

Question #84589, Chemistry /Inorganic Chemistry

Why it is advisable to always reduce the minerals in order to extract metals from them? Give the specific properties of magnalium.

Answer

The ore or the mineral usually contain different metals. But the point is that the metals don't exist in a free state. Usually they exist as an oxides, for example :

Bauxite – Al_2O_3

Haematite – Fe_2O_3

Rutile – TiO_2

So the simplest thing you can do before extracting the metal is to reduce it or in other words to remove oxygen. For example : titanium is produced by turning titanium dioxide into titanium(IV) chloride and reducing it using a more reactive metal such as sodium or magnesium.

Magnalium is an aluminium alloy with 5% magnesium and 95% aluminum. This alloy is used in metallurgy as a reduction agent that removes oxygen and sulfur from the ores, giving insoluble in water oxides and sulphides, because both metals in the composition are active. Another reason of usage is that both metals and their compounds have low density.

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