

## 43121 – 43130 Naples Yellow

Naples yellow is essentially lead antimoniate  $Pb_3(SbO_4)_2$ . It is a chemical combination of lead and antimony oxides and may vary in color from sulphur-yellow to orange yellow, depending on the proportion of the two materials.

The pigment is homogeneous and finely divided, and has good hiding power. Naples yellow does not have a crystalline form and resembles massicot (yellow lead oxide) in its microscopic character. Chemically it is quite stable, but because of the presence of lead, it is darkened by atmospheric hydrogen sulfide, thus it is more useful in an oil-medium than an aqueous binder. Naples yellow is compatible with all pigments and all vehicles. It requires very little oil, between 15-35 %, and has a strong drying effect on oil vehicles.

The history of Naples yellow is rather obscure. Compounds of lead and antimony are known to have been used in Babylonia and Assyria in the production of yellow ceramic glazes. From about the fifteenth century B.C. on, it was the only yellow colorant and opacifier in ancient Egyptian and Mesopotamian glass and glazes.

Little is known about its early history in Europe. The earliest recipes for the pigment are those of Cipriano Piccolpasso, who gives seven variations for its production in his *Li tre libri dell'arte del Vasaio* written between 1556 and 1559.

Since the 1940's, when lead-tin yellow was rediscovered, it was thought that lead-tin yellow replaced Naples yellow in various parts in Europe between ca. 50 to 350 A.D.. This change was thought to coincide with the change from calcium antimonate white ( $Ca_2Sb_2O_7$ ) to tin oxide ( $SnO_2$ , also used in the production of lead-tin yellow), both of which were used as white opacifiers. The belief was held that Naples yellow then replaced lead-tin yellow around the end of the 17<sup>th</sup> century as the opaque yellow pigment in European easel painting.

Current investigation is discovering traces of both antimony and tin with lead in areas of yellow paint on old paintings. Thus, it is possible that both pigments never came out of use but were used simultaneously and interchangeably or in a specially prepared, chemically combined form consisting of the three compounds.

Excerpts from:

*Artist's Pigments Vol.1* Robert L. Feller (editor) and  
*Painting Materials* Rutherford J. Gettens and George L. Stout