

Title: **Makeup-- A Wealth of Minerals**

Level: **K-12**

Day/Time:

[Academic Expectations](#)

[Core Content for Assessment:](#)

Objective:

The purpose of this exercise is to show students how a variety minerals are used in something as common as makeup.

Discussion:

Discuss what minerals are found in makeup, soap, shampoo, toothpaste. Where do these minerals come from?

Background Information:

Have you ever read the ingredients in makeup, shampoo, or toothpaste? It might surprise you. Many personal-care products contain a wealth of mineral materials taken from the earth. Take, for example, eye shadow.

One of the first ingredients listed in eye shadow is usually talc - a magnesium silicate mineral. Its platy crystal habit is in part the reason why talc has been an important ingredient in cosmetics since 3500 B.C. The plates glide smoothly across each other, allowing makeup to be applied easily. They lie across the pores in the skin and lessen the chance of clogging pores, while providing texture to the skin. Yet they are translucent enough not to be seen. Talc is resistant to acids, bases, and heat and tends to repel water. In addition to eye shadows, talc is used in loose and pressed powders, blushes, is a filler in some deodorants, and is added to lotions and creams. Talc can also be found in chewing gum and pharmaceuticals.

Mica, a mineral widely used in eye shadows, powder, lipstick, and nail polish, is added to give luster or pearlescence to a product. Mica is resistant to ultraviolet light, heat, weather and chemical attack and adheres to the skin. Like talc, it has excellent slip characteristics and may be used to replace talc in a makeup. When coated with iron oxide, mica flakes sparkle with a gold tint.

Kaolin, a clay, is added to makeup to absorb moisture. It covers the skin well, will stay on the skin, and is resistant to oil. Kaolin and another clay, bentonite, are added to the earth-based face masks or packs predominately for their cleansing effects. Clays are also used as fillers in different products.

Powdered calcite, a calcium carbonate, absorbs moisture. Because of this, calcite and a

Makeup- A Wealth of Minerals

magnesium carbonate, processed from dolomite, are added to powders to increase the ability of the makeup to absorb moisture.

When it comes to makeup, color is the name of the game. Minerals provide the color to eyes, cheeks, lips, and nails. Iron oxide, one of the most important color minerals, was used by Cleopatra in the form of red ochre as rouge. Today, iron oxides give red, orange, yellow, brown, and black tones to makeup. Chrome oxides are used for greens; manganese violet for purple; ground lapis lazuli may be added to makeup for blue. Ultramarine blue and pink coloring is made from a mixture of kaolin, soda ash, sulfur, and charcoal. Even gold has historically been used as a colorant. Ancient Egyptians used gold to color skin and hair. Gold can still be found in powders and makeup to add a 'rich' golden sheen to the skin.

As an artist starts a painting with a bright white canvas to give the colors brightness and intensity, titanium dioxide is added to brighten and intensify the color of makeup, and to give whiteness and opacity. Titanium dioxide is also a natural sun block and, like talc, iron oxides, and gold, it has been used for centuries. Titanium dioxide can be found in any makeup--shadow, blush, nail polish, lotions, lipstick, and powders. Titanium dioxide also makes Oreo cookies frosting extra-white and is the 'M' on M&M's candy.

Minerals also find their way into health-care products we use daily. Salt is effective in treating skin disease and is used in some soaps. Fluorite, processed for fluoride, is added to toothpaste and drinking water to help prevent tooth decay. Calcium carbonate (calcite) and baking soda (nahcolite) are abrasives in toothpaste. A borax and beeswax mixture is added to cleansing creams as an emulsifier to keep oil and water together. Boric acid is a mild antiseptic and is added to powder as a skin-buffering agent. Zinc oxide is added to creams to allow the cream to cover more thoroughly. Zinc oxide ointment, which contains approximately 20% zinc oxide, is used to heal dry, chapped skin. When an unlucky hiker runs into poison ivy, calamine-base lotions are often used to soothe the itchy skin. Calamine is another name for hemimorphite, a zinc silicate mineral.

As you can see, minerals are found in many things we use. So, the next time you are in the supermarket, take a moment and acquaint yourself with the multitude of minerals that are a part of our daily lives.

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