Supplement of

Quartz dissolution associated with magnesium silicate hydrate cement precipitation

Lisa de Ruiter et al.

Correspondence to: Håkon Austrheim (h.o.austrheim@geo.uio.no)

The copyright of individual parts of the supplement might differ from the CC BY 4.0 License.
Figure S1. PHREEQC calculations showing the development of a solution in which quartz dissolves until equilibrium. The initial solution is in equilibrium with brucite. The results show that the saturation index of sepiolite (Mg$_4$Si$_6$O$_{15}$(OH)$_2$·6H$_2$O), talc (Mg$_3$Si$_4$O$_{10}$(OH)$_2$) and chrysotile (Mg$_5$Si$_2$O$_5$(OH)$_4$) is above 0 after very little quartz has been dissolved, and that the solution is thus supersaturated with respect to these phases. The saturation index of brucite (Mg(OH)$_2$) and amorphous silica stays below 0. The pH of the solution decreases gradually during quartz dissolution.
Table S1. Composition of till from frost-boil at the Feragen Ultramafic Body (FER18/15 and 19/15) and nearby M-S-H cemented rock (FER21/15). Data is obtained by whole rock geochemical analysis.

|        | FER18/15 | FER19/15 | FER21/15 |
|--------|----------|----------|----------|
| SiO2   | 87.72    | 89.58    | 72.81    |
| Al2O3  | 4.48     | 4.23     | 4.25     |
| Fe2O3(T)| 1.54     | 1.42     | 1.01     |
| MnO    | 0.02     | 0.02     | 0.01     |
| MgO    | 0.79     | 0.63     | 9.98     |
| CaO    | 0.26     | 0.30     | 0.24     |
| Na2O   | 0.69     | 0.70     | 0.56     |
| K2O    | 2.11     | 1.99     | 1.90     |
| TiO2   | 0.20     | 0.21     | 0.16     |
| P2O5   | 0.04     | 0.03     | 0.03     |
| LOI    | 0.70     | 0.52     | 9.40     |
| Total  | 98.55    | 99.61    | 100.4    |