

## 44450 Verdigris, synthetic

Chemical composition:  $C_4H_6CuO_4 \cdot H_2O$ ,  $Cu(CH_3COO)_2 \cdot [Cu(OH)_2]_3 \cdot 2H_2O$   
Copper-(II)-acetate-1-hydrate  
Color Index: Pigment Green 20, C.I. 77408

Verdigris is basic copper acetate, but sometimes the term is falsely also used to indicate copper carbonate or any other blue or green corrosion product of copper, brass or bronze. Verdigris is a bluish green crystalline powder with an acetic odor.

The preparation of verdigris was known in ancient times and recipes can be found in numerous manuscripts. It is mentioned in Greek and Roman literature, where the term *maerugo* refers to various blue-green and green corrosion products formed on the surface of copper, copper alloy and copper ores. Current usage of the term verdigris refers exclusively to the copper salts of acetic acid and probably derived from *vert de Grèce* mentioned in ancient texts.

Verdigris was prepared by exposing copper to the vapors of fermenting grape skins or in closed casks over vinegar. The action of acetic vapors on metallic copper produced basic or "crude" verdigris, which can be lixivated and the product recrystallized from acetic acid. This product known as neutral verdigris and can also be used as a pigment or to make copper resinate.

Well crystallized verdigris particles have the shape of pointed needles. They often unite in bundles, while the larger pieces show fibrous structure.

In earlier centuries, literature on painting warned against the instability of verdigris, its use would lead to deterioration of other pigments and it could only be used under special conditions which should be strictly followed. However, observation on paintings and experiments with paint specimens show that verdigris does not manifest any harmful alterations to the paint quality or stability. Many areas containing verdigris found in old paintings contain additions of lead white and/or lead-tin yellow. A mixture of verdigris with orpiment (yellow arsenic sulfide) bound in an oil-medium has remained unchanged. Mixtures of verdigris with sulfur-containing pigments (such as ultramarine blue) in aqueous media may darken due to the formation of copper sulfide. Verdigris, in common with other copper containing pigments, will degrade paper and other cellulosic materials.

Experiments with prepared paint specimens have shown that verdigris paints in both aqueous- as well as oil-mediums have good lightfastness.

Excerpts from:

*Artist's Pigments Vol.2* Ashok Roy (editor) and

*Painting Materials* Rutherford J. Gettens and George L. Stout

## CERTIFICATE OF ANALYSIS

Product:	<b>Verdigris</b> , Copper-(II)-acetate-1-hydrate Crystalline, approx. 31 % Cu
Product No.:	<b>44450</b>
Chemical composition:	$C_4H_6CuO_4 \cdot H_2O$
CAS No.:	6046-93-1
EINECS No.:	205-553-3
Molar Mass:	199,65 g/mol
Appearance:	Crystals
Color:	blue-green
Concentration:	min. 98.0 %