

The Non-Invasive Characterization of Iron Age Glass Finds from the “Gaetano Chierici” Collection in Reggio Emilia (Italy)

SUPPORTING INFORMATION

Contains the following tables:

Table S1: Some details on the Iron Age glass finds of the "Gaetano Chierici" collection at the Civic Museum of Reggio Emilia (Italy).

Table S2: p-XRF data.

Table S1. Some details on the Iron Age glass finds of the "Gaetano Chierici" collection at the Civic Museums of Reggio Emilia (Italy). The diameter measurements were taken in the widest place in the direction perpendicular to the aperture (for beads). Fragmented objects diameters were not measured, unless more than half of the bead was present. "Colour" is the colour of the base of the object. Short description of the decorations is given in the last column. "-" – not applicable.

Group 1. Spherical blue beads							
Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.53/126	RE3	11.5	9.5	3.5	blue	semi-translucent	–
S.53/131	RE7	14.5	11	3	blue	semi-translucent	–
S.53/129	RE8	14.5	11	3	blue	semi-translucent	–
S.27/120	RE29	15.0	10	3	blue	Opaque	white wave
S.38/123	RE32	–	–	–	blue	semi-translucent	–
S.38/125	RE34	–	–	–	blue	Opaque	–
S.38/129	RE38	13.5	11	3	blue	semi-translucent	white wave
S.38/131	RE41	16.0	11	4	blue	semi-translucent	–
S.38/134	RE44	16.0	13	3.5	blue	Opaque	–
S.38/135	RE45	8.0	4.5	3	blue	Opaque	–
Group 2. Pear shaped beads							
Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.27/214	RE30	31.0	–	–	blue	Opaque	lines, waves
S.38/143	RE48	22.0	21	5	blue	Opaque	wave
Group 3. Large ring beads							
Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.53/134	RE9	25.0	9	11.5	dark blue	Opaque	yellow stripe
S.53/138	RE10	39.0	18	10.5	blue	Translucent	–
T.89	RE16	25.0	8	13	dark blue	semi-translucent	–
T.89	RE18	25.0	7.5	12	dark blue	semi-translucent	–
Group 4. Small ring beads							

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.27/230	RE31	6.0	3	2.5	blue	semi-translucent	–
S.38/126	RE35	8.0	–	–	blue	semi-translucent	–

Group 5. Large eye beads

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.27/36	RE27	28.0	20.5	8	dark blue	Opaque	spiral eyes
S.38/130	RE39	36.0	23	7	green	Opaque	stratified eyes, stripes
S.38/130 (1)	RE40	28.0	17	8.5	dark blue	Opaque	Spiral eyes

Group 6. Small eye beads

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.38/124	RE33	–	–	–	yellow	Opaque	twin stratified eyes
S.38/128	RE37	11.5	7	6	dark blue	Opaque	stratified eyes
S.38/132	RE42	–			dark blue	Opaque	stratified eyes
S.38/136	RE46	15.0	9	8	yellow	Opaque	twin stratified eyes
S.38/137	RE47	9.0	8	3	turquoise	Opaque	Stratified eyes

Group 7. Disc shaped beads

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.53/127	RE4	15.5	5	4	colourless, yellow	semi clear	–
S.53/130	RE5	17.5	6	4	colourless, yellow	semi clear	–
S.53/132	RE6	19.0	7	4	colourless, yellow	semi clear	–
S.53/140	RE11	25.0	7.5	7	colourless, yellow	Translucent	pink stripe

Group 8. Toroid beads

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.53/136	RE13	36.0	14	13	dark blue	semi-translucent	white and blue stripes
T.89	RE14	38.0	16.5	12	brown	Opaque	light coloured stripes
T.89	RE15	32.0	11	12	dark	Opaque	yellow and white stripes
T.89	RE17	33.5	14	13.5	dark	Opaque	yellow and white stripes

Group 9. Bangles

Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.44/163	RE19	–	6.5	–	dark blue	Translucent	yellow waves
S.44/164	RE20	–	9	–	brown	Translucent	white stripes
S.44/166	RE22	–	–	–	dark blue	Translucent	yellow waves
S.44/167	RE23	–	–	–	dark blue	Translucent	yellow waves
S.44/168	RE24	–	–	–	dark blue	Translucent	lines
S.44/170	RE26	–	8	–	dark blue	Translucent	yellow lined and waves
Other objects							
Museum ID	Lab. ID	Diameter (mm)	Width (mm)	Aperture diam. (mm)	Colour	Translucency	Decoration
S.97/24-38	RE2	15.0	23	5	blue	semi-translucent	ribs
S.44/169	RE25	–	–	–	dark blue	Translucent	–
S.27/37	RE28	23.0	17	4	red	opaque	grey-green protrusions, lines
S.38/127	RE36	10.5	9	3	dark	opaque	–
S.38/133	RE43	13.0	4	5	dark	opaque	–
S.38/170	RE49	–	3	–	dark blue	opaque	yellow and blue lines, shevron, stripes
S.73/100	RE50	–	–	–	dark blue	semi-translucent	–
S.73/101	RE51	19.0	19	–	dark	semi-translucent	Spiral eyes

Table S2. p-XRF data. Values represented as oxide weight % together with their respective standard deviations. <LOQ – below the limit of quantification, “-” – not applicable. Letters next to the name of samples mean the colour: b – blue; d – dark; g – green; lb – light blue; r – red; y – yellow; w – white.

Group 1. Spherical blue beads												
	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE3_b	<LOQ	7.3	<LOQ	<LOQ	1.4	0.10	<LOQ	0.07	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	2.0	-	-	0.3	0.03	-	0.03	0.03	-	-	-
RE7_b	<LOQ	8.4	<LOQ	<LOQ	1.3	0.07	<LOQ	0.050	0.05	<LOQ	<LOQ	0.3
st.dev	-	0.8	-	-	0.2	0.03	-	0.006	0.02	-	-	0.2
RE8_b	<LOQ	6.1	<LOQ	<LOQ	1.0	0.09	<LOQ	0.04	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	1.1	-	-	0.2	0.03	-	0.02	0.02	-	-	-
RE29_w	2.6	4.6	0.49	0.10	3.8	0.05	<LOQ	0.05	0.03	<LOQ	0.6	10.0
st.dev	0.7	1.1	0.08	0.03	0.8	0.04	-	0.05	0.02	-	0.3	3.4
RE29_b	<LOQ	5.6	<LOQ	<LOQ	1.1	0.06	<LOQ	0.5	0.04	0.2	<LOQ	0.14
st.dev	-	0.9	-	-	0.1	0.03	-	0.3	0.02	0.1	-	0.05
RE32_b	<LOQ	7.0	0.26	<LOQ	1.7	0.11	<LOQ	0.07	0.06	<LOQ	<LOQ	<LOQ
st.dev	-	1.6	0.08	-	0.2	0.04	-	0.02	0.03	-	-	-
RE34_b	<LOQ	5.0	<LOQ	<LOQ	1.2	0.07	<LOQ	0.05	0.03	<LOQ	<LOQ	<LOQ
st.dev	-	1.4	-	-	0.3	0.03	-	0.02	0.02	-	-	-
RE38_b	<LOQ	5.4	<LOQ	<LOQ	1.0	0.06	0.7	<LOQ	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	2.8	-	-	0.5	0.03	0.5	-	0.02	-	-	-
RE38_w	1.9	6.8	0.26	<LOQ	1.1	<LOQ	<LOQ	<LOQ	0.05	<LOQ	1.2	<LOQ
st.dev	0.9	1.0	0.05	-	0.5	-	-	-	0.02	-	0.2	-
RE41_b	<LOQ	6.6	<LOQ	<LOQ	1.5	0.07	<LOQ	0.047	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	1.0	-	-	0.2	0.03	-	0.006	0.02	-	-	-
RE44_b	<LOQ	6.1	<LOQ	<LOQ	1.2	0.09	<LOQ	0.06	0.04	<LOQ	<LOQ	0.15
st.dev	-	1.8	-	-	0.1	0.03	-	0.02	0.01	-	-	0.03
RE45_b	1.5	6.9	0.8	<LOQ	2.6	0.13	0.5	0.11	0.04	<LOQ	0.5	9.4
st.dev	0.7	2.0	1.1	-	0.9	0.05	0.3	0.02	0.02	-	0.2	2.9
Group 2. Pear shaped beads												
	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE30_b	<LOQ	5.8	<LOQ	<LOQ	1.2	0.08	<LOQ	0.05	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	1.3	-	-	0.3	0.04	-	0.01	0.02	-	-	-
RE48_w	<LOQ	14.4	0.27	<LOQ	1.2	0.04	<LOQ	<LOQ	0.05	<LOQ	1.0	0.17
st.dev	-	2.5	0.04	-	0.2	0.04	-	-	0.02	-	0.5	0.04
RE48_b	<LOQ	8.2	<LOQ	<LOQ	2.1	0.13	<LOQ	0.05	0.06	<LOQ	0.2	0.27
st.dev	-	2.1	-	-	0.6	0.06	-	0.02	0.03	-	0.1	0.09
Group 3. Large ring beads												
	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE9_b	<LOQ	9.7	<LOQ	4.0	1.9	0.18	0.9	0.05	0.09	<LOQ	<LOQ	0.4
st.dev	-	2.1	-	0.7	0.4	0.07	0.5	0.03	0.04	-	-	0.1
RE9_y	<LOQ	8.2	<LOQ	0.8	0.8	<LOQ	<LOQ	<LOQ	0.06	0.6	<LOQ	12.5
st.dev	-	1.2	-	0.3	0.2	-	-	-	0.02	0.3	-	4.4
RE10_b	<LOQ	10.1	<LOQ	0.21	0.6	<LOQ	<LOQ	<LOQ	0.07	<LOQ	0.3	<LOQ
st.dev	-	1.8	-	0.04	0.1	-	-	-	0.02	-	0.1	-
RE16_b	<LOQ	7.4	<LOQ	1.0	1.2	0.09	<LOQ	<LOQ	0.06	<LOQ	<LOQ	0.18
st.dev	-	1.1	-	0.1	0.1	0.03	-	-	0.02	-	-	0.04
RE18_b	1.5	11.4	<LOQ	1.81	1.38	0.20	<LOQ	<LOQ	0.08	<LOQ	<LOQ	0.33
st.dev	0.5	1.4	-	0.26	0.06	0.03	-	-	0.02	-	-	0.05

	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE4_y	<LOQ	9.2	<LOQ	0.59	0.50	<LOQ	<LOQ	0.08	0.07	<LOQ	0.6	<LOQ
st.dev	-	0.7	-	0.08	0.04	-	-	0.02	0.02	-	0.1	-
RE5_y	<LOQ	8.4	<LOQ	0.40	0.37	<LOQ	<LOQ	<LOQ	0.06	<LOQ	0.5	<LOQ
st.dev	-	1.1	-	0.05	0.04	-	-	-	0.02	-	0.1	-
RE6_y	<LOQ	7.7	<LOQ	0.37	0.33	<LOQ	<LOQ	<LOQ	0.06	<LOQ	0.5	<LOQ
st.dev	-	1.9	-	0.08	0.08	-	-	-	0.02	-	0.2	-
RE11_y	1.7	10.9	<LOQ	1.8	0.66	<LOQ	<LOQ	<LOQ	0.10	<LOQ	<LOQ	0.7
st.dev	0.5	1.4	-	0.08	0.08	-	-	-	0.02	-	-	1.0

Group 8. Toroid beads

	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE13_w	2.0	8.4	<LOQ	0.31	0.8	<LOQ	<LOQ	<LOQ	0.05	0.9	0.2	1.7
st.dev	0.9	2.6	-	0.09	0.2	-	-	-	0.02	0.2	0.1	0.2
RE13_d	1.5	10.3	<LOQ	1.2	1.15	0.09	<LOQ	<LOQ	0.07	<LOQ	<LOQ	0.38
st.dev	0.5	1.1	-	0.1	0.09	0.03	-	-	0.02	-	-	0.05
RE14_w	1.5	8.7	<LOQ	0.37	0.6	<LOQ	0.6	0.07	0.05	0.9	<LOQ	6.1
st.dev	0.4	1.1	-	0.03	0.1	-	0.3	0.01	0.02	0.1	-	0.4
RE14_d	<LOQ	8.7	<LOQ	2.2	0.55	0.05	<LOQ	<LOQ	0.07	0.2	<LOQ	0.11
st.dev	-	1.0	-	0.1	0.04	0.03	-	-	0.02	0.1	-	0.07
RE14_inside	<LOQ	7.8	<LOQ	1.8	1.2	0.07	<LOQ	<LOQ	0.07	0.4	<LOQ	7.8
st.dev	-	1.1	-	0.2	0.2	0.03	-	-	0.02	0.1	-	1.0
RE15_w	1.5	8.2	<LOQ	0.6	0.9	<LOQ	<LOQ	<LOQ	0.04	1.5	<LOQ	2.3
st.dev	0.5	2.5	-	0.1	0.3	-	-	-	0.02	0.4	-	0.6
RE15_d	<LOQ	8.6	<LOQ	2.34	0.5	<LOQ	<LOQ	<LOQ	0.07	0.2	<LOQ	1.0
st.dev	-	0.7	-	0.05	0.1	-	-	-	0.01	0.1	-	1.0
RE15_y	<LOQ	4.6	<LOQ	0.4	0.7	<LOQ	<LOQ	<LOQ	0.04	0.6	<LOQ	17.1
st.dev	-	1.8	-	0.3	0.1	-	-	-	0.03	0.2	-	1.1
RE17_w	2.3	7.8	<LOQ	0.9	0.9	0.05	<LOQ	0.05	0.07	0.4	<LOQ	1.5
st.dev	0.7	1.8	-	0.2	0.1	0.03	-	0.02	0.02	0.2	-	0.4
RE17_d	1.7	8.7	<LOQ	1.5	1.5	0.11	<LOQ	<LOQ	0.07	0.2	<LOQ	1.1
st.dev	0.6	1.6	-	0.2	0.3	0.04	-	-	0.02	0.1	-	0.5
RE17_y	<LOQ	4.2	<LOQ	0.30	0.5	<LOQ	<LOQ	0.05	0.03	0.5	<LOQ	16.7
st.dev	-	1.2	-	0.07	0.1	-	-	0.03	0.02	0.2	-	5.0

Group 9. Bangles

	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	CuO	ZnO	SrO	SnO ₂	Sb ₂ O ₅	PbO ₂
RE19_w	2.5	9.2	0.33	0.3	2.2	0.14	<LOQ	<LOQ	0.06	<LOQ	0.2	0.11
st.dev	0.8	1.8	0.07	0.1	0.3	0.09	-	-	0.02	-	0.2	0.05
RE19_y	1.5	6.1	<LOQ	0.09	1.55	0.17	<LOQ	0.06	0.05	<LOQ	0.2	3.6
st.dev	0.5	1.0	-	0.03	0.16	0.06	-	0.02	0.02	-	0.1	0.5
RE19_b	1.5	7.5	<LOQ	0.09	1.17	0.25	0.5	<LOQ	0.05	<LOQ	<LOQ	0.3
st.dev	0.5	1.0	-	0.03	0.05	0.04	0.3	-	0.02	-	-	0.2
RE20_w	1.5	13.9	0.38	0.21	0.9	<LOQ	<LOQ	0.052	0.07	<LOQ	3.2	<LOQ
st.dev	0.5	1.7	0.02	0.04	0.1	-	-	0.006	0.02	-	0.6	-
RE20_brown	<LOQ	8.1	<LOQ	<LOQ	0.55	<LOQ	<LOQ	<LOQ	0.06	<LOQ	<LOQ	<LOQ
st.dev	-	2.2	-	-	0.09	-	-	-	0.02	-	-	-
RE22_w	1.9	6.9	<LOQ	0.18	1.6	0.14	<LOQ	0.05	0.05	<LOQ	<LOQ	<LOQ
st.dev	0.4	1.6	-	0.02	0.2	0.05	-	0.01	0.02	-	-	-
RE22_b	<LOQ	7.1	<LOQ	0.10	1.1	0.23	<LOQ	<LOQ	0.05	<LOQ	<LOQ	<LOQ
st.dev	-	0.9	-	0.03	0.2	0.05	-	-	0.01	-	-	-
RE23_y	<LOQ	6.8	<LOQ	0.08	1.6	0.18	<LOQ	0.05	0.05	<LOQ	0.2	4.0
st.dev	-	1.0	-	0.02	0.2	0.03	-	0.01	0.02	-	0.1	0.5

RE23_b	<LOQ	6.9	<LOQ	0.08	1.1	0.23	<LOQ	<LOQ	0.05	<LOQ	<LOQ	0.7
st.dev	-	1.2	-	0.03	0.1	0.05	-	-	0.02	-	-	0.4
RE24_b	4.6	7.6	<LOQ	0.17	0.96	0.11	<LOQ	0.06	0.05	<LOQ	<LOQ	<LOQ
st.dev	1.3	0.9	-	0.03	0.08	0.03	-	0.01	0.01	-	-	-
RE26_y	<LOQ	3.1	<LOQ	<LOQ	1.3	<LOQ	<LOQ	0.06	0.02	<LOQ	0.4	3.9
st.dev	-	1.0	-	-	0.3	-	-	0.02	0.01	-	0.1	0.7
RE26_b	<LOQ	9.7	<LOQ	<LOQ	1.7	0.08	<LOQ	<LOQ	0.04	<LOQ	<LOQ	<LOQ
st.dev	-	1.5	-	-	0.4	0.03	-	-	0.02	-	-	-
Other objects												
	K₂O	CaO	TiO₂	MnO	Fe₂O₃	CoO	CuO	ZnO	SrO	SnO₂	Sb₂O₅	PbO₂
RE2_b	<LOQ	7.1	<LOQ	<LOQ	0.9	0.04	1.1	0.04	0.05	<LOQ	<LOQ	<LOQ
st.dev	-	3.4	-	-	0.5	0.03	0.6	0.02	0.02	-	-	-
RE25_b	1.8	6.5	<LOQ	0.47	0.96	0.10	<LOQ	<LOQ	0.05	<LOQ	0.2	<LOQ
st.dev	0.5	0.8	-	0.03	0.08	0.03	-	-	0.02	-	0.1	-
RE28_grey	2.0	6.3	<LOQ	0.6	1.5	<LOQ	<LOQ	<LOQ	0.05	1.1	0.4	6.9
st.dev	0.7	1.5	-	0.1	0.2	-	-	-	0.02	0.5	0.2	2.2
RE28_r	<LOQ	2.8	<LOQ	0.33	1.7	<LOQ	0.6	<LOQ	0.04	0.3	0.4	3.2
st.dev	-	1.1	-	0.03	0.4	-	0.4	-	0.02	0.1	0.2	1.0
RE36_d	<LOQ	6.3	0.3	4.5	1.4	<LOQ	<LOQ	0.04	0.07	<LOQ	<LOQ	<LOQ
st.dev	-	1.0	0.3	0.5	0.2	-	-	0.03	0.02	-	-	-
RE43_b	3.1	10.2	<LOQ	0.73	1.3	0.24	<LOQ	<LOQ	0.06	<LOQ	<LOQ	<LOQ
st.dev	0.6	1.2	-	0.07	0.1	0.04	-	-	0.02	-	-	-
RE49_y	<LOQ	7.6	<LOQ	<LOQ	1.8	0.04	<LOQ	<LOQ	0.05	<LOQ	0.6	9.4
st.dev	-	1.0	-	-	0.2	0.04	-	-	0.02	-	0.1	0.5
RE49_b	<LOQ	7.7	<LOQ	<LOQ	2.4	0.11	0.6	0.039	0.05	<LOQ	<LOQ	0.22
st.dev	-	2.2	-	-	0.5	0.03	0.3	0.004	0.01	-	-	0.03
RE49_l_b	<LOQ	10.0	<LOQ	<LOQ	0.65	<LOQ	2.6	<LOQ	0.05	<LOQ	2.4	0.26
st.dev	-	1.4	-	-	0.08	-	0.5	-	0.02	-	0.1	0.06
RE50_d	<LOQ	9.3	<LOQ	0.09	0.7	<LOQ	<LOQ	<LOQ	0.06	<LOQ	0.3	0.3
st.dev	-	1.3	-	0.05	0.2	-	-	-	0.01	-	0.1	0.3
RE50_w	1.9	9.94	0.28	0.6	1.6	<LOQ	<LOQ	0.039	0.08	<LOQ	3.7	2.6
st.dev	0.8	2.87	0.08	0.3	0.6	-	-	0.009	0.03	-	2.2	1.8
RE50_b	<LOQ	5.1	<LOQ	0.1	0.7	0.05	<LOQ	<LOQ	0.04	<LOQ	1.1	0.2
st.dev	-	4.0	-	0.1	0.5	0.05	-	-	0.03	-	1.2	0.2
RE51_w	2.5	8.5	<LOQ	0.1	0.7	<LOQ	<LOQ	0.07	0.03	1.3	<LOQ	12.2
st.dev	1.3	3.1	-	0.1	0.3	-	-	0.04	0.03	0.5	-	5.0
RE51_d	7.6	9.1	0.29	1.2	1.4	<LOQ	<LOQ	0.05	0.05	<LOQ	<LOQ	0.2
st.dev	1.5	1.6	0.05	0.1	0.2	-	-	0.01	0.02	-	-	0.1