APPENDIX - Experimental and analytical methods.

Preparation procedure of the starting materials. Preparation procedures and compositions of the andesite and basaltic andesite glasses are given in Martel et al. (1999) and Pichavant et al. (2002), respectively. The starting rhyolitic glass corresponds to the average composition of the microlite-free residual glass of P1 pumice (Martel et al., 2000). It was prepared by mixing appropriate amounts of dry powders of Si, Al, Fe, Mg, Mn, and Ti oxides with Ca, Na, and K carbonates. The mixture was heated to 1000°C in an iron-saturated Pt-crucible at 1 atm for 30 min to decompose the carbonates. Two cycles of heating at 1600°C for 3 h (rapidly quenched in water) followed by a fine grinding in an automatic mortar for 1 h were proceeded in order to obtain a bubble- and crystal-free homogeneous dry powder. Electron microprobe analyses of this glass give the following average composition in wt%: SiO_2: 75.7, Al_2O_3: 13.1, Na_2O: 3.6, FeO: 2.5, CaO: 2.4, K_2O: 1.9, MgO: 0.4, TiO_2: 0.3, and MnO: 0.1. Alkali concentrations were also determined by wet chemistry at CRPG Nancy (France), yielding 1.92 and 3.94 wt% for K_2O and Na_2O, respectively. Mixtures of 20 to 50 mg of this rhyolitic glass powder with precise amounts of deionised water were sealed into Au capsules (2.5 mm inner diameter, 20 mm long) by arc welding. Capsules were weighed before and after the welding, and after 12 h in a drying oven at 150°C to check the absence of water loss prior to the experiments.

Experimental methods. The experiments were performed in horizontally working cold-seal pressure vessels (CSPV) pressurized with water in order to keep the fO_2 near the NNObuffer. Pressure was measured using a pressure transducer calibrated against a Heise gauge (accuracy of $\pm$5 MPa). Temperature was first calibrated with an internal thermocouple at pressure, and routinely measured during the experiment by an external thermocouple located in the borehole of the autoclave (maximum error of 10°C). During the dynamic experiment,

decompression was controlled by bleeding a pressure valve automatically monitored by an Eurotherm device. This new device allowed quasi-steady decompressions. The samples from both the isobaric and decompression experiments were either rapidly quenched within 1 to 2 s by dropping the sample capsule from the hot spot into the water cooled part of the vessel or, in case of the failure of the rapid quench process, isobarically maintained during cooling from run temperature to ~200°C. Experiment durations were ~1 week, which has been shown to be close to equilibrium for temperature between 780-860°C and water pressures from 200 to 50 MPa, starting with a rhyolitic melt (Hammer and Rutherford, 2002; Martel and Schmidt, 2003). After the experiments, the capsules were weighed to check for water leak and then opened for analysis. Experiments starting with the andesite and the basaltic andesite were carried out in internally heated pressure vessels (see procedure in Martel et al., 1999, and Pichavant et al., 2002).

Analytical methods. Natural and experimental microlites and glasses were analyzed using a Cameca SX 50 electron microprobe (BRGM-ISTO, Orléans, France) using a 6-nA beam current, 15-kV accelerating voltage, 10-s counting time on peak, a focused beam for the crystals, and a defocused beam of ~6 µm in diameter for the glasses. The analytical errors on the oxide analyses are 1 % relative for SiO_2 and Al_2O_3; 2 % for CaO; 3 % for FeO, MgO, and TiO_2; and 5 % for MnO, Na_2O and K_2O. Alkali migration in glasses was corrected using hydrated standards of Mt. Pelée matrix glasses, following the procedure of Pichavant (1987) (alkali content determined by wet chemistry at the CRPG Nancy, France, and water contents determined by Karl-Fischer titration, ISTO, France).

Table 1. Composition of the natural plagioclase microlites of Mt. Pelée.

Eruption	Sample[a]	Type[b]	No.	Size[c]	Composition[d]								
				(μm^2)	SiO_2	FeO	Na_2O	K_2O	Al_2O_3	MgO	CaO	Total	An
1929	MT34P	DF	Th128	<500	57.20	0.42	6.06	0.60	25.60	0.01	8.68	98.58	**42.62**
dome			Th129	<500	58.32	0.40	7.05	0.83	24.46	-	7.55	98.62	**35.45**
			Th130	<500	52.49	0.44	4.86	0.26	27.66	0.04	11.93	97.84	**56.69**
			Th131	<500	56.17	0.39	6.09	0.65	25.76	0.02	8.68	97.81	**42.39**
	53083	DF	50	2500	55.91	0.48	5.23	0.29	27.30	0.24	10.42	99.87	**51.51**
			57	2400	55.35	0.37	5.47	0.17	27.8	0.07	10.04	99.30	**49.85**
			59	1500	49.80	0.58	3.23	-	30.81	0.09	13.97	98.50	**70.50**
			60	1600	60.00	0.43	7.14	0.77	24.60	0.04	6.97	99.98	**33.50**
			61	2000	49.62	0.59	3.00	0.13	30.85	-	13.82	98.05	**71.22**
	57611	DF	8	3000	48.52	0.29	2.70	-	31.72	0.07	15.12	98.42	**75.58**
			9	1000	52.41	0.43	4.30	0.15	29.04	0.05	11.94	98.32	**60.00**
			10	1000	48.03	0.95	2.76	0.03	31.85	0.24	15.34	99.34	**75.31**
			11	1000	49.75	0.49	3.62	0.11	30.25	0.05	13.45	97.77	**66.81**
	57611	DF	82	>500	52.65	0.72	4.09	0.20	29.52	0.02	12.09	99.38	**61.28**
	mafic		83	>500	46.00	0.51	1.46	0.03	33.72	0.05	16.72	98.56	**86.19**
			84	>500	49.69	0.71	2.94	0.06	31.45	0.05	14.39	99.33	**72.74**
			85	>500	54.89	0.38	5.68	0.48	27.79	-	10.74	99.98	**49.74**
1929	MT35W	VF	Th152	<500	50.79	0.57	3.72	0.04	29.79	0.04	14.25	99.28	**67.76**
BAF			Th153	<500	54.37	0.33	4.89	0.08	28.46	0.07	11.83	100.10	**56.95**
	MT36A	DF	Th85	<500	56.93	0.50	5.74	0.13	26.69	-	10.03	100.04	**48.76**
			Th86	<500	54.67	0.37	5.17	0.10	28.09	0.04	11.39	99.84	**54.59**
			Th88	<500	54.63	0.30	4.90	0.08	27.95	0.03	11.14	99.25	**55.42**
			Th91	<500	57.05	0.72	5.80	0.16	25.66	0.02	9.57	99.07	**47.25**
			Th94	<500	51.44	0.73	3.72	0.12	30.08	-	14.50	100.59	**67.82**
	MT37N89	VF	82	<500	54.10	0.59	4.76	0.10	27.25	0.09	12.08	99.00	**58.03**
			83	<500	53.97	0.75	5.15	0.12	26.76	0.06	11.08	97.92	**53.97**
			84	<500	54.77	0.70	5.32	0.14	26.11	0.03	10.95	98.05	**52.80**
			85	<500	54.22	0.87	5.21	0.14	26.53	0.09	11.07	98.19	**53.54**
			86	65	52.66	0.80	3.40	0.36	27.79	0.07	12.79	97.97	**66.02**
			87	<500	54.51	0.63	4.81	0.17	26.76	0.05	11.21	98.28	**55.72**
			91	<500	52.74	0.76	4.32	0.11	28.06	0.04	12.40	98.45	**60.92**
			92	<500	50.94	0.65	3.49	0.12	29.46	0.08	14.27	99.01	**68.83**
			93	<500	52.41	0.86	4.26	0.07	28.43	0.07	12.53	98.70	**61.66**
			94	<500	47.20	0.78	2.04	0.06	31.41	0.04	16.36	97.92	**81.28**
			95	<500	54.16	0.66	5.04	0.09	27.23	0.06	11.59	98.85	**55.68**
			111	<500	58.13	0.70	5.70	0.23	25.78	0.03	9.75	100.33	**47.94**
			112	<500	55.93	0.80	5.14	0.15	27.62	0.07	11.04	100.79	**53.78**
			113	<500	52.35	0.77	3.96	0.11	29.18	0.07	13.23	99.80	**64.46**
	MT37N1	VF	114	<500	52.82	0.54	4.18	0.07	28.85	0.04	12.60	99.12	**62.20**
			115	<500	51.70	0.75	4.04	0.07	28.61	0.08	13.05	98.39	**63.80**
			116	<500	53.00	0.80	4.12	0.10	28.77	0.06	12.74	99.66	**62.73**
			117	<500	50.67	0.87	3.11	0.04	30.35	0.10	14.51	99.65	**71.90**
			118	<500	47.61	0.62	1.88	0.05	31.82	-	16.53	98.52	**82.72**
			119	<500	47.04	0.64	1.86	0.04	32.67	0.02	16.81	99.19	**83.15**
			120	<500	47.49	0.72	1.91	0.07	32.09	0.08	16.65	99.05	**82.43**
			121	<500	48.00	0.64	1.99	0.05	32.07	0.06	16.54	99.43	**81.86**
			122	<500	46.64	0.78	1.61	0.05	32.24	0.02	17.09	98.46	**85.20**
			123	<500	45.80	0.69	1.66	0.05	32.35	0.02	17.43	98.01	**85.05**
			124	<500	46.14	0.62	1.57	0.05	32.31	0.04	17.16	97.94	**85.53**
			125	<500	46.36	0.58	1.60	-	32.45	0.02	17.41	98.59	**85.71**
			136	<500	46.11	0.67	1.43	0.05	32.07	0.07	17.56	97.97	**86.94**
			Q62**r**	98	57.04	0.32	6.00	0.08	24.91	-	8.93	97.27	**44.92**
			Q61**c**	98	54.68	0.61	5.23	0.09	27.35	-	11.03	98.98	**53.55**
			Q63**r**	98	57.22	0.51	6.26	0.20	25.02	0.03	8.97	98.44	**43.64**
			Q64	42	56.20	0.51	6.01	0.16	26.24	-	10.43	99.55	**48.50**

			Q66**r**	300	55.71	0.75	5.43	0.08	26.02	0.03	10.19	98.28	**50.70**
			Q65**c**	300	50.77	0.80	3.48	0.07	29.40	0.07	14.13	98.74	**68.88**
			Q67**r**	300	56.33	0.77	5.68	0.11	25.99	-	9.96	98.85	**48.90**
			Q71	30	57.02	0.64	5.88	0.24	24.41	0.02	9.12	97.38	**45.49**
			Q76	18	58.70	0.73	6.14	0.41	24.15	0.13	8.67	98.99	**42.77**
			Q83	18	58.87	0.58	6.43	0.29	23.90	0.07	8.45	98.68	**41.33**
			S44**c**	340	46.25	0.47	1.40	0.06	33.68	0.07	17.18	99.17	**86.84**
			S45**r**	340	54.32	0.51	4.85	0.13	28.50	-	11.66	100.07	**56.62**
			S46	90	54.81	0.54	4.62	0.09	28.52	-	11.32	99.91	**57.16**
			S47	140	50.78	0.51	3.43	0.09	30.03	-	14.02	98.91	**68.94**
			S48	85	56.60	0.47	5.75	0.16	26.20	0.09	9.66	98.93	**47.71**
			S54**c**	1090	46.71	0.62	1.73	0.09	33.27	-	17.36	99.78	**84.26**
			S58**r**	1090	57.08	0.50	5.67	0.11	26.44	-	10.07	99.95	**49.23**
			S59	230	50.30	0.55	3.46	0.11	30.31	0.01	14.34	99.40	**69.16**
			S61	35	55.81	0.79	5.29	0.25	26.57	0.07	10.22	99.05	**50.87**
			S63	30	56.41	0.46	5.40	0.17	26.77	-	10.04	99.25	**50.15**
			S68	40	57.69	0.48	5.64	0.23	26.10	0.05	9.77	100.05	**48.27**
			S70**r**	220	49.96	0.76	3.06	0.10	30.52	0.04	14.37	98.87	**71.79**
			S71**c**	220	49.28	0.82	2.99	0.02	30.03	0.31	14.66	98.12	**72.95**
			S72**r**	220	53.57	0.47	4.86	0.08	28.18	0.01	11.24	98.54	**55.80**
			S73	85	57.33	0.66	6.09	0.25	25.83	-	9.02	99.22	**44.37**
			S74**r**	340	56.61	0.63	5.65	0.11	26.97	0.04	10.02	100.06	**49.18**
			S79**c**	340	45.82	0.71	1.36	0.04	33.84	-	17.69	99.50	**87.59**
			S85	97	54.57	0.72	5.01	0.18	28.02	0.08	10.02	99.41	**53.63**
			S82**c**	1200	46.55	0.54	1.44	0.01	33.54	0.01	17.42	99.56	**86.90**
			S84**r**	1200	54.00	0.41	5.00	0.15	28.17	0.04	11.49	99.27	**55.43**
			S89	54	55.38	0.39	5.11	0.09	27.35	-	10.39	98.71	**52.64**
			S86**c**	900	46.39	0.51	1.33	-	32.78	0.04	18.11	99.16	**88.29**
			S88**r**	900	53.95	0.29	4.72	0.08	29.00	-	11.87	99.92	**57.87**
			S90	56	56.32	0.93	5.48	0.13	27.12	0.03	10.76	100.78	**51.66**
			S91	60	56.87	0.49	5.97	0.16	26.32	-	8.94	98.81	**44.84**
	MT37N58	DF	137	<500	55.36	0.79	5.15	0.20	28.16	0.10	11.51	101.34	**54.62**
			138	<500	55.75	0.74	5.46	0.30	27.16	0.04	10.53	100.03	**50.69**
			139	<500	54.91	0.71	5.10	0.31	27.74	0.04	11.30	100.16	**54.08**
			140	<500	48.82	0.82	2.54	0.12	30.94	0.09	16.06	99.42	**77.19**
			141	<500	54.63	0.81	4.67	0.25	27.63	0.06	11.54	99.64	**56.86**
			142	<500	57.06	0.96	5.27	0.38	25.77	0.04	10.62	100.19	**51.51**
			144	<500	52.00	0.98	3.98	0.21	28.68	0.04	13.15	99.12	**63.81**
			145	<500	50.91	0.88	3.53	0.12	30.29	0.04	14.06	99.84	**68.26**
			146	<500	56.23	0.85	5.43	0.30	26.91	0.04	10.81	100.64	**51.51**
	53614	DF	130	2000	49.02	0.57	3.11	0.02	29.86	0.04	13.65	96.32	**70.72**
			133	1000	50.42	0.52	3.49	0.06	30.84	0.01	14.19	99.64	**68.96**
			134	2000	53.98	0.41	4.86	0.09	28.85	-	11.68	99.91	**56.75**
	52207	DF	12	1000	54.22	0.25	5.17	0.08	27.98	-	10.55	98.25	**52.75**
			21	1000	51.30	0.36	3.45	0.04	31.44	-	13.85	100.44	**68.77**
			22	1000	52.03	0.35	4.13	0.13	30.86	0.02	13.11	100.71	**63.22**
1902	MT34M	DF	B57	75	60.38	0.40	6.83	0.86	25.21	-	7.73	101.55	**36.60**
dome			B58	126	59.50	0.54	6.74	0.72	25.64	0.01	8.54	101.74	**39.54**
			B60	114	60.33	0.56	6.83	1.03	24.45	0.02	7.01	100.29	**34.01**
			B63	50	57.13	0.63	5.60	0.47	26.94	-	10.24	101.23	**48.91**
			B64	96	59.38	0.61	6.80	0.83	25.01	-	7.62	100.38	**36.44**
	53082	DF	18	400	53.26	0.49	4.82	0.22	28.22	0.01	11.18	98.27	**55.44**
			49	2000	53.85	0.46	4.83	0.20	28.37	0.05	10.79	98.62	**54.58**
			50	2000	52.38	0.39	4.66	0.25	29.41	0.26	11.48	98.99	**56.80**
			51	2000	46.96	0.67	1.94	-	32.92	0.06	15.88	98.61	**81.89**
			52	2000	52.05	0.39	4.07	0.13	29.45	0.06	12.52	98.71	**62.47**
			7	2000	46.64	0.52	1.47	-	32.78	0.08	16.23	97.75	**85.92**
			8	2000	48.74	0.48	2.78	-	31.49	0.04	14.54	98.17	**74.29**
			9**r**	2000	52.90	0.77	4.26	0.16	28.99	0.05	11.78	98.99	**59.86**
			10**c**	2000	46.33	0.50	1.62	-	33.49	0.08	16.92	98.97	**85.23**

			34	2000	54.90	0.50	5.06	0.16	28.12	0.07	10.47	99.41	**52.83**
			35	2000	55.09	0.59	4.81	0.15	27.99	0.05	10.81	99.55	**54.89**
			36	2000	55.49	0.38	5.05	0.13	27.63	0.07	10.68	99.45	**53.47**
1902	MT36V15	DF	157	<500	53.38	1.11	4.04	0.09	28.41	0.37	12.61	100.00	**62.98**
Aug 30			158	<500	53.02	0.76	4.14	0.12	28.47	0.07	12.71	99.32	**62.42**
			159	<500	55.79	0.98	4.14	0.47	27.64	0.08	11.80	100.91	**59.48**
			160	<500	52.26	0.79	4.01	0.07	28.92	0.08	13.01	99.15	**63.93**
			161	<500	56.26	0.63	5.24	0.33	26.14	0.01	10.24	98.86	**50.89**
			162	<500	52.90	0.70	4.09	0.19	28.59	0.10	12.59	99.17	**62.29**
			164	<500	53.21	0.73	4.86	0.20	27.15	0.08	11.42	97.69	**55.85**
			179	<500	51.64	0.72	4.25	0.12	27.61	0.09	12.27	96.71	**61.04**
			180	<500	53.28	0.79	4.54	0.17	27.87	0.09	11.75	98.50	**58.22**
			181	<500	53.48	0.54	4.69	0.13	28.03	-	11.59	98.55	**57.27**
	61536	DF	27	3000	45.51	0.57	1.31	0.05	34.06	0.02	17.15	98.94	**87.59**
			28	1500	47.05	0.55	2.23	0.09	32.74	0.07	16.09	98.92	**79.52**
			29	600	48.20	0.56	2.77	0.07	31.42	0.07	14.91	98.04	**74.53**
			30	500	52.52	0.72	4.45	0.30	28.21	0.05	11.10	97.40	**56.89**
			42	250	53.84	0.64	4.85	0.45	28.68	0.03	10.77	99.33	**53.63**
1902	58862	DF	68	500	50.38	0.50	3.18	0.12	30.78	0.05	13.88	98.97	**70.18**
May 20			69	4500	52.07	0.50	4.03	0.11	30.44	0.05	12.94	100.20	**63.54**
			6	2000	46.25	0.52	1.51	0.04	34.03	-	17.45	99.80	**86.30**
1902	MT37B19	DF	A117	19	57.30	0.17	5.22	0.24	26.35	0.04	11.42	100.75	**53.98**
May 8			A59**c**	46	56.84	0.67	5.17	0.50	23.93	0.18	9.78	97.07	**49.57**
			A124**r**	46	56.53	0.75	5.55	-	28.51	0.05	11.65	103.04	**53.69**
			A78	32	56.37	0.29	5.44	0.07	28.00	0.02	11.62	101.82	**53.89**
			A127**r**	65	55.25	-	4.47	0.07	28.81	0.07	13.06	101.72	**61.49**
			A129**c**	65	53.97	-	3.92	0.18	29.85	0.01	13.97	102.17	**65.66**
			A130**r**	654	54.40	-	4.48	0.22	29.09	0.03	13.56	101.92	**61.80**
			A136	20	55.91	-	5.10	0.18	27.88	0.15	12.03	101.25	**56.02**
			A137**r**	138	53.32	-	4.49	-	29.45	0.15	12.72	100.14	**61.00**
			A75**c**	138	56.20	0.89	4.55	0.14	27.97	-	12.43	102.17	**59.68**
			A141**r**	138	55.18	0.38	4.55	0.07	28.28	0.04	12.99	101.42	**60.99**
			Q91	15	59.72	0.54	5.39	0.39	24.52	0.04	9.80	100.50	**48.93**
			Q106	10	56.96	0.61	5.19	0.24	26.73	0.09	11.27	101.10	**53.82**
	MT37B56	DF	B77	22	56.45	0.94	4.85	0.50	27.37	-	11.28	101.43	**54.63**
			B92	24	56.43	0.91	5.22	0.39	27.15	-	10.89	101.07	**52.31**
			B93	28	56.09	0.77	5.00	0.39	27.37	0.02	11.35	101.14	**54.41**
			B100	36	55.77	0.68	4.99	0.29	27.50	-	11.38	100.75	**54.81**
			B104	12	58.58	0.77	5.32	0.44	25.95	0.08	10.28	101.60	**50.30**
			B111	16	58.19	0.98	5.01	0.72	26.08	0.03	10.71	101.78	**51.89**
			B112	26	59.04	0.73	5.42	0.42	25.72	-	10.17	101.58	**49.67**
			Q152	22	56.74	0.99	5.01	0.49	26.39	0.03	10.52	100.25	**52.14**
	MT37B51	DF	B114	93	55.64	0.54	5.07	0.19	27.76	-	11.16	100.44	**54.31**
			B115	22	57.10	0.51	5.45	0.17	26.60	0.05	10.25	100.17	**50.45**
			B116	21	54.14	0.92	4.79	0.12	28.15	0.02	12.12	100.35	**57.89**
			B118**r**	71	54.74	0.46	4.70	0.09	28.04	0.04	12.47	100.59	**59.16**
			B119**c**	71	53.53	0.35	4.59	0.14	29.31	0.05	12.63	100.63	**59.86**
			B120**r**	71	58.48	0.82	5.24	0.33	25.40	0.02	9.94	100.23	**50.16**
			B121	53	56.83	0.47	5.01	0.16	27.12	0.04	10.86	100.52	**53.97**
			B125**r**	75	55.62	0.67	5.21	0.13	27.86	0.02	11.55	101.08	**54.67**
			B126**c**	75	56.20	0.55	5.11	0.17	27.01	0.06	11.45	100.58	**54.79**
			B127**r**	75	54.62	0.56	4.64	1.13	28.74	0.08	12.07	100.98	**58.55**
			B128	76	55.18	0.55	4.63	0.19	28.02	0.05	11.95	100.66	**58.13**
			B138**c**	131	52.20	0.69	3.54	0.06	30.48	0.11	14.46	101.69	**69.06**
			B140**r**	131	55.36	0.42	4.86	0.18	28.11	0.02	11.43	100.38	**55.90**
			Q118	27	57.22	0.53	5.24	0.17	26.29	0.07	10.91	100.45	**52.96**
			Q129	40	51.43	0.61	3.90	0.09	28.97	0.03	13.66	98.75	**65.60**
			Q144	10	57.57	0.72	5.65	0.24	25.83	0.06	10.12	100.30	**49.07**
	MT37B23	DF	9	<500	52.09	0.60	4.13	0.12	27.96	0.06	12.36	97.31	**61.88**
			10	<500	53.26	0.64	4.58	0.12	27.83	0.04	11.74	98.26	**58.17**

			11	<500	55.56	0.44	5.38	0.09	26.99	0.05	10.59	99.18	**51.86**
			12	<500	54.97	0.48	5.22	0.12	27.42	0.03	10.98	99.22	**53.38**
			16	<500	53.57	0.71	4.55	0.16	28.11	0.08	12.18	99.38	**59.09**
			19	<500	51.13	.59	3.23	0.11	31.29	0.02	14.81	101.27	**71.24**
			22	<500	51.47	0.47	3.37	0.06	30.11	-	14.50	100.01	**70.15**
	MT37B92	VF	33	<500	53.92	0.81	5.01	0.10	26.72	0.18	11.10	97.94	**54.70**
			35	<500	54.35	0.67	5.04	0.13	26.97	0.17	11.03	98.35	**54.33**
			43	<500	50.66	0.52	3.64	0.10	29.19	-	13.59	97.70	**66.96**
			44	<500	53.74	0.53	4.57	0.15	26.90	0.05	11.11	97.08	**56.83**
			45	<500	53.46	0.66	4.46	0.12	26.76	0.05	11.15	96.68	**57.59**
			46	<500	53.16	0.47	4.52	0.09	27.17	0.06	11.73	97.28	**58.60**
	MT37B17	DF	50	<500	53.17	0.51	4.69	0.10	27.48	0.02	11.33	97.40	**56.51**
			51	<500	53.18	0.45	4.79	0.16	27.39	0.04	11.51	97.58	**56.51**
			53	<500	52.62	0.61	4.32	0.09	27.92	0.05	11.98	97.61	**60.18**
			54	<500	52.43	0.57	4.50	0.11	27.82	0.04	11.66	97.17	**58.50**
			55	<500	50.00	0.88	3.18	0.08	29.16	0.03	13.88	97.22	**70.36**
			56	<500	51.31	0.85	3.91	0.07	28.56	0.05	19.93	97.77	**64.33**
			57	<500	51.12	0.96	3.76	0.10	28.56	0.04	13.33	97.95	**65.80**
			76	<500	52.20	0.48	4.20	0.06	27.57	0.04	11.78	96.37	**60.55**
			77	<500	52.65	0.65	4.40	0.19	26.93	0.03	11.58	96.56	**58.59**
			78	<500	52.16	0.74	4.59	0.16	26.94	0.10	11.66	96.39	**57.87**
			79	<500	51.82	0.51	4.28	0.08	27.52	0.04	11.93	96.24	**60.30**
			80	<500	53.01	0.66	4.47	0.10	28.37	0.06	12.15	98.91	**59.67**
	58860	DF	44	3000	46.93	1.14	2.03	0.04	32.33	0.06	16.42	99.02	**81.52**
			45	4500	45.28	0.51	1.46	0.08	32.56	0.02	17.27	97.27	**86.32**
			46	2000	46.63	0.60	2.13	-	31.86	0.02	16.32	97.56	**80.89**
	58858	DF	11	2000	50.15	0.47	3.70	0.10	29.95	0.03	12.85	97.32	**65.35**
			12	2000	50.39	0.60	3.35	0.09	30.22	0.28	13.58	98.57	**68.76**
			15	4500	46.04	0.62	1.65	0.04	33.25	-	16.16	97.76	**84.19**
			16	2000	46.12	0.60	1.85	0.07	32.69	0.05	15.88	97.39	**82.23**
			17	2000	45.07	0.42	1.13	0.02	33.24	0.06	17.04	97.01	**89.17**
			18	2000	45.72	0.57	1.65	0.02	33.16	0.04	16.83	98.08	**84.83**
	58859	DF	12	3000	50.88	0.62	3.04	0.06	32.01	0.03	14.77	101.51	**72.61**
			13	2000	52.62	0.58	4.36	0.11	29.82	0.05	12.24	99.79	**60.41**
			14	3000	53.55	0.47	4.21	0.11	30.12	0.01	12.54	101.05	**61.80**
	58857	DF	136	900	50.57	0.76	3.13	0.05	30.58	0.11	14.54	99.82	**71.75**
			137	900	49.15	0.77	2.60	0.02	31.72	0.08	15.04	99.41	**76.08**
P1 (650 y. BP) fallout	MT25E1	P	B68	100	50.02	0.48	2.80	0.10	32.00	0.06	15.58	101.21	**75.03**
			B69	100	50.96	0.55	2.50	0.10	32.03	-	15.16	101.43	**76.54**
			B70	25	56.37	0.48	4.54	0.14	28.23	0.02	12.46	102.30	**59.78**
			B2	69	56.02	0.19	5.11	0.21	28.17	0.04	11.17	100.97	**54.02**
			B3	70	56.62	0.39	5.26	0.11	27.51	0.02	11.14	101.05	**53.54**
			B13**r**	96	49.67	0.48	2.54	0.03	31.98	0.05	16.62	101.41	**78.17**
			B12**c**	96	48.95	0.65	2.51	0.02	32.28	0.04	15.47	100.03	**77.26**
			B16**r**	96	48.97	0.38	2.52	0.04	31.71	0.04	15.57	99.27	**77.19**
			Th116	50	48.77	0.42	2.77	0.04	31.13	0.02	15.50	98.77	**75.38**
			Th118	50	46.12	0.39	1.26	0.07	33.72	-	17.85	99.41	**88.34**
			Th120	50	46.87	0.34	1.65	0.06	33.05	-	16.68	98.71	**84.52**
			Th121	50	47.23	0.45	2.18	-	32.45	-	17.09	99.40	**81.21**
			S2**c**	420	47.45	0.71	1.79	0.03	33.43	0.02	17.07	100.53	**83.90**
			S4**b**	420	50.77	0.33	3.69	0.05	30.40	-	13.95	99.19	**67.42**
			S10	105	50.78	0.39	3.57	0.04	31.56	0.01	14.15	100.65	**68.49**
			S16**c**	120	46.63	0.50	1.70	-	33.48	-	17.10	99.46	**84.71**
			S22**b**	120	56.12	0.41	4.38	0.31	27.67	0.03	11.42	100.41	**57.92**
			S20	95	54.58	0.50	5.32	0.12	28.36	-	10.96	99.85	**52.87**
			S24	680	50.79	0.37	3.41	0.07	31.40	-	14.43	100.50	**69.77**
			S27**r**	1105	52.80	0.63	4.38	0.15	29.24	0.08	12.74	100.03	**61.12**
			S26**c**	1105	45.68	0.69	1.41	0.01	33.97	0.05	18.03	99.86	**87.53**
			S28**r**	1105	54.37	0.45	4.79	0.14	28.69	-	11.72	100.33	**57.03**
			S25	128	50.07	0.62	3.06	0.08	31.29	0.06	14.65	99.85	**72.26**

			S29**c**	875	46.86	0.53	1.53	0.01	33.62	0.02	17.46	100.06	**86.24**
			S32**r**	875	50.75	0.52	3.09	0.11	31.71	0.11	15.04	101.36	**72.41**
			S33	120	55.92	0.46	5.15	0.19	27.34	0.05	11.06	100.28	**53.71**
			S36**c**	300	50.53	0.65	3.00	0.04	31.27	-	14.82	100.31	**73.01**
			S38**r**	300	55.03	0.55	4.68	0.13	28.16	-	11.50	100.06	**57.12**
			S35	120	52.43	0.55	4.18	0.07	29.75	-	12.83	99.81	**62.68**
			S40**c**	170	48.62	0.40	2.37	0.06	32.81	-	16.58	100.85	**79.15**
			S42**r**	170	53.61	0.66	4.62	0.15	30.12	-	12.70	101.91	**59.79**
	MT33C	P	B18	39	57.15	0.56	4.89	0.32	26.12	0.05	10.85	100.20	**54.03**
			B24	34	54.89	0.29	5.23	0.09	28.18	0.01	11.43	100.17	**54.41**
			B25	29	53.09	0.44	3.94	0.08	29.92	0.02	13.55	101.07	**65.22**
			B28**c**	100	54.92	0.58	4.68	0.13	28.83	0.06	12.14	101.44	**58.46**
			B30**r**	100	53.80	0.40	4.68	0.14	28.88	0.06	12.75	100.82	**59.64**
			B31	36	57.55	0.70	4.88	0.44	25.72	0.08	10.76	100.28	**53.49**
			B33	21	53.20	0.52	3.33	0.10	30.46	0.02	14.47	102.34	**70.21**
			B41	100	51.47	0.58	3.97	0.10	29.80	0.05	13.89	99.93	**65.53**
P1 surge	MT36P7	VF	A85	30	54.30	-	4.77	0.14	28.73	0.10	12.13	100.31	**63.01**
	MT36P6	DF	A95	15	55.23	0.99	4.86	0.11	27.76	0.05	12.22	101.22	**57.80**
			A100**c**	123	53.83	0.67	5.16	0.14	27.99	0.02	12.61	100.42	**57.04**
			A101**r**	123	53.37	0.50	4.53	-	28.83	0.05	12.56	100.34	**60.48**
			A102	30	54.23	0.22	4.53	0.13	28.83	0.04	12.26	100.26	**59.48**
			A105	17	54.79	0.57	4.93	0.16	28.25	0.05	12.17	101.16	**57.18**
			A111	50	53.91	0.98	4.50	0.12	29.03	0.06	12.63	101.24	**60.38**
			A113	<500	55.27	0.78	4.36	0.37	27.87	0.10	12.82	101.64	**60.59**
	MT38P	DF	Th105	<500	51.81	0.69	3.47	0.11	30.14	0.06	14.08	100.36	**68.71**
			Th109	<500	47.24	0.76	2.14	0.08	32.32	-	16.83	99.48	**80.90**
			Th110	<500	55.25	0.60	4.81	0.17	27.50	0.09	11.46	99.99	**56.24**
			Th111	<500	51.62	0.50	4.10	0.10	29.68	0.01	12.77	98.92	**62.88**
			Th113	<500	48.26	0.40	2.51	0.02	31.97	0.04	16.38	99.59	**78.19**
	MT33T	VF	Th142	<500	53.10	0.28	4.55	0.04	28.84	0.03	12.73	99.57	**60.56**
			Th146	<500	50.55	0.54	3.47	0.10	30.57	0.02	14.01	99.26	**68.66**
			Th149	<500	54.37	0.84	4.87	0.07	28.92	0.05	12.31	101.49	**58.02**
P2 (1670 y. BP) fallout	MT37F	P	R140	50	50.38	0.54	3.81	0.07	30.55	-	13.48	98.89	**65.90**
			R141	110	52.32	0.60	4.53	0.12	29.78	0.05	12.28	99.73	**59.54**
			R145	25	50.20	0.55	3.61	0.12	31.35	0.02	14.06	99.92	**67.79**
			R151	250	50.95	0.41	4.06	0.09	30.20	0.08	12.68	98.51	**63.00**
			R152	25	54.77	0.61	4.58	0.36	26.47	-	10.51	97.35	**54.66**
			R153	25	45.59	0.53	1.56	0.11	33.25	-	17.12	98.27	**85.29**
			R155	120	44.14	0.70	1.48	0.06	33.79	0.08	17.36	97.65	**86.37**
			R158	80	52.18	0.57	4.75	0.07	29.16	0.07	12.26	99.10	**58.56**
			R159	25	52.20	0.49	4.11	0.14	30.03	-	12.68	99.73	**62.52**
			R160	35	46.25	0.56	1.89	0.01	33.66	0.02	16.23	98.75	**82.56**
			R161	45	45.64	0.49	1.62	0.02	33.80	0.06	17.38	99.11	**85.44**
			R163**c**	270	49.61	0.34	3.87	0.10	29.96	-	13.43	97.33	**65.34**
			R164**r**	270	51.06	0.44	3.94	0.19	29.88	0.04	12.98	98.56	**63.86**
			R166	30	52.06	0.54	4.13	0.15	28.55	0.05	11.55	97.13	**60.14**
			R168	25	46.83	0.61	1.89	0.17	31.23	0.08	16.05	96.94	**81.54**
			R169	25	49.30	0.40	3.51	0.09	30.78	-	13.74	97.81	**68.04**
			R170	140	51.48	0.39	4.18	0.09	29.94	0.03	12.25	98.48	**61.49**
			R173	100	50.40	0.65	3.32	0.10	30.72	-	13.19	98.44	**68.31**
			R174	240	54.37	0.82	4.64	0.16	28.06	-	11.12	99.20	**56.46**
			R176	45	51.21	0.54	4.34	0.07	29.91	0.06	12.17	98.32	**60.52**
			R177	210	45.67	0.57	1.64	0.03	33.73	-	16.54	98.18	**84.61**
P3 (2010 y. BP) fallout			R181	260	51.04	0.15	3.82	0.09	29.96	0.08	12.88	98.03	**64.75**
			R183**c**	2080	49.96	0.57	3.26	0.04	31.61	-	15.18	100.62	**71.88**
			R184**r**	2080	52.08	0.38	4.24	0.11	30.37	-	12.53	99.71	**61.62**
			R187	1270	44.77	0.42	0.90	-	35.37	0.05	18.80	100.32	**91.99**
			R190	350	49.63	0.59	3.03	0.02	32.00	-	14.68	99.95	**72.71**
			R191**c**	1100	48.79	0.62	2.52	-	32.98	-	15.65	100.57	**77.42**
			R192**r**	1100	54.29	0.63	4.64	0.12	29.32	0.10	11.85	101.00	**58.15**

R193	1260	49.84	0.34	2.87	0.04	31.61	-	14.61	99.31	**73.56**

[a]adjacent **c** and **r** for the core and rim, respectively, of a given crystal; 57611*mafic* represents a mafic enclave in the 57611 andesite sample.
[b]DF=dense (juvenile) fragment; VF=vesicular (juvenile) fragment; P=pumice.
[c]microlite area determined by image analysis.
[d]chemical composition in wt% (MnO and TiO_2<0.2 wt%). All Fe as FeO. An for anorthite content in mol%.

Table 2. Mt. Pelée experimental conditions and compositions of glasses and plagioclases.

Run #	Conditions[a]		Composition[b]											
	P(MPa)	T(°C)	phase	n	SiO_2	FeO	Na_2O	K_2O	Al_2O_3	MgO	CaO	TiO_2	Total	An/H_2O
							Rhyolite melt							
HPE2000	200	875	glass	7	75.2(2)	2.5(2)	3.8(2)	2.0(0)	13.3(1)	0.4(0)	2.4(1)	0.3(0)	100.0	**5.8(4)**
PE2000	200	850	glass	7	76.0(2)	2.5(2)	3.5(1)	2.0(0)	13.2(2)	0.4(0)	2.3(1)	0.2(1)	100.0	**6.0(3)**
HPE1750	175	875	glass	8	75.2(2)	2.5(1)	3.7(1)	2.0(1)	13.3(2)	0.4(1)	2.4(1)	0.3(0)	100.0	**5.7(5)**
PE1750B	175	850	plag	5	55.2(5)	0.6(1)	5.1(1)	0.1(0)	27.5(5)	-	11.0(1)	-	99.6	**54.3(5)**
			glass	7	76.8(2)	1.2(1)	3.8(1)	2.1(1)	13.1(1)	0.4(0)	2.2(1)	0.3(1)	100.0	**5.9(4)**
R900	150	900	glass	2	76.0(4)	2.5(0)	3.3(6)	1.9(0)	13.3(1)	0.4(0)	2.4(1)	0.3(1)	100.0	***n.d.***
HPE1500	150	875	plag	8	55.0(4)	0.5(1)	4.8(1)	0.1(0)	28.2(4)	-	11.4(2)	-	100.1	**56.4(9)**
			glass	7	76.5(3)	1.9(2)	3.6(1)	2.0(1)	13.0(2)	0.4(0)	2.4(1)	0.3(1)	100.0	**5.2(4)**
PE1500C	150	850	plag	4	55.1(2)	0.7(2)	5.3(1)	0.1(0)	27.2(6)	-	10.4(5)	-	99.2	**51.6(14)**
			glass	7	77.7(3)	1.1(1)	3.8(1)	2.1(1)	12.5(1)	0.4(0)	1.9(1)	0.3(0)	100.0	**5.3(4)**
R950	125	950	glass	3	76.0(3)	2.4(1)	3.7(2)	1.9(1)	13.2(0)	0.4(0)	2.3(2)	0.3(0)	100.0	***n.d.***
PE1250	125	850	plag	7	56.9(5)	0.6(1)	5.4(2)	0.1(0)	27.5(3)	-	10.7(4)	-	101.2	**51.2(12)**
			glass	8	78.2(2)	1.6(1)	3.0(1)	2.1(1)	12.5(1)	0.4(0)	1.8(1)	0.2(1)	100.0	**5.2(2)**
HPE1000	100	875	plag	6	56.7(3)	0.7(1)	5.3(3)	0.2(1)	26.4(8)	-	10.0(2)	-	99.4	**50.2(18)**
			glass	7	77.9(4)	1.5(2)	3.6(1)	2.2(1)	12.1(2)	0.4(0)	1.8(1)	0.3(0)	100.0	***n.d.***
PE1000	100	850	plag	4	57.9(5)	0.6(1)	5.9(1)	0.1(1)	26.5(4)	-	9.7(4)	-	100.7	**47.2(18)**
			glass	7	79.7(1)	1.1(1)	2.9(1)	2.2(1)	11.7(1)	0.4(0)	1.5(0)	0.3(0)	100.0	**4.7(2)**
LPE1000	100	800	plag	7	59.5(5)	0.9(3)	6.8(1)	0.4(1)	24.5(5)	-	7.6(2)	-	99.8	**37.3(6)**
			glass*	7	79.2(2)	1.0(2)	3.3(2)	3.2(1)	11.8(2)	0.2(1)	0.9(0)	0.2(1)	100.0	**5.5(4)**
PE750	75	850	plag	4	59.3(3)	0.9(1)	6.1(2)	0.4(1)	24.7(2)	0.1(0)	8.2(3)	-	99.7	**41.5(10)**
			glass*	8	79.7(5)	1.1(3)	3.5(2)	2.6(1)	11.3(2)	0.4(2)	1.1(1)	0.3(0)	100.0	**3.9(3)**
LPE750	75	800	plag	4	61.0(7)	1.0(3)	7.1(1)	0.6(1)	23.3(5)	-	6.4(2)	-	99.6	**32.1(6)**
			glass*	8	79.0(3)	0.6(1)	3.5(1)	3.8(2)	12.0(2)	0.2(0)	0.6(0)	0.1(0)	100.0	**3.4(4)**
PE500	50	850	plag	3	61.5(6)	0.6(1)	6.7(2)	0.5(1)	24.6(2)	-	7.5(2)	-	101.5	**37.1(13)**
			glass*	6	79.7(4)	1.2(1)	3.0(2)	3.5(1)	11.6(1)	0.1(0)	0.5(1)	0.2(0)	100.0	**3.3(2)**
H2J	200-50	850	plag	6	56.0(8)	0.6(2)	5.4(2)	0.2(0)	25.8(6)	-	9.8(3)	-	97.8	**49.4(14)**
			glass	2	78.9(4)	0.7(1)	4.4(3)	2.4(0)	11.6(0)	0.4(0)	1.1(0)	0.3(0)	100.0	***n.d.***
							Basaltic andesite melt							
B1050	200	1050	glass	2	53.8(3)	7.6(3)	3.1(1)	0.7(0)	19.7(2)	4.8(1)	9.3(2)	0.8(0)	100.0	**6.7(2)**
B1025	200	1025	plag	6	45.7(7)	0.9(1)	1.3(2)	-	32.5(4)	0.2(2)	17.5(3)	0.1(0)	98.2	**88.0(17)**
			glass	6	53.9(2)	8.0(2)	3.1(2)	0.8(0)	19.2(1)	5.0(1)	9.2(2)	0.8(1)	100.0	**7.1(3)**
B1000	200	1000	plag	6	47.0(8)	0.9(1)	2.0(1)	0.1(0)	32.3(2)	0.2(1)	16.0(3)	0.1(1)	98.5	**81.5(8)**
			glass	8	56.4(8)	9.0(5)	2.9(3)	1.0(1)	18.0(4)	3.9(3)	7.6(3)	1.1(1)	100.0	**7.2(3)**
B900	200	900	plag	6	51.8(5)	0.8(2)	3.9(2)	0.3(1)	28.3(9)	0.1(1)	12.5(4)	-	98.1	**63.0(17)**
			glass	0										

[a]Run durations of 3-7 and 1-3 days for the rhyolite and basaltic andesite starting compositions, respectively; H_2O saturation. H2J is a non-equilibrium experiment decompressed from 200 to 50 MPa in 2 days.

[b]glass* refers to the presence of a silica phase exsolved from the melt; **n** for number of analyses; Oxides in wt% (MnO <0.2 wt%); All Fe as FeO. For plagioclase, **An** represents the anorthite content in mol%; for glass, **H_2O** represents the H_2O dissolved in the melt in wt%, determined by the by-difference method using the electron microprobe and H_2O- and alkali-calibrated glass standards (Martel et al., 1999; Pichavant et al., 2002); *n.d.* for not determined.