

## TRANSNATIONAL ACCESS

### User report

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#### Platform/s accessed

- ☐ FIXLAB  
☐ MOLAB  
☒ ARCHLAB

#### Project Title\*

*Zinc white paints in the 19th and 20th century: multi-dimensional study of the pigment-binder interaction over time and impact on the physico-chemical properties of macro- to micro-metrics*

#### User Group Leader\*

*Palladino Nicoletta*

#### Venue\*

*RCE archives*

#### Date

*2-3/05/2022*

#### Summary\*

*The work consisted in sampling historical zinc white-based materials belonging to the Cultural Heritage Agency (RCE) in The Netherlands, in order to enrich the corpus of analysis of a 3-year PhD on the multidimensional characterization of zinc white. Moreover, some reports of artworks analysed at the RCE containing zinc white were selected to share case studies of use of the pigment. A discussion with RCE researchers (i.e., Klaas Jan van den Berg and Rika Pause) took place about zinc white and the possibility to use some previous XRF data and paint mockups of a previous PhD project of the RCE.*

#### Report

The PhD project ZOoMM (Zinc Oxide: from Micro to Macro) aims at:

1. Better understanding the extent and modalities of use of zinc white
2. Studying the relation between structure and properties of the pigment, to possibly find markers for conservation and authentication of artworks



To address the latter point some zinc white-based materials (e.g., pigment powders, paint tubes) were selected during the first year of thesis (2020-21); the RCE was contacted through ARCHLab in order to check the availability of historical materials.

Objective of the visit was to sample interesting zinc white-based historical materials, talk with researchers who have worked on this pigment at the RCE, and possibly consult some lab reports of artworks analysed at the RCE indicating the presence of zinc white.

IPERION HS was chosen to take advantage of the collaborative spirit of the platform and get information of the availabilities of zinc white-based materials in several archives through the same facility.

The visit consisted in sampling of some zinc white-based materials (indicated in Table 1):

Name	Material	Binder	Category	Brand	Date	Notes
9475	Zinc white	-	Powder	H. Veittenwinkel & Zonen Amsterdam	-	-
10313	ZnO	-	Powder	Van Valen	-	Zinkiet
C3T	Zinc white	Oil	Color chart	Talens	1938-1941	Couleurs à l'huile fines
9474	Zinc white	-	Powder	H. Veittenwinkel & Zonen Amsterdam	-	ZnO 97,5% Pb ca 1% Zn ca 78,1%
10310	ZnO + Cu	-	Powder	-	-	-
10430	Zinc	-	Metal	Maastrichtse zinkwit mij. Ejsden	-	Zinkmetaal, Fabrikatie schema zinkwit
10449	Lithopone	-	Powder	Maastrichtse zinkwit mij. Ejsden	-	Lithopone 30%, Fabrikatie schema lithopone
10440	Zincblende	-	Mineral	Maastrichtse zinkwit mij. Ejsden	-	Ruwe zincblende, Fabrikatie schema lithopone
10433	Zincblende	-	Mineral	Maastrichtse zinkwit mij. Ejsden	-	Ruwe zincblende, Fabrikatie schema zinkwit
10437	Zinc white	-	Powder	Maastrichtse zinkwit mij. Ejsden	-	Serena Roedzegel, Fabrikatie schema zinkwit
10438	Zinc white	-	Powder	Maastrichtse zinkwit mij. Ejsden	-	Roodzegel n°1, Fabrikatie schema zinkwit
10439	Zinc white	-	Powder	Maastrichtse zinkwit mij. Ejsden	-	Grijzegel n°3, Fabrikatie schema zinkwit
10435	Calamine	-	Mineral	Maastrichtse zinkwit mij. Ejsden	-	Galmel, Fabrikatie schema zinkwit
ZWSik	ZnO	-	Powder	Sikkens	-	Zinkwit
10434	Roasted blende	-	Mineral	Maastrichtse zinkwit mij. Ejsden	-	Gerooste blende, Fabrikatie schema zinkwit
10436	Zinc white	-	Powder	Maastrichtse zinkwit mij. Ejsden	-	Serena Witzegel, Fabrikatie schema zinkwit

Table 1: Materials sampled at the RCE

Available analytical and intangible information on the samples were collected, too.

Secondly, discussions with RCE researchers led to:

- Dating of a Talens paint tube already part of the *corpus* of analysis of the project
- Information about case studies and production and use of zinc white
- Possible reuse of XRF data acquired by Birgit van der Driel during her PhD project, and of paint mockups to make sure of how to compare her data with the ones acquired by the XRF instrument at the C2RMF

Finally, some reports of artworks containing zinc white analysed at the RCE were made available to the author after the visit.

Only some of the samples may be added up to the analysis of the PhD project due to time constraints (the visit was postponed of about one year due to COVID-19); it would be particularly interesting to compare the samples from *Maastrichtse* with the ones by the *Vielle Montagne*, one of the main ZnO producers in 19th-20th century, especially through the ongoing microstructural HR-XRD studies at the ESRF. If so, also optical microscopy, SEM-EDX and cathodoluminescence will be performed to provide further data and information to compare them to the other samples of the *corpus*. Moreover, the lithopone sample may be considered for cathodoluminescence studies at the C2RMF as historical material of reference to be compared to a commercial grade.

Results of the reports concerning zinc white will be included in a database of artworks containing zinc white in construction from the beginning of the thesis.

Contacts have been taken with Birgit van der Driel to discuss about the research approach identified for the project (i.e., statistical study of the presence of zinc white in artworks based on XRF point analysis) and the possibility to re-use her data and paint mockups. Since she agreed with the proposition, the

approach will be discussed further with the PhD supervisors to eventually recontact the RCE and Rijksmuseum and agree on data sharing and mockups reuse.

### Expected publications, presentations and other dissemination activities

*Depending on time and results of the analysis, some of the samples may be included in the corpus of study of the PhD project, thus object of a publication on historical materials and/or on the results of the HR-XRD analysis at the ESRF. The lithopone sample may be included in a publication dedicated to the development of cathodoluminescence for the study of pigments. Modalities of dissemination of the database of artworks containing zinc white (including the results from the shared reports) have to be defined.*

### Captions for the photos\*



Figure 1: Samples from the production process of zinc white at the Maatrichtse Mij. Eijssen.