

Table S1 Chemical Composition of Glass Beads from Nanhai No.I shipwreck by μ -XRF (wt%)

Sample No.	Testing position	Na ₂ O	Cl	Al ₂ O ₃	SiO ₂	K ₂ O	CaO	Fe ₂ O ₃	CuO	SnO ₂	PbO	SO ₃	Sum
NHI-1-A	gray 1	2.38	1.44	0.78	44.47	1.04	n.d.	0.32	0.19	2.80	46.58	n.d.	100
NHI-1-A	gray 2	1.43	0.72	0.82	43.73	0.64	n.d.	0.33	0.19	5.55	46.59	n.d.	100
NHI-1-A	yellow 1	2.94	1.17	0.24	30.51	3.14	n.d.	0.22	0.07	4.13	57.59	n.d.	100
NHI-1-A	yellow 2	3.29	1.31	0.25	26.89	2.70	n.d.	0.23	0.07	5.70	59.56	n.d.	100
NHI-1-B	gray 1	1.40	0.74	0.80	46.90	1.76	n.d.	0.30	0.18	5.07	42.85	n.d.	100
NHI-1-B	gray 2	1.24	0.60	0.79	44.70	0.83	n.d.	0.30	0.18	5.12	46.24	n.d.	100
NHI-1-B	Section yellow 1	n.d.	n.d.	n.d.	28.41	4.33	n.d.	0.16	0.11	4.87	62.12	n.d.	100
NHI-1-B	Section yellow 2	n.d.	n.d.	n.d.	27.95	4.12	n.d.	0.15	0.11	5.01	62.67	n.d.	100
NHI-1-C	yellow 1	n.d.	n.d.	0.25	28.93	3.62	n.d.	0.19	0.06	3.99	62.96	n.d.	100
NHI-1-C	yellow 2	n.d.	n.d.	0.72	24.42	3.58	n.d.	0.20	0.07	2.59	68.42	n.d.	100
NHI-1-C	gray surface 1	n.d.	n.d.	0.33	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	99.67	n.d.	100
NHI-1-C	gray surface 2	n.d.	n.d.	0.24	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	99.76	n.d.	100
NHI-1-D	yellow inner section 1	n.d.	n.d.	0.14	37.16	3.64	0.17	0.19	0.08	2.85	55.77	n.d.	100
NHI-1-D	yellow inner section 2	n.d.	n.d.	n.d.	28.52	3.74	n.d.	0.22	0.09	4.29	63.14	n.d.	100
NHI-1-D	gray surface2	n.d.	n.d.	n.d.	n.d.	n.d.	0.35	n.d.	0.05	n.d.	99.60	n.d.	100
NHI-1-E	gray surface1	n.d.	n.d.	0.96	1.72	n.d.	n.d.	0.22	0.07	n.d.	97.03	n.d.	100
NHI-1-E	gray surface2	n.d.	n.d.	n.d.	1.06	n.d.	n.d.	0.10	0.07	n.d.	98.77	n.d.	100
NHI-1-E	yellow surface 1	n.d.	n.d.	0.82	55.13	1.36	n.d.	0.50	0.05	2.16	39.97	n.d.	100
NHI-1-E	yellow surface 2	n.d.	n.d.	0.90	55.91	1.23	n.d.	0.46	0.05	3.32	38.14	n.d.	100
NHI-1-F	brown surface1	n.d.	n.d.	0.74	47.91	1.02	n.d.	0.43	0.12	4.32	45.47	n.d.	100
NHI-1-F	yellow surface2	n.d.	n.d.	1.17	49.79	0.71	n.d.	0.62	0.11	3.52	44.07	n.d.	100
NHI-1-G	black surface1	n.d.	n.d.	0.50	28.24	0.46	n.d.	0.32	0.39	9.93	60.16	n.d.	100
NHI-1-G	gray surface2	n.d.	n.d.	0.83	43.73	0.19	n.d.	0.34	0.18	4.61	50.12	n.d.	100
NHI-1-H	gray surface1	n.d.	n.d.	0.72	39.69	n.d.	n.d.	0.30	0.59	6.27	52.42	n.d.	100
NHI-1-H	black surface2	n.d.	n.d.	0.66	37.24	1.05	n.d.	0.33	0.57	3.58	56.57	n.d.	100
NHI-2-A	Brown section 1	n.d.	n.d.	n.d.	29.52	8.17	n.d.	0.17	13.12	n.d.	49.02	n.d.	100
NHI-2-A	Brown section 2	n.d.	n.d.	n.d.	29.41	9.15	n.d.	0.18	13.23	n.d.	48.04	n.d.	100
NHI-2-A	yellow section 1	n.d.	n.d.	n.d.	29.80	8.25	n.d.	0.18	13.34	n.d.	48.44	n.d.	100
NHI-2-A	Yellow section 2	n.d.	n.d.	n.d.	30.13	8.75	n.d.	0.18	13.23	n.d.	47.72	n.d.	100
NHI-2-C	black surface1	n.d.	n.d.	0.61	21.10	n.d.	n.d.	0.47	0.82	7.95	69.06	n.d.	100
NHI-2-C	black surface2	n.d.	n.d.	0.84	22.33	0.31	n.d.	0.39	0.89	7.47	67.78	n.d.	100
NHI-2-D	yellow surface 1	n.d.	n.d.	0.48	17.03	0.76	3.89	2.28	10.54	0.71	38.49	25.82	100
NHI-2-D	yellow surface 2	n.d.	n.d.	1.10	17.30	0.64	1.94	3.18	9.46	0.94	37.60	27.85	100
NHI-2-D	black surface 1	n.d.	n.d.	0.59	22.40	1.67	1.17	1.62	9.41	1.89	41.22	20.02	100
NHI-2-D	black surface 2	n.d.	n.d.	0.58	11.44	0.41	0.38	5.36	10.67	0.69	34.27	36.21	100
NHI-2-D	brown fresh	n.d.	n.d.	n.d.	27.37	8.22	n.d.	0.14	10.94	2.08	51.25	n.d.	100
NHI-2-F	gray surface 1	n.d.	n.d.	n.d.	n.d.	n.d.	0.23	0.05	0.22	n.d.	99.50	n.d.	100
NHI-2-F	gray surface 2	n.d.	n.d.	n.d.	n.d.	n.d.	0.20	0.10	0.28	n.d.	99.43	n.d.	100
NHI-2-F	black surface1	n.d.	n.d.	1.03	21.50	0.64	n.d.	0.18	0.45	4.13	72.07	n.d.	100
NHI-2-F	black surface2	n.d.	n.d.	0.42	22.95	0.29	n.d.	0.13	0.27	3.91	72.04	n.d.	100

NHI-2-G	gray surface 1	n.d.	n.d.	n.d.	3.88	n.d.	n.d.	0.13	0.21	5.60	90.18	n.d.	100
NHI-2-G	black surface 2	n.d.	n.d.	n.d.	18.83	n.d.	n.d.	0.24	0.71	5.44	74.78	n.d.	100
NHI-2-G	gray surface 3	n.d.	n.d.	n.d.	n.d.	n.d.	0.37	0.07	0.25	n.d.	99.31	n.d.	100
NHI-3-A	yellow 1	n.d.	n.d.	n.d.	25.49	3.51	n.d.	0.16	0.14	7.29	63.41	n.d.	100
NHI-3-A	yellow 2	n.d.	n.d.	n.d.	26.14	3.52	n.d.	0.19	0.13	6.26	63.76	n.d.	100
NHI-3-B	yellow surface1	n.d.	n.d.	n.d.	42.46	4.58	0.38	0.18	0.15	4.06	48.19	n.d.	100
NHI-3-B	yellow surface2	n.d.	n.d.	0.34	43.99	4.34	n.d.	0.19	0.13	5.40	45.61	n.d.	100
NHI-3-B	black surface1	n.d.	n.d.	n.d.	39.04	0.69	0.32	0.37	0.43	5.40	53.74	n.d.	100
NHI-3-B	black surface2	n.d.	n.d.	1.62	63.86	1.55	0.40	0.27	0.47	3.00	28.83	n.d.	100
NHI-3-C	yellow surface1	n.d.	n.d.	n.d.	41.23	3.07	0.20	0.20	1.73	3.20	50.37	n.d.	100
NHI-3-C	yellow surface2	n.d.	n.d.	0.69	43.23	2.88	n.d.	0.23	2.01	4.75	46.22	n.d.	100
NHI-3-C	black surface1	n.d.	n.d.	0.90	41.66	1.02	0.29	0.54	2.49	4.18	48.92	n.d.	100
NHI-3-C	black surface2	n.d.	n.d.	0.69	40.74	0.89	n.d.	0.28	2.29	4.06	51.05	n.d.	100
NHI-3-D	yellow surface1	n.d.	n.d.	0.40	48.40	3.38	n.d.	0.14	0.11	3.07	44.51	n.d.	100
NHI-3-D	yellow surface2	n.d.	n.d.	0.46	49.38	3.29	n.d.	0.13	0.10	3.78	42.86	n.d.	100
NHI-3-E	yellow surface1	n.d.	n.d.	0.63	43.93	3.02	0.19	0.19	0.25	5.05	46.73	n.d.	100
NHI-3-E	yellow surface2	n.d.	n.d.	0.74	45.60	3.09	0.24	0.19	0.30	2.86	46.98	n.d.	100
NHI-3-F	gray surface 1	n.d.	n.d.	0.85	47.61	n.d.	n.d.	0.30	0.21	4.78	46.25	n.d.	100
NHI-3-F	gray surface 2	n.d.	n.d.	0.79	44.84	n.d.	n.d.	0.32	0.23	6.11	47.72	n.d.	100
NHI-3-F	yellow surface 1	n.d.	n.d.	1.09	53.00	1.69	n.d.	0.18	0.10	3.67	40.26	n.d.	100
NHI-3-F	yellow surface2	n.d.	n.d.	0.49	50.18	2.44	n.d.	0.14	0.10	5.83	40.82	n.d.	100
NHI-3-G	yellow surface1	n.d.	n.d.	0.64	49.08	2.49	n.d.	0.20	0.29	4.48	42.82	n.d.	100
NHI-3-G	yellow surface2	n.d.	n.d.	0.53	41.16	2.31	n.d.	0.24	0.33	4.32	51.12	n.d.	100
NHI-3-I	yellow surface	n.d.	n.d.	0.73	34.93	2.52	n.d.	0.39	0.62	7.01	53.79	n.d.	100
NHI-3-I	black surface	n.d.	n.d.	0.64	42.02	1.54	n.d.	0.40	0.87	4.83	49.71	n.d.	100

Note: n.d., not detected.