

Rapid Oxidation – Student Worksheet

Natural processes which change Earth's landscape include:

1. **WEATHERING** - Large lumps of rock are broken into smaller lumps.
2. **EROSION** - Smaller lumps move away from their original location.
3. **SEDIMENTATION** – Transported material is dropped as the moving force loses energy and are laid down to create a sediment.

Weathering

Weathering is a destructive process. Weathering of rocks takes many years, indeed for some hard rocks like granite and quartzite it may take thousands of years.

Oxidation – a common chemical reaction in the weathering process.



Exposing the fresh surface of a rock to oxygen in air can be the start of a chemical reaction where oxygen binds to rock minerals and starts to break down the rock. The whitish crust visible on this brown sedimentary rock is due to oxidation.

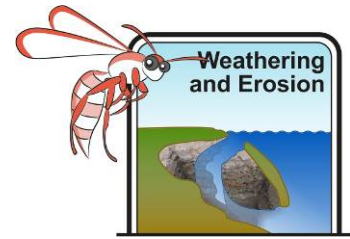


Aboriginal petroglyphs (rock drawing) often use the difference between the colour of the weathered outside of the rock and the unweathered underlying rock to define the engraved outline. This petroglyph is of a kangaroo and is from the Burrup peninsula.

Rapid Oxidation - Teacher Demonstrations

Since oxidation of rock takes a very long time, your teacher may have some faster examples of oxidation for you.

Example	Evidence of weathering by oxidation present



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Oxidation - Weathering working to our advantage

You may have noticed that iron left exposed to oxygen in the air rusts to a dark red/brown colour. The colour comes from rust or iron oxide. Weathered iron plays a major part in Western Australia's economic life.



In the magnificent red coloured Hamersley Ranges that produce much of Western Australia's iron ore, ancient sea sediments were formed from weathered volcanic rocks rich in iron minerals. They were turned to rock about 1.6 to 1.8 million years ago and are now called BIFs or Banded Iron Formations.

The fresh rock consists of layers of greyish hard silica rich rock interleaved with dark iron rich bands. Over millions of years the iron rich bands have oxidised to rust. In times past, when the climate was warmer and wetter, major oxidation weathering of these rocks took place. Warm weather also leached out silica bands and the rusty iron rich weathered (oxidised) rock tumbled

downhill to fill river channels and low lying areas below. This secondary enrichment turned already iron rich rock into even richer rock that is easier to excavate and to refine into steel.



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