

29.

a i. Steel is used to construct ships.

ii. Aluminium is a passivating metal. This means that it forms an oxidising layer on the metal it's coating, stopping O_2 or H_2O from getting through and corroding the metal.

bi. A metal such as zinc is commonly used as a sacrificial anode.

ii. Sacrificial anodes are added to metal-hulled ships ~~so~~ because it's more reactive than the metal underneath. The sacrificial anodes react more readily or in preference to the metal it's coating, stopping the metal-hulled ships from rusting or corroding faster.

~~if the sacrificial anode is scratched~~



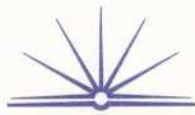
C. Adding other elements to iron can make the iron ~~less reactive~~ more reactive when exposed to oxygen or water.

The pure the iron is the less reactive it becomes.

~~The~~ The uses of ~~it~~ it of steels is that it will make the steel rust or corrode much faster than normal, causing it to be replaced often, which can be expensive.

However they do use other elements in iron for steel because they have found ways where the steel can be protected from oxygen or water such as galvanising. This is a much cheaper way for ships.

Adding other elements to iron makes it brittle, less manageable, and less resistant to corrosion and rust. The melting point and boiling point ~~increases~~ becomes lower, and with this it is easier to work with.



di Corrosion is when a metal loses its mechanical strength and starts to fall apart on the presence of O_2 or H_2O .

ii. Put the different metals you want tested in test tubes then add the environment you want them to be tested in, such as just O_2 or all H_2O . Always have a standard to compare to. Leave the test tubes for a day or two and then see the different rates of corrosion on the different metals under the environments you picked.

iii. Reliability could be improved if you did it a number of times then approximating the procedure.

Accuracy could be improved by using more accurate equipment, or, the metals used are cleaned so as no rust is on them before use.

Also ~~at~~ where you leave the test tubes

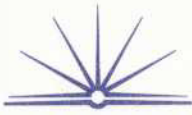
so they are not tampered with by other people.

- e. When an artefact is found in the ocean from a ship wreck it is carefully managed so as not to break it.

The artefact is still left in sea water until it's taken to the place where it begins the cleaning process.

Upon careful observation, the artefact is left to dry to get rid of the salt from around it. Not all the salt can be removed though, because inbetween the artefacts the salt still stays.

~~After~~ After the drying out of the artefact, electrolysis is used to remove the remaining salt and any water that has formed since the drying out. With the electrolysis it also removes ~~and~~ any other impurities that has been sustained on the



artefact.

The procedure after electrolysis is the use of chlorination. With chlorination it get rid of small particles and bacteria that form on the artefact. It also helps to stabilise the ~~art~~ artefact so no salt or other impurities form back on the artefact.

~~After this the artefact~~

After these processes, the artefact is cleaned and put back together so the public can see the preserved ~~art~~ artefact.

Through these processes, it takes many days for each step.