

Detailed ⁴⁰Ar/³⁹Ar dating results of the volcanic rocks from Syria.

| T(°C) | Cum. ³⁹ Ar _k (%) | Atmos. | ³⁶ Ar/ ³⁹ Ar | ³⁷ Ar/ ³⁹ Ar | ³⁸ Ar/ ³⁹ Ar | ⁴⁰ Ar/ ³⁹ Ar | ⁴⁰ Ar/ ³⁶ Ar | Date (Ma) ± 1σ |
|--|--|--------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|----------------|
| S1 | | | | | | | | |
| 600 | 0.025 | 72.223 | 0.005741 | 0.6167 | 0.01962 | 2.313 | 402.9 | 4.8 ± 0.1 |
| 700 | 0.160 | 66.630 | 0.006105 | 0.4705 | 0.01662 | 2.683 | 439.5 | 6.7 ± 0.2 |
| 800 | 0.385 | 54.035 | 0.003498 | 0.6587 | 0.01469 | 1.850 | 528.8 | 6.3 ± 0.1 |
| 850 | 0.571 | 58.819 | 0.004170 | 0.7557 | 0.01471 | 2.027 | 486.1 | 6.2 ± 0.2 |
| 900 | 0.694 | 64.487 | 0.005439 | 0.8644 | 0.01512 | 2.420 | 444.9 | 6.4 ± 0.1 |
| 950 | 0.770 | 70.677 | 0.007224 | 1.0490 | 0.01588 | 2.937 | 406.6 | 6.4 ± 0.2 |
| 1000 | 0.814 | 73.726 | 0.008562 | 1.5900 | 0.01635 | 3.298 | 385.2 | 6.5 ± 0.2 |
| 1050 | 0.856 | 89.662 | 0.010660 | 5.9880 | 0.01849 | 3.039 | 285.1 | 2.4 ± 0.5 |
| 1100 | 0.920 | 76.299 | 0.009877 | 13.7700 | 0.02190 | 2.494 | 252.5 | 4.4 ± 0.9 |
| 1150 | 0.961 | 80.224 | 0.013020 | 15.6400 | 0.02298 | 3.354 | 257.7 | 5.0 ± 1.0 |
| 1200 | 0.985 | 84.359 | 0.020170 | 17.3600 | 0.02417 | 5.545 | 274.8 | 6.6 ± 1.1 |
| 1300 | 0.997 | 94.873 | 0.052880 | 19.0500 | 0.02717 | 14.990 | 283.4 | 5.8 ± 1.4 |
| 1450 | 1.000 | 99.410 | 0.263500 | 20.2800 | 0.07054 | 76.810 | 291.5 | 3.5 ± 2.0 |
| Integrated date = 6.0 ± 0.2 Ma | | | | | | | | |
| Plateau date = 6.4 ± 0.1 Ma (700°C ~ 1000°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |
| S2 | | | | | | | | |
| 600 | 0.014 | >100 | 0.12750 | 1.8540 | 0.04242 | 37.150 | 291.3 | -3.2 ± 1.5 |
| 700 | 0.124 | 92.433 | 0.03029 | 0.7267 | 0.01806 | 9.654 | 318.7 | 5.5 ± 0.3 |
| 800 | 0.332 | 82.874 | 0.01304 | 0.6936 | 0.01533 | 4.615 | 353.9 | 5.9 ± 0.2 |
| 850 | 0.512 | 84.157 | 0.01321 | 0.9778 | 0.01561 | 4.580 | 346.7 | 5.4 ± 0.1 |
| 900 | 0.654 | 85.220 | 0.01532 | 1.4840 | 0.01714 | 5.210 | 340.1 | 5.8 ± 0.2 |
| 950 | 0.758 | 85.109 | 0.01692 | 2.4870 | 0.01949 | 5.685 | 335.9 | 6.4 ± 0.3 |
| 1000 | 0.835 | 88.287 | 0.02044 | 4.4180 | 0.02310 | 6.492 | 317.7 | 5.7 ± 0.3 |
| 1050 | 0.892 | 95.425 | 0.02656 | 15.6500 | 0.02747 | 7.018 | 264.2 | 2.4 ± 1.1 |
| 1100 | 0.932 | 89.934 | 0.03430 | 24.8300 | 0.02881 | 9.217 | 268.7 | 7.1 ± 2.5 |
| 1150 | 0.960 | 96.142 | 0.05225 | 30.5400 | 0.03211 | 13.690 | 262.1 | 4.1 ± 2.0 |
| 1200 | 0.980 | >100 | 0.08295 | 34.8000 | 0.03788 | 21.620 | 260.7 | -2.3 ± 2.5 |
| 1300 | 0.993 | >100 | 0.16550 | 39.9500 | 0.05465 | 44.390 | 268.3 | -11.9 ± 2.8 |
| 1450 | 1.000 | >100 | 0.65130 | 41.2600 | 0.14040 | 188.100 | 288.8 | -10.0 ± 4.4 |
| Integrated date = 5.0 ± 0.4 Ma | | | | | | | | |
| Plateau date = 5.8 ± 0.1 Ma (700°C ~ 1000°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |
| S3 | | | | | | | | |
| 600 | 0.012 | >100 | 0.035820 | 1.1010 | 0.01946 | 9.259 | 258.5 | -9.6 ± 1.5 |
| 700 | 0.142 | 78.419 | 0.008156 | 0.5719 | 0.01295 | 3.047 | 373.6 | 4.9 ± 0.1 |
| 800 | 0.349 | 64.685 | 0.004552 | 0.7936 | 0.01295 | 2.016 | 442.8 | 5.3 ± 0.1 |
| 850 | 0.531 | 70.882 | 0.005244 | 1.0020 | 0.01292 | 2.108 | 402.1 | 4.6 ± 0.2 |
| 900 | 0.688 | 72.739 | 0.006166 | 1.2430 | 0.01308 | 2.405 | 390.0 | 4.9 ± 0.2 |
| 950 | 0.782 | 81.886 | 0.009139 | 1.6800 | 0.01381 | 3.172 | 347.1 | 4.3 ± 0.2 |
| 1000 | 0.845 | 99.069 | 0.013650 | 2.6620 | 0.01499 | 3.897 | 285.5 | 0.3 ± 0.5 |
| 1050 | 0.888 | 97.915 | 0.019480 | 6.9500 | 0.01690 | 5.374 | 275.8 | 0.8 ± 0.5 |
| 1100 | 0.925 | 95.487 | 0.024900 | 11.9900 | 0.01762 | 6.788 | 272.6 | 2.3 ± 0.8 |
| 1150 | 0.953 | >100 | 0.041840 | 13.0900 | 0.02011 | 11.280 | 269.5 | -1 ± 0.9 |
| 1200 | 0.971 | >100 | 0.071070 | 14.1100 | 0.02475 | 19.710 | 277.3 | -2 ± 1.1 |
| 1300 | 0.989 | >100 | 0.097570 | 18.2000 | 0.02954 | 27.030 | 277.1 | -3.5 ± 1.4 |
| 1450 | 1.000 | >100 | 0.342700 | 18.3500 | 0.07227 | 98.410 | 287.1 | -11.6 ± 2.1 |
| Integrated date = 3.5 ± 0.2 Ma | | | | | | | | |
| Plateau date = 4.9 ± 0.2 Ma (700°C ~ 900°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |
| S4 | | | | | | | | |
| 600 | 0.014 | >100 | 0.029880 | 1.690 | 0.02249 | 6.679 | 223.5 | -15.6 ± 1.1 |
| 700 | 0.116 | 90.632 | 0.016600 | 1.228 | 0.01702 | 5.339 | 321.6 | 3.7 ± 0.2 |
| 800 | 0.362 | 79.123 | 0.006811 | 1.337 | 0.01396 | 2.445 | 359.0 | 3.8 ± 0.2 |
| 850 | 0.572 | 81.940 | 0.008223 | 1.677 | 0.01425 | 2.840 | 345.4 | 3.8 ± 0.2 |
| 900 | 0.722 | 88.799 | 0.012070 | 1.942 | 0.01550 | 3.881 | 321.5 | 3.3 ± 0.2 |
| 950 | 0.809 | 91.058 | 0.017890 | 2.274 | 0.01766 | 5.647 | 315.6 | 3.8 ± 0.2 |
| 1000 | 0.865 | 96.243 | 0.029410 | 2.981 | 0.01964 | 8.825 | 300.1 | 2.5 ± 0.3 |
| 1050 | 0.905 | 96.474 | 0.048460 | 8.216 | 0.02409 | 14.230 | 293.6 | 3.8 ± 0.8 |
| 1100 | 0.934 | 97.602 | 0.090660 | 18.100 | 0.03270 | 26.080 | 287.7 | 4.8 ± 1.6 |
| 1150 | 0.953 | >100 | 0.171000 | 21.100 | 0.04848 | 48.590 | 284.2 | -2.8 ± 1.4 |
| 1200 | 0.964 | >100 | 0.317000 | 23.530 | 0.07207 | 91.510 | 288.7 | -3.1 ± 2.3 |
| 1300 | 0.988 | 99.942 | 0.222000 | 31.800 | 0.05618 | 63.270 | 285.0 | 0.3 ± 3.3 |
| 1450 | 1.000 | >100 | 0.653400 | 31.990 | 0.13440 | 190.500 | 291.6 | -1.1 ± 3.2 |
| Integrated date = 3.1 ± 0.2 Ma | | | | | | | | |
| Plateau date = 3.7 ± 0.2 Ma (700°C ~ 950°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |
| S5 | | | | | | | | |
| 600 | 0.012 | >100 | 0.10390 | 3.356 | 0.02656 | 28.230 | 271.6 | -17.1 ± 1.2 |
| 700 | 0.097 | 94.951 | 0.02816 | 1.071 | 0.01678 | 8.707 | 309.2 | 3.3 ± 0.3 |
| 800 | 0.221 | 91.010 | 0.01835 | 0.915 | 0.01472 | 5.911 | 322.1 | 4.0 ± 0.2 |
| 850 | 0.352 | 90.277 | 0.01753 | 1.136 | 0.01522 | 5.671 | 323.6 | 4.1 ± 0.2 |
| 900 | 0.503 | 91.021 | 0.01758 | 1.365 | 0.01520 | 5.622 | 319.9 | 3.8 ± 0.2 |
| 950 | 0.627 | 91.842 | 0.02022 | 1.542 | 0.01528 | 6.407 | 316.9 | 3.9 ± 0.3 |
| 1000 | 0.728 | 95.190 | 0.02729 | 2.021 | 0.01653 | 8.341 | 305.6 | 3.0 ± 0.2 |
| 1050 | 0.819 | 96.472 | 0.03732 | 4.028 | 0.01904 | 11.150 | 298.6 | 3.0 ± 0.4 |
| 1100 | 0.868 | 97.365 | 0.07031 | 7.343 | 0.02507 | 20.800 | 295.8 | 4.1 ± 1.2 |
| 1150 | 0.913 | 99.693 | 0.13990 | 9.532 | 0.03616 | 40.780 | 291.5 | 0.9 ± 0.9 |
| 1200 | 0.946 | 99.810 | 0.28940 | 16.640 | 0.06324 | 84.450 | 291.8 | 1.2 ± 2.0 |
| 1300 | 0.982 | 99.231 | 0.37600 | 25.540 | 0.07838 | 110.100 | 292.7 | 6.5 ± 2.0 |
| 1450 | 1.000 | 99.524 | 0.75380 | 25.680 | 0.14540 | 221.900 | 294.4 | 8.1 ± 2.9 |
| Integrated date = 3.4 ± 0.4 Ma | | | | | | | | |
| Plateau date = 4.0 ± 0.2 Ma (800°C ~ 950°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |
| S16 | | | | | | | | |
| 600 | 0.115 | 74.918 | 0.004864 | 0.7585 | 0.01318 | 1.871 | 384.6 | 3.5 ± 0.2 |
| 700 | 0.304 | 82.244 | 0.008721 | 0.7986 | 0.01361 | 3.089 | 354.2 | 4.1 ± 0.2 |
| 800 | 0.475 | 79.631 | 0.007417 | 0.8838 | 0.01413 | 2.697 | 363.7 | 4.1 ± 0.2 |
| 850 | 0.581 | 78.969 | 0.007329 | 0.9415 | 0.01474 | 2.681 | 365.9 | 4.2 ± 0.2 |
| 900 | 0.694 | 82.373 | 0.008424 | 1.0410 | 0.01534 | 2.955 | 350.8 | 3.9 ± 0.2 |
| 950 | 0.776 | 84.853 | 0.009592 | 1.3100 | 0.01544 | 3.253 | 339.1 | 3.7 ± 0.2 |
| 1000 | 0.822 | 91.404 | 0.010840 | 2.1010 | 0.01752 | 3.360 | 310.0 | 2.2 ± 0.2 |
| 1050 | 0.883 | 91.563 | 0.009614 | 9.9710 | 0.02507 | 2.311 | 240.3 | 1.5 ± 0.6 |
| 1100 | 0.939 | 94.749 | 0.013420 | 26.2800 | 0.03206 | 2.124 | 158.3 | 0.8 ± 1.7 |
| 1150 | 0.967 | >100 | 0.019480 | 28.7900 | 0.03449 | 3.604 | 185.0 | -0.1 ± 1.9 |
| 1200 | 0.985 | >100 | 0.034140 | 38.0900 | 0.03584 | 6.905 | 202.3 | -2.6 ± 2.5 |
| 1300 | 0.995 | >100 | 0.074060 | 44.5300 | 0.04187 | 16.480 | 222.6 | -16.2 ± 3.5 |
| 1450 | 1.000 | >100 | 0.126100 | 35.6100 | 0.04515 | 34.560 | 274.1 | -0.4 ± 2.7 |
| Integrated date = 3.1 ± 0.2 Ma | | | | | | | | |
| Plateau date = 4.0 ± 0.2 Ma (600°C ~ 950°C) J-value = 0.004179547 ± 0.000002287 | | | | | | | | |

Note:

Atmos.(%)=[1-40Ar*/(40Ar*+40Ar_{air})]*100, *= radiogenic 40Ar

J-value: Weighted mean of three fusions of irradiation standard LP-6 biotite having a 40Ar/39Ar age of 128.5 ± 0.5 Ma, relative to the 28.03 ± 0.08 Ma FC sanidine primary standard (Jourdan and Renne, 2007, GCA vol. 71, p.p. 387-402).

The apparent date is obtained by using the following equations:

$$\text{Age} = \frac{1}{\lambda} \ln\left(1 + J \frac{^{40}\text{Ar}^*}{^{39}\text{Ar}_K}\right), \text{ and}$$

$$\frac{^{40}\text{Ar}^*}{^{39}\text{Ar}_K} = \frac{\left[^{40}\text{Ar}/^{39}\text{Ar}\right]_c - 295.5 \left[^{36}\text{Ar}/^{39}\text{Ar}\right]_c + 295.5 \left[^{36}\text{Ar}/^{37}\text{Ar}\right]_c \left[^{37}\text{Ar}/^{39}\text{Ar}\right]_c}{1 - \left[^{39}\text{Ar}/^{37}\text{Ar}\right]_c \left[^{37}\text{Ar}/^{39}\text{Ar}\right]_c} - \left[\frac{^{40}\text{Ar}}{^{39}\text{Ar}} \right]_k$$

where []_c and []_k = isotope ratios of argon extracted from irradiated calcium and potassium salts) and []_m = isotope ratio of argon extracted from irradiated unknown.

Age (Ma)=the date calculated using the following decay constants: λ_ε = 0.581x10⁻¹⁰ yr⁻¹; λ_β = 4.962x10⁻¹⁰ yr⁻¹; λ = 5.543 x 10⁻¹⁰ yr⁻¹; 40K/K = 0.01167 atom % (Steiger and Jäger, 1977).

The quoted error is one standard deviation and includes the error in the J-value, the standard error, but not for the error in the interference corrections.