

## 23600 - 23610 Alizarine Lakes

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Alizarin is an organic compound that is historically important as a prominent dye. It is an anthraquinone originally derived from the root of the madder plant. In 1869, it became the first natural pigment to be duplicated synthetically.

Madder can be laked by treating it with alum, and an alkali, that converts the water-soluble madder extract into a solid, insoluble pigment. This resulting madder lake has a longer-lasting color, and can be used more efficaciously, for example by blending it into paint. Other metal salts can be used in place of alum to give madder-based pigments of various other colors. This general method of preparing lakes has been known for centuries.

Madder was used in ancient Egypt, Greece, and Rome for dyeing textiles and, to some extent, for making pigments. It was said to have been introduced into Italy by the Crusaders. By the 13<sup>th</sup> century, madder was being cultivated on a fairly large scale in Europe, but there is not evidence of its use in medieval or Renaissance painting. Madder lake was most widely used in the 18<sup>th</sup> and 19<sup>th</sup> century, though never as extensively as the ruby-like lakes made from kermes, cochineal, brazilwood, and lac.

In 1826 two French chemists, Robiquet and Colin, isolated the coloring principles of madder – alizarin and purpurin – by treating the root with sulfuric acid. The resulting extract, known as garancine, was used to make madder lakes, rose madder, and madder carmine. Prior to this improvement, madder lake had been so costly that its use was confined to miniature painting. For fifty years afterward, no other ruby-red or rose-pink coloring matter gave better or more permanent results.

Synthetic alizarin was first made in 1868. In the following years, madder lake was superseded by alizarin crimson, a pigment superior to it in every respect. Synthetic alizarin did not replace natural madder immediately. The French government attempted to protect its madder-growing industry by making it mandatory to use madder in dyeing trousers for the army. Since many 19<sup>th</sup>-century painters believed that alizarin did not have the delicacy of subtlety of rose madder, the latter continued to be available into the 20<sup>th</sup> century. Today, most painters prefer alizarin, but a few artists' colors made from rose madder can still be found among the European brands. In typical form, rose madder is a very pale pink powder; in oil and watercolor, it seems like alizarin crimson enormously reduced with alumina hydrate. When viewed by transmitted light, paint films of rose madder have a pronounced bluish undertone.