








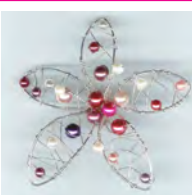
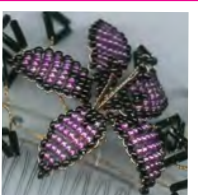






Wirework - Choosing The Right Gauge & Wire Hardness

Wire is available in a multitude of different ductilities (or temper), diameters and finishes. Choosing the right one for the job will give you a great result - the wrong one will prove frustrating and ultimately the work will not be fit for the purpose. This guide should help you to choose the right gauge for your project.

Wire Gauges

Round wire is available in many diameters - the diameters are denoted in millimeters or sometimes in the UK as SWG (Standard Wire Gauge). In the USA they use the Browne & Sharpe (B&S) system which often is just referred to as 'gauge' which can be confusing so if you are working from a book check where it was published. With both the SWG and B&S systems the larger the number the thinner the wire becomes. The table below gives you conversions across the three wire sizing systems and general uses for the wire gauges - before selecting your wire also read the section below on 'Ductility and Wire Hardness' as the hardness of a wire is as important as the gauge and can drastically affect the final work.

CONVERSION CHART WITH GENERAL USES

<u>Approx</u>	<u>Diam.</u>	<u>SWG</u>	<u>B&S</u>	<u>General Uses</u>		
	0.2mm	36	31	Knitting and crochet with fine needles and hooks; machine knitting; binding tiara bands; soft stamens; fine weaving; filigree infilling; lace making, small 3D beaded animals.		
			0.2mm soft wire used for weaving beads between the thicker wires of a fancy tiara frame		0.2mm soft wire used to make very fine twisted stamens that will sway in a light breeze and right - loosely woven and twisted to make a delicate necklace	
	0.34mm	28	27/28	Knitting and crochet with larger needles and hooks; heavier stamens on tiaras; making branched stamens and sprays; binding thicker wires; soft weaving to flex around curves and plaiting.		
			0.315mm soft wire used to bind large beads together into a flower shape		Seed bead flower made from 0.315mm soft wire and right - the same wire hand knitted to make a necklace centre piece	
	0.4mm	26	25/26	Twisted spray necklaces; binding; formal tiara stamens; small non-supporting structures, 3D woven shapes - the most useful thickness for fine twisting and simple weaving.		
			0.4mm soft wire used to make formally arranged-branched stamens on a tiara		0.4mm soft wire used to space beads across the heavier wire petal shapes. Right - a woven lily flower on 0.4mm soft wire	
	0.5mm	25	24	Available in many colours - use soft 0.5mm for venetian style flowers, twisted stamens, closely wrapped bindings to give texture and colour to heavier structural wire. Use the half-hard for fine linking with wrapped loops.		
			Size 11/0 seed beads and 0.5mm soft wire make a Venetian style lily flower		Left - use 0.5mm soft wire to make stamens on a necklace which will resist 'wear and tear' better than the gauges used on a tiara. Right - 0.5mm soft bound over a thicker structural wire to make a vine effect	
	0.6mm	24	22	Headpin diameter - substitute for eyepins; small loop chain making ie. earrings; wrapped loops for heavier beads; fine non-supporting spirals and coils on tiaras.		
			0.6mm half-hard wire used to make a 2cm diameter daisy motif for a tiara		Substitute eyepins for 0.6mm half hard wire to save money on linked earrings. Right - decorative loops on the edge of a beaded brooch with 0.6mm half-hard 0.6mm wire	

Continues over.....

Approx

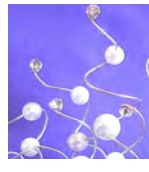
Diam. SWG B&S General Uses

0.8mm 22 20

Supported spirals on necklaces and earrings; non-supported on tiaras; small filigrees; tiara frames; flat curls; wrapping beads; chain making for heavier projects; open shapes up to 10mm; hoops up to 35mm for earrings etc - the most useful gauge for general use.



A 25mm simple filigree made from 0.8mm half hard wire suitable for chandelier style earrings



Left - 0.8mm half hard used for spirals on a tiara where the wire can support its own weight plus beads. Right - simple curves in 0.8mm will hold their shape as a necklace link if supported through the central axis



0.9mm 21 19

Only available as a soft tempered wire but in many colours - use for coloured substitute for 0.8mm half-hard wire in linked designs; tiara coils and spirals; flat coils etc



Left - small fancy links in 0.9mm Note the links are a 'closed shape'. Right - straight links can be longer (up to 35mm without bending out of shape. Far right - straight links with a loop to take extra decoration.



1.0mm 20 18

As for 0.8mm but will take a greater load before deformation occurs.

1.2mm 18 16/17

Will retain shape under heavy loading - does not require extra support for open shapes up to 40mm. Tiara bands; articulated torques; open spirals and curls; scrolling for necklaces and earrings and large filigrees; supports for finer wires; mobile hangers for light weight projects.



1.2mm makes a sturdy tiara base - use a double layer for fancy designs. Right - Fancy scroll shapes 25mm in diameter will hold firm to give pattern and structure to a decorated torque.



Right - a decorated torque. 1.2mm half-hard makes a sturdy torque base.



1.5mm 14 15

As heavy a wire as you can manage with round nosed pliers - will support a large open shape - solid torques; lampshades; large mobile hangers; framing up large structures

Some books refer to heavier Browne & Sharpe gauges - these are only practical to use in a soft wire - as a rough guide BS12 is 2mm diameter; BS10 is 2.5mm and BS8 is 3.2mm.

Ductility, Temper Or Hardness

When making your wire selection you will need to balance the diameter of the wire against the ductility, hardness or temper of the material it is made from. In general wire is available in soft; half-hard; hard or spring tempered. Wire, being made of metal, reacts to heat and work (bending, hammering and stretching) changing its physical properties - this can be used to our advantage.

In general applying heat to a wire will soften it - this is called annealing - however this is not appropriate with plated or coloured wire as the surface will either blacken (oxidise) or show heat patterns which spoil the finish. However you will find that as you work the wire in your hands you will generate a little heat which makes the wire a little more malleable without discolouration. As you work the wire more and more the metal will begin to 'work harden' ie. it stiffens and becomes harder which means that it will retain its shape more readily. However if you take the wire beyond a certain point it becomes brittle and will break. The art of wirework with plated wire is to choose the correct gauge and then take it as close as you can to the stiffened state, without transgressing it, to give you a firm shape without breakage.

You will find **half-hard wire** the most useful for the majority of projects - if you choose the right gauge it will harden up just enough as you use it to hold the form that you need. If you need to do a lot of twisting (ie. a lot of work) in the project use a **soft wire** but in a slightly heavier gauge. If you want something very rigid without any bending at all use a hard wire or a thicker version of the half-hard.

Spring tempered wire is very difficult to bend out of the coil shape it was put into and will snap if you force it. **Memory wire** is a spring tempered wire often used to make quick and easy designs - use a 'Memory Wire End Cap' bead (Spellbound Codes FN201 and FN202) to close off the end or simply roll a small loop at the end of the wire to secure the beads - no clasp is necessary as the wire will spring to fit.



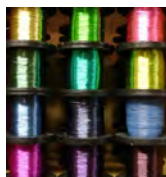
Silver Plated & Gold Plated Copper

Available in Half-Hard & Soft Diameters - 0.2mm, 0.4mm, 0.6mm, 0.8mm, 1.0mm, 1.2mm, 1.5mm



Coloured Copper in Half-Hard Temper

Diameters - 0.3mm and 0.5mm



Coloured Copper Soft Temper

Diameters 0.2mm, 0.315mm, 0.5mm, 0.7mm, 0.9mm



Pre-Knitted Tubular Coloured Copper Wire

Wire diameters - 0.1mm, 0.2mm and 0.2mm coarse knit



Memory Wire

Available in four coil diameters - finger ring, bracelet, bangle and necklace