

Corrosion of Metal Objects: Part II

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Many items brought in for framing are made of, or contain parts of, metal. Last month, I shared some facts about: copper/copper alloys (brass and bronze, specifically) and iron. This month, I've written about other metals you may encounter.

Pewter & Lead: By itself, pewter is too soft a metal to be useful. It is an alloy of mainly tin (corrosion-resistant) with a small part antimony (for strength), and a trace of copper (for flexibility). Pewter is easier to care for than silver or copper items, and won't rust.

Before 1800, pewter was made from tin, copper, lead, zinc and/or bismuth in various proportions. No lead is used in modern pewter. Craftsmen discovered that the addition of antimony and the exclusion of lead made a stronger, safer metal.

All the alloys that go into pewter are very soft and can be easily bent, dented, and scratched so special handling is recommended. Do not use ordinary metal polishes on pewter.

Pollutants can be destructive to lead. Formic acid reacts with it and forms white crystals of lead formate, which can be toxic when inhaled. Lead is relatively porous and can be

contaminated with organic acids that can result in crystal growth even after the source of contamination and original crystals are gone.

When corrosion on pewter occurs, a loose white powder forms on the surface. Acids from such things as wooden storage or display units, cardboard, poor quality paper, and acetic acid from some cleaning products can produce this.

Silver: Silver is a strong metal but can tarnish quickly. Sulfur producing materials should be kept away from silver objects. (For more information on silver, see *PFM*, Nov., 1997.)

Plated Metals: Plated metals are created when two different metals are bonded together. Common pairs are: copper and silver; copper and gold; copper and nickel; copper and tin; iron and tin; iron and zinc; and iron and nickel. Plated metals are particularly prone to corrosion. These bonded metals need only a salt and some moisture to start the corrosion process. It is most often found on areas with damaged or defective plating. Blistering or pitting can occur when corrosion grows on the underlying metal. Loose powder is another sign.

Coins & Metals: These objects can contain a wide variety of metals and alloys, so care should be taken to avoid all types of corrosion. Plastic containers for coins can be a problem. Polyvinyl chloride (PVC) products should be avoided because of the tendency to off gas acidic fumes. Enclosures made from polyester (Mylar) or acrylics are usually considered safe.

Metal corrosion can be active or inactive. Some objects may have corroded, but remain stable, while others are actively corroding. Preventative maintenance is important. Only gold and platinum require little or no maintenance.

Inactive corrosion is a layer of stable tarnish or color change that forms to protect the metal underneath (as with the green color that forms on copper). With active corrosion, metal is continually being lost and steps must be taken to slow or stop deterioration. Flakes or loose powder are signs of active corrosion. High humidity or pollutants can start the process. ■