



# Color Chemicals


Pigments are the compounds added to materials to give them color. This deceptively simple application has shaped our perception of the world via art, fashion, and even computer displays and medicine. Pigments are used in **paints, inks, plastics, fabrics, cosmetics, and food.**

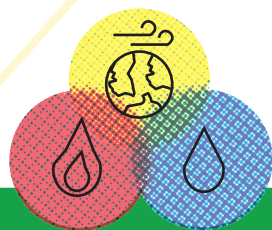
**3.88** (USD)  
**billion**

Estimated amount for the market of **food colorants.**

 **Red pigments** are made from **Carmin** also called cochineal (for the insect from which it is extracted), carmine lake or natural red, is a pigment of a bright-red color obtained from the aluminium complex derived from carminic acid.

 **Orange Pigments** are made from **Cadmium**. Most of the cadmium produced worldwide has been for use in rechargeable nickel-cadmium batteries.

 **Yellow pigment** was made by grinding together parts of **lead** and mixing it with sea salt and water.



**Aristotle** in 330 B.C. (Greek philosopher) developed the first known theory of color believing it was sent by God from heaven through celestial rays of light. He learned that all colors came from white and black and related them to the four elements: **water, air, earth, and fire.**

A color circle, based on **red, yellow and blue**, is traditional in the field of art. **Sir Isaac Newton** developed the first circular diagram of colors in 1666.

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Black pigments are primarily created from particles of carbon.

**Organic pigments** are presently synthesized from aromatic hydrocarbons. These are compounds containing structures of **carbon** atoms with **hydrogen** atoms attached that are formed in closed rings. Organic pigments include azo pigments, which contain a nitrogen group; they account for most of the organic red, orange, and yellow pigments.



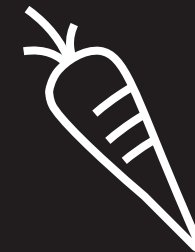
**Inorganic pigments** include **white pigments** are used to provide opacity and to lighten other colours. Mainly made from titanium dioxide. This class includes **calcium carbonate, calcium sulfate, diatomaceous silica** (the remains of marine organisms), and **china clays.**



**Pigment dyes** are often found in **cheap and low quality** fabrics. As a result, they are in mass production and sell more. You would find this prevalent in fast fashion.



**Colorants** such as pigments are added to **produce plastic** products in various colors.



**Microbes** are a type of **bacteria** that produce pigments used in food color.



**Cosmetics** have mineral pigments, which are effective **color additives** used for the coloring of quality makeup products.



**Ink** can be a complex medium, composed of **solvents, pigments, and dyes.** The pigments are made up of salts of multiring nitrogen compounds (dyes).

**Green Pigments** come from **malachite, cobalt oxide, zinc oxide, copper acetate**, and artificial chemical compounds. In the 19th century, green pigment made with **copper arsenite** was known for its toxicity.

**Blue pigments** were originally made from minerals such as **lapis lazuli, cobalt and azurite.** Blue dyes are made from plants; usually woad in Europe, and Indigofera tinctoria, or true indigo, in Asia and Africa.

**Purple pigments** are made by combining **red and blue** pigments; most often blue azurite or lapis-lazuli with red ochre, cinnabar, or minium. They also combined lake colors made by mixing dye with powder; using woad or indigo dye for the blue, and dye made from cochineal for the red.

