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Material Analysis of Mass-Produced Soaps Used in an Installation by General Idea Collective

Introduction

Modern and contemporary artists often use surprising materials in their art. Household items are present in the installations, adapted to it or taken from the shelves. Soap is one of such materials. It can be found in collections, integrated to their paintings like Rashid Johnson's "Broken Five" or as sculpting material as seen in "Lick and Lather" by Janine Antoni.

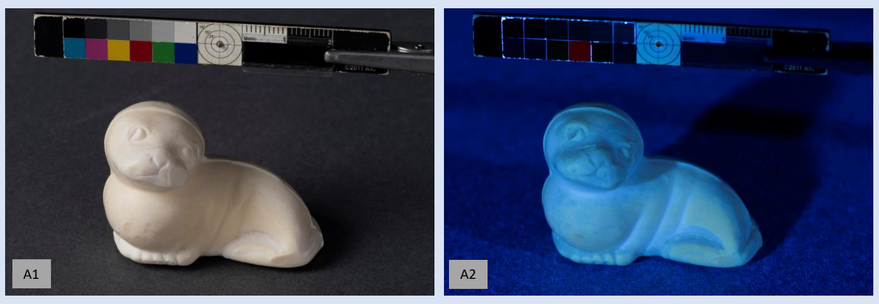
General Idea, a group of Canadian artists active from 1969 to 1994, produced an installation made of 10,000 soaps shaped like seal pups that was adjacent to their "Fin de Siècle" installation at the Toronto PowerPlant. Later known as "P is for Putti", the soaps were sold individually with a signed coaster and the money raised was donated to AIDS-related charities. These objects, which were industrially produced and originally destined to be sold at pharmacies, are now in museums. Little is known about the original manufacturing process of these mass-produced soaps from the early 1990s.

Three of these seal-shapes soaps were reunited for investigation. Stored in varying conditions, they had aged differently in the span of 30 years. One was in museum storage at the Agnes Etherington Art Centre and two were stored by a private owner in polyethylene packaging. The latter developed yellow droplets at the surface, disfiguring the soaps.

Objectives

The objectives of this research project are to identify the components that constitute the droplets forming at the surface, followed by an attempt to recreate the degradation issues by submitting commercial soaps to two extremes in relative humidity conditions.

Images with Normal and UV light



Above: Agnes Etherington Art Centre's Putti, in both normal light and longwave UV (365 nm).
Below: Two privately held soap Putti that were stored wrapped in polyethylene for 30 years (WH1 and WH2).

Acknowledgements: Thank you to Prof. Alison Murray, Scott Williams, Jennifer Nicoll at the Agnes Etherington Art Center, William Huffman and Geneviève Saulnier at the National Gallery of Canada who shared with me the condition of the *Putti* held in their own collection.

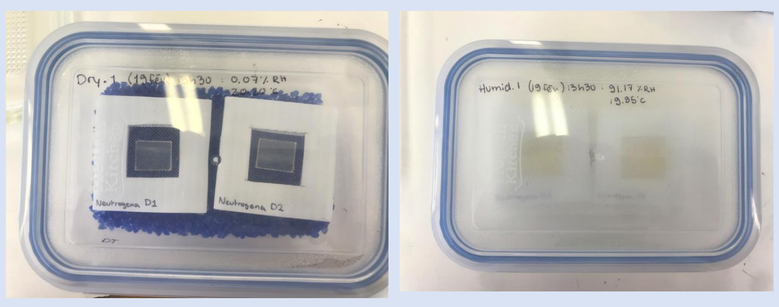
Experimental

Analytical equipment

- Nicolet i5s FTIR single pass diamond with Attenuated Total Reflectance (ATR) attachment employed, operating with 32 scans and at a resolution of 4cm^{-1}.
- VSC 8000 Foster Freeman forensic for material investigation through imaging.

Humidity condition setup

Four glass containers (Hearth Kitchen) equipped with a watertight lid with integrated silicone seal which snap-locks into place were used to create the microclimates. The dry environment was created with moisture absorbing silica gels (RH=0-5%), and the humid environment was created with wet blotter paper (RH=98-100%). Confirmation of the environmental extremes was ensured by placing a datalogger (Sensirion SHT31) inside the enclosures for 24h. The soap samples were placed at the center of specially made coroplast windows, and then into the container. The thickness of the coroplast therefore allowed a certain distance between the soap and the environment inducing agents.

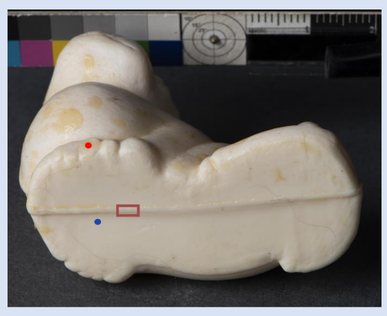


Above: enclosures creating desired humidity environments.

Results

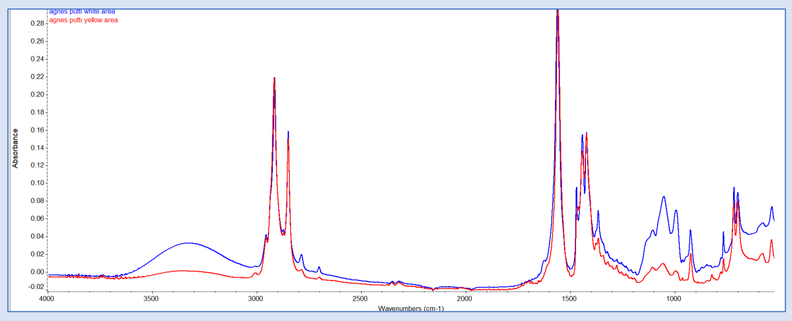
Areas sampled

- Agnes putti white area
- Agnes putti yellow area



- Putti WH2 under no drop
- Sample taken by scalpel
- Putti WH2 drop at toe

Infrared spectra

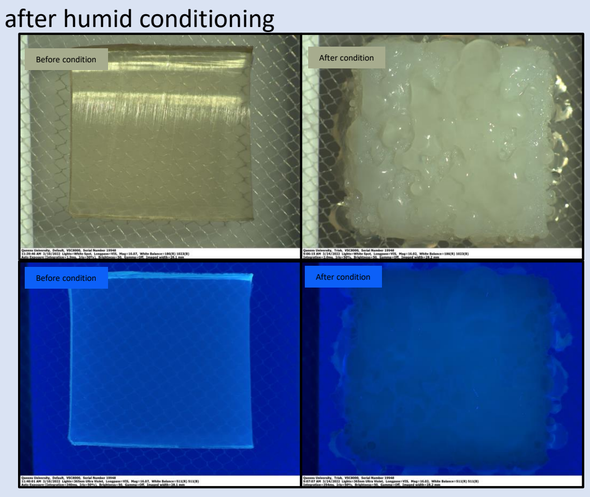


Discussion

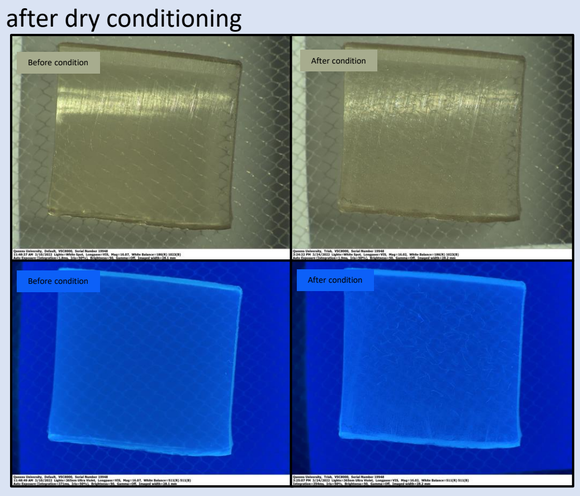
Within the soap structure held in museum conditions, there is a heterogenous distribution of the soap ingredients that translates to a colour difference, perceptible to the naked eye by varying shades of white-yellow.
Droplets on the privately owned soap show the same polyols and carbohydrates as the soap body itself, but very little sodium carboxylate. This indicates that the droplets are made from material that has migrated from the body of the soap. These exudates are most likely material that was initially present in the soap, and probably not degradation products.

Artificial conditioning: Neutrogena transparent soap

Before and after humid conditioning

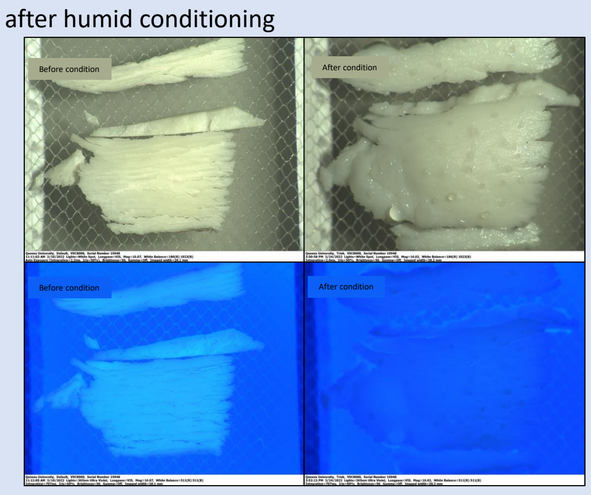


Before and after dry conditioning

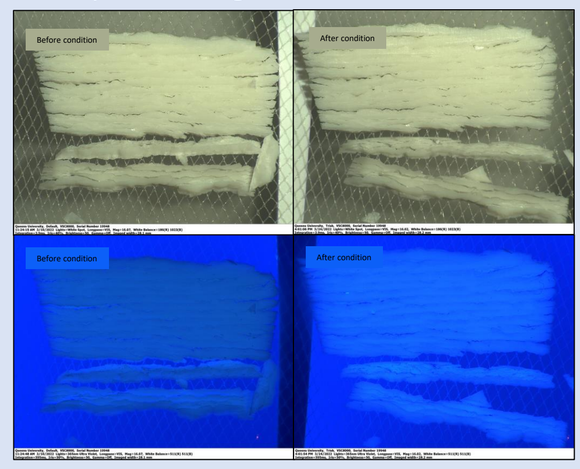


Artificial conditioning: Nivea creme soft

Before and after humid conditioning



Before and after dry conditioning



Conclusion

- Syneresis: the drops are no different from the body of the soap, but they are lacking sodium carboxylate. This is potentially cause by realignment of molecules that constitute the soap over a long period of time. This soap molecule realignment process is probably quite slow and therefore difficult to imitate by a short experiment. Further research is needed.
- Putti all have the same composition, although different ratios depending on area analysed:
  - Heterogenous distribution of ingredients
  - Aging conditions probably didn't induce chemical changes (crosslinking or oxidation) whether stored in museum conditions or not.
- Investigation: the RH extremes did not produce droplets like they did for the *Putti*. Instead, it confirmed that the higher the RH, the more water content in the soap, and the lower the RH the lower the water content in the soap.
  - Other observations : opacification of high glycerin content soap, high viscosity of droplets at surface. Increase in volume for white soap.