

What liquid will cause metals to corrode or rust faster



I have decided to base my experiment on four different types of metals and four different liquids. I will be using a penny, nail, paper clip and a needle as my four metals. My four liquids will be vinegar, bleach, lemon water and salt water. To get started, the metal contents should be established. Today's pennies are mostly made of zinc with a thin layer of copper overcoating. A nail is a form of carbon steel or black iron. Paper clips are made from a low grade steel. A needle is made from stainless steel.

Examining the liquids and lemon juice is a citric acid. It should have corrosive actions on some of the metals, but not all. I believe that it will not affect this penny, except to clean it and shine it. I don't think it will affect the paper clip either. I think that the only way it will have any affect on the needle or paper clip, will be if they were damaged or scratched. Corrosion would be caused if that were the case. I also think there were not to be any corrosion to the nail with lemon juice. Vinegar water is used to clean things.

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I don't think the vinegar will rust a needle, paper clip, nail, or penny the fastest. There will be a minimal affect on the steel material. The carbonation of water, vinegar and oxygen on the air will form iron oxide on the nail, the scientific name for rust. Vinegar will remove any corrosion and clean the penny. Bleach is a chloride, like vinegar, I think the affects will be minimal on most of the metals. Since bleach contains oxygen, it would be most likely the liquids to rust the nail the fastest. The affect on the penny will be more like a cleaning agent, like vinegar and lemon juice, than as a corrosive.

I think that salt water will be the best Corrosive liquid. Salt water will cause corrosion faster because the salt will act as a catalyst steel up the change and erode the materials. I feel it would corrode all of the metals. The needle may be the only metal it may not affect it, like some other liquids, it may not rush unless the metal has been scratched deep. In conclusion, I think that salt water will be the most corrosive liquid and the nail made from carbon steel will be the most corrosive metal, in the least amount if time.