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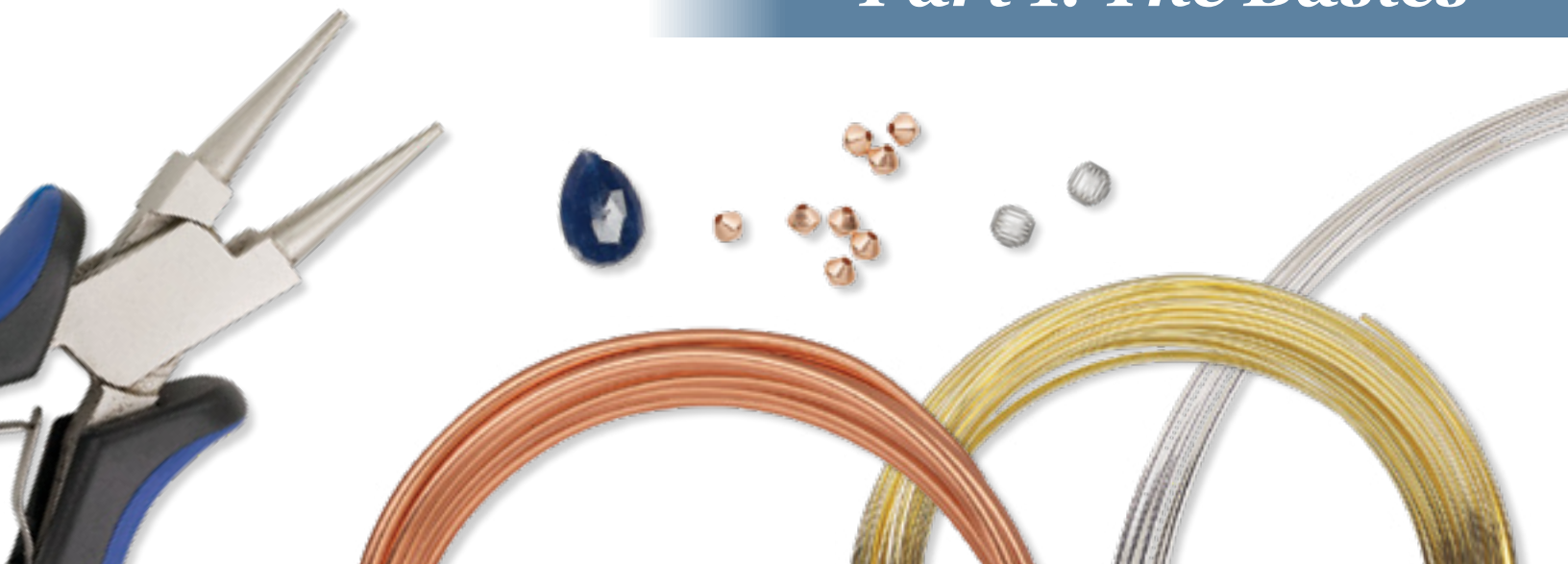
Design Idea PD4C

All About...

Wire

for Jewelry-Making

Part 1: The Basics



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All About Jewelry-Making Wire

Discover the basics of wire-wrapping wire and how to select the right wire for your projects. Learn the meaning of dead-soft, half-hard and full-hard and the benefits of each, along with the different gauges and shapes.

Find additional resource gems sprinkled throughout – just look for the teal boxes!

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All About Jewelry-Making Wire

Wire is an integral component of jewelry. Whether you're wire wrapping, creating coils, weaving or any other technique, the right wire choice will make your life easier. But, how do you know which wire to choose? In this article, learn how hardness, gauge and more can affect your results.

Design Idea NH2T

Hardness

Hardness is the measure of how malleable the wire is. The most used wires in wire working are dead-soft and half-hard. There is also full-hard and memory wire.

Dead-soft wire is easy to bend and can be manipulated easily without tools. Metal of this hardness does not form sharp angles and will not hold shape well. Dead-soft is best for wire weaving, coils and spirals, or wrapping around a base.

Half-hard is the sweet middle spot. This wire is fairly easy to bend, can be formed into sharp angles and will retain shape. This is the most used wire for wire-wrapping and creating ear wires, jump rings, open loops and clasps.

Full-hard is more difficult to bend and can be a bit brittle if bent too far or too many times. Full-hard wire retains shape exceptionally well, even under pressure. Full-hard metal wire is often used as a frame for wrapping and creating clasps and bails.

Memory wire is very hard and is designed to stay in a factory-created shape. The coiled shape of memory wire allows for bangles, necklaces and rings to easily be created. Special memory wire cutters and pliers are recommended to avoid damage to your regular tools.

Design Idea L33N

Design Idea NB2M

Relative Hardness

The previous descriptors are how all metal hardness is described but not all metals are created equal. Dead-soft sterling silver will not feel and work the same as dead-soft 14Kt gold wire of the same size.

When making ear wires, dead-soft fine silver is a poor choice. It won't hold its shape and you'll work-harden with little results. Consider which metal alloy you're using, not just the hardness. Textured wire in the same metal also gains a slight edge on hardness, giving it a bit more rigidity when designing. This also applies to color-coated wire as opposed to base materials, such as how raw copper Zebra Wire™ will be slightly softer in temper if compared to colored Zebra Wire with layered enamel coatings.

The following lists metals from softest to hardest in terms. Notice how the order changes from temper to temper.

Softest to Hardest		
Dead-Soft	**Half-Hard**	**Full-Hard**
1. Fine Silver 2. Copper 3. Rich low brass 4. Gold-filled 5. Sterling silver 6. 14Kt yellow gold	1. Fine silver 2. Copper 3. Sterling silver 4. Rich low brass 5. Gold-filled 6. 14Kt yellow gold	1. Fine silver 2. Copper 3. Sterling silver 4. Rich low brass 5. Gold-filled 6. 14Kt yellow gold

Design Idea NA3W

All About Jewelry-Making Wire: Video

Discover the basics of beading wire and how to select the right wire for your projects. Patti will teach you the meaning of dead-soft, half-hard and full-hard and the benefits of each, along with the different gauges and shapes. Watch the video:

To help you select the best wire for your task at hand, our jewelry designers weighed in on how some of the wires available at Fire Mountain Gems feel when working with them:

Softest to Hardest
Aluminum and dead-soft copper
Dead-soft sterling silver
MICROWrap™ nylon-coated stainless steel
Zebra Wire™ raw copper
Wrapit® copper
Sterling silver-filled dead-soft
Half-hard sterling silver and gold-filled
Wrapit nickel and bronze
Full-hard sterling silver and gold-filled
Half-hard stainless steel
Memory wire

Hardening Wire

Work-hardening is the process of wire becoming more rigid with manipulation. On a scientific level, you have moved the metal's molecules closer together. As you work with metal, the harder it will become. It is best to work-harden as much as possible before shaping since it can become increasingly difficult to work-harden after your piece is finished. While working on your piece, check the hardness often so your metal doesn't become too brittle and break.

Ways to specifically work harden include:
- Pulling wire straight with nylon-jaw pliers or polishing cloth
- Tumbling with steel shot
- Hammer with a rubber mallet or jewelry hammer on a steel block
- Twisting
- Coiling and uncoiling
- Pulling through draw plates

Dead-soft wire can be work-hardened if the core is changed, but there are limits. Hammering and other methods will work-harden the outer layers to a small degree, but it does not alter the core and so the wire remains soft. Some metals, such as aluminum, are always soft and therefore not always labeled with a specific hardness.

Softening Wire

To soften metal, you loosen the molecules up through the process of annealing. Annealing is a process of heating and cooling resulting in more flexible wire. When annealing, metal oxidizes quickly and a pickling solution is used to clean the metal back to pristine quality.

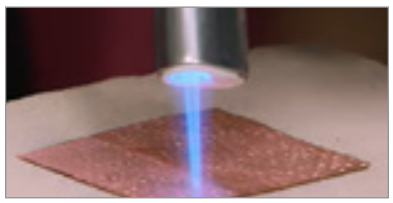
Work-Hardening Metal

E526

How to Straighten Wire

L63K

Annealing Metal



Video K71D

Shape

Wire shapes aren't just for looks–certain shapes are best used for certain techniques and types of jewelry.

Round

Round wire is the universal wire and works for most applications. It doesn't have an edge and if it gets twisted, you'll never know. There are no edges to mar and it's a great choice for cabochons or when you will be crossing the wire over itself.

Half-Round

Half-round is a favorite for creating ring shanks and wire-wrapping since there is a flat edge that will lie flat against skin, square wire frames, cabochons, etc. It works well for "hugging" things such as another wrap, piece of wire or object.

Twisted

Twisted decorative wire is great for beading and wire-wrapping projects.

Square

With four flat sides, square wire offers a beautiful, beveled quality that gives more flash to your piece. Used in bundling, it is often seen when making bangles and wrapping cabochons.

Rectangular/Flat

Rectangular or flat wire is mostly used for creating bezels.

Shop by Shape

- Round
- Square
- Half-Round
- Twisted Square
- Flat
- Twisted Round
- Textured Flat
- Textured Round
- Twisted Flat
- Low Domed
- Oval
- Triangle

Design Idea NE2X

Gauge

The size of wire is designated with gauge. Findings made with wire, ear wires, head pins and jump rings are all measured by the same gauge system. The most confusing aspect of gauge is that it can seem backward—the smaller the gauge number, the thicker the metal is. For example, an 18-gauge (1mm) wire is twice as thick as a 24-gauge (0.5mm) wire.

The chart shown on this page depicts standard North American wire gauges, but this is not a worldwide measuring system. In other parts of the world, wire and metal sheet are labeled by their metric measurement. Use this handy Wire Gauge to Inches and Millimeters Conversion chart to help with conversion, so you get the right wire size.

Sometimes gauge, rather than hardness, is the starting point for what you're looking to design. Below you'll find some of the preferred techniques for specific gauge sizes:

Techniques and Gauge Sizes
Wire-Wrapping Gauges 14, 16, 18, 20, 22, 24, 26
Making Jump Rings Gauges 14, 16, 18, 20, 21, 22, 24
Coiling Gauges 22 - 30
Making Head Pins Gauges 20, 21, 22, 24, 26
Making Ear Wires Gauges 20, 21, 22
Weaving (knitting, Viking knit, crochet) Gauges 26, 28, 29, 30

Precious Metal Wire Performance Results Chart

What you can and cannot do with your precious metal wire shouldn't have to be guesswork. Let this handy chart guide you on the dos and don'ts of working with precious metal wire.

E12K

Wire Gauge to Inches and Millimeters Conversion Chart		
Gauge	*Inches*	*Millimeters*
10	0.1020	2.5900
11	0.0910	2.3100
12	0.0810	2.0600
13	0.0720	1.8300
14	0.0640	1.6300
15	0.0570	1.4500
16	0.0520	1.2900
17	0.0450	1.1400
18	0.0400	1.0200
19	0.0360	0.9100
20	0.0320	0.8100
21	0.0280	0.7100
22	0.0250	0.6400
23	0.0230	0.5800
24	0.0200	0.5100
25	0.0179	0.4550
26	0.0159	0.4040
27	0.0142	0.3610
28	0.0126	0.3200
29	0.0113	0.2870
30	0.0100	0.2500
31	0.0089	0.2260
32	0.0080	0.2000
33	0.0071	0.1800
34	0.0063	0.1600
35	0.0056	0.1420
36	0.0050	0.1300
37	0.0045	0.1140
38	0.0040	0.1000

Shop by gauge using the handy links in this chart!

View more wire information and design inspirations