

Supplementary Read-Me File: Instructions for Supplementary Table 5

An evolutionary system of mineralogy, Part VIII: The evolution of the metamorphic minerals

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Supplementary Table 5 is a csv file that records percentages of coexistence of pairs of 94 of the most commonly encountered metamorphic minerals. This file is thus a 94 x 94 half-matrix that is calculated from data in Supplementary Table 4.

Column A and Row 1 indicate the names of mineral kinds listed in alphabetical order.

Each element in this matrix is a percent from 0 to 100 that indicates percentage of the less common mineral that coexists with the more common mineral. Consider matrix element D2, which relates to the coexistence of *actinolite* (with 74 occurrences, as listed in Supplementary Table 4) and albite (with 177 occurrences). In Supplementary Table 4, matrix element D2 reveals that 20 rocks (out of 2785 tabulated) contain both *actinolite* and *albite*. Therefore, in Supplementary Table 5, matrix element D2 = $20/74 \times 100 = 27$ percent.

This protocol is especially important when considering the coexistence of a relatively rare mineral with a common one. For example, *baddeleyite* is a relatively scarce metamorphic mineral, occurring in only 18 of 2785 metamorphic rocks recorded in Supplementary Table 3. However, 16 of those occurrences also contain *calcite*. Therefore, as recorded in matrix element Q14 of Supplementary Table 5, $16/18 = 89\%$ of *aegirine* occurrences also have *calcite*.

Note that each of the 94 diagonal elements of this matrix is 100 % (i.e., each mineral always coexists with itself).

An important feature of this matrix is that of the 4371 off-diagonal matrix elements [i.e., $(94^2 - 94)/2$], 40.0 % are non-zero, indicating that the corresponding pair of minerals coexists in at least one reported rock in Supplementary Table 3. However, only 8.8 % of possible mineral pairs coexist in 25 % or more of the rocks studied.