

Chemical Composition of Ceramic Samples

Dataset Information

The energy dispersive X-ray fluorescence (EDXRF) was used to determine the chemical composition of celadon body and glaze in Longquan kiln (at Dayao County) and Jingdezhen kiln. Forty typical shards in four cultural eras were selected to investigate the raw materials and firing technology. We hope to identify chemical elements that are the strongest explanatory variables to classify samples into different cultural eras and kilns.

Variable Information

Ceramic.Name: name of ceramic types from Longquan and Jindgezhen

Part: a binary categorical variable ('Body' or 'Glaze')

Na2O: percentage of Na2O (wt%)

MgO: percentage of MgO (wt%)

Al2O3: percentage of Al2O3 (wt%)

SiO2: percentage of SiO2 (wt%)

K2O: percentage of K2O (wt%)

CaO: percentage of CaO (wt%)

TiO2: percentage of TiO2 (wt%)

Fe2O3: percentage of Fe2O3 (wt%)

MnO: percentage of MnO (ppm)

CuO: percentage of CuO (ppm)

ZnO: percentage of ZnO (ppm)

PbO2: percentage of PbO2 (ppm)

Rb2O: percentage of Rb2O (ppm)

SrO: percentage of SrO (ppm)

Y2O3: percentage of Y2O3 (ppm)

ZrO2: percentage of ZrO2 (ppm)

P2O5: percentage of P2O5 (ppm)

CeramicName	Part	Na2O	MgO	Al2O3	SiO2	K2O	CaO	TiO2	Fe2O3	MnO	CuO	ZnO	PbO2	Rb2O	SrO	Y2O3	ZrO2	P2O5
FLQ-1-b	Body	0.62	0.38	19.61	71.99	4.84	0.31	0.07	1.18	630	10	70	10	430	0	40	80	90
FLQ-2-b	Body	0.57	0.47	21.19	70.09	4.98	0.49	0.09	1.12	380	20	80	40	430	-10	40	100	110
FLQ-3-b	Body	0.49	0.19	18.6	74.7	3.47	0.43	0.06	1.07	420	20	50	50	380	40	40	80	200
FLQ-4-b	Body	0.89	0.3	18.01	74.19	4.01	0.27	0.09	1.23	460	20	70	60	380	10	40	70	210
FLQ-5-b	Body	0.03	0.36	18.41	73.99	4.33	0.65	0.05	1.19	380	40	90	40	360	10	30	80	150
FLQ-6-b	Body	0.62	0.18	18.82	73.79	4.28	0.3	0.04	0.96	350	20	80	10	390	10	40	80	130
FLQ-7-b	Body	0.45	0.33	17.65	74.99	3.53	0.7	0.07	1.28	650	20	90	90	410	30	30	90	140
FLQ-8-b	Body	0.59	0.45	21.42	71.46	3.47	0.35	0.05	1.2	500	10	70	50	380	70	40	80	440
FLQ-9-b	Body	0.42	0.53	23.12	67.41	3.81	0.74	0.16	2.81	340	40	120	30	370	20	30	150	180
FLQ-10-b	Body	0.56	0.49	19.86	72	4.51	0.25	0.23	1.1	330	20	70	20	350	10	40	130	150
FLQ-11-b	Body	0.35	0.23	19.53	72.87	4.62	0.28	0.07	1.05	320	70	40	20	450	10	40	120	140
FLQ-12-b	Body	0.43	0.7	19.35	71.21	4.77	1.26	0.04	1.23	420	0	90	30	430	10	40	80	100
FLQ-13-b	Body	0.76	0.44	19.45	72.52	3.94	0.58	0.07	1.24	420	50	100	10	390	30	30	80	150
DY-BS-1-b	Body	0.03	0.26	18.34	73.26	5.11	0.14	0.12	1.74	480	0	100	90	370	20	50	200	80
DY-BS-2-b	Body	0.71	0.31	24.47	65.2	6.16	0.17	0.09	1.89	430	40	110	20	360	10	50	200	60
DY-BS-3-b	Body	0.25	0.24	23.07	67.37	5.8	0.18	0.14	1.94	280	0	70	60	370	10	50	200	90
DY-BS-4-b	Body	0.43	0.47	20.67	70.07	5.27	0.13	0.2	1.77	300	10	80	40	350	40	60	180	110
DY-BS-5-b	Body	0.28	0.22	20.89	70.77	4.79	0.15	0.13	1.77	230	60	90	60	290	0	60	190	60
DY-BS-6-b	Body	0.25	0.49	20.79	69.92	5.37	0.18	0.15	1.86	470	30	120	80	370	10	50	180	60
DY-BS-7-b	Body	0.16	0.34	23.77	66.31	6.05	0.16	0.16	2.05	280	40	80	80	400	20	50	230	70
DY-NS-1-b	Body	0.03	0.36	25.13	64.58	6.56	0.17	0.07	2.11	400	20	90	40	380	10	70	170	110
DY-NS-2-b	Body	0.24	0.55	22.81	66.31	5.59	0.2	0.18	3.11	350	20	110	70	330	30	50	220	90
DY-NS-3-b	Body	0.29	0.33	23.49	67.94	4.46	0.17	0.16	2.15	310	0	80	20	230	20	30	210	170
DY-NS-4-b	Body	0.45	0.46	25.8	64.42	4.57	0.15	0.19	2.97	240	60	110	40	270	0	50	260	120
DY-NS-5-b	Body	0.29	0.23	22.26	68.93	4.19	0.12	0.29	2.68	250	50	120	60	270	20	40	310	70
DY-NS-6-b	Body	0.41	0.25	19.48	71.97	5.03	0.28	0.04	1.53	490	80	110	60	320	10	60	160	200
DY-NS-7-b	Body	0.34	0.47	22.48	67.8	5.45	0.49	0.14	1.83	310	10	120	40	320	10	60	170	120
DY-NS-8-b	Body	0.71	0.25	19.49	70.85	5.43	0.27	0.14	1.88	370	30	110	70	330	30	60	190	70
DY-Y-1-b	Body	0.3	0.37	25	65.09	6.17	0.18	0.07	1.83	360	30	80	100	370	10	60	160	110
DY-Y-2-b	Body	0.5	0.32	25.15	65.37	5.34	0.12	0.1	2.1	400	30	90	10	380	0	70	190	50
DY-Y-3-b	Body	0.31	0.41	22.77	67.75	4.5	0.18	0.24	2.85	350	10	100	0	310	30	60	250	90
DY-Y-4-b	Body	0.2	0.49	24.07	66.18	4.66	0.2	0.21	2.98	410	20	120	90	330	20	60	280	120
DY-Y-5-b	Body	0.26	0.32	26.48	63.88	5.62	0.13	0.15	2.17	370	40	70	70	390	0	50	160	70
DY-Y-6-b	Body	0.86	0.19	21.54	68.95	5.59	0.16	0.08	1.63	620	30	120	70	390	20	80	210	100
DY-Y-7-b	Body	0.17	0.53	21.4	71.02	2.73	0.14	0.28	2.73	180	30	80	10	290	10	40	300	170
DY-Y-8-b	Body	0.32	0.22	22.34	68.86	5.28	0.13	0.12	1.73	300	0	100	60	370	0	70	160	70
DY-Y-9-b	Body	0.39	0.35	23.2	66.4	6.25	0.21	0.1	2.09	470	40	110	80	390	30	60	190	50
DY-M-1-b	Body	0.18	0.18	23.25	67.86	5.37	0.14	0.11	1.92	390	20	120	60	340	0	60	170	50
DY-M-2-b	Body	0.42	0.18	22.09	69.03	5.17	0.17	0.07	1.86	510	50	120	30	310	10	70	170	80
DY-M-3-b	Body	0.29	0.21	24.35	65.43	6.07	0.13	0.1	2.41	420	20	100	40	380	10	50	160	70
DY-QC-1-b	Body	0.55	0.27	21.58	69.91	4.61	0.13	0.1	1.86	330	40	110	10	310	0	50	160	50
DY-QC-2-b	Body	0.64	0.19	21.31	69.34	4.9	0.22	0.14	2.27	420	40	120	60	320	20	50	160	70
DY-QC-3-b	Body	0.14	0.27	24.01	66.7	5.47	0.23	0.09	2.08	420	30	70	70	320	30	60	390	60
DY-QC-4-b	Body	0.31	0.28	23.23	67.08	5.63	0.16	0.13	2.18	360	20	90	30	320	10	60	160	60
FLQ-1-g	Glaze	0.97	0.07	11.42	74.41	5.7	5.34	0.05	1.04	550	20	60	20	310	150	20	50	390
FLQ-2-g	Glaze	1.46	0.47	12.96	68.79	4.85	8.88	0.11	1.49	950	30	40	0	350	250	30	60	840

FLQ-3-g	Glaze	1.05	0.23	13.64	69.9	4.46	8.43	0.07	1.22	590	20	90	40	370	90	40	80	460
FLQ-4-g	Glaze	0.14	0.41	12.42	67.24	4.29	12.86	0.06	1.58	960	80	70	40	330	160	40	70	1000
FLQ-5-g	Glaze	0.37	1.03	13.15	68.98	5.58	7.91	0.08	1.9	800	60	120	0	320	80	40	80	1080
FLQ-6-g	Glaze	1.09	0.5	13.47	68.51	5.97	7.23	0.19	2.05	870	20	50	40	360	240	20	100	870
FLQ-7-g	Glaze	1.16	0.58	13.83	71.37	5.14	5.99	0.08	0.85	1050	60	90	20	380	240	40	100	670
FLQ-8-g	Glaze	1.01	0.1	11.84	71.13	3.84	9.4	0.1	1.58	520	40	50	40	180	160	30	70	1610
FLQ-9-g	Glaze	1.88	0.58	12.95	67.58	2.98	10.28	0.12	2.61	590	80	90	30	230	190	20	90	690
FLQ-10-g	Glaze	0.73	0.25	13	71.01	5.78	6.43	0.1	1.71	1090	40	70	20	330	180	30	80	990
FLQ-11-g	Glaze	0.68	0.27	12.74	71.93	6.16	6.1	0.09	1.04	810	20	20	0	360	200	30	90	370
FLQ-12-g	Glaze	1.29	0.32	12.83	68.81	5.8	7.92	0.07	1.97	680	30	40	20	340	210	40	70	540
FLQ-13-g	Glaze	1.27	0.54	13.01	73.11	5.46	4.12	0.13	1.36	660	10	40	20	400	160	30	80	360
DY-BS-1-g	Glaze	0.28	0.52	14.76	68.65	3.63	10.46	0.07	0.64	2000	30	120	100	210	570	50	140	880
DY-BS-2-g	Glaze	0.34	0.97	13.76	65.53	3.57	13.69	0.06	1.07	2190	20	70	20	180	780	50	150	1480
DY-BS-3-g	Glaze	0.5	0.66	11.3	69.9	3.88	11.72	0.06	0.98	1270	30	130	20	220	680	40	130	1060
DY-BS-4-g	Glaze	0.51	0.4	13.54	71.35	4.14	8.21	0.07	0.78	910	20	120	30	190	630	20	150	590
DY-BS-5-g	Glaze	0.14	0.5	14.15	68.91	5.1	9.21	0.08	0.91	1410	10	50	30	250	660	40	140	880
DY-BS-6-g	Glaze	0.38	1.04	12.37	67.7	3.89	12.17	0.07	1.38	1830	40	140	30	230	540	50	170	850
DY-BS-7-g	Glaze	0.25	0.47	14.09	68.46	4.71	9.81	0.07	1.14	1460	10	100	20	270	610	50	170	900
DY-NS-1-g	Glaze	0.2	0.53	12.83	72.24	5.03	6.92	0.07	1.18	950	10	50	10	250	520	40	130	650
DY-NS-2-g	Glaze	0.19	0.57	13.61	70.06	4.7	9.14	0.07	0.66	640	20	70	0	220	640	30	160	840
DY-NS-3-g	Glaze	0.69	0.35	13.86	71.38	4.94	6.71	0.16	0.91	770	30	120	60	230	460	40	140	510
DY-NS-4-g	Glaze	0.65	0.78	13.81	70.37	5.91	6.14	0.08	1.27	1500	30	110	30	290	490	30	110	720
DY-NS-5-g	Glaze	0.03	1.01	13.05	72.28	5.56	5.77	0.07	1.24	1750	20	150	30	270	330	30	130	960
DY-NS-6-g	Glaze	0.61	0.35	12.73	71.6	5.79	6.96	0.07	0.88	1740	40	140	70	240	550	40	120	540
DY-NS-7-g	Glaze	0.03	0.54	13.97	67.3	3.56	12.53	0.1	0.97	1340	40	70	30	180	690	40	170	1030
DY-NS-8-g	Glaze	0.31	0.53	14.63	68.22	3.6	11.06	0.06	0.58	1950	40	230	80	180	700	30	150	1030
DY-Y-1-g	Glaze	0.25	0.5	12.93	71.59	5.5	6.99	0.06	1.18	1290	20	90	40	250	520	40	120	510
DY-Y-2-g	Glaze	0.11	0.32	11.33	75.95	5.87	4.37	0.09	0.96	1600	50	200	50	300	300	30	120	400
DY-Y-3-g	Glaze	0.24	0.39	12.64	74.08	5.11	5.76	0.08	0.71	620	40	100	30	250	610	30	150	380
DY-Y-4-g	Glaze	0.15	0.33	13.14	73.76	4.87	6.03	0.05	0.68	700	20	110	0	220	560	30	150	380
DY-Y-5-g	Glaze	1	0.52	13.7	70.52	6.74	5.34	0.05	1.11	1510	70	140	50	320	610	30	120	490
DY-Y-6-g	Glaze	0.66	0.53	12.95	72.16	6.57	4.29	0.14	1.69	2250	50	90	60	280	400	40	110	480
DY-Y-7-g	Glaze	0.32	0.58	12.89	70.6	4.27	8.7	0.05	1.61	880	20	70	0	230	470	30	130	900
DY-Y-8-g	Glaze	0.71	0.57	11.61	71.04	5.31	8.13	0.06	1.58	2450	40	150	20	240	480	40	170	780
DY-Y-9-g	Glaze	0.4	0.47	14.38	66.59	4.16	12.16	0.07	0.77	870	0	80	30	210	650	40	140	1160
DY-M-1-g	Glaze	0.03	1.32	13.55	67.66	5.41	8.91	0.11	2	2970	60	180	90	220	650	30	100	1590
DY-M-2-g	Glaze	0.37	0.47	13.56	72.77	6.54	4.12	0.08	1.09	2560	20	80	10	290	640	40	130	410
DY-M-3-g	Glaze	0.34	0.55	12.37	70.7	5.33	8.06	0.06	1.61	1250	10	90	30	250	520	30	140	690
DY-QC-1-g	Glaze	0.72	0.34	12.2	72.19	6.19	6.06	0.04	1.27	1700	60	110	10	270	540	40	120	630
DY-QC-2-g	Glaze	0.23	0.24	12.99	71.81	5.25	7.15	0.05	1.29	750	40	100	0	240	470	40	120	480
DY-QC-3-g	Glaze	0.14	0.46	12.62	69.16	4.34	11.03	0.05	1.2	920	40	90	20	230	470	40	130	1100
DY-QC-4-g	Glaze	0.14	0.63	14.25	71.55	4.87	6.43	0.08	1.05	800	40	90	20	220	410	40	110	690