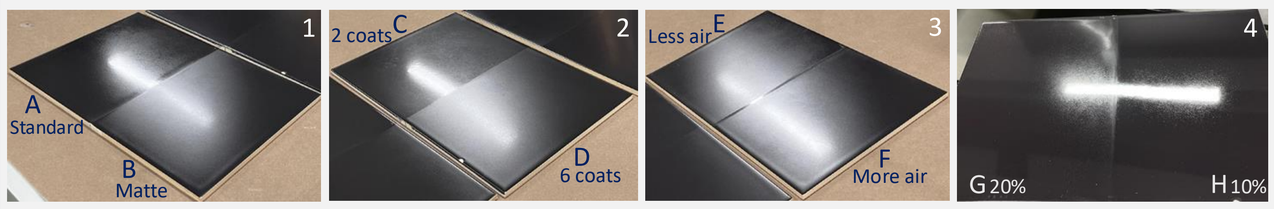
Fig. 16a-d: Applying solvent-loaded Evolon CR onto paint surface (a), establishing contact with wallpapering brush (b), applying gentle pressure with cotton gloves (c), removing Evolon CR + adsorbed varnish (d).

Spray Varnishing

- Satisfactory saturation was achieved with the initial brush varnish, yet the granular surface texture generated an unwanted glittering effect after varnishing
- Tested different varnish systems to determine a final spray varnish that matted the surface and reduced the glittering appearance while retaining adequate saturation
- Used black glossy ceramic tiles to experiment with and compare Laropal A81 spray applications in which one variable was changed per test
- Final selection: 4 spray coats of 20% LA81 "matte" - 100 g. Laropal A81 in 417 mL. white spirit (18% aromatic content) + 83 mL. isopropanol

Table 1: Summary of comparisons and results for Laropal A81 spray varnish tests on black ceramic tiles.

Test	Varnish Applications	Variable	Results
1 AB	20% LA81 standard (A) vs. 20% LA81 matte (B), 4 coats each, same spray gun settings	Solvent mixture (slower vs. faster evaporating)	20% LA81 matte (faster-evaporating solvent mixture) appears significantly more matte. There is some slight reticulation in the "standard" application.
2 CD	20% LA81 matte with 2 coats (C) vs. 20% LA81 matte with 6 coats (D), same spray gun settings	Number of spray coats	6 coat application appears significantly more matte.
3 EF	20% LA81 matte with more air (E) vs. 20% LA81 matte with less air (F), 4 coats each, same volume of material released	Amount of air through spray gun setting	Application with more air appears slightly more matte.
4 GH	20% LA81 standard (G) vs. 10% LA81 standard (H), 4 coats each, same spray gun settings	Percentage of resin	20% application appears more matte and even in coverage. Reticulation is in both yet is more noticeable in the 10% application.



Figs. 17-20: Results of LA81 spray varnish test comparisons on black ceramic tiles, tests 1-4 from left to right (see Table 1).

Conclusions

The treatment was successful and safely re-established the painting's legibility, making it suitable for display and supporting a truer perception of Chardin's composition and style. Technical analysis contributed to a body of knowledge on Chardin's materials and techniques. This case study presented an effective application of Evolon CR plus controlled solvent loading, illuminated the effects of certain variables during spray application of varnish, and provided insights into the impact of metal soap degradation on historic oil paintings as well as practical approaches for conserving such paint surfaces.

References

1. Fronek, Joseph. "The Materials and Techniques of the Los Angeles *Soap Bubbles*," in *Masterpiece in Focus: Soap Bubbles by Jean-Siméon Chardin.* Los Angeles County Museum of Art, 1990.
2. Jaskierny, Diana M. "Jean Siméon Chardin, Still Life with Cat and Fish, 1728," Technical Entry in *French Paintings and Pastels, 1600–1945: The Collections of The Nelson-Atkins Museum of Art*, ed. Aimee Marcereau DeGalan. The Nelson-Atkins Museum of Art, 2021.
3. Merrill, Ross. "A Step Toward Revising Our Perception of Chardin." *AIC Preprints, American Institute for Conservation, 9th Annual Meeting, Philadelphia* (1981): 123-28.
4. Webster-Cook, Sandra, Kate Helwig, and Lloyd de Witt. "The Research and Conservation Treatment of Jar of Apricots/Le Bocal dábricots, 1758 by Jean-Siméon Chardin." *AIC Paintings Specialty Group Postprints*, vol. 26 (2013): 1-19.

Acknowledgments

My endless thanks to: the entire 2024-2025 Mauritshuis conservation team for their incredible guidance and support, and for making my time there so special; as well as to the Fulbright Program, the Stichting Fulbright Commission the Netherlands, and the American Friends of the Mauritshuis for making this project and once-in-a-lifetime fellowship possible.