

## Statue of Liberty

A Patina 20 years in the making

### Copper

The Statue of Liberty, a gift to the people of the United States from the people of France, was unveiled in 1886. The metal “skin” that covers her iron skeleton is made of copper, so she started out looking as bright as a new penny.

Even before they hit the shelves, olives display a range of colors. Moving from early to late right Ness, Olive shift through green, yellow- green, rows, red- Brown and purplish black colors.

### Cuprite

Over time, however, the color of the new copper we can began to dull, thanks to oxidation by our atmosphere. copper on the surface reacted with oxygen to form a pinkish red mineral called cuprite.

### Tenorite

Cuprite was further oxidized to form a black mineral called Tenorite. Meanwhile, sulfur dioxide was being released into the atmosphere. Once airborne, sulfur dioxide reacted with water to form sulfuric acid.

### Brochantite

Tenorite reacted with sulfuric acid, along with more water, to form a blue-green-colored mineral called brochantite. Brochantite also reacted with sulfuric acid and water to form a green mineral called antlerite.

### Atacamite

And, because the statue's pedestal sits in New York Harbor, salty spray also made a contribution. Chloride ions from seawater reacted with brochantite and water, creating an olive-green mineral called atacamite.

The Statue of Liberty's iconic green patina was fully formed by 1906, and it continues to protect the underline copper from additional chemical reactions.

\* How many pennies could the Statue of Liberty's copper make?

### Sources:

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Created by ACS with assistance from Shannon Ryan, ACS Productions.

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