

藝 · 金工

金工基本技法
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工具物料指南
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首飾製作教學

打開金工製作的神秘大門，
傻瓜也能輕鬆地造出專屬的首飾。

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工具介紹

TOOLS and EQUIPMENT



工具介紹

量度與記號工具 Measuring & Marking Tools



電子式游標卡尺
Electronic Digital Caliper
量度材料或工件的呎吋



戒圍量圈
Finger Gauge
套在手指上以量度呎吋



戒圍量棒
Ring Mandrel Measure
套上指環以量度戒圍



軟尺
Flexible Tape Measures
量度手腕呎吋



筆式束鉗
Scriber
配上鋼針，於金屬材料上繪
劃線條



金屬材料

METALS



金屬材料 Metals

開始金工製作，首先就要有「金」在手。所說的並不是黃金或鉑金等高級貴金屬，而是銀、銅等，在金工藝術初學者都可負擔的價錢範圍內能買得到的金屬。在香港，要買到所需呎吋的銀或銅並不困難，只要對金屬有基本的認識，就可以輕易地為使用哪種金屬下決定。在購買時，**可以向店家說明需要的純度**，例如 925 銀是一般標準規格，但若想使用較柔軟的銀，也可請店家為你製作 950 銀。除此之外，也應該**預先準備設計草圖**，以便預算購買的份量、厚薄與呎吋。

To start metalsmithing, we must first have some "metal" on our hands. What we are talking about are not high-grade precious metals such as gold or platinum, but metals such as silver and copper that are within a price range that beginners in metalsmithing can afford. In Hong Kong, it is not difficult to buy silver or copper. As long as you have some basic knowledge of metal, you can easily decide which metal to use. At the time of purchase, **you can explain your desired metal purity to the store**. For example, 925 silver is a general standard for jewellery making. If you want to use softer silver, you can also ask the store to make 950 silver for you. Besides, you should also **make a sketch of your design in advance so as to budget the weight, thickness and length of the purchase**.



金工基本技法

BASIC TECHNIQUES



焊接 Soldering

將不同的工件連接在一起、讓平面的工件變成圈狀，或使不同的金屬合二為一等，就需要使用到焊接的技法。

透過火源加熱，配搭助焊劑與焊料，就能成功焊接。過程中，**火源溫度控制是最關鍵的因素**，而焊料有高低溶點之分，若是在同一工件上需要作先後多點焊接的話，則應使用不同溶點的焊料，由高至低按**次序使用**。若只有一點需要焊接，也應使用中溫或高溫焊料，以銀焊料為例，其溶點越高，則含銀比例也越高，可以減少焊接位置在日後變黃的機會。此外，助焊劑常見的有粉狀與膏狀，主要成份都是硼砂與硼酸，所以可以按自己的喜好選擇使用，都可以得到很好的效果。

Soldering is a process in which two or more spots are joined together by melting and putting some solder into the joint, the solder have a lower melting point than the adjoining metal.

By using the heat, flux and solder, soldering can be successfully done. In the process, **the temperature control of the heat is the most critical factor**. While solder has high and low melting points, **to solder several spots successively on one workpiece, solder with different melting points should be used in the order from high to low**. Even if there is only one point to be soldered, a medium temperature or high temperature solder is preferred. The higher the melting point of silver solder, the higher the silver content ratio, which can reduce the chance of the soldering position from turning yellow in the future. In addition, flux usually comes in

powder or paste form, the main components are borax and boric acid, you can choose which to use according to your own preferences, both performs the same.



將需要焊接的兩點放近。

Bring two points which need to be soldered close to each other.



塗上助焊劑。

Apply flux.



將整個工件平均微火加熱。

Heat the entire workpiece evenly with a low heat.



持續加熱，留意金屬色澤變化，讓工件的溫度比退火時高一些。

Keep heating and pay attention to the change of the metal colour, until the workpiece temperature is higher than annealing.



放上焊料會立即熔化，保持以火源最熱點加熱焊接位置，讓焊料流動。

Solder will melt immediately, concentrate the heat at the spot to be soldered and let the solder flow.



1 – 1.5 秒後移開火源，讓焊料回復固態。

Remove the heat after 1 to 1.5 seconds and let the solder return to a solid state.



焊接完成後，會留下黑色或咖啡色的氧化物及助焊劑結晶。

After soldering, black or brown oxide and flux crystal will be left on the metal.



為清潔工件，將少量明礬與清水放進燒杯，沸騰後放入工件煮約 1 分鐘。

To clean the workpiece, put a small amount of alum and clear water into a beaker, and keep heating for about a minute after boiling.



完成清潔後，工件會呈現霧白的色澤。

After cleaning, the workpiece will have a foggy white colour.



焊接技巧看這裡
Soldering Demonstration

如果你已經動手嘗試焊接，但覺得有點難控制，在這裡偷偷給你分享一些**焊接高手才懂的小秘密**！

If you have tried soldering, but feel it's a little difficult to control, let me share some **secrets that only soldering experts use!**

1. 工件需整體平均加熱，不能只集中加熱需要焊接的位置，直至焊料溶化，才應稍作集中加熱。
The whole workpiece should be heated evenly, not only at the spot to be soldered; only when the solder melts, the heat should be concentrated.
2. 焊料需放置準確，與焊接的兩點均有接觸。
Place the solder accurately and ensure it contacts with both soldering spots.
3. 焊接的位置，必需有足夠的接觸點。假如都是曲面或表面不平均的話，應先用細銼稍作修整。
Where soldering is needed, there must be enough contacting surface. If all of them are curved surfaces or the surfaces are not even, you should use a fine file to flatten the surface first.
4. 在焊接前，不要重覆加熱焊料，例如將焊料集中熔化成球等，這樣會使焊料的熔點推高，增加了焊接需要的時間，導致工件過熱。

Before soldering, do not pre-heat the solder, e.g. melting the solder into a ball, etc. It will higher the melting point of the solder, thus increasing the time required for soldering, and will overheat the workpiece.

5. 明礬經重覆使用會無效，如果發現工件經煮後沒有變成霧白，則代表是時候補充明礬。

Repeated use of alum is ineffective. If it is found that the workpiece does not turn into foggy white after boiling, it means it is time to get some new alum.