

Supplemental Table S1.

Labels, occurrence, host rock and mineral assemblages of the Somma-Vesuvius samples. Sample provenances (see Fig. 1) are Somma Vesuviana and Ercolano (Avellino eruption) and Terzigno (Pompeii eruption).

#	Sample ID	Formation	Lithotype	Mineral associations [§]																																	
				Mca	Cpx	Ol	Ves	Lc	Nph	Sdl	Me	An	Fsp	Chn	Chu	Hu	Grt	Ttn	Bri	Mag	Spl	Bdy	Pcl	Prv	Tho	Zrc	Cal	Dol	Ap	Mim	Gn	Py	Flr	Syl			
1	PS41	Avellino	skarn	●	●									●																							
2	PS55	Avellino	skarn	●	●		●									●	●										●									●	
3	PS58	Pompeii	skarn	●	●	●															●															●	
4	PS60	Avellino	skarn	●	●		●															●	●													●	
5	PS68	Avellino	skarn	●	●		●															●														●	
6	PS70	Pompeii	skarn	●													●										●										
7	PS73	Pompeii	skarn	●		●																														●	
8	PS77	Avellino	skarn	●	●		●																				●										
9	PS82	Pompeii	skarn	●	●		●																													●	
10	PS84	Avellino	skarn	●			●																				●									●	
11	PSK-R	Avellino	skarn	●		●																					●									●	
12	PS40	Pompeii	skarn-marble	●			●																				●									●	
13	PS44	Pompeii	skarn-marble	●																							●	●								●	●
14	PS50	Pompeii	skarn-marble	●																							●	●									
15	PS54	Pompeii	skarn-marble	●																							●	●									
16	PS62	Pompeii	skarn-marble	●		●	●																					●									
17	PS65	Pompeii	skarn-marble	●																							●										●
18	PS57	Avellino	syenite	●	●			●	●	●																										●	
19	PS80	Pompeii	cumulate	●	●		●																													●	●
20	PS81	Pompeii	cumulate	●	●																															●	

[§] Abbreviations (after Warr, 2021): An; anorthite; Ap, apatite; Bdy, baddeleyite; Bri, britholite-(Ce); Cal, calcite; Chn, chondrodite; Chu, clinohumite; Cpx, clinopyroxene; Dol, dolomite; Flr, fluorite; Fsp, feldspar; Gn, galena; Grt, garnet; Hu, humite; Lc, leucite; Mag, magnetite; Mca, mica; Me, meionite; Mim, mimetite; Nph, nepheline; Ol, olivine; Pcl, pyrochlore supergroup minerals; Prv, perovskite; Py, pyrite; Sdl, sodalite; Spl, spinel; Syl, sylvite; Tho, thorianite; Ttn, titanite; Ves, vesuvianite; Zrc, zirconolite.

Further minerals, detected in trace amounts, are undetermined mixed Si-Zn-Fe-Pb phase (PS44), likely stolzite (PS82) and bismoclite (PS55, PS80, PS81, PSK-R), as well as cuspidine (PS77).