

CORROSION OF IRON GALL INK

Sample

Document of craft paper (pulp rags) of the XVIIth century containing a handwritten note with iron gall ink brown tonality on the reverse side. Department of Restoration. Fine Arts Faculty. Barcelona.

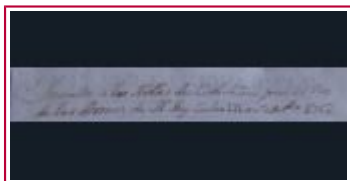
Pathology Causes

Chemical reactions of the components that interact with gall ink paper pulp, leading to stiffness and weakening of the fibers.

The iron gall ink is composed of tannic acid (obtained from the bark and roots of trees), gallic acid (extract gills), iron salts, gum arabic and water, different concentration and varieties may exist in composition. Stored inks have a stable solution color (black-blue) but when applied on paper and in contact with the air is darkened by oxidation (black), forming a water insoluble ferric tannin. Chemical instability and corrosive power of ink cause degradation of the paper.

The components of the iron gall ink lead to the degradation of cellulose of the paper by the chemical reactions of the acid hydrolysis of cellulose by the action of acids, and the oxidation of the cellulose by the catalytic action of iron ions.

Visual Image



Author: Carolina Pascual Sebastián

Description: Degradation of the iron gall ink which has lost intensity and has turned brown on its own oxidation.

Figure 1. Detail of handwritten note with iron gall ink brown tonality on the reverse side.

Figure 2. Reverse (grazing light).

Figure 3. Obverse (grazing light).

Image detail / macro



Author: Carolina Pascual Sebastian

Magnification: 10x

Description: Detil of the handwritten note.

Figure 1. Ink transfer to the obverse of the paper.

Figure 2. Gap in the paper (with appearance of burnt paper) by ink corrosion which has generated the perforation of the paper.

Associated Pathologies

Paper acidity.

Observations

File author: Carolina Pascual Sebastián

Subject: Examen, Diagnóstico y Documentación II

Bibliography

JAMES CARLO [et al.]. Old Master prints and drawings: a guide to preservation and conservation. Amsterdam: Amsterdam University Press, cop. 1997

Author

Secció Conservació-Restauració. Facultat Belles Arts. ub.conservacio.restauracio@gmail.com

Education

Institution or Company

Universitat de Barcelona
