

APPENDIX A

Table A.1. Decompression experiments performed in internally heated pressure vessels at 1030 °C and FMQ+3.6 using dacitic andesite.

| Sample ID | \log (BND \times mm ³) (a) | r [MPa/s] (b) | P _f [MPa] | H ₂ O [wt%] (d) | S [ppm] (e) |
|------------|---|---------------|----------------------|----------------------------|-------------|
| F1000-700 | 5.13 (78) | 0.10 | 1500 | 4.21 (15) | bd |
| F1000-1000 | 5.09 (70) | 0.10 | 1000 | 4.47 (15) | bd |
| F1000-1500 | 5.85 (16) | 0.10 | 700 | 5.44 (15) | 65 (35) |

The initial pressure of the decompression experiments was 400 MPa. The samples were immediately quenched once the final pressure (P_f) was reached (t_A = 0 h). Errors are provided in parentheses (1 σ); e.g., the standard deviation of the 10 image analyses performed on each run product (i.e., 5 BSE images per sample; bubbles at the edges included/exclude; see Fiege et al., 2014a) is provided for the BND values.

Anhydrous starting glass (dacitic andesite; in wt%; 1 σ in parentheses): 64.79(59) SiO₂; 1.28(7) TiO₂; 15.62(22) Al₂O₃; 4.94(33) FeO_{tot}; 0.23(4) MnO; 1.40(6) MgO; 4.92(2) CaO; 3.92(25) Na₂O; 1.80(7) K₂O (Total: 98.91(78)). *Initial volatile contents:* 6.18 \pm 0.16 wt% H₂O; 86 \pm 11 ppm S. Further details about the experimental and analytical approach are given in Fiege et al. (2014a).

(a): logarithmized BND values [mm³]; (b): decompression rate, relative error of r: ~7 %; (c) final pressure; (d) measured via Fourier transformed infrared spectroscopy (Fiege et al., 2014a); (e) measured via electron probe micro analyses (Fiege et al., 2014a).

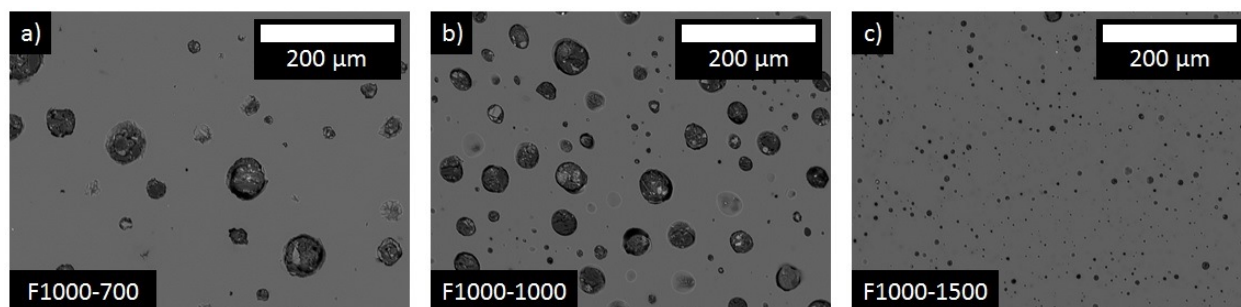


Figure A.1a-c. Selected back scattered electron (BSE) images of the run products of the three decompression experiments performed for this study. The vesicles are sometimes a little fractured on their edges and often contain abrasive materials and epoxy. Both features are probably related to samples preparation, while quench phases may also be present in some of the bubbles. Thus, the bubbles were manually outlined and marked in black prior to image analyses. Sample preparation also results in larger fractures in some areas within the samples. These areas were excluded from the image analyses.