

Appendix 3. Bond valences (v.u.) for högbomite-24*R*. According to electron-microprobe analyses Fe is present in approximately equal amounts of ferrous and ferric iron, which has been considered in bond valence calculations.

	M1	M2	T3	M4	M5	T6	T7	M8	S
	(Al)	(Ti/Fe/Mg)	(Mg/Fe)	(Al)	(Al)	(Mg/Fe)	(Mg/Fe)	(Al)	
O1 [4]	0.443 4'-2'®	0.372 3'-1'®	0.675 3'-1'®						1.933
O2 [3]	0.467 2'-3'®								1.401
O3 [3]		0.800 3'-1'®		0.483 2'-2'®					1.766
O4 [4]			0.677 1'-1'®	0.464 1'-3'®					2.069
O5 [4]				0.421 2'-1'®	0.512 3'-2'®		0.580 3'-1'®		2.025
O6 [4]				0.502 1'-3'®		0.507 1'-1'®			2.013
O7 [4]					0.485 3'-1'®	0.503 3'-1'®		0.505 4'-2'®	1.998
O8 [4]							0.528 1'-1'®	0.444 2'-3'®	1.860
S	2.706	3.516	2.702	2.774	2.991	2.016	2.268	2.908	

Appendix 4. Bond valences (v.u.) for högbomite-10*T*. According to electron-microprobe analyses Fe is present in approximately equal amounts of ferrous and ferric iron, which has been considered in bond valence calculations.

	M1	T2	M3	T4	M5	M6	T7	M8	T9	M10	S
	(Al)	(Fe/Mg)	(Al)	(Fe/Mg)	(Ti/Fe/Mg)	(Al)	(Fe/Mg)	(Al)	(Zn/Mg)	(Al)	
O1 [4]	0.490 6'-1'®	0.575 3'-1'®	0.478 2'-2'®								2.021
O2 [4]		0.575 1'-1'®	0.516 1'-3'®								2.123
O3 [4]			0.477 2'-2'®	0.719 3'-1'®	0.340 3'-1'®						2.013
O4 [3]			0.453 1'-3'®								1.359
O5 [3]					0.745 3'-1'®	0.516 2'-2'®					1.777
O6 [4]				0.730 1'-1'®		0.460 1'-3'®					2.110
O7 [4]						0.434 2'-2'®	0.583 3'-1'®	0.528 3'-1'®			1.979
O8 [4]						0.507 1'-3'®			0.508 1'-1'®		2.029
O9 [4]								0.494 3'-1'®	0.500 3'-1'®	0.507 4'-2'®	2.008
O10 [4]							0.531 1'-1'®			0.459 2'-3'®	1.908
S	2.940	2.300	2.879	2.887	3.255	2.867	2.280	3.066	2.008	2.946	