

The physical properties of metals and their corrosion - lab report example

[Science](#), [Chemistry](#)



The Physical Properties of Metals and Their Corrosion

The paper "The Physical Properties of Metals and Their Corrosion" is a brilliant example of a lab report on chemistry. This experiment involved testing the physical properties of metals including brittleness and their hardness. The experiment also involved determining the corrosion on the metal.

Introduction

The purpose of this laboratory is to determine the physical properties of metals and the effect of corrosion on the metals. Further, this experiment also looks forward to determining the differences in physical properties of the metals and the resulting alloy. Some of the physical properties that can help in differentiating metals include their brittleness and hardness. Alloys refer to the combination of two different metals through melting together the metals. This experiment involves comparing the properties of copper and iron, and copper and its alloy brass.

Experimental section

An iron nail was put in a test tube in the presence of air and water. The reaction of iron with oxygen in the presence of water leads to the formation of iron oxide. The formed iron oxide is the name for rust, which is an illustration of occurrence of corrosion in the metal contained in the Iron.

Results

There was the formation of an orange coating that shows that there was a slight occurrence of rust.

Experiment II

Placed the iron nail in a test tube outside in the air then added saltwater.

Results

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There was the formation of a brown coating on the iron metal which illustrates the formation of extreme rust.

Experiment III

The test tube was dried then followed by addition of water and oil on top.

Results

There was no rusting witnessed

Experiment IV

An iron nail was dipped into potassium chromate followed by putting it into a test tube containing distilled water. Few Sulphuric acids (H_2SO_4) was added into the test tube. Few drops of potassium ferricyanide acted as a test for rusting.

Results

There was no observational change on the iron nail.

Discussion

The experiment shows the required condition for rusting. In the first experiment, there was a presence of water and air which allowed the nail to rust. Experiment II also results in an orange coating on the nail meaning rusting occurs due to the presence of the salty water. This implies that salty condition is responsible for speeding up the rusting process. The use of oil, as an inhibition for oxygen entering the tube, confirmed that rusting could not occur without oxygen.

Questions

Copper or iron, which got hot faster?

Copper got hot faster

Which would be the best electric wires?

Copper because of higher conductivity

Copper or brass, which got hot faster?

Copper

Are alloys better or poorer conductors than their constituent metals?

The alloys are poorer conductors of than their constituent metals

Hardness

Copper or iron, which is harder?

Iron is harder

Copper or brass, which is harder?

Brass is harder

Are alloys usually harder or softer than their constituent metals?

The alloys are always harder than their constituent metals.

Brittleness

Number of times copper wire was bent before breaking 21

Number of time iron wire was bent before breaking

Properties of alloys

Corrosion

Indicate the relative degree of corrosion in each of the four systems and explain the results

Only a small amount of rust occurs

Lots of rust occurs

There is less corrosion

There is much of corrosion occurring.

A) Metals

Conductivity

Copper conducts more heat than iron. Copper also conducts than brass which is the alloy of copper. The alloys allow poorer conductors than their constituents.

In terms of hardness, iron is always harder than copper and brass is also hard than iron. The alloys are always harder than their constituent metals. In terms of brittleness, copper is always more brittle than iron hence it always breaks three-time compared to the latter.

Conclusion

The lab experiment was successful since it went successful with the achievement of the desired results. The experiment helped in yielding result about the conditions necessary for rust. It shows that there is a need for oxygen in order for rusting to occur. The use of oil, as an inhibition for oxygen entering the tube, confirmed that rusting could not occur without oxygen. The experiment also showed that salty condition was responsible for accelerating the rate of the rusting process. Further, the experiment also helped in comparing the properties of different metals and to the respective alloy.