



Arizona Rocks 68

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Desert varnish is a coating that rocks in arid climates get on their surface. Originally it was thought to be from the weathering of the underlying rock, but more recent studies show the varnish to be more complicated. It is composed of clay, manganese and iron oxides, bacteria, and a trace of a few other things.

The color of the varnish is tan, brown, red or black. The most obvious ones are the red (iron) and black (manganese). Most researchers now agree that when the rocks are wet, windblown clay will stick to the rock. This clay will then serve as a home for a number of different bacteria and these bacteria oxidize the iron and manganese to get energy and give the resulting coating the red and or black color. If the area or the rock exposure gets too much rain or water, the varnish will be washed away.

For thousands of years people have chipped away the darker varnish to expose the lighter rock underneath. These petroglyphs served as art, messages, and a record of the people's history. How long it takes the varnish to form seems to depend on a number of factors mainly related to climate, but some of the oldest petroglyphs have almost disappeared because new varnish has formed. This suggests that it takes at least thousands of years to form.



Desert Varnish chipped away to form petroglyphs at Newspaper Rock in Petrified Forest National Park



Desert Varnish on the walls at Canyon de Chelly above White House Ruin