

**Age Hardening:** A two-step process for hardening and strengthening alloys. The process requires an annealing step at elevated temperatures followed by quenching to produce a super-saturated solid solution. A subsequent “aging” treatment at lower temperatures causes the formation of precipitates which harden and strengthen the metal.

**Alloy:** A metal composed of a combination of two or more chemical elements.

**Assay:** An analysis used to determine the presence, absence, or quantity of one or more precious metals contained in a sample.

**Annealing:** The process of heating and cooling to soften and make a metal more malleable.

**Casting:** The process of pouring molten metal into a mold. Also, the name given to the result.

**Centrifugal casting:** A casting process by which a mold is force-filled by rotation of the metal and the mold in a centrifugal machine.

**Drawing:** The process of shaping metal by pulling it through a hole of a specific shape and size and using tensile force to achieve plastic deformation of the material.

**Ductility:** The ability of metal to be deformed without fracturing.

**Enameling:** The process of using an opaque vitreous composition (paint) applied by fusion to a metals surface to create a colorful, smooth, glossy surface. DHF Co. recommends Fine Silver, 18K Yellow Standard, and 22K Yellow Standard.

**Extrusion:** Shaping metal into continuous forms, such as rods, tubing, or other cross section shapes, by forcing it through a die and using compressive forces.

**Fire-stain, fire scale:** An oxide that forms below the surface of copper bearing alloys such as sterling silver; when thick, the oxide is due mainly to overheating or unprotected heating. It is sometimes difficult to remove and can be avoided by painting the surface with flux before heating or by quick dipping, after subjection to heat, in a 50% solution of nitric acid and water followed by thorough rinsing in water.

**Fusing:** The process of heating a piece of metal until it starts to melt and join with another piece without the use of solder. When the metal begins to liquefy and move, the area where they are touching will join together.

**Grain-refiner:** An ingredient contained in some DHF Co. alloys to produce a finer grain structure. This improves the flow characteristics and allows the metal to fill more completely within the mold. This also increases the reusability of your karat gold castings.

**Hardening:** The process of making alloy, as hard as possible. Hardening metal can be done by heating it or simply by working with the metal.

**Heat treating:** A process of hardening, tempering, or annealing steel or other metals.

**Hydrogen:** A colorless, odorless, tasteless, flammable gaseous substance that is used to melt metal.

**Karat (Kt or K):** The gold content of metal; refers to the quality of purity in Gold.

*24 Karat (24K) – Pure Gold or Fine Gold.*

*18 Karat (18K) – 75% Pure Gold and 25% alloy.*

*14 Karat (14K) – 58.33% Pure Gold and 41.67% alloy.*

*10 Karat (10K) – 41.67% Pure Gold and 58.33% alloy.*

**Malleability:** The property of metal that allows it to be formed by hammering or rolling processes.

**Millimeter:** A measure of length widely used in the jewelry industry. There are 25.4 millimeters in one inch.

**Pennyweight (DWT.):** Is a unit of Troy weight for precious metals. There are 20 pennyweights in one troy ounce.

**Pickle:** An acid solution used for the removal of oxides or “flux glass” from metal surfaces, usually after soldering. Pickle is a mixture of about 9 parts water and one part sulphuric acid. Used by jewelers for cleaning gold and silver work after soldering. Pickle solutions are preferably used hot in copper pans or heat-resistant glass beakers. As of late, a commercial pickling product in the form of granules has replaced the sulphuric acid.

**Platinum:** One of the noble metals, platinum was discovered in Europe in the mid 1700s. The metal has a high melting temperature as well as a high density factor when compared to Gold and Silver.

**Plus Alloys:** DHF Co. alloys which have an ingredient added to produce as-cast brightness and in some applications eliminate the need for stripping (bombing).

**Porosity:** A catch-all word for casting trouble and comes in many forms. The most common porosity is very small bubbles on or just under the surface. Sometimes they will wait until the final polish to make their appearance. See page 17 for more information.

**Propane:** A colorless, easily liquefied, gaseous hydrocarbon, used for heating and melting metal.

**Reticulation:** The process of heating the surface of Sterling Silver or another copper based metal to a point where the metal flows along the surface. The end result is a piece of metal with a rippled finish.

**Scrap:** Metal unsuitable for direct use that can be reclaimed by smelting and refining.

**Solder:** An alloy of metal with a low melting point intended to join surfaces of metals.

**Sprue:** The gating network providing the passageway for liquid metal to flow through in casting.

**Tarnish:** Surface discoloration of metal due to the formation of a thin film of oxide or sulfide when the metal is exposed to air or gases.

**Welding:** The process of uniting two metallic parts by heating and allowing the metals to flow together or by hammering or compressing with or without previous heating.



## David H. Fell & Company, Inc.

*Precious Metals Refiner and Manufacturer of Quality Mill Products Since 1973*

(323) 722-9992 • Fax (323) 722-6567 • Call Toll Free: (800) 822-1996

www.dhfco.com • E-mail: info@dhfco.com

Daily Markets – Recorded: (213) 627-GOLD (4653)

On the web: www.dhfco.com



### For US Mail

PO Box 910952  
Los Angeles, CA 90091-0952

### For FedEx & UPS

6009 Bandini Blvd.  
City of Commerce, CA 90040  
(323) 722-9992  
Fax (323) 722-6567

### Downtown Annex

550 S. Hill St., Suite 560  
Los Angeles, CA 90013  
(213) 623-1868  
Fax (213) 627-2987