

Supplementary Material 1

Table 1. Chemical composition of plagioclase of Plinian eruptions of La Malinche volcano. HP: Huamantla Pumice; MIP: Malinche I Pumice; MIIP: Malinche II Pumice.

Sample	Deposit	SiO ₂	Al ₂ O ₃	CaO	Na ₂ O	K ₂ O	Total	An	Ab	Or
1	HP	62.2	24.4	5.7	7.9	0.4	100.6	0.28	0.70	0.02
2	HP	61.6	24.8	5.9	7.7	0.4	100.4	0.29	0.69	0.02
3	HP	61.7	24.3	5.6	8.1	0.4	100.0	0.27	0.71	0.03
4	HP	57.2	26.6	8.4	6.8	0.3	99.3	0.40	0.59	0.02
5	HP	60.1	25.5	6.9	7.5	0.3	100.3	0.33	0.65	0.02
6	HP	60.6	25.0	6.3	7.7	0.5	100.0	0.30	0.67	0.03
7	HP	60.0	25.0	6.6	7.8	0.4	99.7	0.31	0.67	0.02
8	HP	60.2	24.9	6.3	7.4	0.4	99.2	0.31	0.66	0.02
9	HP	57.9	26.9	8.4	6.7	0.3	100.1	0.40	0.58	0.02
10	HP	58.3	27.5	8.5	6.3	0.3	100.8	0.42	0.56	0.02
11	HP	60.0	25.5	6.8	7.4	0.3	100.0	0.33	0.65	0.02
12	HP	59.3	25.7	7.3	7.1	0.4	99.8	0.36	0.62	0.02
13	HP	58.2	27.3	8.1	6.5	0.3	100.4	0.40	0.58	0.02
14	HP	57.9	27.0	8.4	6.4	0.3	100.0	0.41	0.57	0.02
15	HP	60.3	25.3	6.9	7.1	0.4	100.0	0.34	0.64	0.02
16	HP	57.5	26.9	8.3	6.5	0.3	99.4	0.41	0.58	0.02
17	HP	57.8	27.4	8.6	6.5	0.2	100.6	0.42	0.57	0.01
18	HP	57.7	27.0	8.3	6.6	0.2	99.8	0.41	0.58	0.01
19	HP	57.8	27.3	8.3	6.4	0.2	100.0	0.41	0.57	0.01
20	HP	58.0	26.7	8.4	6.6	0.3	100.0	0.40	0.58	0.02
21	HP	57.7	27.2	8.7	6.5	0.3	100.3	0.42	0.56	0.01
22	HP	58.2	26.6	7.9	6.7	0.3	99.6	0.39	0.59	0.02
23	HP	58.4	26.7	8.5	6.6	0.2	100.4	0.41	0.57	0.01
24	HP	58.9	26.1	7.8	6.8	0.3	99.9	0.38	0.60	0.02
25	HP	56.7	27.1	8.9	6.2	0.2	99.2	0.44	0.55	0.01
26	HP	57.9	26.2	7.9	6.7	0.3	99.1	0.39	0.60	0.02
27	HP	58.2	26.3	7.7	6.7	0.3	99.2	0.38	0.60	0.02
28	HP	56.3	26.2	8.5	7.0	0.3	98.3	0.40	0.59	0.02
29	HP	57.1	27.1	8.9	6.5	0.2	99.7	0.42	0.56	0.01
30	HP	57.3	27.6	8.9	6.1	0.3	100.1	0.44	0.55	0.02
31	HP	57.5	27.0	8.1	6.9	0.3	99.7	0.39	0.60	0.02
32	HP	57.7	27.3	8.5	6.7	0.3	100.6	0.41	0.58	0.01
33	HP	57.4	27.5	8.8	6.1	0.2	100.0	0.44	0.55	0.01
34	HP	58.9	25.9	7.3	6.8	0.3	99.2	0.37	0.61	0.02
35	HP	60.0	25.5	6.6	7.3	0.3	99.8	0.33	0.65	0.02
36	HP	59.4	25.3	6.8	7.5	0.3	99.4	0.33	0.65	0.02
37	HP	59.3	25.7	7.3	7.4	0.3	100.0	0.35	0.64	0.02
38	HP	59.5	25.6	6.7	7.4	0.3	99.5	0.33	0.66	0.02
39	HP	58.9	25.9	7.0	7.4	0.3	99.5	0.34	0.64	0.02
40	HP	61.1	24.9	6.4	7.4	0.4	100.3	0.32	0.66	0.03

41	HP	59.0	26.2	7.4	7.0	0.3	99.9	0.36	0.62	0.02
42	HP	57.1	26.0	7.8	6.7	0.3	98.0	0.38	0.60	0.02
43	HP	59.2	26.3	7.5	6.7	0.4	100.0	0.37	0.61	0.02
44	HP	59.0	25.8	7.2	7.4	0.4	99.8	0.34	0.64	0.02
45	HP	59.0	25.9	7.3	6.8	0.3	99.3	0.37	0.62	0.02
46	HP	60.9	24.8	6.1	7.7	0.4	99.8	0.30	0.68	0.02
47	HP	61.7	24.1	5.4	8.0	0.5	99.6	0.26	0.71	0.03
48	HP	59.4	25.8	7.1	7.2	0.3	99.9	0.34	0.64	0.02
49	HP	57.2	27.1	8.7	6.3	0.2	99.5	0.43	0.56	0.01
50	HP	57.3	27.4	8.7	6.4	0.3	100.0	0.42	0.56	0.01
51	HP	57.2	27.3	8.6	6.1	0.3	99.5	0.43	0.55	0.02
52	HP	58.7	26.8	7.8	6.6	0.3	100.1	0.39	0.59	0.02
53	HP	58.4	26.7	8.0	6.9	0.4	100.4	0.38	0.60	0.02
54	HP	58.2	26.8	8.0	6.4	0.2	99.6	0.40	0.58	0.01
55	HP	57.3	27.2	8.7	6.3	0.3	99.7	0.43	0.56	0.02
56	HP	60.1	25.4	6.5	7.3	0.4	99.7	0.32	0.66	0.02
57	HP	59.2	26.0	7.2	7.0	0.3	99.8	0.36	0.63	0.02
58	HP	59.5	25.7	7.1	7.2	0.4	99.9	0.34	0.63	0.02
59	HP	59.5	26.1	7.2	7.2	0.3	100.3	0.35	0.63	0.02
60	HP	58.1	26.8	7.9	6.6	0.3	99.7	0.39	0.59	0.02
61	HP	59.7	25.4	6.9	7.5	0.4	99.9	0.33	0.65	0.02
62	HP	60.1	25.2	6.7	7.5	0.4	99.9	0.32	0.66	0.02
63	HP	60.2	25.2	6.5	7.6	0.4	99.9	0.31	0.66	0.02
64	HP	59.5	25.8	6.9	7.4	0.5	100.0	0.33	0.64	0.03
65	HP	57.8	26.6	8.2	6.6	0.3	99.4	0.40	0.58	0.02
66	HP	59.9	25.5	6.8	7.5	0.3	100.0	0.33	0.65	0.02
67	HP	57.0	27.5	8.8	6.5	0.2	100.1	0.42	0.57	0.01
68	HP	59.1	25.8	7.1	7.3	0.3	99.7	0.34	0.64	0.02
69	HP	58.8	25.7	7.1	7.2	0.4	99.2	0.34	0.63	0.02
70	HP	60.0	25.7	6.9	7.3	0.4	100.3	0.34	0.64	0.02
71	HP	58.1	26.3	7.8	6.6	0.2	99.0	0.39	0.60	0.01
72	HP	56.0	27.7	9.4	5.8	0.3	99.2	0.46	0.52	0.02
73	HP	55.1	28.4	10.3	5.5	0.2	99.4	0.50	0.49	0.01
74	HP	59.0	26.0	7.3	7.3	0.3	99.9	0.35	0.63	0.02
75	HP	54.4	29.0	10.8	5.4	0.2	99.8	0.52	0.47	0.01
76	HP	55.5	28.7	10.3	5.6	0.2	100.2	0.50	0.49	0.01
77	HP	60.1	25.3	6.2	7.6	0.5	99.7	0.30	0.67	0.03
78	HP	61.1	25.2	6.4	7.8	0.4	100.9	0.30	0.67	0.02
79	HP	58.7	26.5	7.4	6.8	0.3	99.7	0.37	0.61	0.02
80	HP	58.4	26.3	7.7	6.8	0.3	99.4	0.38	0.60	0.02
81	HP	58.2	26.2	7.2	7.1	0.4	99.2	0.35	0.63	0.02
82	HP	59.0	26.4	7.4	7.0	0.3	100.2	0.36	0.62	0.02
83	HP	57.5	27.1	8.7	6.6	0.3	100.2	0.41	0.57	0.02
84	HP	56.9	27.4	8.7	6.6	0.3	99.8	0.41	0.57	0.02
85	HP	57.9	26.8	8.2	6.5	0.3	99.6	0.40	0.58	0.02
86	HP	57.6	27.5	8.7	6.5	0.3	100.7	0.42	0.57	0.02

87	HP	59.7	26.0	7.1	7.3	0.4	100.4	0.34	0.64	0.02
88	HP	59.9	26.0	7.0	7.3	0.3	100.5	0.34	0.64	0.02
1	MIP-B	57.7	27.2	8.8	6.5	0.3	100.4	0.57	0.42	0.01
2	MIP-B	54.4	30.2	11.8	4.9	0.1	101.5	0.59	0.40	0.01
3	MIP-B	54.1	29.5	11.6	4.9	0.1	100.2	0.50	0.49	0.01
4	MIP-B	56.0	29.1	10.3	5.5	0.2	101.1	0.60	0.40	0.01
5	MIP-B	53.8	30.2	11.8	4.8	0.1	100.7	0.42	0.56	0.02
6	MIP-B	54.2	29.5	11.6	4.8	0.2	100.2	0.57	0.43	0.01
7	MIP-B	54.3	29.5	11.3	5.1	0.2	100.3	0.56	0.43	0.01
8	MIP-B	55.1	29.2	10.8	5.1	0.1	100.3	0.50	0.49	0.01
9	MIP-B	53.8	29.6	11.6	5.0	0.1	100.1	0.58	0.42	0.00
10	MIP-B	54.0	29.2	11.7	5.1	0.1	100.0	0.57	0.42	0.01
11	MIP-B	56.6	28.4	9.6	5.8	0.2	100.6	0.54	0.45	0.01
12	MIP-B	54.2	29.5	11.1	5.0	0.2	100.0	0.54	0.46	0.01
13	MIP-B	56.0	28.3	10.2	5.7	0.2	100.4	0.56	0.44	0.01
14	MIP-B	54.6	29.1	11.3	5.0	0.2	100.2	0.56	0.44	0.01
15	MIP-B	57.0	28.4	9.7	6.0	0.2	101.2	0.47	0.52	0.01
16	MIP-B	55.2	29.0	11.1	5.5	0.1	101.0	0.55	0.44	0.01
17	MIP-B	54.9	29.3	10.9	5.1	0.2	100.4	0.49	0.50	0.01
18	MIP-B	54.0	30.0	11.6	4.9	0.2	100.6	0.55	0.44	0.01
19	MIP-B	55.9	28.6	10.2	5.6	0.2	100.6	0.47	0.52	0.01
20	MIP-B	54.1	29.7	11.5	4.9	0.1	100.4	0.52	0.47	0.01
21	MIP-B	54.2	29.7	11.6	4.8	0.1	100.5	0.54	0.45	0.01
1	MIP-M	55.9	27.7	9.74	5.72	0.26	99.3	0.48	0.51	0.01
2	MIP-M	53.4	29.0	11.78	4.70	0.15	99.0	0.58	0.42	0.01
3	MIP-M	54.3	28.1	10.62	5.29	0.19	98.5	0.52	0.47	0.01
4	MIP-M	55.1	27.2	10.11	5.93	0.19	98.6	0.48	0.51	0.01
5	MIP-M	54.8	27.8	10.29	5.25	0.16	98.3	0.51	0.48	0.01
6	MIP-M	57.6	26.0	8.22	6.42	0.30	98.5	0.41	0.58	0.02
7	MIP-M	50.6	29.0	12.55	4.16	0.09	96.4	0.62	0.37	0.01
8	MIP-M	51.1	29.4	12.98	4.14	0.09	97.8	0.63	0.36	0.01
9	MIP-M	53.8	28.1	10.74	5.12	0.15	97.8	0.53	0.46	0.01
10	MIP-M	55.1	28.1	10.36	5.63	0.18	99.3	0.50	0.49	0.01
11	MIP-M	54.7	28.3	10.82	5.05	0.13	99.0	0.54	0.45	0.01
12	MIP-M	54.9	28.3	10.62	5.42	0.17	99.4	0.51	0.48	0.01
13	MIP-M	53.6	29.4	11.67	4.61	0.14	99.4	0.58	0.41	0.01
14	MIP-M	53.7	29.6	11.97	4.58	0.14	100.0	0.59	0.41	0.01
15	MIP-M	53.0	27.6	10.15	5.05	0.20	96.0	0.52	0.47	0.01
16	MIP-M	54.5	28.1	10.84	5.18	0.16	98.7	0.53	0.46	0.01
17	MIP-M	54.0	28.6	11.29	4.97	0.16	99.1	0.55	0.44	0.01
18	MIP-M	53.9	28.6	11.43	4.99	0.18	99.1	0.55	0.44	0.01
19	MIP-M	54.4	28.2	11.04	5.16	0.17	99.0	0.54	0.45	0.01
20	MIP-M	52.5	29.2	12.02	4.44	0.14	98.4	0.59	0.40	0.01
21	MIP-M	53.8	29.3	11.70	4.87	0.19	99.9	0.56	0.42	0.01
1	MIP-T	61.3	24.3	5.57	8.08	0.50	99.7	0.27	0.70	0.03
2	MIP-T	61.5	24.9	5.95	7.62	0.34	100.4	0.30	0.68	0.02

3	MIP-T	58.9	26.1	8.13	6.55	0.34	100.0	0.40	0.58	0.02
4	MIP-T	59.6	25.0	6.70	7.41	0.36	99.1	0.33	0.65	0.02
5	MIP-T	60.0	24.7	6.46	7.70	0.38	99.3	0.31	0.67	0.02
6	MIP-T	61.4	24.2	5.97	7.44	0.37	99.3	0.30	0.68	0.02
7	MIP-T	59.3	25.4	6.85	7.28	0.38	99.2	0.33	0.64	0.02
8	MIP-T	61.6	24.0	5.56	7.99	0.43	99.6	0.27	0.70	0.03
9	MIP-T	58.9	26.0	7.47	7.05	0.35	99.8	0.36	0.62	0.02
10	MIP-T	58.5	26.3	7.85	7.02	0.31	99.9	0.38	0.61	0.02
11	MIP-T	60.4	25.3	6.83	7.47	0.42	100.5	0.33	0.65	0.02
12	MIP-T	57.3	27.8	9.56	5.91	0.20	100.7	0.47	0.52	0.01
13	MIP-T	61.9	24.0	5.26	8.25	0.49	99.8	0.25	0.72	0.03
14	MIP-T	60.8	24.8	5.94	7.77	0.48	99.8	0.29	0.68	0.03
15	MIP-T	61.2	23.8	5.81	8.01	0.50	99.3	0.28	0.69	0.03
16	MIP-T	59.4	25.7	7.51	7.20	0.28	100.2	0.36	0.62	0.02
17	MIP-T	61.2	24.4	5.80	7.77	0.37	99.5	0.29	0.69	0.02
18	MIP-T	60.1	25.5	7.36	7.11	0.40	100.5	0.36	0.62	0.02
19	MIP-T	59.3	25.8	7.03	7.44	0.31	99.9	0.34	0.65	0.02
20	MIP-T	61.1	24.9	6.27	7.71	0.33	100.3	0.30	0.68	0.02
21	MIP-T	57.4	27.5	9.35	6.00	0.18	100.4	0.46	0.53	0.01
22	MIP-T	56.9	27.4	9.40	5.97	0.23	99.9	0.46	0.53	0.01
23	MIP-T	56.3	28.1	9.89	5.89	0.18	100.4	0.48	0.51	0.01
24	MIP-T	61.2	24.7	5.90	7.78	0.39	100.0	0.29	0.69	0.02
25	MIP-T	61.8	24.2	5.60	8.16	0.50	100.3	0.27	0.70	0.03
26	MIP-T	59.2	26.1	7.49	7.20	0.32	100.3	0.36	0.62	0.02
27	MIP-T	61.3	25.2	6.56	7.44	0.33	100.8	0.32	0.66	0.02
28	MIP-T	62.5	24.3	5.92	8.02	0.43	101.1	0.28	0.69	0.02
29	MIP-T	61.0	25.3	6.45	7.73	0.40	100.9	0.31	0.67	0.02
30	MIP-T	60.2	25.2	7.03	6.77	0.30	99.5	0.36	0.62	0.02
31	MIP-T	61.7	24.6	5.87	7.74	0.44	100.3	0.29	0.69	0.03
32	MIP-T	59.6	26.1	7.44	7.22	0.32	100.7	0.36	0.63	0.02
33	MIP-T	57.0	27.5	9.50	6.17	0.21	100.3	0.45	0.53	0.01
34	MIP-T	62.0	24.4	5.70	8.21	0.49	100.8	0.27	0.70	0.03
35	MIP-T	61.5	24.9	5.74	7.82	0.53	100.5	0.28	0.69	0.03
36	MIP-T	58.3	26.0	7.51	6.73	0.38	98.9	0.37	0.60	0.02
37	MIP-T	58.6	26.1	7.63	6.91	0.35	99.7	0.37	0.61	0.02
38	MIP-T	58.9	26.6	7.81	6.76	0.32	100.4	0.38	0.60	0.02
39	MIP-T	56.4	26.9	9.14	6.42	0.24	99.1	0.43	0.55	0.01
40	MIP-T	59.6	26.4	7.42	6.92	0.33	100.7	0.36	0.62	0.02
41	MIP-T	59.0	27.0	7.92	6.87	0.28	101.1	0.38	0.60	0.02
42	MIP-T	54.2	29.4	11.16	4.98	0.17	99.9	0.55	0.44	0.01
43	MIP-T	54.9	28.7	11.02	5.41	0.16	100.2	0.52	0.47	0.01
44	MIP-T	55.2	29.0	10.88	5.38	0.18	100.7	0.52	0.47	0.01
45	MIP-T	53.7	30.1	11.78	4.57	0.13	100.2	0.58	0.41	0.01
46	MIP-T	52.9	30.2	12.30	4.60	0.13	100.1	0.59	0.40	0.01
47	MIP-T	53.0	29.7	12.53	4.60	0.11	99.9	0.60	0.40	0.01
1	MIIP	53.9	28.5	10.62	5.14	0.19	98.3	0.53	0.46	0.01

2	MIP	61.0	24.8	5.90	7.87	0.45	100.0	0.29	0.69	0.03
3	MIP	59.1	26.2	7.61	6.97	0.36	100.3	0.37	0.61	0.02
4	MIP	58.2	26.0	7.36	7.48	0.35	99.4	0.35	0.64	0.02
5	MIP	59.0	26.2	7.52	7.21	0.32	100.2	0.36	0.62	0.02
6	MIP	59.7	25.8	6.88	7.16	0.38	99.9	0.34	0.64	0.02
7	MIP	54.7	27.9	10.05	5.53	0.20	98.4	0.49	0.49	0.01
8	MIP	59.1	25.9	6.93	7.11	0.43	99.5	0.34	0.63	0.03
9	MIP	58.6	26.6	7.70	7.24	0.33	100.4	0.36	0.62	0.02
10	MIP	56.6	27.7	9.33	5.92	0.28	99.9	0.46	0.53	0.02
11	MIP	59.8	25.3	6.73	7.31	0.38	99.6	0.33	0.65	0.02
12	MIP	61.0	24.7	6.14	7.94	0.44	100.2	0.29	0.68	0.03
13	MIP	55.7	28.2	10.02	5.47	0.22	99.6	0.50	0.49	0.01
14	MIP	61.0	24.6	5.99	7.68	0.37	99.6	0.29	0.68	0.02
15	MIP	61.4	24.6	5.62	7.56	0.46	99.7	0.28	0.69	0.03
16	MIP	60.6	24.8	6.29	7.73	0.44	99.9	0.30	0.67	0.03
17	MIP	59.7	25.1	6.51	7.59	0.39	99.3	0.31	0.66	0.02
18	MIP	62.2	23.8	5.20	7.97	0.48	99.7	0.26	0.71	0.03
19	MIP	56.3	27.6	9.44	6.12	0.24	99.7	0.45	0.53	0.01
20	MIP	56.9	27.1	8.48	6.28	0.32	99.1	0.42	0.56	0.02
21	MIP	60.3	25.0	5.92	7.49	0.52	99.3	0.29	0.67	0.03
22	MIP	60.1	24.8	6.72	7.33	0.41	99.4	0.33	0.65	0.02
23	MIP	58.7	26.3	7.35	6.98	0.37	99.6	0.36	0.62	0.02
24	MIP	60.8	25.1	5.97	7.89	0.44	100.2	0.29	0.69	0.03
25	MIP	56.8	27.9	9.00	6.14	0.29	100.1	0.44	0.54	0.02
26	MIP	53.8	29.0	11.37	4.93	0.16	99.2	0.56	0.44	0.01
27	MIP	54.4	29.3	11.23	4.95	0.16	100.0	0.55	0.44	0.01
28	MIP	53.5	29.3	11.26	4.91	0.16	99.1	0.55	0.44	0.01
29	MIP	53.6	29.3	11.38	5.03	0.19	99.5	0.55	0.44	0.01
30	MIP	54.4	29.2	10.99	5.08	0.16	99.9	0.54	0.45	0.01
31	MIP	55.9	27.6	9.40	5.93	0.28	99.1	0.46	0.52	0.02
32	MIP	57.4	27.3	8.96	6.12	0.23	100.0	0.44	0.55	0.01
33	MIP	57.5	27.0	8.31	6.71	0.34	99.9	0.40	0.58	0.02
34	MIP	53.9	29.6	11.48	4.84	0.13	99.9	0.56	0.43	0.01
35	MIP	59.7	26.0	7.16	7.18	0.39	100.4	0.35	0.63	0.02
36	MIP	57.9	26.7	7.83	7.14	0.28	99.9	0.37	0.61	0.02

Table 2. Chemical composition of amphibole of Plinian eruptions of La Malinche volcano. HP: Huamantla Pumice; MIP: Malinche I Pumice; MIIP: Malinche II Pumice.

Sample	Deposit	SiO ₂	TiO ₂	Al ₂ O ₃	FeOt	MgO	CaO	Na ₂ O	K ₂ O	Total
1	HP	46.08	0.99	10.62	16.64	12.69	10.72	1.68	0.55	99.98
3	HP	46.89	1.06	9.91	16.96	12.66	10.74	1.43	0.55	100.19
4	HP	45.94	1.03	10.15	16.12	12.60	11.17	1.65	0.57	99.21
5	HP	46.04	1.08	10.67	16.30	12.26	10.92	1.54	0.71	99.51
6	HP	46.28	1.08	10.34	16.50	12.40	11.06	1.66	0.59	99.92
8	HP	46.92	1.11	9.00	12.93	14.56	10.70	1.42	0.40	97.04
9	HP	46.29	1.07	10.00	14.28	13.74	10.75	1.44	0.70	98.27
10	HP	46.03	1.16	10.21	14.16	13.74	10.88	1.63	0.76	98.56
11	HP	45.92	1.36	9.85	14.41	13.40	10.88	1.58	0.52	97.93
12	HP	47.65	0.98	8.92	12.73	14.92	10.38	1.42	0.38	97.37
13	HP	45.94	1.12	10.05	13.34	14.11	10.60	1.60	0.67	97.44
14	HP	45.99	1.13	10.17	14.08	13.84	10.80	1.53	0.74	98.28
15	HP	44.59	1.73	11.54	13.77	13.79	11.17	1.94	0.56	99.09
16	HP	45.53	1.74	11.28	13.66	13.91	10.94	1.83	0.55	99.43
17	HP	46.50	1.72	11.01	13.09	14.47	11.01	1.73	0.47	100.00
18	HP	45.42	1.76	10.97	12.30	14.12	10.91	1.90	0.56	97.95
19	HP	46.19	1.72	10.54	13.07	14.46	10.97	1.70	0.54	99.17
20	HP	44.67	1.76	11.10	13.25	13.34	11.12	1.91	0.54	97.69
21	HP	45.28	1.72	11.41	13.86	13.69	11.09	1.85	0.56	99.46
22	HP	50.65	0.81	7.02	12.40	15.95	10.82	1.05	0.32	99.03
23	HP	50.37	0.86	7.22	12.80	16.12	10.74	1.16	0.26	99.53
24	HP	49.49	0.82	6.94	12.29	15.83	10.75	1.32	0.31	97.74
25	HP	48.21	1.02	7.89	12.57	15.08	10.64	1.47	0.35	97.22
26	HP	49.32	1.01	8.19	13.17	15.65	10.58	1.55	0.33	99.79
27	HP	46.64	1.02	8.37	12.58	14.64	10.63	1.33	0.33	95.53
29	HP	48.55	1.03	8.70	13.46	14.79	10.57	1.49	0.42	99.00
30	HP	48.51	1.07	8.28	12.40	14.98	10.76	1.36	0.43	97.78
31	HP	49.17	0.98	7.77	12.46	15.61	10.51	1.36	0.28	98.14
33	HP	49.58	0.94	7.77	12.96	15.74	10.57	1.30	0.32	99.17
34	HP	49.31	0.96	7.56	12.65	15.54	10.38	1.41	0.27	98.07
35	HP	49.72	0.93	7.50	12.92	15.79	10.69	1.39	0.32	99.26
36	HP	48.07	0.80	7.62	12.44	15.25	10.63	1.41	0.58	96.80
37	HP	48.96	0.88	6.83	12.54	15.14	10.91	1.67	0.45	97.37
38	HP	50.35	0.86	7.09	12.65	16.23	10.41	1.30	0.26	99.15
39	HP	49.98	0.82	7.04	12.52	16.06	10.77	1.33	0.33	98.84
40	HP	50.97	0.78	6.72	11.71	16.14	10.53	1.27	0.25	98.38
41	MIP	44.17	2.27	12.66	12.79	13.73	11.15	2.33	0.43	99.53
42	MIP	44.65	2.21	11.84	11.70	15.05	11.25	2.31	0.35	99.35
43	MIP	45.91	1.71	11.22	11.97	15.13	10.99	2.16	0.37	99.46
44	MIP	43.20	2.33	10.26	12.87	14.20	10.91	2.35	0.40	96.53
45	MIP	47.67	1.57	7.76	11.47	16.53	11.03	1.70	0.23	97.97
46	MIP	43.40	2.30	10.30	13.12	14.72	10.92	2.13	0.34	97.23
47	MIP	43.61	2.38	10.81	13.17	14.52	11.16	2.28	0.48	98.40

48	MIP	43.86	2.03	10.15	12.74	14.69	11.14	2.15	0.41	97.16
49	MIP	44.49	1.87	9.77	12.60	14.92	11.00	2.07	0.38	97.09
50	MIP	44.17	2.27	12.66	12.79	13.73	11.15	2.33	0.43	99.53
51	MIP	44.65	2.21	11.84	11.70	15.05	11.25	2.31	0.35	99.35
52	MIP	45.91	1.71	11.22	11.97	15.13	10.99	2.16	0.37	99.46
53	MIP	50.88	0.76	5.93	12.99	16.28	11.36	1.15	0.27	99.62
54	MIP	50.82	0.85	5.98	12.65	15.72	11.30	1.12	0.30	98.74
55	MIP	50.63	0.73	6.02	12.71	16.04	11.51	1.09	0.32	99.04
56	MIP	51.10	0.77	5.61	12.10	16.31	11.56	1.07	0.33	98.85
57	MIP	50.93	0.84	6.17	12.79	15.97	10.84	1.17	0.24	98.96
58	MIP	49.55	1.08	7.11	13.57	15.08	11.30	1.33	0.40	99.42
59	MIIIP	44.05	2.05	12.47	11.70	14.39	10.77	2.17	0.56	98.15
60	MIIIP	44.31	2.03	12.30	12.01	14.20	10.85	2.10	0.53	98.32
61	MIIIP	45.28	2.13	11.63	11.59	14.73	10.60	2.12	0.43	98.52
62	MIIIP	47.94	1.29	8.75	12.57	15.23	10.24	1.77	0.35	98.13
63	MIIIP	48.30	1.35	8.61	11.55	15.55	10.59	1.64	0.37	97.96
64	MIIIP	44.63	2.14	11.90	12.37	14.71	10.38	2.03	0.49	98.65
65	MIIIP	45.48	1.89	10.65	13.51	14.21	10.99	1.90	0.37	99.00
66	MIIIP	43.67	2.06	12.43	13.91	13.10	11.24	2.04	0.51	98.96
67	MIIIP	46.55	1.41	9.96	12.14	14.89	10.56	1.83	0.39	97.74
68	MIIIP	43.10	2.21	12.75	14.16	13.02	11.24	2.16	0.56	99.19
69	MIIIP	43.95	1.89	11.97	14.02	13.27	11.13	2.15	0.53	98.90
70	MIIIP	43.45	2.10	12.52	13.97	13.31	11.16	2.11	0.57	99.19
71	MIIIP	44.83	1.86	11.99	12.28	14.37	11.06	2.30	0.53	99.22
72	MIIIP	45.34	1.80	11.59	12.15	14.56	10.91	1.77	0.47	98.58
73	MIIIP	44.12	1.96	12.44	12.79	14.13	10.77	2.09	0.49	98.78
74	MIIIP	43.80	2.08	12.55	13.53	13.35	11.17	2.14	0.57	99.18
75	MIIIP	44.41	2.03	12.32	12.51	14.45	11.01	2.19	0.61	99.52
76	MIIIP	45.33	1.98	11.56	11.89	14.82	10.94	2.31	0.56	99.40
77	MIIIP	43.62	1.95	12.80	13.69	13.57	10.89	2.21	0.54	99.27
78	MIIIP	44.80	1.99	12.14	12.56	14.51	11.00	2.20	0.53	99.73
79	MIIIP	44.16	2.10	12.06	11.83	14.43	10.83	2.14	0.55	98.10
80	MIIIP	48.60	1.29	8.53	12.19	15.93	10.58	1.65	0.33	99.10
81	MIIIP	47.66	1.48	9.53	12.90	15.02	10.78	1.74	0.40	99.51

Table 3. Chemical composition of biotite of Plinian eruptions of La Malinche volcano. HP: Huamantla Pumice; MIP: Malinche I Pumice; MIIP: Malinche II Pumice.

Sample	Deposit	SiO ₂	K ₂ O	FeO	MgO	Al ₂ O ₃	TiO ₂	CaO	MnO	Cr ₂ O ₃	Na ₂ O	Total
5	MIP	38.17	6.17	13.15	17.84	15.99	3.32	0.09	0.18	0.01	1.40	96.33
7	MIP	37.36	6.76	15.79	15.81	15.27	3.38	0.10	0.08	0.01	1.36	95.92
8	MIP	37.75	6.87	11.94	18.39	16.86	3.17	0.04	0.18	0.01	0.87	96.09
9	MIP	37.98	6.93	16.12	16.09	15.25	3.34	-0.01	0.14	0.00	1.35	97.14
10	MIP	38.22	6.42	13.49	15.91	16.55	3.33	0.13	0.19	0.01	1.34	95.59
11	MIP	38.83	7.45	14.16	17.30	15.45	3.47	0.07	0.22	0.02	1.20	98.16
12	MIP	38.33	7.62	14.82	16.36	14.53	3.40	0.05	0.05	0.00	1.09	96.25
13	MIP	38.81	8.25	15.56	16.67	14.61	3.35	-0.02	0.24	0.00	0.97	98.43
14	MIP	38.50	7.14	13.76	17.21	15.06	3.25	-0.02	0.08	0.03	1.14	96.14
15	MIP	38.90	7.97	15.58	16.29	15.14	3.33	-0.02	0.09	0.01	0.90	98.19
16	MIP	38.13	7.69	15.32	16.10	14.85	3.30	-0.03	0.08	0.02	1.20	96.67
18	MIP	39.60	7.31	15.35	15.77	14.78	3.55	0.08	0.19	0.00	1.12	97.75
19	MIP	39.09	7.64	15.38	16.10	15.07	3.56	0.07	0.12	0.00	1.20	98.22
21	MIP	39.96	8.01	14.20	15.63	14.73	3.49	-0.01	0.12	0.00	1.06	97.20
22	MIP	38.96	7.49	14.78	15.10	14.40	3.49	0.04	0.13	0.01	0.99	95.38
39	MIP	37.81	6.26	13.77	17.86	15.98	3.20	0.13	0.11	0.02	1.21	96.34
40	MIP	38.16	6.36	13.92	17.12	14.81	3.31	0.12	0.06	0.02	1.42	95.29
86	HP	39.26	6.60	13.34	16.94	14.54	3.18	0.14	0.10	0.09	0.99	95.18
88	HP	38.91	6.47	13.53	16.93	14.92	3.21	0.16	0.04	0.04	1.20	95.41
92	HP	40.53	6.62	14.00	16.73	14.49	3.43	0.23	0.15	0.03	1.18	97.39
93	HP	40.78	6.59	13.47	16.74	14.57	3.35	0.18	0.01	0.06	1.05	96.81
99	HP	40.75	7.31	13.16	16.62	14.88	3.50	0.18	0.13	0.03	0.81	97.37
102	HP	40.42	6.89	13.87	16.57	14.35	3.50	0.16	0.11	0.02	0.93	96.81
103	HP	39.92	7.17	13.38	16.42	14.53	3.61	0.18	0.28	0.01	0.96	96.44
106	HP	38.85	6.25	14.88	16.56	14.69	3.26	0.18	0.19	0.00	1.16	96.44
107	HP	39.88	6.96	14.78	16.81	14.88	3.78	0.13	0.14	0.00	0.92	96.02
112	HP	40.07	7.00	14.09	16.53	14.85	3.70	0.01	0.15	0.00	1.00	97.38
120	HP	39.34	6.41	14.66	16.38	14.61	3.27	0.16	0.19	0.00	1.15	96.15
144	MIIP	39.44	6.52	13.32	18.08	15.75	2.78	0.04	0.13	0.00	0.61	96.65
146	MIIP	40.97	6.24	13.39	15.63	16.04	3.01	0.09	0.14	0.01	0.55	96.06
149	MIIP	40.05	6.49	13.59	15.72	15.89	2.93	0.09	0.16	0.02	0.42	95.34

Table 4. Chemical composition of Fe-Ti oxides of Plinian eruptions of La Malinche volcano. HP: Huamantla Pumice; MIP: Malinche I Pumice; MIIP: Malinche II Pumice.

Sample	Deposit	SiO ₂	TiO ₂	Al ₂ O ₃	Cr ₂ O ₃	FeO	MnO	MgO
1	MIP	0.02	28.90	0.44	0.01	64.64	0.07	1.25
2	MIP	0.02	30.69	0.39	0.08	65.07	0.20	1.18
3	MIP	0.00	29.18	0.43	0.10	66.04	0.15	1.03
4	MIP	0.08	28.77	0.47	0.10	64.57	0.19	1.04
5	MIP	0.02	29.98	0.43	0.06	66.26	0.14	1.08
6	MIP	0.04	29.81	0.40	0.08	64.55	0.25	1.17
7	MIP	0.03	29.39	0.39	0.09	65.59	0.12	1.07
8	MIP	0.16	5.01	2.45	0.12	86.29	0.40	1.31
9	MIP	0.03	31.38	0.39	0.06	63.53	0.16	1.32
10	MIP	0.01	29.61	0.50	0.05	65.59	0.17	1.07
11	MIP	0.16	30.01	0.47	0.06	61.90	0.19	2.26
12	MIP	0.04	4.84	2.46	0.11	87.83	0.28	1.23
13	MIP	0.01	30.98	0.43	0.10	63.85	0.20	1.29
14	MIP	0.14	3.89	2.63	0.11	86.11	0.30	2.39
15	MIP	0.11	4.84	2.41	0.14	86.65	0.32	1.07
16	MIP	0.06	4.94	2.38	0.08	87.17	0.26	1.11
17	MIP	0.03	29.20	0.35	0.03	66.36	0.18	0.91
18	MIP	0.11	29.16	0.39	0.03	65.61	0.11	1.14
19	MIP	0.02	28.48	0.40	0.04	65.67	0.16	1.05
20	MIP	0.00	29.66	0.45	0.08	65.13	0.11	0.90
21	HP	0.02	7.96	3.06	0.14	83.71	0.23	2.38
22	HP	0.04	7.84	3.02	0.16	84.41	0.27	2.25
23	HP	0.03	7.88	3.12	0.17	83.05	0.24	2.27
24	HP	0.07	7.74	3.17	0.17	82.80	0.23	2.42
25	HP	0.11	7.52	3.31	0.31	83.30	0.30	2.27
26	HP	0.11	7.83	3.02	0.12	82.73	0.27	2.50
27	HP	0.12	7.90	3.22	0.17	83.29	0.28	2.23
28	HP	0.06	8.14	3.00	0.19	82.96	0.31	2.38
29	HP	0.09	7.81	3.07	0.16	82.45	0.30	2.21
30	HP	0.08	7.79	3.11	0.11	82.16	0.26	2.26
31	HP	0.04	7.64	2.96	0.11	82.35	0.22	2.49
32	HP	0.13	7.85	3.04	0.15	82.24	0.33	2.28
33	HP	0.08	8.54	3.21	0.40	82.95	0.33	2.47
34	HP	0.07	8.35	3.00	0.09	84.41	0.33	2.28
35	HP	0.06	8.03	3.04	0.13	83.51	0.22	2.15
36	HP	0.08	8.14	3.06	0.13	83.62	0.25	2.23
37	HP	0.03	7.85	3.12	0.13	82.62	0.29	2.40
38	HP	0.08	7.49	3.12	0.15	81.34	0.25	2.43
39	HP	0.09	7.98	3.04	0.17	83.21	0.27	2.26
40	HP	0.18	7.80	3.00	0.15	81.94	0.24	2.37
41	HP	0.01	8.07	3.36	0.11	83.16	0.25	2.37
42	HP	0.02	8.31	2.83	0.23	83.54	0.36	2.24
43	HP	0.00	7.98	3.11	0.17	82.31	0.24	2.30

44	HP	0.13	8.04	3.08	0.21	82.36	0.37	2.35
45	HP	0.00	4.50	1.82	0.00	89.81	0.53	1.01
46	HP	0.00	4.42	1.73	0.00	89.68	0.57	0.96
47	HP	0.00	4.14	1.88	0.00	90.99	0.54	1.03
48	HP	0.00	4.34	1.82	0.00	90.54	0.55	1.01
49	HP	0.00	4.34	1.75	0.00	89.78	0.55	0.99
50	HP	0.00	4.44	1.76	0.00	89.63	0.55	0.98
51	HP	0.00	4.32	1.83	0.00	90.93	0.56	1.08
52	HP	0.00	4.34	1.71	0.00	90.38	0.56	0.96
53	HP	0.00	4.37	1.87	0.00	89.01	0.54	1.05
54	HP	0.00	4.53	1.71	0.00	89.64	0.55	1.00
55	HP	0.00	4.40	1.76	0.00	91.16	0.53	1.02
56	HP	0.00	4.42	1.83	0.00	90.27	0.54	1.02
57	HP	0.00	4.37	1.72	0.00	89.75	0.56	1.00
58	HP	0.00	4.34	1.76	0.00	88.57	0.54	1.02
59	HP	0.00	33.39	0.25	0.00	62.80	0.50	1.37
60	HP	0.00	4.60	1.86	0.00	89.42	0.55	1.09
61	HP	0.00	4.34	1.72	0.00	90.83	0.55	0.96
62	HP	0.00	4.32	1.80	0.00	90.06	0.54	1.04
63	HP	0.00	4.46	1.82	0.00	89.69	0.55	1.05
64	HP	0.00	4.32	1.74	0.00	90.62	0.56	0.95
65	HP	0.00	4.53	1.85	0.00	89.94	0.55	1.07
66	HP	0.00	4.25	1.75	0.00	89.44	0.56	0.97
67	HP	0.00	4.51	1.83	0.00	89.76	0.55	1.07
68	HP	0.00	4.51	1.80	0.00	90.05	0.54	1.05
69	HP	0.00	4.55	1.86	0.00	90.73	0.54	1.07
70	HP	0.00	4.51	1.87	0.00	90.06	0.56	1.06
71	HP	0.00	4.35	1.83	0.00	89.30	0.55	1.09
72	HP	0.00	4.45	1.80	0.00	87.75	0.54	1.02
73	HP	0.00	29.99	0.34	0.00	66.63	0.38	1.03
74	HP	0.00	4.52	1.78	0.00	89.48	0.54	1.02
75	HP	0.00	4.57	1.81	0.00	88.63	0.55	1.00
76	HP	0.00	4.57	1.73	0.00	89.04	0.54	1.03
77	HP	0.00	4.47	1.79	0.00	90.08	0.56	1.01
78	HP	0.00	4.68	1.82	0.00	88.41	0.56	1.08
79	HP	0.00	4.28	1.78	0.00	89.62	0.54	1.01
80	HP	0.00	4.37	1.74	0.00	87.89	0.53	0.98
81	HP	0.00	4.66	1.82	0.00	87.53	0.54	1.03
82	HP	0.00	34.69	0.29	0.00	60.44	0.55	1.50
83	HP	0.00	4.46	1.83	0.00	86.82	0.55	1.03
84	HP	0.00	35.01	0.26	0.00	60.23	0.55	1.45
85	HP	0.00	4.49	1.86	0.00	87.73	0.54	1.02
86	HP	0.00	4.48	1.85	0.00	87.22	0.54	1.08
87	HP	0.00	35.02	0.25	0.00	61.44	0.56	1.43
88	HP	0.00	34.58	0.44	0.00	60.64	0.53	1.80
89	HP	0.00	4.36	1.81	0.00	87.74	0.54	1.00

90	HP	0.00	34.91	0.25	0.00	60.80	0.55	1.49
91	HP	0.00	34.87	0.26	0.00	60.79	0.56	1.43
92	MIP	0.04	7.95	3.01	0.12	83.68	0.32	2.38
93	MIP	0.15	7.93	3.06	0.31	82.81	0.30	2.21
94	MIP	0.10	7.53	2.79	0.07	81.59	0.21	2.32
95	MIP	0.08	7.88	2.94	0.03	82.31	0.30	2.18
96	MIP	0.10	7.95	3.18	0.09	83.08	0.27	2.26
97	MIP	0.09	8.02	2.97	0.12	83.45	0.39	2.13
98	MIP	0.04	7.74	2.75	0.15	83.48	0.34	2.29
99	MIP	1.48	6.98	3.19	0.07	80.74	0.34	2.33
100	MIP	0.07	7.96	2.91	0.10	83.91	0.31	2.12
101	MIP	0.07	7.86	2.94	0.15	82.51	0.27	2.09
102	MIP	0.11	8.11	2.91	0.29	82.36	0.30	2.21
103	MIP	0.07	7.79	3.02	0.13	84.12	0.30	2.11
104	MIP	0.04	7.63	2.91	0.09	84.19	0.34	2.09
105	MIP	0.09	7.64	2.84	0.06	84.19	0.33	2.13
106	MIP	0.06	7.55	2.94	0.06	84.82	0.26	2.24
107	MIP	0.12	7.92	3.17	0.14	82.86	0.27	2.35
108	MIP	0.00	8.01	2.93	0.11	83.14	0.26	2.07
109	MIP	0.12	7.43	3.15	0.09	82.51	0.29	2.33
110	MIP	0.10	7.95	2.72	0.28	83.04	0.19	2.05
111	MIP	0.06	7.56	2.94	0.07	81.56	0.40	2.07
112	MIP	0.10	7.47	2.73	0.21	83.49	0.28	2.16
113	MIP	0.04	7.65	3.17	0.36	83.48	0.33	2.21

Table 5. Glass matrix composition of Plinian eruptions of La Malinche volcano. HP: Huamantla Pumice; MIP: Malinche I Pumice; MIIP: Malinche II Pumice.

Sample	Deposit	SiO ₂	TiO ₂	Al ₂ O ₃	FeO	MgO	MnO	CaO	K ₂ O	Na ₂ O	P2O5	Cl	Total
1	HP	58.35	1.17	14.34	14.17	2.37	0.00	3.23	2.17	4.42	0.04	0.10	100.34
2	HP	59.97	0.42	13.90	2.56	1.77	0.02	3.33	2.32	3.17	0.08	0.15	87.68
6	HP	69.77	0.27	15.41	2.52	1.35	0.00	3.56	2.21	3.30	0.06	0.09	98.54
7	HP	65.82	0.38	14.78	2.87	1.91	0.00	3.45	2.15	4.28	0.09	0.08	95.79
9	HP	72.42	0.16	13.77	0.91	0.36	0.00	1.78	2.74	3.46	0.01	0.08	95.69
81	HP	73.41	0.10	12.49	0.63	0.18	0.06	1.14	2.65	3.02	0.00	0.09	93.76
82	HP	76.36	0.10	13.11	0.60	0.21	0.02	1.13	2.89	3.45	0.02	0.09	97.99
83	HP	75.64	0.10	13.65	0.70	0.21	0.06	1.25	2.71	3.54	0.03	0.09	97.99
84	HP	76.38	0.13	13.22	0.91	0.16	0.00	1.12	2.78	3.37	0.08	0.07	98.21
85	HP	76.20	0.08	13.27	0.66	0.21	0.04	1.17	2.60	3.46	0.02	0.08	97.79
86	HP	75.22	0.12	13.18	0.79	0.18	0.00	1.18	2.76	2.85	0.00	0.07	96.35
87	HP	73.96	0.12	12.92	0.66	0.20	0.00	1.24	2.81	2.51	0.00	0.07	94.48
88	HP	76.15	0.10	13.14	0.67	0.22	0.01	1.08	2.83	3.41	0.07	0.08	97.78
89	HP	75.22	0.12	13.15	0.72	0.18	0.00	1.09	2.93	3.68	0.02	0.07	97.18
90	HP	75.35	0.08	12.79	0.79	0.25	0.01	1.11	2.70	3.44	0.00	0.04	96.57
11	MIP	69.41	0.37	17.20	1.93	0.72	0.00	3.56	1.74	3.64	0.14	0.07	98.78
12	MIP	71.54	0.41	16.08	2.36	0.82	0.00	2.76	2.30	4.16	0.05	0.07	100.56
13	MIP	72.40	0.43	16.16	2.25	0.82	0.02	2.63	2.41	4.30	0.14	0.06	101.61
15	MIP	69.51	0.42	15.86	2.52	0.89	0.00	2.86	2.01	3.20	0.11	0.08	97.45
16	MIP	70.82	0.39	16.22	1.75	0.87	0.01	2.83	1.83	4.01	0.14	0.08	98.93
17	MIP	70.03	0.38	14.82	2.32	0.86	0.00	2.52	1.50	3.10	0.10	0.09	95.72
19	MIP	69.46	0.47	14.97	1.94	0.74	0.00	2.66	1.55	3.12	0.18	0.08	95.17
22	MIP	68.08	0.34	15.70	2.06	0.68	0.00	2.50	2.50	3.16	0.11	0.10	95.24
23	MIP	69.80	0.40	16.05	2.22	0.78	0.00	2.63	2.63	4.02	0.14	0.08	98.75
25	MIP	69.50	0.32	15.96	2.39	0.75	0.00	2.46	2.46	4.20	0.11	0.08	98.24
26	MIP	68.48	0.44	15.79	2.24	0.81	0.00	2.55	2.55	3.53	0.08	0.07	96.54
27	MIP	56.05	0.38	13.37	2.06	0.48	0.01	2.52	2.52	3.94	0.06	0.10	81.47
28	MIP	53.38	0.33	12.72	1.63	0.47	0.00	2.04	2.04	1.19	0.03	0.15	73.98
29	MIP	73.41	0.37	17.83	1.94	0.82	0.00	2.87	2.87	3.60	0.21	0.04	103.96
32	MIP	72.35	0.25	13.40	1.23	0.37	0.04	1.59	1.59	2.58	0.07	0.06	93.53
33	MIP	73.44	0.22	14.42	1.33	0.41	0.04	1.71	1.71	3.35	0.09	0.07	96.79
34	MIP	74.64	0.19	13.87	1.17	0.41	0.00	1.50	1.50	3.43	0.03	0.07	96.79
36	MIP	70.39	0.19	13.59	1.14	0.31	0.01	1.35	1.35	2.45	0.14	0.17	91.09
38	MIP	73.85	0.23	14.24	1.07	0.40	0.00	1.66	1.66	2.83	0.06	0.05	96.04
39	MIP	57.62	0.23	12.11	1.22	0.27	0.00	1.30	1.30	2.16	0.14	0.20	76.56
40	MIP	73.37	0.28	14.68	1.40	0.44	0.07	1.77	1.77	3.38	0.10	0.03	97.29
41	MIIP	65.03	0.17	16.55	0.84	0.15	0.00	3.38	1.79	4.81	0.11	0.11	92.94
44	MIIP	62.27	0.19	11.92	1.04	0.29	0.00	1.06	2.81	3.27	0.12	0.06	83.03
45	MIIP	72.94	0.32	13.86	1.61	0.28	0.00	1.48	2.88	3.28	0.12	0.07	96.83
47	MIIP	74.27	0.25	12.98	1.28	0.31	0.05	1.11	2.85	3.38	0.07	0.10	96.64
49	MIIP	70.94	0.20	16.45	1.00	0.25	0.00	2.73	2.37	4.78	0.09	0.06	98.87
50	MIIP	73.63	0.32	13.30	1.67	0.87	0.03	1.54	3.01	2.95	0.12	0.07	97.51

53	MHP	72.29	0.28	15.07	1.31	0.40	0.00	1.79	2.38	4.01	0.09	0.07	97.69
54	MHP	70.58	0.21	16.74	1.27	0.53	0.02	2.72	2.32	4.45	0.09	0.08	99.02
55	MHP	74.26	0.26	13.44	1.44	0.44	0.00	1.06	2.97	3.27	0.06	0.06	97.27
56	MHP	74.17	0.24	15.23	1.44	0.45	0.02	1.49	2.82	3.49	0.06	0.06	99.47
57	MHP	71.53	0.32	13.23	1.41	0.42	0.01	1.06	2.89	3.23	0.11	0.08	94.29
60	MHP	73.82	0.26	14.26	1.28	0.57	0.00	1.35	2.87	2.95	0.04	0.07	97.46
61	MHP	71.91	0.22	15.38	1.22	0.44	0.00	2.41	2.43	4.29	0.05	0.07	98.43
62	MHP	62.70	0.21	19.71	0.94	0.30	0.00	2.39	1.68	4.13	0.09	0.05	92.18
63	MHP	70.76	0.23	18.00	1.15	0.25	0.04	3.47	1.83	4.61	0.07	0.05	100.46
64	MHP	71.15	0.20	17.37	1.23	0.35	0.03	2.75	2.28	4.99	0.07	0.04	100.45
65	MHP	70.87	0.27	13.73	2.10	1.30	0.06	1.45	2.54	3.60	0.02	0.06	96.00
66	MHP	73.44	0.19	14.26	0.93	0.36	0.02	1.61	2.72	4.25	0.13	0.08	98.00
67	MHP	73.18	0.21	14.38	1.16	0.38	0.00	1.54	2.70	3.60	0.02	0.06	97.23
68	MHP	72.85	0.25	14.22	1.81	0.97	0.00	2.03	2.75	4.23	0.02	0.07	99.19
69	MHP	69.63	0.20	13.60	1.12	0.32	0.00	1.54	2.52	2.97	0.07	0.04	91.99
70	MHP	72.47	0.20	14.27	1.01	0.41	0.04	1.60	2.70	3.99	0.13	0.11	96.92
71	MHP	73.69	0.22	14.27	1.29	0.35	0.01	1.56	2.79	3.45	0.09	0.10	97.81
72	MHP	73.45	0.21	14.24	1.23	0.39	0.00	1.45	2.74	3.83	0.13	0.05	97.72
73	MHP	71.44	0.20	13.82	1.18	0.41	0.00	1.50	2.60	3.32	0.10	0.08	94.64
74	MHP	72.83	0.17	14.05	1.13	0.35	0.02	1.56	2.47	3.72	0.15	0.05	96.50
75	MHP	74.42	0.26	13.55	1.19	0.39	0.00	1.33	2.62	3.48	0.04	0.04	97.31
76	MHP	73.67	0.21	14.41	1.13	0.36	0.00	1.50	2.62	3.63	0.07	0.08	97.69
77	MHP	72.86	0.23	14.31	1.13	0.35	0.04	1.54	2.71	3.42	0.05	0.04	96.68
78	MHP	73.74	0.19	14.32	1.04	0.41	0.01	1.52	2.58	3.46	0.07	0.04	97.38
79	MHP	72.80	0.20	14.66	1.33	0.30	0.08	1.54	2.58	3.69	0.00	0.06	97.24
80	MHP	73.09	0.21	14.15	1.13	0.34	0.03	1.52	2.72	3.58	0.15	0.07	96.97

Table 6. Amphibole geothermobarometry analyses of Plinian eruptions of La Malinche volcano.

Eruption	Amphibole type	SiO ₂	TiO ₂	Al ₂ O ₃	FeOt	MgO	CaO	Na ₂ O	K ₂ O	Temperature (°C)	Pressure (MPa)	Continental depth (km)	ΔNNO	Log fO ₂	H ₂ O melt (wt%)
Huamantla Pumice	Pargasite	46.08	0.991	10.62	16.64	12.69	10.72	1.681	0.55	854	243	9.2	1.1	-11.6	7.0
Huamantla Pumice	Pargasite	46.887	1.057	9.905	16.964	12.66	10.74	1.427	0.55	831	204	7.7	1.1	-12.1	6.8
Huamantla Pumice	Pargasite	45.935	1.03	10.15	16.12	12.6	11.17	1.646	0.57	854	225	8.5	1.0	-11.8	6.8
Huamantla Pumice	Pargasite	46.039	1.081	10.67	16.304	12.26	10.92	1.537	0.71	854	252	9.5	0.9	-11.8	7.1
Huamantla Pumice	Pargasite	46.281	1.082	10.34	16.498	12.4	11.06	1.661	0.59	850	231	8.7	0.9	-11.9	6.9
Huamantla Pumice	Magnesio Hb	46.92	1.112	9.003	12.93	14.56	10.7	1.415	0.4	831	170	6.4	1.7	-11.5	6.2
Huamantla Pumice	Pargasite	46.291	1.067	10	14.281	13.74	10.75	1.441	0.7	849	215	8.1	1.4	-11.4	6.3
Huamantla Pumice	Pargasite	46.027	1.155	10.21	14.163	13.74	10.88	1.626	0.76	861	226	8.5	1.3	-11.3	6.0
Huamantla Pumice	Magnesio Hb	45.921	1.364	9.853	14.413	13.4	10.88	1.577	0.52	853	211	8.0	1.2	-11.6	6.5
Huamantla Pumice	Pargasite	47.648	0.976	8.919	12.726	14.92	10.38	1.421	0.38	825	163	6.2	1.8	-11.5	6.1
Huamantla Pumice	Pargasite	45.943	1.124	10.05	13.338	14.11	10.6	1.603	0.67	857	220	8.3	1.5	-11.2	6.1
Huamantla Pumice	Pargasite	45.994	1.132	10.17	14.078	13.84	10.8	1.534	0.74	859	224	8.5	1.4	-11.3	6.1
Huamantla Pumice	Pargasite	44.589	1.732	11.54	13.774	13.79	11.17	1.94	0.56	910	308	11.6	1.1	-10.6	6.6
Huamantla Pumice	Pargasite	45.528	1.738	11.28	13.656	13.91	10.94	1.828	0.55	891	284	10.7	1.1	-10.9	6.7
Huamantla Pumice	Pargasite	46.496	1.721	11.01	13.09	14.47	11.01	1.729	0.47	880	259	9.8	1.3	-10.9	6.8
Huamantla Pumice	Pargasite	45.424	1.763	10.97	12.301	14.12	10.91	1.897	0.56	890	273	10.3	1.1	-10.9	6.5
Huamantla Pumice	Pargasite	46.185	1.715	10.54	13.07	14.46	10.97	1.697	0.54	876	237	9.0	1.3	-11.0	6.3
Huamantla Pumice	Pargasite	44.672	1.76	11.1	13.247	13.34	11.12	1.909	0.54	897	291	11.0	0.9	-11.0	6.8
Huamantla Pumice	Magnesio Hb	45.276	1.723	11.41	13.863	13.69	11.09	1.848	0.56	897	295	11.1	1.0	-10.9	6.8
Huamantla Pumice	Magnesio Hb	50.651	0.809	7.021	12.4	15.95	10.82	1.054	0.32	789	100	3.8	2.1	-12.0	5.3
Huamantla Pumice	Magnesio Hb	50.374	0.864	7.217	12.804	16.12	10.74	1.155	0.26	796	104	3.9	2.1	-11.8	5.2
Huamantla Pumice	Magnesio Hb	49.485	0.816	6.937	12.29	15.83	10.75	1.316	0.31	782	101	3.8	2.1	-12.1	5.1
Huamantla Pumice	Magnesio Hb	48.205	1.017	7.885	12.573	15.08	10.64	1.47	0.35	802	129	4.9	1.8	-12.0	5.6
Huamantla Pumice	Magnesio Hb	49.316	1.013	8.187	13.168	15.65	10.58	1.545	0.33	806	131	4.9	1.9	-11.8	5.4
Huamantla Pumice	Magnesio Hb	46.644	1.02	8.372	12.575	14.64	10.63	1.325	0.33	820	150	5.7	1.8	-11.6	6.1
Huamantla Pumice	Magnesio Hb	48.553	1.029	8.701	13.461	14.79	10.57	1.486	0.42	812	151	5.7	1.7	-11.9	6.0
Huamantla Pumice	Magnesio Hb	48.506	1.066	8.284	12.397	14.98	10.76	1.356	0.43	806	140	5.3	1.7	-12.0	5.9
Huamantla Pumice	Magnesio Hb	49.173	0.976	7.765	12.464	15.61	10.51	1.361	0.28	802	121	4.6	2.0	-11.8	5.6
Huamantla Pumice	Magnesio Hb	49.58	0.936	7.766	12.957	15.74	10.57	1.301	0.32	805	119	4.5	2.0	-11.7	5.4
Huamantla Pumice	Magnesio Hb	49.308	0.963	7.562	12.653	15.54	10.38	1.405	0.27	796	116	4.4	2.0	-12.0	5.4
Huamantla Pumice	Magnesio Hb	49.722	0.933	7.503	12.918	15.79	10.69	1.385	0.32	794	112	4.2	2.0	-12.0	5.2
Huamantla Pumice	Magnesio Hb	48.071	0.798	7.624	12.442	15.25	10.63	1.41	0.58	800	122	4.6	2.0	-11.9	4.9
Huamantla Pumice	Tremolite	48.955	0.883	6.83	12.539	15.14	10.91	1.672	0.45	784	101	3.8	1.8	-12.4	4.6
Huamantla Pumice	Magnesio Hb	50.345	0.864	7.086	12.651	16.23	10.41	1.302	0.26	793	101	3.8	2.2	-11.8	4.9
Huamantla Pumice	Tremolite	49.977	0.815	7.043	12.523	16.06	10.77	1.327	0.33	785	101	3.8	2.1	-12.0	5.0
Huamantla Pumice	Magnesio Hb	50.974	0.783	6.719	11.714	16.14	10.53	1.272	0.25	775	94	3.5	2.1	-12.3	5.2
Malinche I Pumice	Pargasite	44.169	2.273	12.66	12.787	13.73	11.15	2.326	0.43	939	399	15.1	0.7	-10.4	7.3

Malinche I Pumice	Pargasite	44.646	2.212	11.84	11.699	15.05	11.25	2.306	0.35	932	322	12.2	1.2	-10.1	6.4
Malinche I Pumice	Pargasite	45.908	1.714	11.22	11.972	15.13	10.99	2.16	0.37	900	274	10.3	1.4	-10.5	6.4
Malinche I Pumice	Pargasite	43.202	2.326	10.26	12.873	14.2	10.91	2.353	0.4	914	244	9.2	1.1	-10.5	5.2
Malinche I Pumice	Pargasite	47.669	1.573	7.764	11.474	16.53	11.03	1.7	0.23	832	123	4.6	2.1	-11.1	4.5
Malinche I Pumice	Pargasite	43.402	2.296	10.3	13.123	14.72	10.92	2.127	0.34	913	238	9.0	1.3	-10.3	5.2
Malinche I Pumice	Pargasite	43.607	2.378	10.81	13.165	14.52	11.16	2.283	0.48	924	265	10.0	1.1	-10.3	5.2
Malinche I Pumice	Pargasite	43.856	2.032	10.15	12.737	14.69	11.14	2.153	0.41	908	231	8.7	1.3	-10.4	5.2
Malinche I Pumice	Pargasite	44.485	1.873	9.767	12.598	14.92	11	2.069	0.38	892	209	7.9	1.5	-10.6	5.2
Malinche I Pumice	Pargasite	44.169	2.273	12.66	12.787	13.73	11.15	2.326	0.43	939	399	15.1	0.7	-10.4	7.3
Malinche I Pumice	Pargasite	44.646	2.212	11.84	11.699	15.05	11.25	2.306	0.35	932	322	12.2	1.2	-10.1	6.4
Malinche I Pumice	Pargasite	45.908	1.714	11.22	11.972	15.13	10.99	2.16	0.37	900	274	10.3	1.4	-10.5	6.4
Malinche I Pumice	Tremolite	50.884	0.763	5.93	12.991	16.28	11.36	1.147	0.27	761	78	2.9	2.2	-12.5	4.6
Malinche I Pumice	Tremolite	50.818	0.847	5.983	12.648	15.72	11.3	1.122	0.3	755	80	3.0	2.0	-12.8	4.9
Malinche I Pumice	Tremolite	50.629	0.731	6.019	12.706	16.04	11.51	1.089	0.32	763	80	3.0	2.1	-12.5	4.7
Malinche I Pumice	Tremolite	51.101	0.772	5.611	12.102	16.31	11.56	1.065	0.33	755	73	2.8	2.2	-12.7	4.5
Malinche I Pumice	Tremolite	50.931	0.844	6.173	12.785	15.97	10.84	1.169	0.24	766	82	3.1	2.1	-12.5	4.9
Malinche I Pumice	Magnesio Hb	49.551	1.082	7.107	13.569	15.08	11.3	1.328	0.4	786	104	3.9	1.7	-12.4	5.1
Malinche II Pumice	Pargasite	44.049	2.047	12.47	11.695	14.39	10.77	2.168	0.56	934	387	14.6	1.1	-10.1	6.8
Malinche II Pumice	Pargasite	44.31	2.028	12.3	12.009	14.2	10.85	2.101	0.53	927	371	14.0	1.0	-10.3	7.0
Malinche II Pumice	Pargasite	45.282	2.132	11.63	11.593	14.73	10.6	2.12	0.43	907	309	11.7	1.2	-10.5	6.7
Malinche II Pumice	Magnesio Hb	47.938	1.287	8.748	12.567	15.23	10.24	1.767	0.35	821	155	5.8	1.8	-11.6	5.6
Malinche II Pumice	Magnesio Hb	48.298	1.352	8.608	11.551	15.55	10.59	1.639	0.37	821	150	5.7	1.8	-11.6	5.7
Malinche II Pumice	Pargasite	44.632	2.139	11.9	12.365	14.71	10.38	2.027	0.49	914	327	12.3	1.3	-10.3	6.5
Malinche II Pumice	Pargasite	45.478	1.894	10.65	13.507	14.21	10.99	1.902	0.37	886	247	9.3	1.2	-10.9	6.4
Malinche II Pumice	Pargasite	43.667	2.056	12.43	13.908	13.1	11.24	2.042	0.51	933	389	14.7	0.7	-10.5	7.4
Malinche II Pumice	Pargasite	46.552	1.408	9.958	12.141	14.89	10.56	1.834	0.39	858	210	7.9	1.6	-11.1	6.2
Malinche II Pumice	Pargasite	43.101	2.207	12.75	14.157	13.02	11.24	2.158	0.56	946	420	15.9	0.6	-10.4	7.2
Malinche II Pumice	Pargasite	43.95	1.888	11.97	14.019	13.27	11.13	2.149	0.53	922	348	13.2	0.8	-10.6	6.9
Malinche II Pumice	Pargasite	43.448	2.099	12.52	13.965	13.31	11.16	2.111	0.57	938	394	14.9	0.8	-10.4	7.0
Malinche II Pumice	Pargasite	44.829	1.863	11.99	12.282	14.37	11.06	2.297	0.53	922	338	12.8	1.1	-10.4	6.6
Malinche II Pumice	Pargasite	45.343	1.798	11.59	12.148	14.56	10.91	1.772	0.47	902	306	11.6	1.3	-10.5	7.0
Malinche II Pumice	Pargasite	44.118	1.964	12.44	12.788	14.13	10.77	2.091	0.49	928	378	14.3	1.1	-10.2	7.0
Malinche II Pumice	Pargasite	43.802	2.081	12.55	13.528	13.35	11.17	2.143	0.57	936	396	14.9	0.7	-10.5	7.1
Malinche II Pumice	Pargasite	44.412	2.033	12.32	12.508	14.45	11.01	2.186	0.61	932	362	13.7	1.1	-10.2	6.5
Malinche II Pumice	Pargasite	45.334	1.983	11.56	11.891	14.82	10.94	2.306	0.56	913	302	11.4	1.2	-10.4	6.1
Malinche II Pumice	Pargasite	43.618	1.949	12.8	13.687	13.57	10.89	2.213	0.54	938	414	15.6	0.9	-10.3	7.1
Malinche II Pumice	Pargasite	44.804	1.985	12.14	12.556	14.51	11	2.201	0.53	925	344	13.0	1.1	-10.3	6.6
Malinche II Pumice	Pargasite	44.159	2.103	12.06	11.83	14.43	10.83	2.139	0.55	928	352	13.3	1.1	-10.2	6.6
Malinche II Pumice	Magnesio Hb	48.595	1.293	8.534	12.194	15.93	10.58	1.645	0.33	820	143	5.4	2.0	-11.5	5.4
Malinche II Pumice	Pargasite	47.658	1.48	9.532	12.895	15.02	10.78	1.741	0.4	844	183	6.9	1.6	-11.4	6.0

Table 7. Fe-Ti oxides geothermometry analyses of Plinian eruptions of La Malinche volcano.

Eruption	% FeO	% Fe ₂ O ₃	Temperature (°C)	ΔNNO	Log fO ₂
Malinche I Pumice	23.73	45.46	862.8	2.64	-10.69
Malinche I Pumice	25.32	44.17	850.9	2.65	-10.91
Malinche I Pumice	24.27	46.42	834.8	2.86	-11.02
Malinche I Pumice	23.93	45.16	859.2	2.67	-10.73
Malinche I Pumice	24.91	45.95	858.6	2.65	-10.76
Malinche I Pumice	24.53	44.48	921.7	2.18	-10.03
Malinche I Pumice	24.45	45.72	922.9	2.22	-9.98
Malinche I Pumice	25.76	41.98	909.4	2.13	-10.28
Malinche I Pumice	24.56	45.60	921.6	2.21	-10.01
Malinche I Pumice	22.97	43.27	910.2	2.22	-10.20
Malinche I Pumice	25.38	42.76	911.5	2.15	-10.23
Malinche I Pumice	24.51	46.50	929.7	2.21	-9.87
Malinche I Pumice	24.22	46.00	933.7	2.17	-9.84
Malinche I Pumice	23.61	46.74	933.5	2.22	-9.80
Malinche I Pumice	24.97	44.64	921.6	2.18	-10.03
Huamantla Pumice	27.08	39.70	896.1	2.11	-10.53
Huamantla Pumice	24.76	46.53	928.1	2.20	-9.91
Huamantla Pumice	27.97	36.09	900.3	1.93	-10.60
Huamantla Pumice	28.34	35.43	893.2	1.95	-10.70
Huamantla Pumice	28.40	36.72	892.3	2.00	-10.68
Huamantla Pumice	27.35	36.99	894.9	2.00	-10.64
Huamantla Pumice	28.18	36.26	889.3	2.01	-10.72
Huamantla Pumice	28.25	36.16	884.8	2.05	-10.78

Table 8. Melt inclusions compositions of Plinian eruptions of La Malinche volcano.

Sample	Deposit	SiO ₂	TiO ₂	Al ₂ O ₃	FeO	MgO	MnO	CaO	K ₂ O	Na ₂ O	Total	H ₂ O (% wt)	%PEC
2	HP	78.01	0.10	13.82	0.62	0.20	0.10	0.55	6.21	0.66	100	4.00	10
6	MIP	77.67	0.20	13.78	2.69	0.70	0.10	0.82	2.68	0.95	100	0.66	20
8	MIP	78.42	0.10	15.85	0.79	0.10	0.03	0.18	2.81	1.89	100	3.54	12
9	MIP	77.21	1.10	13.95	2.25	0.10	0.03	1.02	2.55	2.25	100	2.14	13
13	MIP	79.66	0.10	14.54	0.61	0.05	0.03	0.03	3.67	1.52	100	1.00	10
14	MIP	79.76	0.10	13.88	1.22	0.40	0.10	0.43	2.93	1.35	100	2.12	10
16	MIP	74.76	0.40	14.72	2.30	0.40	0.10	1.69	2.90	2.65	100	1.18	10
17	MIP	79.27	0.10	15.09	0.58	0.10	0.10	-0.71	3.71	2.22	100	3.68	20
18	MIP	78.01	0.10	14.50	0.64	0.10	0.10	0.20	4.51	2.00	100	4.43	15
19	MIP	78.87	0.10	15.67	0.64	0.10	0.10	0.34	3.38	1.01	100	4.54	15

Table 9. Water and CO₂ contents of the melt inclusions of Plinian eruptions of La Malinche volcano.

#	Eruption	H ₂ O Inclusions (wt. %)	CO ₂ Inclusions (ppm)
1	Huamantla Pumice	0.90	7487.66
2	Huamantla Pumice	-	-
4	Huamantla Pumice	3.29	-
5	Huamantla Pumice	1.59	665.05
6	Huamantla Pumice	1.88	534.24
7	Huamantla Pumice	1.07	2666.78
8	Huamantla Pumice	4.44	-
10	Huamantla Pumice	-	-
11	Huamantla Pumice	2.78	-
12	Huamantla Pumice	-	-
13	Huamantla Pumice	4.03	-
14	Huamantla Pumice	-	-
15	Huamantla Pumice	-	-
16	Huamantla Pumice	3.39	-
17	Huamantla Pumice	4.44	2275.31
18	Huamantla Pumice	1.72	-
19	Huamantla Pumice	0.30	-
20	Huamantla Pumice	3.10	2729.59
21	Huamantla Pumice	7.24	-
22	Huamantla Pumice	3.85	-
23	Huamantla Pumice	2.02	-
24	Huamantla Pumice	1.16	-
25	Huamantla Pumice	3.97	-
26	Huamantla Pumice	2.55	-
27	Huamantla Pumice	0.91	-
28	Huamantla Pumice	-	-
28	Huamantla Pumice	-	-
30	Huamantla Pumice	-	-
31	Huamantla Pumice	-	-
32	Huamantla Pumice	3.84	1368.24
33	Huamantla Pumice	0.57	176.91
34	Huamantla Pumice	1.45	-
35	Huamantla Pumice	-	-
36	Huamantla Pumice	1.80	-
37	Huamantla Pumice	-	-
38	Huamantla Pumice	1.32	-
39	Malinche I Pumice	2.28	-
40	Malinche I Pumice	1.03	-
41	Malinche I Pumice	0.98	-
42	Malinche I Pumice	0.74	-
43	Malinche I Pumice	-	-
44	Malinche I Pumice	-	-
45	Malinche I Pumice	5.21	785.30
46	Malinche I Pumice	-	-

47	Malinche I Pumice	7.43	-
48	Malinche I Pumice	2.38	-
49	Malinche I Pumice	2.41	704.43
50	Malinche I Pumice	2.46	4623.11
51	Malinche I Pumice	4.00	-
52	Malinche I Pumice	-	-
53	Malinche I Pumice	6.12	-
54	Malinche I Pumice	-	-
55	Malinche I Pumice	3.67	-
56	Malinche I Pumice	4.76	256.65
57	Malinche I Pumice	2.86	-
58	Malinche I Pumice	7.02	-
59	Malinche I Pumice	1.34	-
60	Malinche I Pumice	4.58	-
61	Malinche I Pumice	7.02	-
62	Malinche I Pumice	2.33	-
63	Malinche I Pumice	7.29	-
64	Malinche I Pumice	2.29	-
65	Malinche I Pumice	-	-
66	Malinche I Pumice	0.51	1052.86
67	Malinche I Pumice	-	-
68	Malinche I Pumice	0.79	-
69	Malinche I Pumice	0.83	-
70	Malinche I Pumice	0.51	-
71	Malinche I Pumice	2.48	-
72	Malinche I Pumice	4.09	4269.19
73	Malinche I Pumice	4.76	-
74	Malinche I Pumice	4.22	-
75	Malinche I Pumice	1.56	1856.84
76	Malinche I Pumice	0.29	256.65
77	Malinche I Pumice	0.98	-
78	Malinche I Pumice	0.61	-
79	Malinche I Pumice	1.11	656.27
80	Malinche I Pumice	0.97	1837.53
81	Malinche I Pumice	0.41	-
82	Malinche I Pumice	-	-
83	Malinche I Pumice	0.42	-
84	Malinche I Pumice	2.68	-
85	Malinche I Pumice	4.01	-
86	Malinche I Pumice	2.16	5781.25
87	Malinche I Pumice	1.92	5038.04
88	Malinche I Pumice	2.83	6919.72
89	Malinche I Pumice	2.46	-
90	Malinche I Pumice	0.75	-
91	Malinche I Pumice	2.13	24489.03
92	Malinche I Pumice	-	-
93	Malinche I Pumice	4.10	-
94	Malinche I Pumice	5.27	-

95	Malinche I Pumice	4.60	5878.17
96	Malinche I Pumice	-	-
97	Malinche I Pumice	-	-
98	Malinche I Pumice	-	-
99	Malinche I Pumice	2.72	-
100	Malinche I Pumice	1.32	845.52
101	Malinche I Pumice	0.83	-
102	Malinche I Pumice	1.23	-
103	Malinche I Pumice	1.80	11325.09
104	Malinche I Pumice	0.82	4357.98
105	Malinche I Pumice	2.24	-
106	Malinche I Pumice	4.33	-
107	Malinche I Pumice	4.02	3282.19
108	Malinche I Pumice	0.50	2934.18
109	Malinche I Pumice	1.06	409.72
110	Malinche I Pumice	-	-
111	Malinche I Pumice	1.12	3988.41
112	Malinche I Pumice	7.76	400.91
113	Malinche I Pumice	3.29	645.41
114	Malinche I Pumice	1.26	-
115	Malinche I Pumice	3.69	-
116	Malinche I Pumice	5.52	12771.97
117	Malinche I Pumice	4.37	-
118	Malinche I Pumice	1.91	-
119	Malinche I Pumice	-	-
120	Malinche I Pumice	3.42	-
121	Malinche I Pumice	2.35	8888.35
122	Malinche I Pumice	2.10	-
123	Malinche I Pumice	2.05	-
124	Malinche I Pumice	3.00	-
125	Malinche I Pumice	7.45	-
126	Malinche I Pumice	5.34	3115.90
127	Malinche I Pumice	-	-
128	Malinche I Pumice	2.23	-
129	Malinche I Pumice	-	-
130	Malinche I Pumice	1.31	4519.34
131	Malinche I Pumice	5.99	-
132	Malinche I Pumice	3.14	-
133	Malinche I Pumice	8.69	-
134	Malinche I Pumice	3.88	9296.65
135	Malinche I Pumice	4.68	-
136	Malinche I Pumice	-	-
137	Malinche I Pumice	-	-
138	Malinche I Pumice	4.97	-
139	Malinche I Pumice	1.39	3705.09
140	Malinche I Pumice	6.12	-
141	Malinche I Pumice	3.84	-