Jewelry Making DAILY

PRESENTS

4 Free Chain Maille Jewelry Patterns, Projects or Weaves

Plus Bonus Guide to

Aspect Ratio, Wire Gauge, Inner Diameter and Outer Diameter

SIMPLE KNOTS CHAIN MAILLE EARRINGS
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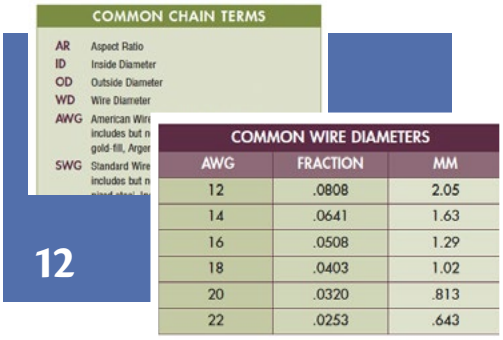
FOXY ROXY NECKLACE
BY SARA (GRAHAM) RICHARDSON

HONEYCOMB HIVE BRACELET
BY TAMMY BOWMAN



AWG	FRACTION	MM
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22	.0253	.643

A LITTLE MATH = A LOT OF SUCCESS IN CHAIN MAILLE
BY KAREN HUNG

IN JEWELRY MAKING, jump rings are links usually used to connect other parts, as in securing a clasp to a necklace or charms to a bracelet, but you can also make jewelry with nothing but jump rings, too. Requiring little more than the pliers you need to open and close them and a good supply of jump rings to link to one another, the easy and versatile jewelry making technique of chain maille combines jump rings into chains, necklaces, bracelets, earrings, and more that can be simple or complex, wildly colorful or elegantly monochromatic – whatever stye you choose.

Jewelry Making Daily Presents: 4 Free Chain Maille Jewelry Patterns, Projects or Weaves Plus Bonus Guide to Aspect Ratio, Wire Gauge, Inner Diameter and Outer Diameter is the perfect sampler collection of chain maille projects and chain maille jewelry instructions. You can start by learning how to make chain maille earrings with colorful jump rings and glass beads in just five minutes! Then try a basic two-by-two chain for a colorful chain maille bracelet delicately ornamented with vinelike coils. Next, move on to a chain maille necklace featuring patterned focal beads that hang from a handmade foxtail weave chain: this classic chain maille weave is one of everybody's favorites. Then try a new look for dragonscale weave as you create hexagonal elements that resemble a honeycomb, separated by charming pewter bees to complete the theme – sweet!

But that's not all! In the fabulous bonus guide to working with jump rings, you'll learn everything you need to know about aspect ratio, inside diameter, outside diameter, wire diameter, and wire gauges to allow you to follow these chain maille jewelry tutorials exactly as shown – or successfully adapt them into your own original designs. So get out your flat nose pliers, round nose pliers, flush cutters, jump rings, ear wires, clasps, and favorite beads, and start making chain maille jewelry today!

Merle

Merle White
Editorial Director, Interweave Jewelry Group

Simple Knots Chain Maille Earrings

Make these in just 5 minutes

BY DENISE PECK

Here's an easy way to show off a pair of favorite beads. This chain maille knot is made with just three jump rings. You can use any gauge or size ring you'd like.

1 Open two pink jump rings, link them together and close. Open a third pink jump ring wide enough to slip over both, and close to make the knot.

2 Open one sterling jump ring, and encircle all three pink rings of the knot. Close. Attach a second sterling ring to the first.

3 Open a pink jump ring, slip it through your bead and around all three rings of your knot, and close. Add an earwire. Repeat for the other earring.

DENISE PECK is Editor-in-Chief of *Step by Step Wire Jewelry* and the author of several best-selling wire jewelry making books and DVDs.

ORIGINALLY PUBLISHED IN ***STEP BY STEP WIRE JEWELRY***, WINTER 2008

Vineyard Coils Bracelet

Slip lush purple and green coils onto a simple chain maille bracelet, and thread on a leafy clasp. It's reminiscent of grapes on a silver vine!

BY SARA (GRAHAM) RICHARDSON

MATERIALS
7mm silver-plated jump rings, 64
24-gauge colored craft wire,
amethyst and seafoam,
Hook and eye clasp.

TOOLS
Thin mandrel (16-gauge copper wire or equivalent), flat nose pliers, 2 pairs, flush cutters.

FINISHED SIZE 7¼"

SOURCES
Wire: Parawire, parawire.com. Jump rings: Michaels, michaels.com. Clasp: Star's Clasps, starsclasps.com.

1 Open all 64 jump rings.

2 Build a coil on the mandrel using a length of seafoam 24g wire. Slide the coil off the mandrel, and cut it into 16 pieces, each about ¼" long.

3 Repeat Step 2, with the amethyst 24g wire.

4 Slide both colors of coils onto the jump rings. If the coils don't slide down onto the ring, remove the coil, flush cut the ends if needed, and slip the coil back on the ring.

5 Close a seafoam coiled ring and a plain jump ring, but do not link them together.

6 Link an amethyst coiled ring and a plain jump ring onto the rings from Step 5. Close both rings to start a two-by-two chain.

7 Link a seafoam coiled ring and a plain ring to the rings you added in Step 6. Repeat Steps 6 and 7, alternating colors, until you end with an amethyst coiled ring next to a plain ring.

8 Thread on single jump rings through the holes of both sides of the clasp. Attach one side of the clasp to the seafoam end, and the other to the amethyst end. Close the rings.

SARA (GRAHAM) RICHARDSON is a former editor of *Step by Step Wire Jewelry* and now runs Creative World of Sara, which includes the line Lovestruck Jewelry.

ORIGINALLY PUBLISHED IN ***EASY WIRE***, FALL 2008

MATERIALS
20-gauge silver craft wire, 1'
18-gauge 8mm OD anodized aluminum jump rings in one or more colors, appx. 437
Ceramic 20mm Happy Beads, 6
Hook or toggle clasp

TOOLS
Round nose pliers, flush cutters, 16-gauge mandrel or thin knitting needle, small paperclip or scrap wire (optional)

SOURCES
Happy Beads from Some Enchanted Beading, someenchantedbeading.com. Wire from Parawire, parawire.com. Jump rings from The Ring Lord, theringlord.com. Clasp from Star's Clasps, starsclasps.com.

Foxy Roxy Necklace

Combine foxtail chain with rocky ceramic beads.

BY SARA (GRAHAM) RICHARDSON

Lately, I have had a lot of fun with lightweight anodized aluminum jump rings in my chain maille designs. I also had some Happy Beads tucked away in a container. I found jump rings that matched the beads, made foxtail chains, linked all the beads together with simple loops, and combined them. Make the chains match your beads, or play around with different color combinations.

ORIGINALLY PUBLISHED IN ***STEP BY STEP WIRE JEWELRY***, Summer 2009

1 Cut a 2" length of wire. Slip it through a bead, and make simple loops on each side. Repeat for the other beads. Link by opening one loop on the right side of the bead, and threading on the loop of the next bead. Close the loops.

2 Take six silver rings, and open four of them. Link them together in a two-by-two-by-two pattern. Twist a scrap piece of wire or put a small paper clip on the end to keep your place.

3 Pick up all the rings and flop the top rings down to each side. Thread the thin mandrel through the middle rings now at the top. Slide the mandrel to the left and thread it through one of the jump rings you flopped to the side. Slide the mandrel to the right to catch the other flopped side ring. You should have what looks like a clover.

4 Thread a silver jump ring through the four rings on the mandrel, and close. Thread another jump ring through the same path. Close. Take the chain off the mandrel, and add two more rings to the top of the chain, and close both.

5 Repeat Steps 3–5 several more times to form the chain.

6 At any point, switch to the colored rings and back to the silver rings. Repeat Steps 3–5 until you make a chain about 5½" long. Repeat Steps 2–6 to make an identical chain for the other side of the necklace.

7 On one end of a chain, thread on a single jump ring through two end rings, and attach it to the first loop of the beaded section. Close the ring. Repeat on the other chain.

8 Link two jump rings on the end of the chain. With the second jump ring, attach one half of the clasp. Close the rings. Repeat on the other end of the chain.

SARA (GRAHAM) RICHARDSON is a former editor of *Step by Step Wire Jewelry* and now runs Creative World of Sara, which includes the line Lovestruck Jewelry.

Try a

NEW LOOK

for Dragonscale weave.

honeycomb hive

BY *Tammy Bowman*

HAVE YOU EVER LOOKED AT SOMETHING OLD AND SEEN SOMETHING NEW IN IT? That's what happened as I was preparing to make a Dragonscale sheet bracelet. The honeycomb pattern began to formulate in my mind's eye and it took shape with just a few modifications of the weave. I linked hexagonal, honeycomb sections together and adorned them with buzzing bees. Have fun embellishing your own charm bracelet with flowers and whimsical garden life!

TOOLS & SUPPLIES

- 20-gauge, 4.75 mm ID, amber enameled copper jump rings, 168
- 20-gauge, 3.12 mm ID, non-tarnish silver enameled copper jump rings, 195
- Lead-free pewter bee charms, 7
- 20-gauge 2" silver head pins, 7
- Size 11° silver-lined clear seed beads, 7
- 6mm closed silver jump ring, 1
- 13x7mm silver lobster clasp, 1
- Needle- or flat-nose pliers, 2 pair
- Round-nose pliers
- Flush cutters

RESOURCES: Enamel copper jump rings: Unkamen Supplies, unkamensupplies.etsy.com.

FINISHED SIZE: 8"

ORIGINALLY PUBLISHED IN ***STEP BY STEP WIRE JEWELRY***, April-May 2012

1

2

3

1. For each hexagonal, honeycomb unit, close 5 and open 19 amber jump rings and open 24 silver jump rings. Begin the first row of the chain by picking up 2 closed amber jump rings with an open silver jump ring. Close the silver jump ring. *Note: The artist is left-handed, so unless you are also, you would be holding the jump ring and pliers in your right hand.*

2. Pick up a closed amber jump ring with an open silver jump ring and attach the silver jump ring to one of the closed amber jump rings from Step 1. Close the silver jump ring. You now have an amber, silver, amber, silver, amber chain. Check ring closures after each row to ensure that the rings are flush with minimal gaps. It is very difficult to adjust ring closures once the rings are embedded in the weave.

3. Place the chain on your work surface and position the 2 silver jump rings perpendicular to the amber jump rings.

4. Place a closed amber jump ring on top of each silver ring.

5. Weave 1 open amber ring through the 2 closed silver rings. Close the amber ring.

6. Add an amber ring to one of the silver rings on either end then close the amber ring. Repeat by adding another amber ring to the remaining silver ring on the opposite side and close the amber ring.

4

5

6

wire tip

For this weave, keep in mind that amber rings are connected to silver rings and silver rings are connected to amber rings. Amber rings never pass through any amber rings and likewise silver rings never pass through other silver rings.

7

8

9

7. To add the next row of silver rings, pass a silver ring through the area designated by the open yellow dot. With the ring, reach in and grab the two amber rings from Step 4, then turn the ring toward the closed yellow dot by weaving the ring between the opening in the amber ring from Step 1. The silver ring emerges from the space created by overlapping amber rings (closed yellow dot).

8. Close the silver ring. Note that the silver ring captures the 2 amber rings from Step 4, but not the middle amber ring from Step 1. Instead, the silver ring is nestled inside the middle of the amber rings from Step 1 and Step 5. Please be aware that this step is highly contortional, i.e. the silver ring must "snake" through 4 different amber rings. While this is a tight maneuver, the silver ring should be able to emerge from the closed yellow circle without putting stress on the existing rings or on itself. If you find that weaving the silver ring is putting too much tension on the weave, open the silver ring slightly, but do not distort it. The silver rings must pass a width of several amber rings, therefore, they require being opened to a slightly larger degree than what is found in most weaves.

9. Add a silver ring to one of the closed amber rings from Step 4 by flipping the amber ring from Step 6 toward the middle of the weave. This silver ring will rest in the middle of the amber ring from Step 1. Flip the amber ring from Step 6 back over so that the silver ring is nestled inside it as well.

10

11

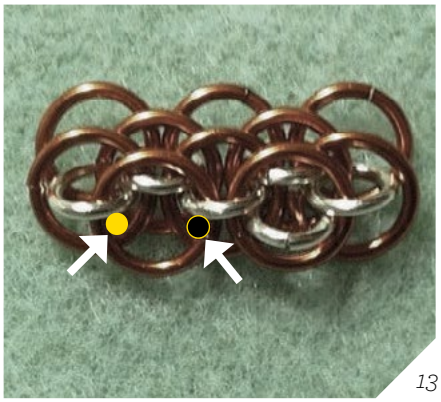
12a

12b

10. Repeat Step 9 on the opposite end with another silver ring.

11. Lock the silver rings from Steps 7 to 10 into place with 2 amber rings. Each amber ring passes through the center of 2 adjacent silver rings from Steps 7–10. Close each amber ring after it is added.

12. Continue to add another row of silver rings as described in Step 7. The weave becomes tighter at this point, so pay extra attention that the silver ring captures only the 2 amber rings from Steps 5 and 6 and is nestled inside the amber rings from Steps 4 and 11. The yellow open dot shows the space that the silver ring enters and the closed yellow dot shows the space the silver ring exits. Figure 12b shows the open silver ring in the correct position before ring closure.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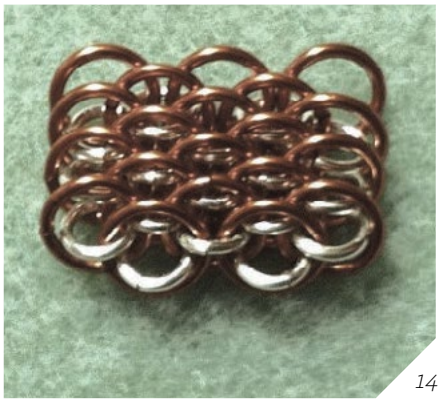
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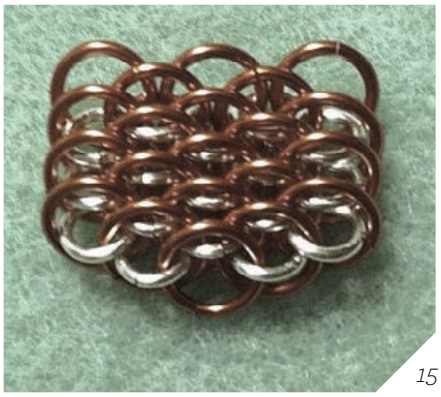
13. Add the second silver ring in the manner described in Step 12.

14. Continue adding rows of amber and silver rings in the manner described above until you have 4 rows of 3-ring amber units and 4 rows of 2-ring silver units.

15. Begin to taper off the rings to create a six-sided honeycomb unit by weaving 1 amber ring through the 2 silver rings in the last row of Step 14.

16. Add one silver ring to the honeycomb unit to complete the taper for this side.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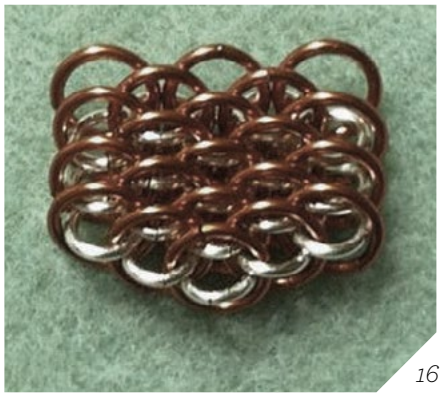
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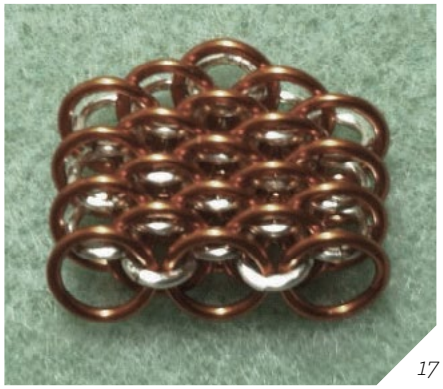
17. Flip the honeycomb unit over to begin the taper for this side.

18. Add 3 silver rings by weaving through the amber rings from Step 4.

19. Add 2 amber rings to the next row by weaving through the silver rings added in Step 18.

20. Add 2 silver rings to the 3 amber rings from Steps 1–2 (the original amber rings used to begin the unit).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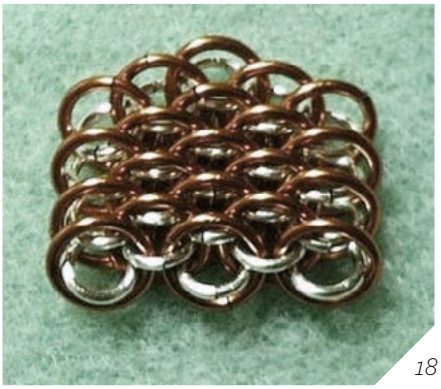
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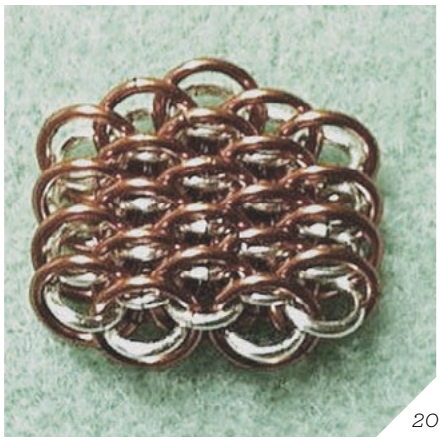
19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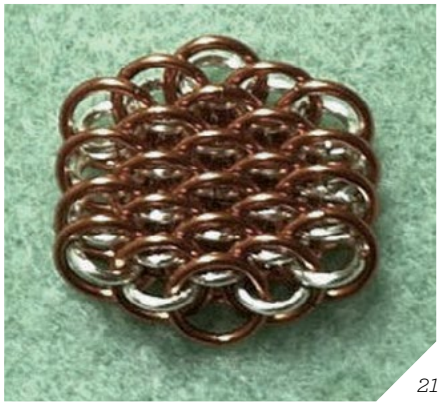

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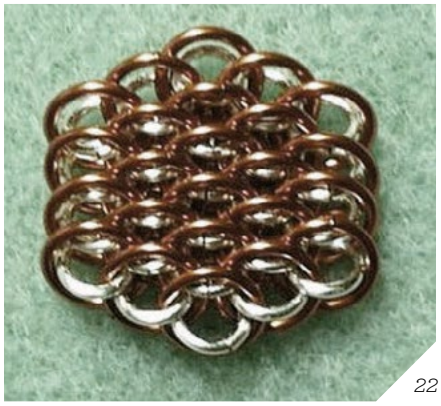
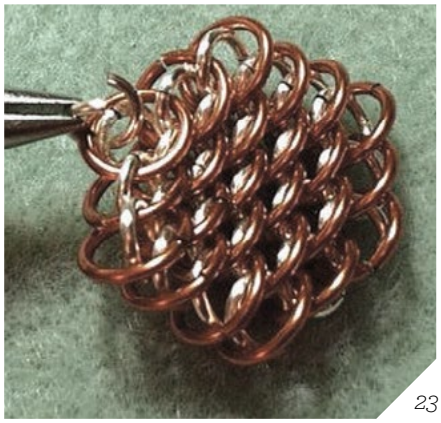


22

21. Add 1 amber ring to the 2 silver rings from Step 20.

22. Add the final silver ring to the unit by weaving through the amber rings added in Step 19. You have now completed one honeycomb unit. Repeat Steps 1–22 for the remaining honeycomb units.



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24

23. To connect the honeycomb units, attach a silver ring through the amber and silver rings added in Steps 21 and 22. Repeat with another silver ring on the opposite end of the unit.

24. Connect one honeycomb unit to another using a silver jump ring. If you have extra jump rings, you may wish to double this connection ring for additional strength.

25. Make the bumble bee dangles by threading a bee charm on a headpin followed by an 11° seed bead. Make a wrapped loop above the seed bead with round-nose pliers and trim excess wire with flush cutters.

26. Attach the charm to an open silver jump ring and connect the dangle to the middle silver ring between two honeycombs. Close the silver jump ring. Attach a 6mm jump ring to one end of the bracelet and a lobster clasp to the opposite end. Adjust the size by increasing/decreasing honeycomb units and/or adding additional silver rings between the units.

25

26

TAMMY L. BOWMAN has a Ph.D. in Biochemistry but decided to delve into beading and chain maille about seven years ago. She lives in Tampa with her husband, two daughters, and yellow lab. See more of her designs at innermusejewelry.etsy.com and innermusejewelry.blogspot.com.

A Little Math = A Lot of Success in Chain Maille

Understanding aspect ratio.

BY KAREN HUNG

COMMON CHAIN TERMS

AR Aspect Ratio

ID Inside Diameter

OD Outside Diameter

WD Wire Diameter

AWG American Wire Gauge (In the United States, includes but not limited to: copper, sterling, gold, gold-fill, Argentium,™ aluminum, craft wire)

SWG Standard Wire Gauge (in the United States, includes but not limited to: stainless steel, galvanized steel. Includes precious metals in the United Kingdom and Canada)

Knowing how to weave rings into intricate patterns is only half of the craft of chain maille. To make a great looking chain, you must know the optimal ring size to highlight the pattern. If your rings are too large, your chain is floppy, and the pattern is lost. Conversely, if your rings are too small, your chain is inflexible or may not be able to be woven at all. Many times you'll see references to ring sizes in books or Web sites, sometimes referred to as key numbers or more commonly, Aspect Ratio (AR).

The AR is the relationship between the Wire Diameter (WD) and Inside Diameter (ID) of the ring. As important as the AR is for chain making, there usually isn't one AR for any particular chain weave. With few exceptions, there is usually an AR range for most chains, and the number you choose is a subjective decision. When you see an AR range in the lower numbers, it indicates a tighter weave. Larger numbers indicate an airy weave. One important thing to remember — the real beauty of AR is that the ratio remains the same regardless of the wire you are using; gold, to copper, to galvanized steel, AWG or SWG, the AR is always the same.

FINDING THE ASPECT RATIO

To get the AR of a chain you need ... math. But the formula is very easy, and you will find yourself using it over and over when making chains.

Here's the basic formula: ID / WD = AR

Let's say you want to weave a Byzantine chain that you saw in a magazine, but you prefer to make it with a larger or smaller wire than shown. Looking at the AR formula, you can see there are only three data points needed to make all your chain fantasies come true.

Let's say the magazine chain is: 16 AWG copper rings with an ID of 4.25mm, using this information you can do the AR calculation. *(See Common Wire Diameters box)*

COMMON WIRE DIAMETERS

AWG	FRACTION	MM
12	.0808	2.05
14	.0641	1.63
16	.0508	1.29
18	.0403	1.02
20	.0320	.813
22	.0253	.643

To find the AR of the magazine chain (16AWG =1.29mm and 4.25mm ID rings), plug the numbers into the formula:

ID / WD = AR 4.25 ➥ 1.29 = 3.29

Now you know the AR of the magazine chain is 3.29. To make a larger chain, let's say with 14 AWG wire, you would use the basic formula, rearranged to use the numbers that you know to find the new ring ID for the 14 AWG wire.

From the chart, you know the diameter of 14 AWG is 1.63mm, and from your previous calculation you know that the AR for the magazine Byzantine chain is 3.29. Plugging in the known

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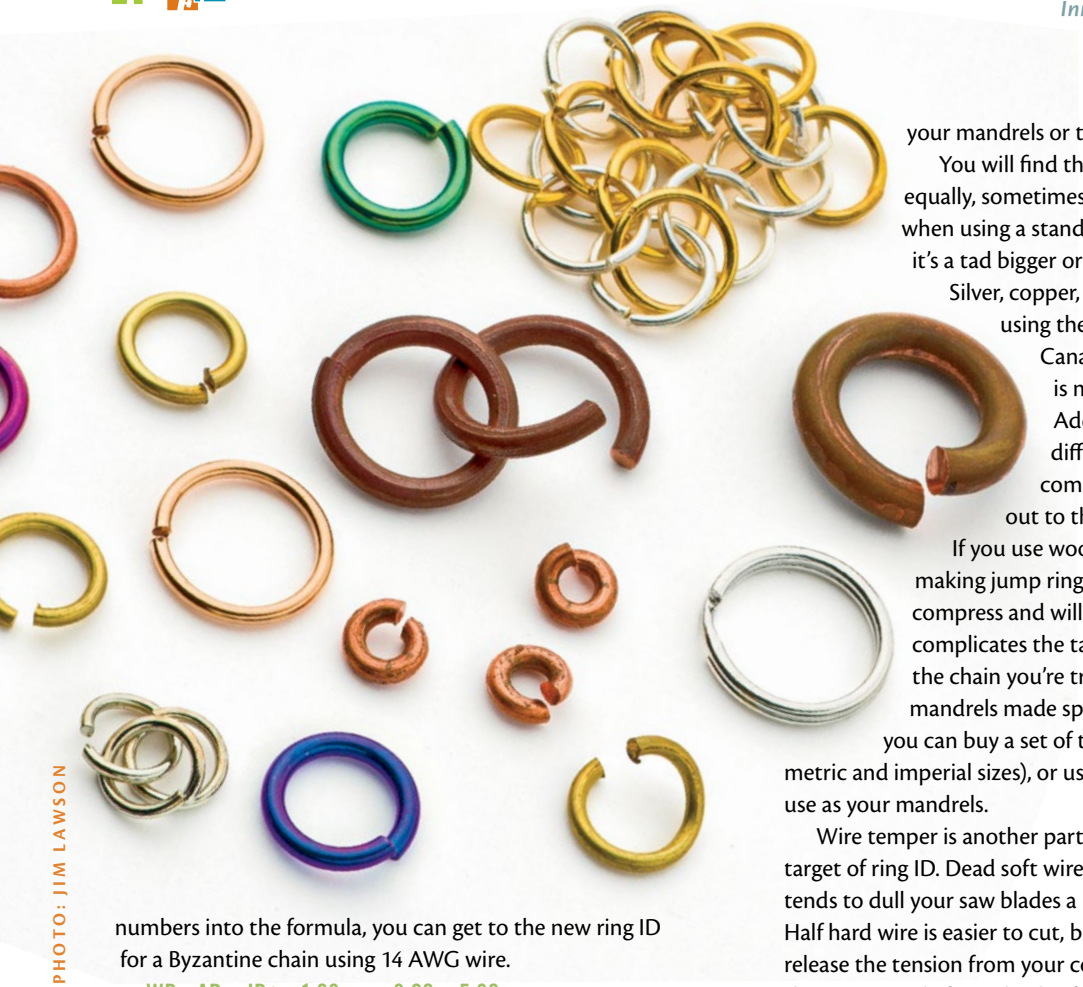

PHOTO: JIM LAWSON

numbers into the formula, you can get to the new ring ID for a Byzantine chain using 14 AWG wire.

WD x AR = ID ➡ 1.63mm x 3.29 = 5.36mm

You will need a mandrel that will produce jump rings with as close to a 5.36mm ID as possible. The ring size for a Byzantine chain that looks the best using 14 AWG wire is made with a 7/32 (5.55mm) mandrel. Make a small sample before cutting all your rings.

Let's go down a wire gauge (18-gauge) and determine a new ring ID, the WD for 18 AWG wire is 1.02mm, and the AR for the magazine Byzantine chain is 3.29.

WD x AR= ID ➡ 1.02mm x 3.29 = 3.36mm

The ring ID for the 18AWG wire comes out to 3.36mm. You may want to go down to the 3.25mm mandrel or up to 3.5mm mandrel. Your mandrels, your wire, the wire temper, or simply your preference will ultimately determine which size ring you think is perfect. Again, make a small sample, and adjust as necessary.

AR, WIRE, MANDRELS, AND EXPERIENCE

Most of the time the AR you use to determine the ring ID works fine. But sometimes you will find that your chain is a bit tighter or a bit looser than expected, despite the fact that you've double-checked your math. Your unexpected results could have been caused by a number of things including the real gauge of the wire, your mandrels or the wire temper.

You will find that not all wire is created or labeled equally, sometimes your wire measures perfectly when using a standard wire gauge, or sometimes it's a tad bigger or smaller than what it's labeled. Silver, copper, and Argentium™ are all measured using the AWG in the United States. In Canada and the U.K., the same wire is measured using the SWG system. Additionally, the same gauge wire in different metals, or wire from different companies, may not always measure out to the same size.

If you use wooden dowels as mandrels for making jump rings, each time you use them they compress and will get a bit smaller, which further complicates the task of determining the ring ID for the chain you're trying to weave. You can buy steel mandrels made specifically for making jump rings, or you can buy a set of transfer punches (available in both metric and imperial sizes), or use aluminum knitting needles to use as your mandrels.

Wire temper is another part of hitting this seemingly moving target of ring ID. Dead soft wire wraps up nice, but since it's soft it tends to dull your saw blades a bit faster than other wire tempers. Half hard wire is easier to cut, but springs back a bit when you release the tension from your coil, making your rings a little bigger than rings made from dead soft wire. Hard wire will spring back even farther than half hard—and spring hard wire is even worse!

Determining ring ID and making rings is time consuming, but making your own rings frees you to create *your* chain.

The best piece of chain making advice is to buy some copper wire in a number of gauges, and make prototypes of your chains. Document your favorite sizes. The time and wire used for making samples will serve you well. You learn the weave without worrying what your rings will look like after you've opened and closed each ring several times, you will find your optimal ring, and you will have a small piece of chain or tail to use to start, instead of having to start anew.

Wire diameter source: The Complete Metalsmith by Tim McCreight.

KAREN HUNG is an independent craftsperson working in Southern California. She has a MS degree in Organization Psychology, and spent many years living in Los Angeles and working in Human Resources. Then she found herself in San Diego, where she signed up for a jewelry class, and discovered the joys of the rolling mills, big torches, and molten metal. See more of her work at khmetalwork.com and khmetalwork.etsy.com. E-mail karen@khmetalwork.com.