



## GLOSSARY OF PLATING TERMS

**Acid gold:** A mildly acidic process that is used when plating from 7 to 200 mils of gold. The deposits are usually 23kt purity, and it is not usually used as the final finish.

**Antique:** A process which involves the application of a dark top coating over bronze or silver. This coating, either plated or painted, is partially removed to expose some of the underlying metal.

**Anti-tarnish:** A protective coating that provides minimal tarnish protection for a low cost.

**Barrel plating:** A type of mass finishing that takes place in a barrel or tub. Barrel plating is usually requested for very small pieces where pricing must be kept low.

**Black nickel:** A bright or matte, dark plating process that is used to highlight antique finishes. Or, when used as a final color it will range from dark grey to light black. A bright black nickel will yield the darkest color.

**Bright finish:** A high luster, smooth finish.

**CASS testing:** The Copper-Accelerated Acetic Acid Salt Spray test is the same as the Neutral Salt Spray (NSS) test, except it is accelerated, with typical time cycles being 8 and 24 hours.

**Cold nickel:** A non-brightened nickel bath which replicates the original finish, that is, bright areas remain bright and dull areas remain dull.

**Color:** Describes the final top coating (flash) which could be white, silver, 14kt gold (Hamilton), 18kt gold, or 24kt gold (English gold). See "gold flash" and "cyanide gold."

**Copper:** An excellent undercoat in the plating process. Copper provides good conductivity and forms an excellent protective barrier between the base metal and the plate. There are three ways to plate copper: A copper strike promotes good adhesion and will activate the surface; a cyanide copper provides protection and good coverage, particular in pieces that have complex geometric shapes, and also promotes good adhesion; an acid copper levels the surface well, gives a very bright deposit, and

can be used as a substitute for nickel.

**Chromate:** A coating that provides moderate protection against tarnishing, primarily to enhance shelf-life.

**Cross-sectional analysis:** A destructive test whereby an item is mounted in a plastic resin, then cut to expose a cross-section of the plate. The thickness of the plated layers are then measured under a microscope.

**Cyanide gold:** Is used to apply the final coloration on gold. The thickness is usually no more than 3-5 mils. See "color" and "gold flash."

**Dark ruthenium:** A grey, non-tarnishing, hard precious metal color which is in the same family as rhodium.

**Dull finish:** A finish that has no brightness and looks like an older, worn piece.

**E-coat:** An electrophoretic coating that provides maximum protection for anti-tarnish and extended wear. E-coat is not recommended for use with "88 metal", a white cast metal which cannot withstand the e-coat's curing cycle and will usually deform. The average e-coat thickness is usually less than 5 microns and covers the entire piece as it is electroplated.

**Gold electroplate:** As defined by the Federal Trade Commission is a deposit of a minimum of 7 millionths of an inch of gold

**Gold flash:** A short plating cycle (less than 15 seconds) that is used for color or thin deposits of less than 3 mils. A flash allows the plater a quick and inexpensive way to have a variety of gold colors (14kt. to 24kt.) as a final finish.

**Green gold:** A colored gold finish that has a slight green hue due to the addition of silver as an alloy.

**Hand antique:** An antique process where colored lacquer is applied over the surface of the piece, then removed by hand from the raised surfaces.

**Heavy gold:** As defined by the Federal Trade Commission is a deposit of 100 or more mils of gold.

**Hollow objects:** Lightweight hollow items like hoop earrings or bracelets that trap solution when

submerged can create problems in the plating process because the trap solution will cause staining or tarnishing. A drainage hole in the piece will usually prevent problems.

**Hull-cell analysis:** A laboratory procedure that analyzes any bath by taking a small portion of the bath and plating from it. The laboratory technician then recommends additions which will improve the appearance of the plate.

**Humidity testing:** The purpose of humidity testing is to evaluate the performance and adhesion of the coating. The test takes place in a 100% humid chamber for 3-5 days.

**Imitation Rhodium:** A non-tarnishing, low cost white metal that has fair wear ability.

**Karat:** Indicates purity of deposit. 24kt consists of 100% gold; 18kt, 75% gold; and 14kt 58.3% gold.

**Karat clad:** Indicates a heavy gold deposit, 100 mils, that is a composite metal of two or more layers that have been electrolytically bonded together.

**Lacquer:** A paint, clear or colored, that is applied to an item.

**Leveling:** The microscopic filling-in of surface imperfections that results in the surface being smoother and more level than before the procedure.

**Matte:** A dull, non-bright finish

**Micron:** 40 mils, or 40 millionths of an inch

**Mil:** A millionth of an inch

**MIL spec:** The standard military spec for plating is 60 millionth of an inch

**Neutral Salt Spray test:** The purpose of the NSS is to observe corrosion of the preplate and/or breakdown or lifting of the top coat. The test takes place in a chamber for either 100 hours (standard MIL spec.) or 336 hours G.M. exterior spec.

**Nickel:** Usually the layer between copper and the precious metal finish. Nickel protects metallic objects from corrosion and promotes excellent leveling. A bright nickel give high brightness to the final

finish and a Watts nickel produces a dull matte finish.

**Nickel-free:** A type of hypo-allergenic plating. Generally, acid copper is substituted for nickel in the plating process, since about 10% of the population is susceptible to nickel allergies. Palladium is then used as a barrier coat between the copper and the top-coat.

**Palladium:** A non-tarnishing precious metal that is often used as an alternative for rhodium, although it is not as white. Palladium is also used as a barrier coat in the nickel-free process.

**Perspiration testing:** A test using artificial perspiration that measures the ability of a coating to resist corrosion.

**Physical Vapor Deposition (PVD or sputtering):** A dry vacuum process used to coat parts with ultra-hard zirconium and titanium nitrides.

**Plating:** Forming a layer of metal on an object from a plating solution.

**Post-finishing:** A procedure which is applied to an item after it is plated, for example, antique, chromate, or e-coat.

**Powder coating:** A clear or colored fine powder which is electrostatically applied dry and then cured in an oven to liquefy the powder and coat the entire item.

**Pre-finishing:** A procedure that is performed prior to plating to make the product suitable to receive the plate, for example, tumbling, vibrating or polishing.

**Rack plating:** Products are individually affixed, via a copper wire, to a plating rack. The rack is dipped into a plating bath, electric current is activated, and plating occurs.

**Rhodium:** An expensive, non-tarnishing, precious metal that has a good white color. Rhodium is a hard metal which provides good wear-resistance and is often used in two-tone finishes.

**Rose gold:** A colored gold finish which has a pink hue due to the addition of copper as an alloy.

**Russian gold:** The same as smut gold

**Satin:** A hand procedure which produces fine lines on an item prior to plating.

**Satin-relieve:** A hand procedure which removes some top color and exposes the colored layer beneath. Satin-relieving leaves fine lines and produces a dull, antique look.

**Silver:** An inexpensive, beautiful, white metal. However, silver tarnishes and needs a protective coating.

**Smut gold:** The addition of antimony to a gold bath to produce a black powdery finish that is easily removed with a mild abrasive to produce an antique finish.

**Smut silver:** The chemical tarnishing of a silver deposit to produce a dark, oxide finish that is easily removed by a mild abrasive to produce an antique finish.

**Stop-off:** The application of a plating resist to achieve a two-tone plating effect, usually gold and silver.

**Tarni-tan:** A type of anti-tarnish protection

**Thermal cycle testing:** Takes place in a computerized chamber where temperatures fluctuate from extreme hot to extreme cold over a long period of time (usually weeks). The plated finish or clear coat is evaluated for adhesion loss, cracks or fractures due to stressed deposit.

**Thermal shock:** The rapid change in temperature from hot to cold or cold to hot. Thermal shock can cause certain stones to crack during the plating process.

**Tubbing:** A pre-finish that is usually performed to brighten the item and takes place in a tub with detergent and steel shot.

**Tumbling:** A pre-finish that takes place in a rotating barrel with abrasive medium.

**Two-tone:** A plating process that produces a final finish that includes at least two different colors on the same piece.

**Vermeil:** As defined by the Federal Trade Commission is a deposit of 100 mils of gold over a silver product, with a nickel barrier between the silver base and the gold finish.

**Vibing:** A pre-finishing technique that removes metal and improves the surface finish of an item by smoothing it.

**X-ray fluorescence:** A non-destructive test to determine the thickness of various layers of metal on a part. Common elements measured are: copper, nickel, gold, silver, palladium and rhodium.