



APPENDIX D

TEN PALACE ARMOURY ARMOUR
AND CROSS-SECTION SAMPLES:

COMPARATIVE SUMMARY



Palace Armoury ID no. & date	Armour component name	Armour macroscopic examinations						Armour sample microscopic examinations						
		Whole armour corrosion description: morphology, extent and distribution		Armour sample site description: corrosion morphology and extent (surface assessment only), between lames, damaged edge, etc,		Number of lames & sampling location notes	Representativeness of artefact	Representativeness of collection	Metal type & micro-structure	Corrosion products observable by OM & SEM-EDS				
		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface		
						Inward growing	Outward growing	Inward growing	Outward growing					
PA RC 20 – ca. 1670	Upper cannon	Highly developed general surface corrosion products throughout	Moderately developed general surface corrosion products throughout	Highly developed general surface corrosion products	Highly developed general surface corrosion products	One lame from five. Highly degraded edge (corroded and physically damaged?). Etching design	Yes, in respect to corrosion typology, but not in respect to extent of corrosion. No, in respect to highly damaged edge	No, in respect to highly corroded and physically damaged state	Equi-axe ferrite-pearlite ¹	Present	Present	Present	Present	
PA RC 29 – undated	Tasset (part proper right?)	Moderately developed general surface corrosion products throughout	Highly developed general surface corrosion products throughout	Not observable: between lames	Mildly developed general surface corrosion products	One lame from two. Edge between lames, but static	Yes, in respect to corrosion typology, and no in respect to extent of corrosion.	No, in respect to highly corroded and physically damaged state	Ferrite ³	Present	Present	Present	Present	

¹ Vella et al., 2004, p. 226

² (Crawford in) Vella et al., 2005a, p. 9

³ Vella et al., 2004, p. 223

⁴ (Crawford in) Vella et al., 2005a, p. 8


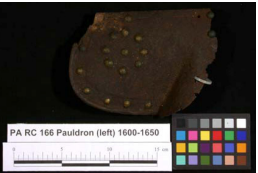
Palace Armoury ID no. & date	Armour component name	Armour macroscopic examinations				Armour sample microscopic examinations							
		Whole armour corrosion description: morphology, extent and distribution		Armour sample site description: corrosion morphology and extent (surface assessment only), between lames, damaged edge, etc,		Number of lames & sampling location notes	Representativeness of artefact	Representativeness of collection	Metal type & micro-structure	Corrosion products observable by OM & SEM-EDS			
		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface	
										Inward growing	Outward growing	Inward growing	Outward growing
PA RC 80 – undated	Tasset (proper right?)	Mildly developed filiform and general surface corrosion products locally	Moderately developed general surface corrosion products	Not observable: between lames	Moderately developed general surface corrosion products	One lame from five. Edge between static lames	Determinable for inner surface only. Yes, in respect to corrosion typology and extent	No, in respect to relative absence of outer surface corrosion products	Widmanstätten ferrite-pearlite ⁵	Absent	Present	Present	Present
													
PA RC 88 – ca. 1620	Full arm: pauldron, couter, and upper and lower cannons (proper left)	Moderately developed general surface corrosion products throughout	Highly developed general surface corrosion products throughout	Moderately developed general surface corrosion products	Moderately developed general surface corrosion products	One lame from twelve (consisting of 3 separable components). Edge between dynamic lames	Yes, in respect to corrosion typology. In respect to other lames, extent of corrosion is equivalent on outer surface and not as developed on inner surface	No, in respect to painted surface finish	Pearlite with layered ferrite ⁷	Present	Present	Present	Present
													

⁵ Vella et al., 2004, p. 225

⁶ (Crawford in) Vella et al., 2005a, p. 9

⁷ Vella et al., 2004, p. 228

⁸ (Crawford in) Vella et al., 2005a, p. 11


Palace Armoury ID no. & date	Armour component name	Armour macroscopic examinations				Armour sample microscopic examinations									
		Whole armour corrosion description: morphology, extent and distribution		Armour sample site description: corrosion morphology and extent (surface assessment only), between lames, damaged edge, etc,		Number of lames & sampling location notes	Representativeness of artefact	Representativeness of collection	Metal type & micro-structure	Corrosion products observable by OM & SEM-EDS					
		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface			
										Inward growing	Outward growing	Inward growing	Outward growing		
PA RC 165 – 1600-1650	Pauldron (part proper left?)	Moderately developed general surface corrosion products and highly developed in parts	Highly developed general surface corrosion products throughout	Highly developed general surface corrosion products	Highly developed general surface corrosion products	One lame from one. Physically damaged edge	Yes, in respect to corrosion typology and extent. No, in respect to damaged edge	No, in respect to highly corroded and physically damaged state	Ferrite (with phosphorus?) ⁹	Present in partially emptied pits	Present	Present	Present	Present	 10
PA RC 166 – 1600-1650	Pauldron (part, proper right?)	Highly developed general surface corrosion products throughout	Highly developed general surface corrosion products throughout	Highly developed general surface corrosion products	Highly developed general surface corrosion products	One lame from one. Physically damaged edge	Yes, in respect to corrosion typology and extent. No, in respect to damaged edge	No, in respect to physically damaged and highly corroded state with no adjacent metallic areas	Ferrite ¹¹	Present	Present	Present	Present	 12	

⁹ Vella et al., 2004, p. 229

¹⁰ (Crawford in) Vella et al., 2005a, p. 11



¹¹ Vella et al., 2004, p. 223

¹² (Crawford in) Vella et al., 2005a, p. 8

		Armour macroscopic examinations						Armour sample microscopic examinations					
Palace Armoury ID no. & date	Armour component name	Whole armour corrosion description: morphology, extent and distribution		Armour sample site description: corrosion morphology and extent (surface assessment only), between lames, damaged edge, etc,		Number of lames & sampling location notes	Representativeness of artefact	Representativeness of collection	Metal type & micro-structure	Corrosion products observable by OM & SEM-EDS			
		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface	
										Inward growing	Outward growing	Inward growing	Outward growing
PA 316 – ca. 1570	Pauldron (proper left)	Moderately developed general corrosion products throughout oblique surfaces & highly developed filiform corrosion throughout oblique surfaces	Highly developed general surface corrosion products throughout	Not observable: between lames	Highly developed general surface corrosion products	One lame from nine. Edge between dynamic lames	Determinable for inner surface only. Yes, in respect to corrosion typology and extent	Yes	Ferrite with carbides ¹³	Present	Present	Present	Present
													

¹³ Vella et al., 2004, p. 227

¹⁴ (Crawford in) Vella et al., 2005a, p. 10


Palace Armoury ID no. & date	Armour component name	Armour macroscopic examinations				Armour sample microscopic examinations								
		Whole armour corrosion description: morphology, extent and distribution		Armour sample site description: corrosion morphology and extent (surface assessment only), between lames, damaged edge, etc,		Number of lames & sampling location notes	Representativeness of artefact	Representativeness of collection	Metal type & micro-structure	Corrosion products observable by OM & SEM-EDS				
		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface		
										Inward growing	Outward growing	Inward growing	Outward growing	
PA 329 – ca. 1570	Backplate	Moderately developed general corrosion products throughout oblique surfaces & highly developed filiform corrosion throughout oblique surfaces	Moderately developed general surface corrosion products throughout	Mildly corroded surfaces with no corrosion products evident	Moderately developed general surface corrosion products	One lame from two. Physically damaged edge	Outer – Yes, in respect to surfaces exhibiting pitting but few corrosion products. No, in respect to corrosion typologies and extent of corrosion. Inner surface – Yes, in respect to corrosion typology and extent	Yes	Widmanstätten ferrite-pearlite ¹⁵	Present in partially emptied pits	Absent	Present	Present	
PA RC 25 – ca. 1670	Gorget (part)	Moderately developed general surface corrosion products throughout	Moderately developed general surface corrosion products throughout	Moderately developed general surface corrosion products with decorative etching	Moderately developed general surface corrosion products	One lame from one. Features etching design.	Yes, in respect to corrosion typology, and extent of corrosion	No, in respect to etched surfaces	Widmanstätten ferrite-pearlite ¹⁷	Present	Present	Present	Present	

¹⁵ Vella et al., 2004, p. 224

¹⁶ (Crawford in) Vella et al., 2005a, p. 8

¹⁷ Vella et al., 2004, p. 224

¹⁸ (Crawford in) Vella et al., 2005a, p. 9

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		Outer surface	Inner surface	Outer surface	Inner surface					Outer surface		Inner surface	
										Inward growing	Outward growing	Inward growing	Outward growing
PA RC 317 – ca. 1570	Pauldron (proper right)	Moderately developed general corrosion products throughout oblique surfaces & highly developed filiform corrosion throughout oblique surfaces	Moderately developed general surface corrosion products throughout	Mildly developed general surface corrosion products	Mildly developed general surface corrosion products	One lame from nine. Edge between dynamic lames	Yes, in respect to generalised corrosion but less in respect to extent of corrosion. No, in respect to filiform corrosion typologies.	Yes	Ferrite-pearlite ¹⁹	Present	Present	Present	Present
													

References:

- Vella, D., Degriigny, C., Golfomitsou, S., and Crawford, J. (2005a). Documentation and analysis of a selection of artefacts from metal collections of the Mediterranean Basin: D3-1: Definition of metal compositions representative of the collections WP3/TASK 3.1/D3-1/April 2005. European Commission Promet project. Bighi, Malta, Diagnostic Science Laboratories, Malta Centre for Restoration – internal document.
- Vella, D., Degriigny, C., Williams, A. and Grech, M. (2004). Metallurgy of armour exhibited at the Palace Armoury Valletta, Malta. Metal 04 Proceedings of the international conference on metals conservation, Canberra, National Museum of Australia.

¹⁹ Vella et al., 2004, p. 226

²⁰ (Crawford in) Vella et al., 2005a, p. 10