| Model/Reference | Species | P (bar) | T (˚C) | Compositional range | Notes |
|---|---|---|---|---|---|
| **MagmaSat**<br>*Ghiorso and Gualda, 2015* | $H_2O$ | 0–20,000[1] | 550-1420[1] | Very broad compositional range: subalkaline picrobasalts to rhyolites, including a variety of mafic and silicic alkaline compositions | [1]Ranges extracted from Fig. 2d of Ghiorso and Gualda. 2015 |
| | $CO_2$ | 0–30,000[1] | 1139-1400[1] | | |
| | $H_2O$ - $CO_2$ | 0–10,000[1] | 800-1400[1] | | |
| **Dixon**<br>*Simplification of Dixon (1997) used in VolatileCalc (Newman and Lowenstern, 2002)* | $H_2O$-$CO_2$ | 0-5000[1]<br>0-2000[2]<br>0-1000[3] | 600-1500[1]<br>(1200)[4] | Alkali basalts:<br>40-49 wt% $SiO_2$ | [1]Warnings implemented in VolatileCalc (Newman and Lowenstern, 2002).<br>[2]Calibration range suggested by Lesne et al. (2011)<br>[3]Calibration range suggested by Iacono-Marziano et al. (2012)<br>[4]Calibration temperature of Dixon (1997) |
| **MooreWater**<br>*Moore et al. 1998* | $H_2O$ | 0–3000[1] | 700–1200[1] | Broad compositional range: subalkaline basalts to rhyolites, alkaline trachybasalts-andesites, foidites, phonolites | [1]Author-suggested calibration range. The calibration dataset spans 190 to 6067 bar, and 800-1200˚C |
| **Liu**<br>*Liu et al. 2005* | $H_2O$ - $CO_2$ | 0-5000[1] | 700–1200[1] | Haplogranites and rhyolites | [1]Author-suggested calibration range for the mixed fluid model. The calibration dataset covers 750-5510 bar and 800-1150˚C for the Carbon model, and 1-5000 bar and 700-1200˚C for the water model |
| **Iacono-Marziano**<br>*Iacono-Marziano et al., 2012* | $H_2O$ - $CO_2$ | 95–10,500 (mostly <5000)[1] | 1100-1400 (preferably 1200-1300)[2] | Predominantly mafic compositions: subalkaline and alkaline basalts-andesites | [1]Range of calibration dataset, as authors do not specifically state a calibration range. We note that the vast majority of experiments were conducted at <5000 bar.<br>[2]Authors state that most experiments were conducted between 1200-1300˚C (whole range 1100-1400˚C |
| **Shishkina**<br>*Shishkina et al. 2014* | $H_2O$ | 230–5000[1] | 1050–1400 (preferably 1150-1250)[1, 3] | Mafic and intermediate compositions: Subalkaline basalts-basaltic andesites, alkali basanites-phonolites. $SiO_2$<65 wt%. | [1]Author stated range based on testing of their expressions on experiments not used in the calibration dataset.<br>[2]Range of calibration dataset (authors do not provide suggestion as for $H_2O$).<br>[3]Note, this model contains no temperature term. |
| | $CO_2$ | 500–5000[1] | 1200–1300[2, 3] | Predominantly mafic compositions: subalkaline basalts, alkaline basanites, trachybasalts | |
| **AllisonCarbon**<br>*Allison et al., 2019* | $CO_2$ | SFVF 4133–6141[1]<br>Sunset Crater 4071–6098[1]<br>Erebus 4078–6175[1]<br>Vesuvius 269–6221[1]<br>Etna 485–6199[1]<br>Stromboli 524–6080[1] | 1200[2] (~1000-1400) | Alkali-rich mafic magmas from 6 volcanic fields. Separate model coefficients for each composition. | [1]Range of calibration dataset for each composition. Spreadsheet from authors implies uppermost calibration limit is 7000 bars.<br>[2]Note, all calculations performed at 1200 ˚C (the experimental temperature). Authors imply results generally applicable between 1000-1400 ˚C |