

Table 1. The sources for the recreated alloys and their composition													
Nr	Source	Cu	Au	Ag	Fe	Pb	As	Sn	Zn	Ni	Bi	Co	Reference
1	Balâța-Sichem**	91,8	0,5	0,2	0,5	0,5	3,1	3	0,1	0,1	0,15	0,05	Giumlia-Mair 1996b, 340.
2	Alloy nr.27	95	1	1	0,5	-	0,5	2	-	-	-	-	Giumlia-Mair & Lehr 2003, 297.
3	Siamun Sphinx**	94	1,3	1	0,7	1	1	1	-	-	-	-	Mathis <i>et al.</i> 2009, 68.
4	Alloy 1	95	0,6	0,3	0,5	0,5	-	3	0,1	-	-	-	See 1: no As & trace elements
5	Alloy 2	95,5	1	1	0,5	-	-	2	-	-	-	-	See 2: no As
6	Alloy 3	95	1,3	1	0,7	1	-	1	-	-	-	-	See 3: no As
7	Mycenaean dagger **	92,5	2	0,5	-	-	-	5	-	-	-	-	Ogden 1993, 42. Giumlia-Mair 2013, 100.
8	Enkomi cup	91,3	6	2	0,4	-	0,3	-	-	-	-	-	Giumlia-Mair 2013, 100.

*Percentages as wt%; in reproduction of alloy 1, 0, 15% Sb was omitted; - : not present/detected.
**reproduction with approximated wt% to reach 100%, approaches original analyses.

Table 2. Recipes of separate patination ingredients		Literature
Natron* mix 30 g (to store and use); 35% Na ₂ CO ₃ , 40% NaSO ₄ , 25% NaCl	10,5 g Natron:Na ₂ CO ₃ (sodium carbonate), 7,5 g NaCl (sodium chloride), 12 g NaSO ₄ (sodium sulphate)	Lucas 1962, 267.
Experimental Rokusho (for Niiro) (modified)	2,8 g pure <i>verdigris</i> and 1 g CaCO ₃ , (to mix with 5 ml <i>plum vinegar (incl. NaCl)</i> , 5 g <i>copper sulphate</i> and 1 liter water for the Niiro- process)	Ó Dubhghaill & Jones 2009, 293.
Lye	200 ml demineralized water, 1 g K ₂ CO ₃ (Potassium carbonate)	

*I don't know the effect if you use NaHCO₃ (sodium bicarbonate), just a little amount of this was used.

Table 3. Modern Japanese patination solutions (pH: 4 - 5 at ca.37,7 - 95°C)

Experiment	Alloy	1a1	1a2	2a1	3a1
1: <i>Rokusho</i> 1 (75 min) (ca. 37,7-50°C)	Front:				
	Back:				
		1a1	1a2		
2: Nikomi- Chakusoku (30 min) (ca. 90-95°C)	Front:				
	Back:				
		4a2	5a1*	6a1*	7a1*
4: <i>Rokusho</i> + 30 ml plum vinegar (60 min) (ca. 37,7-50°C)	Front:				
	Back:*				
		2a1	2a2	3a1	3a2
5: Nikomi- Chakusoku (30 min) (ca. 90-95°C)	Front:				
	Back:				






























		4a1	4a2	5a1	5a2
6: Nikomi- Chakusoku (60 min) (ca. 90-95°C)	Front:				
	Back:				
		*front is unfortunately not available			

Table 4. Modern Japanese patination solution (pH: 4 - 5 at 35 - 95°C)

6: Nikomi- Chakusoku (60 min) (ca. 90-95°C)	Alloy	6a1	6a2		
	Front:				
	Back:				
		4a1	6a2	7a1	
8: Rokusho 1 (5 days) (35 °C)	Front:				
	Back:				
		1b2	7a1	8a2	
9: Nikomi Chakusoku (60 min) (ca. 90-95°C)	Front:				
	Back:				

		4a1	5a1	6a1	7a1
12: Nikomi - Chakusoku (30 min) (Exp.4 recycled) (ca. 90-95°C)	Front:				
	Back:				
12: Nikomi Chakusoku (60 min) (ca. 90-95°C)	Front:				
	Back:				

Table 5: Modern Japanese patination solutions (pH ca. 4 - 5 at 25°C - 95°C)

11a:	Alloy	4a2	11b:		6a1
Quenched red hot 1x in Rokusho 1 (500 °C in 25 °C)	Front:		Quenched red hot 3 x in Rokusho 1 (500 °C in 25 °C)	Front:	
	Back:			Back:	
		1a1	1a2	2a1	3a1
13: Rokusho 1 with salty Umeboshii plums (Exp 1 recycled) (30 min) (37,7- 50 °C)	Front:				
	Back:				

























22:		1a1	3a1	5a2	7a1
Nirosolution (60 min) (incl. 5 min preboiling in lye) (ca. 90-95°C)	Front:				
	Back:				
22: Nirosolution (120 min) (no preboiling in lye) (ca. 90-95°C)	Front:				
	Back:				

Table 6. Acidic patination liquids				
3:	Alloy	4a1		
Urine (35°C for 3 days)	Front:			
	Back:			
pH: 5,35 at 32°C				
		4a1	3a2	7a1
7: Urine + <i>verdigris</i> (35°C for 3 days)	Front:			
	Back:			
pH: 5,78 at 22 °C				
		4a1		
10a: pure plum vinegar (24 hrs)	Front:			
	Back:			
pH: 2,71 at 24 °C				
10b: plum vinegar + <i>verdigris</i> (24 hrs)	Front:			
	Back:			
pH: 4 at 25 °C				











		5a1	
14: Pomegranate + Natron mix med (72 hrs at 35 °C) pH: 5,38 at 24,7 °C	Front:		
	Back:		

Table 7. Acidic patination liquids

16a:	Alloy	6a2	16b:	Alloy	6a2
red wine (no sulphides) pH: 3,67 at 25,5°C (24 hrs9	Front:		Red wine (no sulphides) +Natron Mix pH: 5,71 at 22,7 °C (24 hrs)	Front:	
	Back:			Back:	
		5a2			
17: white grape sauce (72 hrs at 37°C) pH: 3,83 at 25,7 °C	Front:				
	Back:				
		2a1			3a2
18a: wrapping in cloth –	Front:		18b: wrapping in cloth-	Front:	











tapwater + <i>verdigris</i> (48 hrs) pH: 5,81 at 24,1 °C	Back:		tapwater + alum (48 hrs) pH: 5,93 at 25,3 °C	Back:	
		6a1			
19b: Water + Alum pH: 3,78 at 24,7 °C	Front:				
	Back:				
		1a2			3a1
20a: plum vinegar vapour (24 hrs) pH: 2,71 at 24°C	Front:		20b: plum vinegar vapour (72 hrs) pH: 2,71 at 24°C	Front:	
	Back:			Back:	

Table 8. Neutral to alkaline patination solutions					
19a: Tapwater (96 hrs at (pH: 7,29 at 24,5°C)	Alloy	6a1			
	Front:				
	Back:				





		7a2			7a2
19c: tapwater + pure natron (72 hrs) (pH: 8,15 at 24, 7 °C	Front:		19d: tapwater+ natron mix (with NaCl & NaSO ₄) (72 hrs) pH: 8,16 at 25, 7 °C	Front:	
	Back:			Back:	

Table 9. Dry experiments					
11c: Heated with gas burner to 500 °C	Alloy	7a2			
	Front:				
	Back:				
		5a1	5a2	7a1	7a2
15: Wu -Tong (sweaty hands) (ca. 2-3 hrs)	Front:				
	Back:				
		1a1			8a2
21: Heat treatment "black satin" (60 min)	Front:		21: Heat treatment "Black Satin" (120 min)	Front:	
	Back:			Back:	

Table 10. Experiments with seawater and sweaty hands (November 2017)

<p>24: Seawater (Kiel- Schilksee, pH 8) November 2017</p>	<p>Alloy 2a1</p>	<p>Front: </p>	<p>Back: </p>	<p>23: wearing on hand Mokume Gane ring with shakudo</p>	
<p>25: Sweaty hands November 2017</p>	<p>5a1:</p>				