



**Using the Japanese Ringmakers with  
Art Clay Silver  
by  
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# **USING THE JAPANESE RINGMAKER WITH ART CLAY SILVER**

## **1.0 Introduction**

The Ringmaker was manufactured especially for use with PMC. All the instructions for the Ringmaker are written for PMC3 which has shrinkage of 12-15%, compared to art clay silver which has shrinkage of 8-10%. I therefore set out to examine whether the sizing charts produced for the Ringmaker could indeed be accurately used to make rings with Art Clay Silver (see appendix). You will see there is only one chart which should be accurate for both ½ round and flat rings. This is possible as the size of the rings when they come out of a ring maker are not the same i.e. a size 17 flat ring pre fired is a different size to a ½ round size 17 ring. I presumed they have been engineered that way so the same table can be used.

It is suggested that rings should be fired for 2 hrs at maximum temperature. This ensures the strongest possible ring is formed as not only does the binder burn away but with the long firing times the silver particles sinter fully becoming closer together increasing strength. It is suggested that this long sinter time also increases shrinkage.

## **2.0 Method**

I made rings using the size 17, 21 and 25 flat Ringmaker with the standard 2mm joint and half round rings with the size 17 and 21 Ringmaker. I fired them for 1hr at 800 degrees then measured their size. I re-fired the rings for 1.5 hours, 2 hours and 2.5hrs always allowing the rings to cool over night before re-firing.

The rings were measured after each firing. I was concerned that firing and then re-firing may effect the results. However a second batch of rings were made with some fired for 2 hours, some for one hour only and some for 1.5hrs only. The results were consistent with the first batch suggesting that the shrinkage was due to holding at maximum temperature rather than simply the length of time fired.

A third batch of rings were made and this time the largest stopper that would fit inside the ring was placed in it and the ring fired to ascertain the minimum shrinkage. The rings were checked for cracks. This was repeated with a fourth set of rings.

### 3.0 RESULTS

#### 3.1 RESULTS FOR FIRING FLAT RINGS

##### 3.11 FIRING FOR 1 HR( all sizes are Japanese ring sizes)

Ring maker size	Pre fired size	Size after max. shrinkage size	Possible sizes from Ringmaker
17	15	11 (8%)	11, 12, 13
21	20	14 (10%)	14 , 15, 16,17
25	22	18.5 (6%)	19, 20

##### 3.12 FIRING FOR 1.5 HRS

Ring maker size	Pre fired size	Max shrinkage size	Possible sizes from Ringmaker
17	15	11 (8%)	11,12,13
21	20	13.5 (11%)	14,15,16,17
25	22	18 (7%)	18,19,20

##### 3.13 FIRING FOR 2 HRS

Ring maker size	Pre fired size	Max shrinkage size	Possible sizes from Ringmaker
17	15	10-11 (8% -9%)	?10,11,12,13
21	20	13.5-13 (11%-12%)	13,14,15,16,17
25	22	16 (10%)	16,17,18,19,20

### 3.2 RESULTS FOR FIRING ½ ROUND RINGS

#### 3.21 FIRING FOR 1HR

Ring maker size	Pre fired	Max shrinkage size	Possible sizes from ringmaker
17	14	9 (10%)	9,10,11,12,13
21	18	14 (7%)	14, 15, 16

#### 3.22 FIRING FOR 1.5HRS

Ring maker size	Pre fired size	Max shrinkage size	Possible sizes from Ringmaker
17	14	9 (10%)	9,10,11,12,13
21	18	13.5-14 (7-8%)	14,15,16

#### 3.23 FIRING FOR 2HRS

Ring maker size	Pre fired size	Max shrinkage size	Possible sizes from Ringmaker
17	14	9 (10%)	9,10,11,12,13
21	18	13-13.5 (8-9%)	?13 14,15,16

#### **4.0 SUMMARY OF FINDINGS**

- As with PMC, shrinkage continues for up to 2hrs. With some rings (mainly larger sizes) there was a slight increase in shrinkage after 2 hrs but this was very minimal
- At 2 hours the shrinkage was fairly consistent when checked on multiple rings
- Shrinkage was less consistent with short firing times when checked on multiple rings although there was not a great variance.
- When the rings were fired with the largest stopper there was no sign of any damage to the rings so it appears that the shrinkage can be successfully limited.
- The rings made using Art Clay Silver are considerably larger in size than those suggested on the PMC tables.
- It appears that a different shrinkage table for ½ round and flat rings is required.
- There was much less difference in ring size with length of firing, with the ½ round ring making.

#### **5.0 DISCUSSION AND RECOMMENDATIONS**

The best way to use these Ringmakers is to fire your piece at 800 for 2 hours and it is always best to fire with a stopper to ensure accurate shrinkage.

I found that the fact that Art Clay Silver produces bigger rings than PMC is an advantage in New Zealand where very few people have Japanese ring size 8, 9 and 10. From my experience of using these in course situations I have found the most common ring size was 18 and above, meaning my most commonly used ring maker was the size 25 flat, A size 29 ring maker would also be useful.

When doing a class it may not always possible to fire for two hours. However the only sizes for which you may need to fire longer is if you want a very small size 10 ring (this may be possible at longer firing although more tests are needed) and if you want a size 18. I fired two rings for between 1-1.5 hrs and did accurately achieve two size 18 rings. I managed to fire for longer times in my class by doing a demonstration followed by lunch followed by a second demonstrate. The class was stress free and rings were accurate sizes.

Finally here are some things you may find useful when using the ring maker

- 1) Fill the mould as much as possible before putting the top on
- 2) Leaving for 24 hrs makes the rings very easy to get out of the mould without distortion
- 3) Dry rings as much as possible before removing from the mould
- 4) If flat rings get stuck it may help to take out thickness gauge and push gently from the bottom
- 5) When pushing the stopper through the ring maker it is very important to resist the movement with your finger from underneath this helps ensure you get a full ring.

## **6.0 APPENDIX**

<b>RINGMAKER Sizes</b>		<b>Finished Ring Sizes (*Japan sizes)</b>
17	→	8 9 10 11
21	→	12 13 14 15
25	→	16 17 18 19

### **Useful articles and links**

<http://www.cooltools.us/The-Ultimate-Silver-Metal-Clay-Firing-Guide-s/1219.htm>