# Detecting orogenic wedge state and the rise of the External Alps by detrital thermochronology

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Critical taper theory permits the modelling of an orogenic wedge as a single mechanical entity. However, although shallow-crustal orogens dominated by brittle failure have been successfully modelled using critical taper, this remains controversial for major, ductile-failure-dominated orogens. In critical taper models, the steepness of the basal and upper orogenic surfaces defines the critical taper angle, dictates whether the orogen is supercritical, subcritical, or critical, and governs failure location during shortening. Here, we exploit a key prediction of critical taper: internally-shortening (subcritical) wedges must build topography. This promotes migration of the primary orogenic drainage divide toward the pro-foreland, shutting off sediment supply from the high-metamorphic-grade orogenic core. We utilise the apatite and rutile U-Pb thermochronometers (temperature sensitivities of ca. 375-550 and 490-640 °C, respectively) to track Oligo-Miocene sediment supply to the pro-foreland of the central and western Alps. We show that the drainage connection to the high-metamorphic-grade internal Alps was interrupted from ca. 26-25 Ma to ca. 19-16 Ma, which we link to divide migration caused by the out-of-sequence rise of the External Alpine crystalline massifs. This record of divide migration indicates subcritical wedge behaviour, and demonstrates that critical taper models are applicable to major, ductile-failure-dominated orogens such as the central and western Alps.

## INTRODUCTION

Critical taper theory (Davis et al., 1983; Dahlen et al., 1984) has been used to describe numerous shallow-crustal wedges dominated by brittle (Coulomb) failure (e.g., Willett et al., 1993; DeCelles and Mitra, 1995; Suppe, 2007). However, although the theoretical case has been made for extending critical taper theory to major orogens dominated by ductile deformation (Platt, 1986), this remains controversial. Critical taper theory posits that an orogenic wedge comprises three parts: the wedge itself, the undeformed foreland, and the wedge basal detachment. To accommodate horizontal shortening, one of these components fails: which failure mode occurs is governed by the critical taper angle (Davis et al., 1983; Dahlen et al., 1984). If the taper angle exceeds the critical angle the wedge is supercritical, the foreland fails, and the orogenic wedge incorporates additional material by thrust propagation into the foreland, decreasing the taper angle. Where the taper angle matches the critical angle, the basal detachment fails and the wedge moves toward the foreland. Finally, if the wedge is subcritical it deforms internally by out-of-sequence thrusting and backthrusting, increasing the taper angle. Many ductile-deformation-dominated orogens do exhibit apparent features predicted by critical

taper theory, including a rheological decollement at the wedge base in Taiwan (Huang et al., 2015) and deep-crustal ductile duplexing beneath the Greater Himalaya (Gao et al., 2016). However, the perceived incompatibility of critical taper behaviour and ductile deformation (e.g., Searle et al., 2016) has instead driven the search for exotic alternative models such as channel flow (e.g., Beaumont et al., 2001).

Here, we exploit a key prediction of critical taper theory: that orogens in subcritical state must build topography. This is because in subcritical state, rock uplift outpaces erosion, and the condition of topographic steady-state is violated as topography is built by out-of-sequence thrusting until the taper angle increases (Fig.1). Topography can also be built by supercritical and critical wedges, but only in subcritical wedges is it a requirement. As the topography is built, it promotes migration of the primary orogenic drainage divide from a more internal to a more external position. Here, we track drainage-divide migration using sedimentary provenance analysis to test whether ductile-failure-dominated orogens exhibit critical taper behaviour. Typically, major ductile-failure-dominated orogens are characterised by a high-metamorphic-grade (i.e., amphibolite-, eclogite-, or granulite-facies) internal core juxtaposed against a lower-grade external zone. Migration of the primary orogenic drainage divide from the internal into the external zone during periods of subcritical wedge state should therefore be accompanied by shut-off of the supply of high-grade metamorphic debris to the foreland basin, providing a simple way to reconstruct paleo-orogenic wedge state.

## GEOLOGICAL SETTING

We apply this concept to the Alpine orogen, the result of Cretaceous-Neogene convergence of the Eurasian and African plates (e.g., Handy et al., 2010), which has been proposed to exhibit critical taper behaviour (e.g., Carrapa, 2009). The central and western Alps are characterised by broadly orogen-parallel metamorphic zones, and include twin parallel chains (internal and external) of crystalline basement massifs (Fig.1A). The External Massifs comprise polymetamorphic gneisses which attained amphibolite-granulite facies during the Eo-Variscan and Variscan orogens (ca. 480-290 Ma; Matte, 2001) followed by Permo-Triassic magmatism and metamorphism (ca. 290-245; Schuster and Stüwe, 2008), but experienced only moderate (sub-greenschist to greenschist-facies) Alpine metamorphism (Figs. 1, DR1; Table DR1 – see Data Repository). The Internal Massifs experienced Alpine-age eclogite-facies metamorphism between ca. 40-33 Ma (Fig. 1; Table DR1); this occurred slightly later in the associated Lepontine Dome (33-29 Ma; Fig. 1; Table DR1). The Lepontine Dome also experienced an amphibolite-facies Barrovian overprint between ca. 23-18 Ma (Fig. 1; Table DR1). The surrounding Penninic units experienced eclogite-facies metamorphism earlier, at ca. 48-42 Ma (Fig. 1; Table DR1). The Sesia and Campo units along the Insubric line experienced amphibolite-eclogite metamorphism during the poorly-dated Eoalpine event, between ca. 125-65 Ma (Fig. 1; Table DR1). These Cretaceous-Neogene amphibolite-eclogite units are here

collectively termed the high-grade internal zone (Fig.1B). Crucially, only the high-grade internal zone attained temperatures sufficient to reset both the medium-temperature apatite and rutile U-Pb thermochronometers during (Eo-)Alpine metamorphism. These thermochronometers are sensitive to temperatures of ca. 375-550 and 490-640 °C, respectively (Kooijman et al., 2010; Cochrane et al., 2014), and so are highly appropriate for the detection of amphibolite-eclogite grade source terranes (Mark et al., 2016). In contrast, the more commonly used zircon U-Pb and white mica $^{40}Ar/^{39}Ar$ techniques exhibit temperature sensitivities of >900 °C and ca. 350 °C, and are respectively under- and over-sensitive in an Alpine context: zircon U-Pb ages are typically pre-Alpine, while the white mica $^{40}Ar/^{39}Ar$ system is widely reset (e.g., Carrapa, 2010). Neocrystalline apatite and rutile formation is also mostly limited to the high-grade internal zone, as neocrystallisation of both these accessory phases is rare at temperatures < ca. 500 °C and < ca. 430 °C, respectively (Zack et al., 2004; Zeh, 2004). By contrast, the External Massifs and other lower metamorphic-grade units are expected to yield pre-Alpine apatite and rutile U-Pb ages (Fig.1; Table DR1). Therefore, the presence or absence of apatite and rutile yielding (Eo)-Alpine U-Pb ages in foreland basin units will indicate whether the primary orogenic paleo-drainage divide was in an internal or external position.

## METHODS

We focus on the pro-foreland basins of the central and western Alps. Pro-foreland stratigraphy around the Alpine arc exhibits a shared (albeit slightly time-transgressive) pattern of mid-Eocene to mid-Oligocene marine units overlain by late Oligocene and younger predominantly terrestrial units. This terrestrial sequence was briefly interrupted during ca. 21-17 Ma by the "Burdigalian seaway", an early Miocene marine incursion (Ford and Lickorish, 2004).

We obtained detrital apatite and rutile U-Pb ages from Oligo-Miocene clastic units deposited between ca. 30-13 Ma in the Honegg-Napf and Speer-Hörnli paleo-alluvial fan systems in the central Alpine pro-foreland Swiss Molasse Basin (Fig. 1; Table DR2), for which high-resolution magnetostratigraphic deposition ages are available (Schlunegger et al., 1996; Kempf et al., 1999). We combine these data with previously reported (Mark et al., 2016) detrital apatite and rutile U-Pb ages from clastic units of the Barrême and Valensole basins in the western Alpine pro-foreland deposited between ca. 28-13 Ma, for which high-resolution biostratigraphic deposition ages are available (Table DR2). Sample locations and analytical methods are fully detailed in the Data Repository.

## RESULTS AND DISCUSSION

Clastic units deposited between ca. 30-26 Ma all show clear derivation from the high-grade internal zone (Figs. 2 and 3A; Tables DR3 and DR4). Near the base of the Honegg-Napf fan system, rutile U-Pb ages yield an Eoalpine peak at ca. 77 Ma, together with a smaller peak at 204 Ma and Variscan apatite and rutile U-Pb peaks (Figs.2, DR2). The ca. 77 Ma peak matches the timing of eclogite-grade

metamorphism in the Sesia zone (Table DR1) which was exposed by ca. 33 Ma (Scheuring et al., 1974); the ca. 204 Ma peak matches Triassic metamorphism and magmatism reported from the northern Ivrea zone (Table DR1). An Eoalpine rutile U-Pb age peak of ca. 103 Ma is also present near the base of the Speer-Hörnli fan system, and matches upper-greenschist/amphibolite-grade metamorphism at ca. 125-78 Ma experienced by the southern Campo unit (Table DR1), which cooled through the zircon fission track partial-annealing zone (ca. 200-250 °C; Rahn et al., 2004) at ca. 84-79 Ma (Viola et al., 2003; Fig. 1; Table DR1). These Eoalpine ages are diagnostic provenance signals, as Eoalpine-age high-grade metamorphism is unknown in the central Alps except in the Sesia and southern Campo zones. Reworking of Eoalpine-age rutiles from the eastern Swiss Molasse Basin is excluded, because paleocurrent data indicate east-directed flow within this basin during this time (Kuhlemann, 2007). Nor are Eoalpine-age rutiles sourced from Cretaceous-Eocene flysch incorporated into the Alpine wedge: flysch units yield only Variscan rutile U-Pb ages (Schlieren and Sardona flysch, Fig. 2). Drainage from the Sesia and south Campo units into the Swiss Molasse Basin between ca. 30-26 Ma is thus required. In the Barrême basin between ca. 30-26 Ma, apatite U-Pb peak ages of ca. 36 and ca. 48 Ma match the timing of eclogite-grade metamorphism in the Dora Maira and Monviso units respectively, while an age peak at ca. 86 Ma is in accordance with detrital Eoalpine $^{40}Ar/^{39}Ar$ white mica ages sourced from the Dora Maira unit and deposited synchronously in the Po basin (Carrapa et al., 2016). Therefore, the primary drainage divide between the pro- and retro-foreland basins of the western and central Alps was located at or near the Insubric line between ca. 30-26 Ma (Fig. 3). The Variscan apatite and rutile U-Pb ages in all samples are non-diagnostic, as Variscan age units are widespread throughout the Alps (Table DR1).

A major change in sediment provenance is then observed synchronously around the western and central Alpine arc at ca. 26-25 Ma. No unit deposited between ca. 26-25 and ca. 19 Ma yields (Eo)Alpine apatite or rutile U-Pb ages, and white mica yielding (Eo)Alpine $^{40}Ar/^{39}Ar$ ages is also absent from the pro-foreland basin during this time (von Eynatten and Wijbrans, 2003; Carrapa et al., 2016). All rutile and apatite grains are sourced from the low-metamorphic-grade External Massifs or their Permo-Triassic clastic cover units, and are pre-(Eo)Alpine. For example, Permo-Triassic volcaniclastic units in the hinterland of the Speer-Hörnli fan yield abundant late Variscan apatite U-Pb ages (Verrucano Formation, Fig. 2). A ca. 2 Ga rutile U-Pb age peak in the Barrême basin likely reflects rutile recycled from Permian clastic cover of the Argentera External Massif (Mark et al., 2016). Thus, between ca. 25-19 Ma in the central and western Alps there were no pro-foreland drainage connections to the high-grade internal zone. The primary Alpine drainage divide must have migrated towards the pro-foreland at ca. 26-25 Ma. In the retro-foreland basin, this shift is recorded by the onset of coarse clastic sedimentation at 25.0 ± 1.9 Ma (Garzanti and Malusà, 2008). Divide migration is coincident with the activity of structures controlling shortening and uplift of the external massifs during ca. 26-20 Ma (Fig.3B; Table DR5). Thus, we propose that migration of the primary

Alpine drainage divide from an internal to an external position at ca. 26-25 Ma was driven by the rise of the External Massifs. An additional consequence of divide migration was a decrease in area draining to the pro-foreland basin and reduced sediment flux, leading to a transition from overfilled to underfilled conditions in the pro-foreland starting ca. 24-22 Ma and ultimately the ca. 21-17 Ma "Burdigalian seaway" marine incursion (Ford and Lickorish, 2004; Kuhlemann, 2007).

The reconnection of the drainage network to the high-grade internal zone is documented by units deposited between ca. 19-13 Ma. In the Valensole basin, units deposited from 16.3 ± 1.3 Ma yield apatite U-Pb age peaks of ca. 36 Ma, 48 Ma, and 78 Ma. These are nearly identical to apatite U-Pb peaks from units deposited prior to ca. 25-26 Ma in the nearby Barrême basin (Fig. 2), and indicate a reconnection to the Dora Maira and Monviso units. These grains are unlikely to be recycled from older pro-foreland deposits, as hinterland Oligocene wedge-top basins such as the Barrême are volumetrically insignificant. Rutile deposited in the Honegg-Napf fan system at 15.1 ± 0.1 Ma yields a U-Pb age peak of ca. 23 Ma, consistent with a source from the Lepontine Dome (Table DR1): sourcing from the Aar-Gotthard massif is unlikely, as it yields only pre-Alpine rutile U-Pb ages (Table DR1). The relative lack of Alpine apatite or rutile U-Pb ages in the Speer-Hörnli fan during this time (in sampled units deposited at 16.4 ± 0.1 Ma and 13.6 ± 0.1 Ma) likely reflects non-exposure of the upper-blueschist-grade southern Prättigau nappe and NE Lepontine Dome prior to ca. 16 Ma (Wiederkehr et al., 2009), and subsequent drainage capture of these areas by the paleo-Rhine, which does not drain to the Speer-Hörnli area (Fig. 3C). Overall, the inferred sources for pro-foreland sedimentary units deposited between ca. 19-13 Ma are compatible with the modern primary drainage divide location.

## CONCLUSIONS

In summary, our detrital thermochronology data show that the Alpine primary drainage divide was located in the internal zone between ca. 30-26 Ma; migrated to an external position at ca. 26-25 Ma; and returned to an internal position throughout the central and western Alps from ca. 16-15 Ma, and possibly as early as ca. 19 Ma. Divide migration coincides with the onset of shortening and exhumation in the External Massifs (Fig. 3B; Table DR5), which is associated with a major phase of out-of-sequence thrusting, accompanied by backthrusting and Lepontine Barrovian metamorphism in the central Alps (Table DR1). The record of divide migration therefore indicates that the central and western Alpine pro-wedge was in a subcritical state between ca. 26-25 Ma and ca. 19 Ma. During ca. 30-26 Ma, and then from ca. 19-16 Ma onwards, the wedge was supercritical or critical. Confirmation that ductile-failure-dominated orogens can exhibit critical taper behaviour resolves the seeming paradox that features predicted by critical taper, such as rheological basal decollements and duplexing along orogenic basal surfaces (Huang et al., 2015; Gao et al., 2016), are observed in ductile settings.

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## FIGURE CAPTIONS

**Figure 1: A**. Alpine metamorphism, after Bousquet et al. (2012). External massifs: AG – Aar-Gotthard; AR – Aiguilles Rouges; Ar – Argentera; B – Belledonne; MB – Mont Blanc; Pe – Pelvoux. Internal massifs: DM – Dora Maira; GP – Gran Paradiso; M – Monviso; MR – Monte Rosa. Other units: P – Prättigau; Aro – Arosa; Sar – Sardona; Sch – Schlieren; V - Verrucano. **B**. Units likely to yield Alpine rutile and apatite U-Pb ages, colors as in (**A**). **C**. Metamorphic facies P-T conditions, colors as in (**A**) and (**B**). SG – sub-greenschist; LG – lower greenschist; UG – upper greenschist; HPG – high-pressure greenschist; T – greenschist-amphibolite transition; AM – amphibolite; GR – granulite; B – blueschist; BET – blueschist-eclogite transition; UB – upper blueschist; EC – eclogite; UHP – ultra-high pressure. **D**. Schematic sketch showing failure modes predicted by critical taper theory: 1 – critical; 2 – supercritical; 3 – subcritical.

**Figure 2:** Kernel density plots (KDPs) of detrital apatite (blue) and rutile (red) U-Pb ages. HN – Honegg-Napf fan system; HS – Speer-Hörnli fan system; BA – Barrême basin; VA – Valensole basin; n – number of grains. Age peaks in Ma. Similar samples merged for clarity, see Fig.DR2 for individual KDPs.

**Figure 3:** Alpine drainage divide evolution and wedge state, with schematic restoration of key units at **A**. 28 Ma; **B**. 23 Ma; and **C**. 16 Ma (see Data Repository for details). Dashed red line marks drainage divide; arrows indicate source areas for sampled units. Inset in (**B**) shows ages of out-of-sequence structures associated with the External Alpine massifs; numbers are referenced to Table DR5. Blue overlay shows approximate maximum extent of Burdigalian Seaway, after Ford and Lickorish (2004). Colors and abbreviations as in Fig.1.

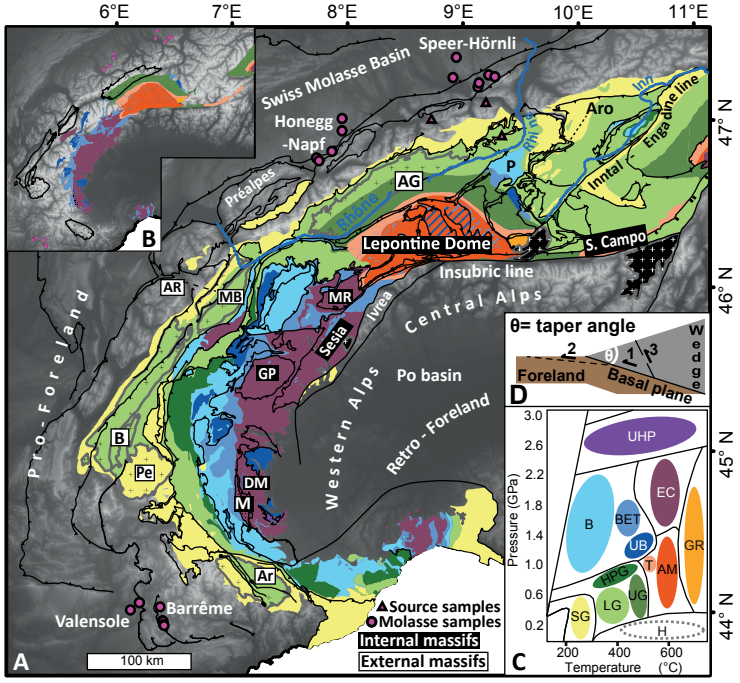
6°E
7°E
8°E
9°E
10°E
11°E
47° N
46° N
45° N
44° N
Swiss Molasse Basin
Speer-Hörnli
Honegg
-Napf
Préalpes
Aare
Rhine
Inn
Aro
Engadine line
Inntal
AG
P
B
Lepontine Dome
S. Campo
Insubric line
Central Alps
AR
MB
MR
Sesia
Ivrea
GP
Po basin
Retro - Foreland
Pro - Foreland
Western Alps
B
Pe
DM
M
Ar
Valensole
Barrême
Source samples
Molasse samples
Internal massifs
External massifs
A
100 km
θ= taper angle
Foreland
Basal plane
Wedge
D
UHP
EC
B
BET
UB
GR
T
AM
HPG
LG
UG
SG
H
Pressure (GPa)
3.0
2.6
2.2
1.8
1.4
1.0
0.6
0.2
200
400
600
Temperature (°C)
C

Figure 1

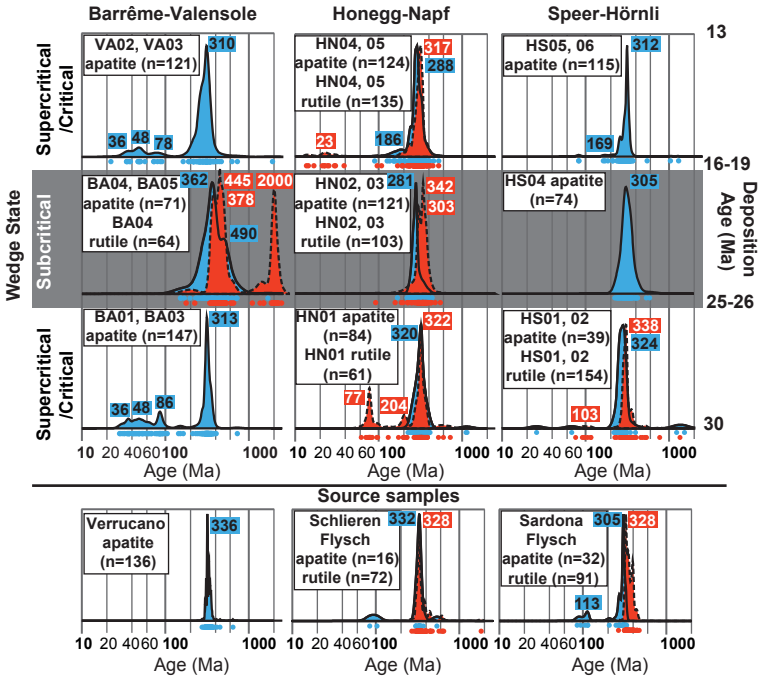
Barrême-Valensole
Honegg-Napf
Speer-Hörnli
Wedge State
Supercritical /Critical
Subcritical
Supercritical /Critical
Deposition Age (Ma)
13
16-19
25-26
30
VA02, VA03 apatite (n=121)
310
36
48
78
HN04, 05 apatite (n=124)
HN04, 05 rutile (n=135)
317
288
23
186
HS05, 06 apatite (n=115)
312
169
BA04, BA05 apatite (n=71)
BA04 rutile (n=64)
362
445
2000
378
490
HN02, 03 apatite (n=121)
HN02, 03 rutile (n=103)
281
342
303
HS04 apatite (n=74)
305
BA01, BA03 apatite (n=147)
313
36
48
86
HN01 apatite (n=84)
HN01 rutile (n=61)
320
322
77
204
HS01, 02 apatite (n=39)
HS01, 02 rutile (n=154)
338
324
103
10 20 40 60 100 1000
Age (Ma)
Source samples
Verrucano apatite (n=136)
336
Schlieren Flysch apatite (n=16)
rutile (n=72)
332
328
Sardona Flysch apatite (n=32)
rutile (n=91)
305
328
113

Figure 2

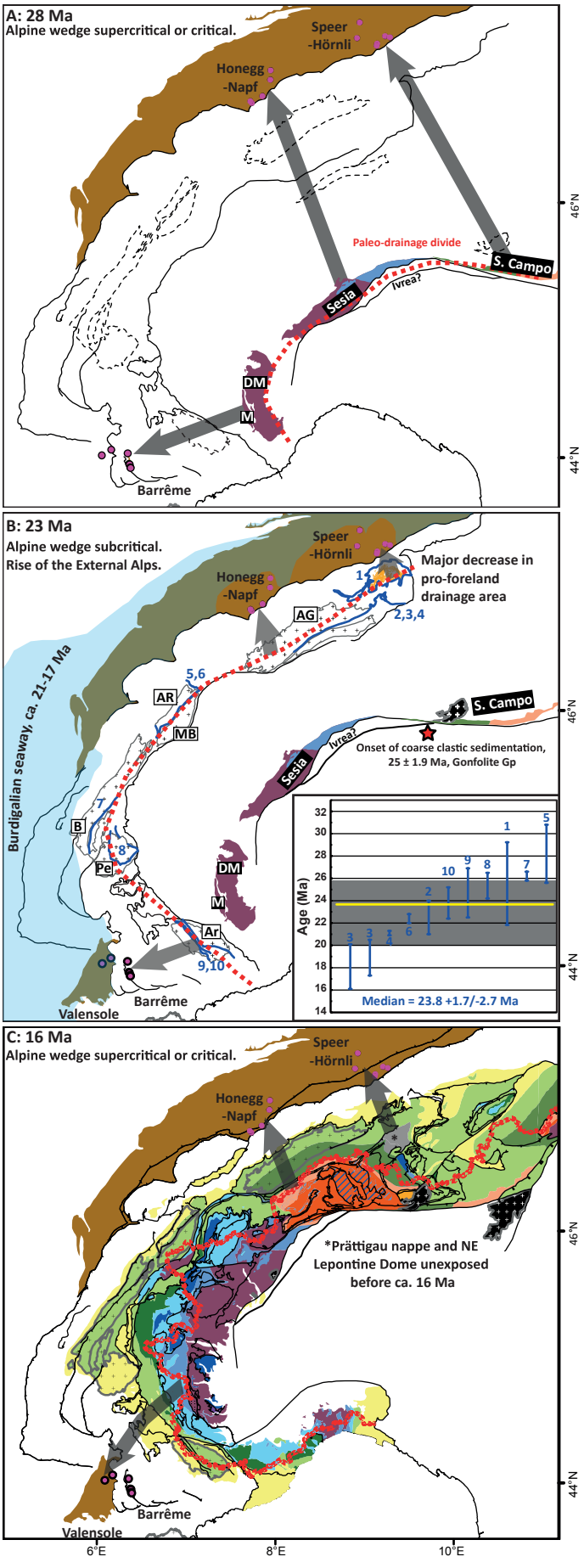
A: 28 Ma
Alpine wedge supercritical or critical.
Speer
-Hörnli
Honegg
-Napf
Paleo-drainage divide
S. Campo
Ivrea?
Sesia
DM
M.
Barrême
46°N
44°N
B: 23 Ma
Alpine wedge subcritical.
Rise of the External Alps.
Major decrease in
pro-foreland
drainage area
1
2,3,4
AG
5,6
AR
MB
Burdigalian seaway, ca. 21-17 Ma
S. Campo
Ivrea?
Sesia
Onset of coarse clastic sedimentation,
25 ± 1.9 Ma, Gonfolite Gp
7
B
8
Pe
DM
M
Ar
9,10
Valensole
Barrême
Age (Ma)
Median = 23.8 +1.7/-2.7 Ma
C: 16 Ma
Alpine wedge supercritical or critical.
*Prättigau nappe and NE
Lepontine Dome unexposed
before ca. 16 Ma
6°E
8°E
10°E

Figure 3

Data Repository

Detecting orogenic wedge state and the rise of the External Alps by detrital thermochronology

Chris Mark, Nathan Cogné, David Chew, and Isadora Henrichs

**METHODS**

At each outcrop, ca. 10 kg of material was collected across several adjacent beds to minimise depositional bias. Samples were washed, subjected to standard jaw crushing, sieving, magnetic, and heavy-liquid separation techniques to obtain the sub-300 µm non-magnetic heavy mineral fraction, followed by hand picking under a Nikon SMZ 1500 binocular microscope. To avoid sample bias, no attempt was made to exclude anhedral or inclusion-bearing grains, as the LA-ICPMS technique permits identification and exclusion of U-rich inclusions from time-resolved (i.e. downhole) variations in the ablation signal. All analyses were made using a Photon Machines Analyte Exite 193 nm ArF Excimer laser ablation system coupled to a Thermo Scientific iCAP Qc quadrupole mass spectrometer at Trinity College Dublin. The laser fluence was 3.9 J $cm^{-2}$, with a repetition rate of 5 Hz and analysis time of 45 s followed by a 25 s background measurement.

Reduction of the raw isotope data was performed using the IOLITE extension to the Igor Pro analytical software package[1]. Laser spots of 60 µm diameter were preferred, but analytical sessions employing 80, 45, and 36 µm spot diameters were also used where grain size dictated. Downhole U-Pb fractionation, mass bias, and intra-session instrument drift in separate apatite and rutile analytical sessions were corrected for by repeated measurements of the primary Madagascar and secondary McClure Mountain and Durango apatite standards, and the primary R10 and secondary R19 and RZ3 rutile standards[2–6]. Data reduction was performed using the "VizualAge_UcomPbine" data reduction scheme (DRS)[7] for IOLITE, which corrects for the presence of variable common Pb in the primary age standard. A user-specified downhole correction model is used to characterise the time-resolved fractionation response of individual standards; the DRS then applies this U-Th-Pb downhole fractionation model to both the unknowns and secondary standards across the entire analytical session. Unlike phases such as zircon that exclude common (initial or non-radiogenic) Pb during crystallization, the typically high common Pb content in both apatite and rutile typically renders these grains discordant in the U-Pb system. Common Pb in the primary standards was corrected for using a $^{207}$Pb-based correction method using a known initial $^{207}$Pb/$^{206}$Pb ratio[7]. Variable common Pb content in the detrital apatite unknowns was corrected by one of two techniques. The first method employs a terrestrial Pb evolution model[8], using a starting estimate for the age of the apatite and adopting an iterative approach based on a $^{207}$Pb correction[9]. The second method was used for low-U grains which were part of discrete populations (or sub-populations) defining a linear array on a Tera-Wasserburg plot[10]. In these cases the initial $^{207}$Pb/$^{206}$Pb ratio used in the $^{207}$Pb-based correction was obtained from the $^{207}$Pb/$^{206}$Pb axis array intercept.

The $^{207}$Pb-based correction assumes U-Pb* (radiogenic Pb) concordance; a reasonable assumption in the case of standards and unknown grains which have experienced rapid, simple cooling histories, but which may not be the case for detrital grains with unknown cooling histories, which could have experienced partial Pb loss. As a result, independent knowledge of the thermal histories of likely source areas is required to discriminate

between partially and wholly reset detrital U-Pb ages, similarly to partially reset AFT ages. In well-studied areas such as the Alps, this is relatively straightforward. Due to the unrealistically long dwell time required to measure the low-abundance $^{204}$Pb isotope with reasonable precision on single-collector mass spectrometers, use of alternate $^{204}$Pb-based correction methods which do not assume U-Pb* concordance were impractical[7]. As a $^{207}$Pb-based correction was used, no single U-Pb age can be excluded based on discordance criteria. However, the low-U content (sometimes << 1 ppm), and therefore near-zero Pb* content of some apatite grains, can result in large analytical uncertainties. Therefore, we adopt the approach of excluding grains with 2σ errors > 25%[10]; as young grains typically have proportionately greater age uncertainties, 2σ uncertainties up to 50% were permitted for ages younger than 100 Ma.

**NOTES ON SCHEMATIC PALAEOGEOGRAPHIC RECONSTRUCTION, FIGURE 3.**

- Reconstruction is relative to a stable Europe.
- Reconstruction of Dora Maira and units along Insubric Line after existing reconstruction[11]. These units likely experienced Oligo-Miocene orogen-parallel extension along the Insubric line, but the extent is unknown. Therefore, the orogen-parallel extent of these units is likely incorrect.
- Alpine front at ca. 28 Ma (Fig. 3A) defined by: (i) overthrusting of Speer molasse units by flysch at ca. 27.5 Ma[12], indicating Alpine front location along Swiss Molasse Basin margin at this time; and (ii) distribution of Oligocene wedge-top basins in the Daupine and Digne regions shown on BGRM maps: these units are typically pre-Chattian, indicating Alpine front location of the western pro-foreland prior to ca. 28 Ma. Subsequent Mid-Miocene thrusts into the Swiss Molasse Basin shown in Fig. 3C.
- The Penninic Front was in approximately its modern position relative to Europe by ca. 23 Ma (Fig.3B). Motion had begun (and in some cases was complete) on the Roselend fault, Urseren fault, and Rhone Valley faults (all Penninic Front component structures) by ca. 23 Ma[13–15].
- Units south of the Insubric Line (Ivrea and Gonfolite Group) restore 34 km eastward at ca. 28 Ma. This assumes 60 km dextral motion along the Insubric Line since ca. 32 Ma[11], and also assumes the Alps had approximately attained their modern structural configuration by ca. 16 Ma. This is in agreement with ZHe ages from the northern Ivrea zone of ca. 14 Ma[16], suggesting only shallow-crustal exhumation and thus limited transpressional motion since this time.
- Bergell pluton intruded at ca. 32 Ma, ca. 20 km north of Insubric Line[17]. Exposed from ca. 24 Ma[18,19].

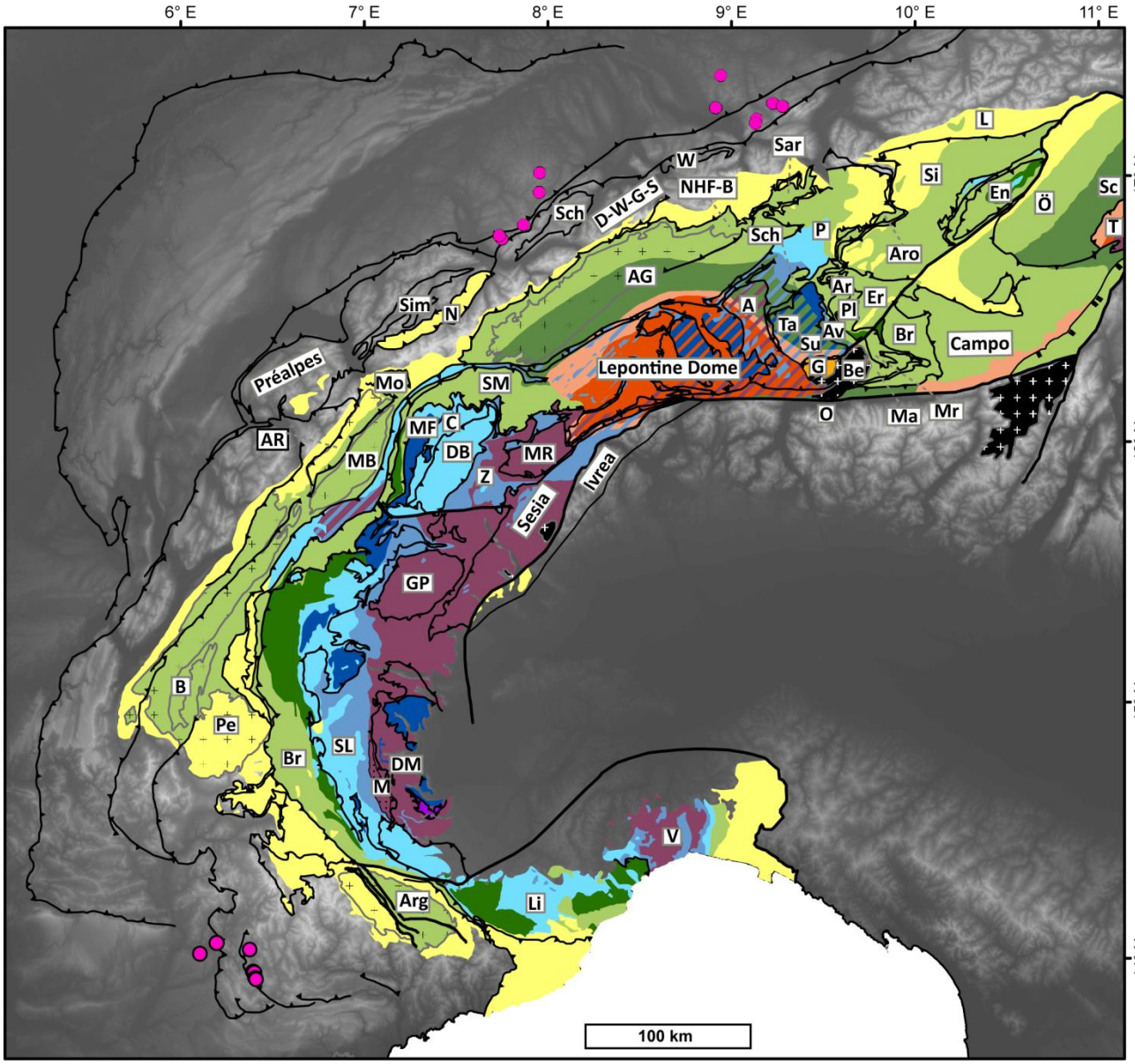


**Figure DR1:** Alpine metamorphism, colors and source as in Fig.1, showing units listed in Table DR1: AG – Aar-Gotthard; A – Adula; Ar – Arblatsch; Arg – Argentera; Aro – Arosa; Av – Avers; Be – Bergell; Br – Briançonnais; C – Combin; DB – Dent Blanche; D-W-G-S – Diablerets-Wildhorn-Glarner-Säntis; DM – Dora Maira; En – Engadine; Er-Br – Err-Bernina; GP – Gran Paradiso; G – Gruf; L – Lechtal; Li – Ligurian; Ma – Malenco; Mr – Margna; MF – Mont Fort; MR – Monte Rosa; M – Monviso; Mo – Morcles; NHF-B – North Helvetic-Blattengrat flysch; O – Orobic; Ö – Ötztal; N – Niesen; Sch – Schlieren; Sim – Simme; W – Wagital (the Niesen-Schlieren-Simme-Wagital units are Penninic flysch pro-foreland klippen which have experienced little to no metamorphism); Pl – Platta; P – Prättigau; Sar – Sardona; Sch – Schams; SL – Schistes Lustrés; Sc – Schneeberg; Si – Silvretta; SM – Siviez-Mischabel; Su – Suretta; Ta – Tambo; T – Teixell; V – Voltri; Z - Zermatt. Units not listed in Table DR1 but shown for completeness: AR – Aiguilles Rouges; B – Belledonne; MB – Mont Blanc; Pe – Pelvoux; GP – Gran Paradiso.

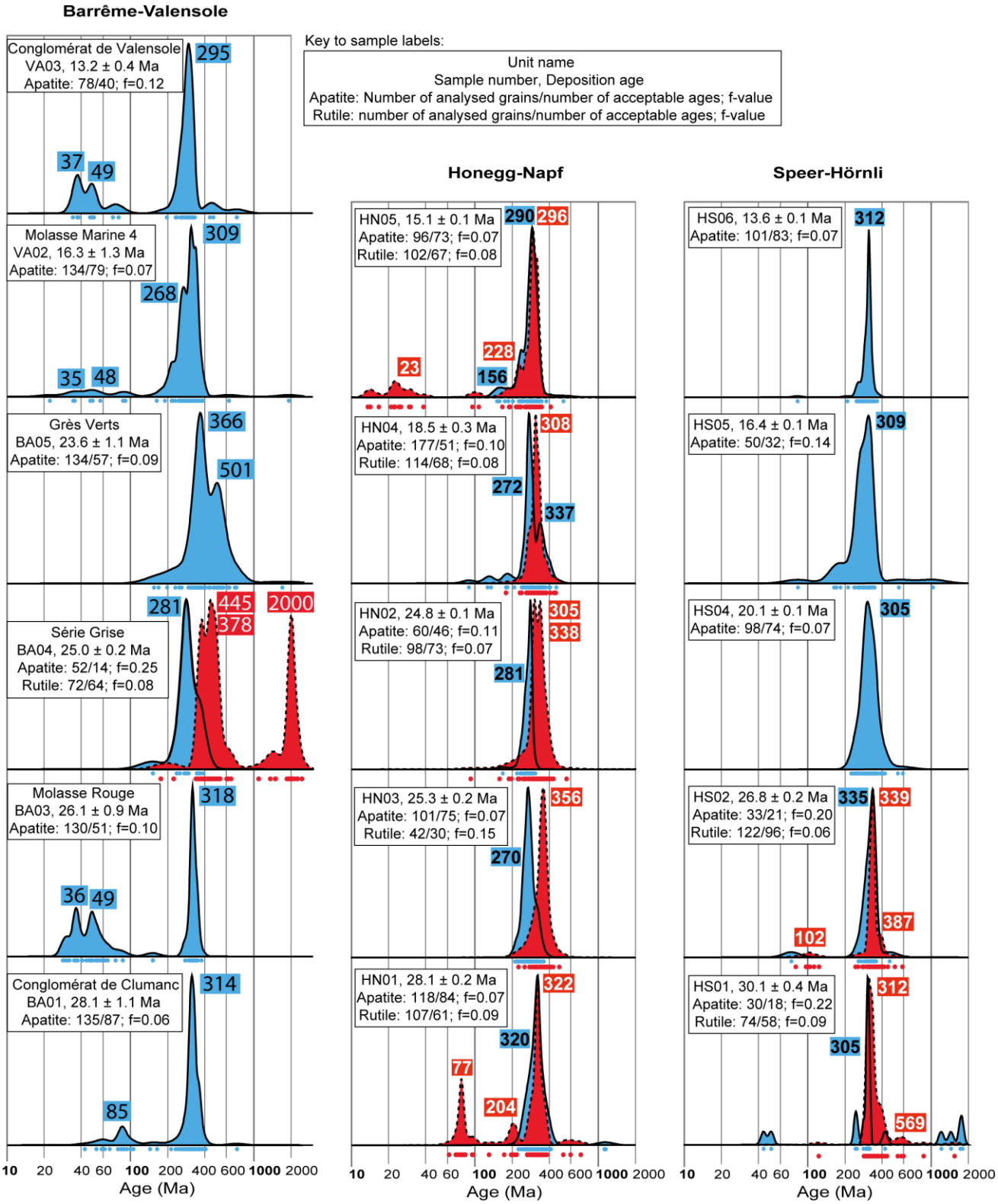


**Figure DR2:** Individual kernel density plots (KDPs) for all units, with peak ages in Ma. Blue – apatite; red – rutile. Grain age acceptability criteria are detailed in the Methods. The f-value is maximum size of contributing population fraction that could have been missed, at 95% confidence level, for stated value of n[20].

**Table DR1:** Paleotemperature ranges and ages, Alpine source areas. Note that some methods listed record only crystallisation (e.g., garnet Sm-Nd, zircon U-Pb), while other methods may record either diffusion-dominated thermochronometric behaviour, or crystallisation/recrystallisation (e.g., white mica $^{40}Ar/^{39}Ar$). Units listed in alphabetical order.

| Unit | Dominant lithology | Method | T (°C) | Age (Ma) | Expected apatite/rutile U-Pb age (Ma) |
|---|---|---|---|---|---|
| Aar-Gotthard | Polymetamorphic ortho- and paragneiss with Carbo-Permian felsic intrusions. | Titanite U-Pb[21]<br>Rutile U-Pb[22]<br>Monazite U-Th-Pb[15]<br>Fluid inclusions[23]<br>White mica K-Ar[24] | ca. 700-800<br>ca. 490-640<br>ca. 450-730(?)<br>ca. 400-450<br>ca. 300-350 | ca. 319<br>ca. 329<br>ca. 23-19<br>Alpine<br>ca. 21-17 | 23-19 (apatite)<br>Pre-Alpine (rutile) |
| Adula (NE) | Polymetamorphic orthogneiss with metabasite and carbonate metasediment. | Zircon U-Pb (rim)[25]<br>Garnet Lu-Hf[26]<br>Index minerals[27] | ca. 600-900<br>ca. 400-800<br>ca. 450-500 | ca. 376-309<br>ca. 324<br>Alpine | 33-18 (apatite)<br>Pre-Alpine (rutile) |
| Arblatsch | Palaeocene-Eocene flysch, comprising pelites and sandstones. | Illite crystallinity[28] | ca. 350 | Alpine | Pre-Alpine |
| Argentera | Ordovician-Devonian polymetamorphic ortho- and paragneiss and amphibolite intruded by Permian granitoids and overlain by thick end-Palaeozoic and Mesozoic clastic and carbonate cover. | Zircon U-Pb[29]<br>White mica $^{40}Ar/^{39}Ar$[30] (shear zone mylonite)<br>White mica $^{40}Ar/^{39}Ar$ (bedrock)[31]<br>“<br>Zircon fission track[32] | ca. 800-900<br>ca. 300-350<br><br>ca. 300-350<br>“<br>ca. 200-250 | 462-323<br>26-20<br><br>375-330<br>40<br>29-20 | Pre-Alpine |
| Arosa | Early-mid Jurassic (?) ophiolite with melange of Cretaceous-Eocene flysch and Triassic-Jurassic marl and carbonate. | Illite crystallinity[33] | ca. 220-250 | Alpine | Pre-Alpine |
| Avers | Cretaceous-Eocene calcschist with intercalated metabasite. | Index minerals[34] | ca. 380-420 | Alpine | Alpine (apatite)<br>Pre-Alpine (rutile) |
| Bergell | Alpine granitoid. | Zircon U-Pb[35]<br>Biotite K-Ar[36] | ca. 900<br>ca. 250-300 | ca. 33-28<br>ca. 26-21 | 28-26<br>(rutile unlikely) |
| Briançonnais | Late Palaeozoic to Mesozoic clastic cover units with rare, minor basement slices. | Raman spectroscopy[37]<br>White mica $^{40}Ar/^{39}Ar$ [38] | ca. 250-300<br>ca. 300-350 | Alpine<br>55-40 | Pre-Alpine |

| | | | | | |
|---|---|---|---|---|---|
| Campo | Polymetamorphic ortho- and paragneisses, intruded by Permian gabbro. | White mica Ar/Ar[39]<br>Biotite Rb-Sr[40] | ca. 300-350<br>ca. 300-400 | ca. 200-180<br>ca. 300-120 | Pre-Alpine<br>(127-120 in south) |
| Combin (Tsaté) | Jurassic ophiolite with Jurassic-Cretaceous calcschists and carbonate metasedimentary cover, above exotic Permian to Cretaceous continental sediments. | Raman spectroscopy[41]<br>White mica Rb-Sr[42] | ca. 418-494<br>ca. 450-550 | Alpine<br>ca. 42-37 | 42-37 (apatite)<br>(rutile likely Pre-Alpine) |
| Dent Blanche | Polymetamorphic ortho- and paragneisses intruded by Permian gabbro, with rare Permo-Triassic carbonate and clastic metasedimentary cover. | Monazite U-Th-Pb[43]<br>White mica Rb-Sr[44]<br>Index minerals[45]<br>Index minerals[46]<br>White mica Ar/Ar[44] | ca. 450-730(?)<br>ca. 450-550<br>ca. 387-450<br>ca. 290-495<br>ca. 300-350 | ca. 274-248<br>ca. 44-29<br>Alpine<br>Alpine<br>ca. 55-30 | 55-30 (apatite)<br>(rutile likely Pre-Alpine) |
| Diablerets-Wildhorn-Glarner-Säntis | Jurassic-Cretaceous carbonate and Permo-Triassic volcaniclastics. | Calcite-dolomite thermometry[47] | ca. 210-318 | Alpine | Pre-Alpine |
| Dora Maira | Polymetamorphic orthogneiss with clastic, carbonate, and pelitic metasedimentary cover and rare metavolcanics, intruded by intermediate to felsic Permian plutons. | Zircon U-Pb (rim overgrowths)[48]<br>Zircon U-Pb (rim overgrowths)[49]<br>Monazite U-Pb[48]<br>Monazite U-Pb[50]<br>“<br>Garnet Sm-Nd[48]<br>Garnet Lu-Hf[51]<br>Garnet geothermobarometry[52]<br>Mineral assemblage geothermobarometry[53]<br>Titanite U-Pb[54]<br>Mineral assemblage geothermobarometry[55]<br>Zircon fission track[49] | ca. 600-900<br>“<br>ca. 450-730<br>“<br>“<br>ca. 400-800<br>ca. 400-800<br>ca. 730<br>ca. 650-730<br>ca. 650-700<br>ca. 555-575 (N Dora Maira)<br>ca. 200-250 | 38 ± 1<br>35 ± 1<br>34-30<br>37 ± 7<br>60 ± 10<br>38<br>33 ± 1<br>Alpine<br>Alpine<br>33-32<br>Alpine<br>30 ± 1 | ca. 38-33 |
| Engadine | Calcschist with minor mafic units; subordinate ophiolite (Arosa) with cherts, shales, and flysch. | Mineral assemblage geothermobarometry[56]<br>Mineral assemblage geothermobarometry[57]<br>White mica Ar/Ar[56] | ca. 350-375<br>ca. 325-375<br>ca. 300-350 | Alpine<br>Alpine<br>ca. 29-46 | Pre-Alpine |
| Err-Bernina | Polymetamorphic felsic ortho- and | Zircon U-Pb[58] | ca. 900 | ca. 338-295 | 89-76 (apatite) |

| | | | | | |
|---|---|---|---|---|---|
| | paragneisses, and mica schists, intruded by mid Carboniferous to early Permian granitoids and gabbros. | Index minerals[59]<br>White mica K-Ar[59] | ca. 350-400<br>ca. 300-350 | Alpine<br>ca. 89-67 | Pre-Alpine (rutile) |
| Gran Paradiso | Polymetamorphic para- and orthogneiss and mica schist, with felsic Permian intrusions and rare mafic units. | Monazite U-Pb[60]<br>Allanite U-Pb[60] | ca. 450-730(?)<br>ca. 450-550 | ca. 37-36<br>ca. 35-32 | 37-32 |
| Gruf | Permian granulite with Alpine migmatisation. | Zircon U-Pb (rim) [61]<br>Index minerals[62] | ca. 600-900<br>ca. 700-800 | ca. 34-29<br>Alpine | 34-29 |
| Ivrea | Continental mantle peridotites and amphibolite to granulite grade metasedimentary cover, intruded by Permo-Triassic gabbros. | Zircon U-Pb[63]<br>Garnet Sm-Nd[64]<br>Biotite K-Ar[16]<br>Zircon fission track[16] | ca. 900<br>ca. 400-800<br>ca. 250-300<br>ca. 200-250 | ca. 232-205<br>ca. 274-244<br>ca. 212-156<br>ca. 166-33 | Pre-Alpine |
| Lechtal (Northern Calcareous Alps) | Jurassic-Cretaceous carbonate with minor Permo-Triassic clastic units. | Illite crystallinity[65] | ca. <200 | Alpine | Pre-Alpine |
| Lepontine Dome (inc. SW Adula) | Polymetamorphic ortho- and paragneiss, intruded by Variscan granitoids, with Mesozoic carbonate cover and rare Cretaceous-Eocene calcschists. | Zircon U-Pb (rim)[25,66]<br>Allanite U-Pb[67]<br>Monazite U-Th-Pb[67,68]<br>White mica K-Ar[69] | ca. 600-900<br>ca. 450-550<br>ca. 450-730(?)<br>ca. 300-350 | ca. 33-29<br>ca. 32-29<br>ca. 23-18<br>ca. 21-12 | 33-18 |
| Ligurian | Late Palaeozoic to mid-Cretaceous clastic and carbonate cover units; Cretaceous-Eocene(?) flysch. | Mineral assemblage geothermobarometry[70] | ca. 250-350 | Alpine | Pre-Alpine |
| Malenco-Forno | Pre-Permian ultramafic upper mantle units, Permian gabbro, and Jurassic ophiolite (metabasalts, and marine metasediments). | Garnet-amphibole thermometry[71]<br>Amphibole Ar/Ar[72]<br>“ | ca. 450<br>ca. 450-500<br>“ | Alpine<br>ca. 225-130<br>ca. 91-67 | 91-67 (apatite)<br>Pre-Alpine (rutile) |
| Margna | Polymetamorphic ortho- and paragneisses, intruded by late Carboniferous to early Permian granitoids and gabbro, and Mesozoic metasedimentary cover. | Index minerals[73]<br>Index minerals[59] | ca. 450-500<br>ca. 350-450 | Alpine<br>Alpine | Alpine (apatite)<br>Pre-Alpine (rutile) |
| Mont Fort | Permo-Triassic volcaniclastic sediment cover overlying Pre- | Index minerals[74]<br>White mica Ar/Ar[75] | ca. 360-470<br>ca. 300-350 | Alpine<br>ca. 39-38 | 39-38 (apatite)<br>Pre-Alpine (rutile) |

| | | | | | |
|---|---|---|---|---|---|
| | Alpine polymetamorphic basement. | | | | |
| Monte Rosa | Polymetamorphic paragneiss and migmatite, with felsic Carbo-Permian intrusions with Permo-Triassic paragneiss, schist, and quartzite metasedimentary cover. | Zircon U-Pb (rim)[76]<br>Monazite U-Th-Pb[77]<br>Index minerals[78] | ca. 600-900<br>ca. 450-730(?)<br>ca. 590-630 | ca. 39-34<br>ca. 40-35<br>Alpine | 40-34 |
| Monviso | Jurassic ophiolite with Jurassic-Cretaceous calcschists. | Zircon U-Pb (vein)[79]<br>Mineral assemblage geothermobarometry[80]<br>Garnet Lu-Hf[51]<br>Garnet Sm-Nd[81]<br>White mica Rb-Sr[81]<br>White mica $^{40}Ar/^{39}Ar$ [82] | ca. 800-900<br>ca. 570-670<br><br>ca. 400-800<br>ca. 400-800<br>ca. 450-550<br>ca. 300-350 | 45 ± 1<br>Alpine<br><br>49 ± 1<br>60 ± 12<br>40 ± 1<br>51-48 | ca. 50-40 |
| Morcles-Doldenhorn | Jurassic-Cretaceous carbonate. | O isotope thermometry[83]<br>Calcite-dolomite thermometry[47] | ca. 260-350<br>ca. 332-385 | Alpine<br>Alpine | Pre-Alpine |
| North Helvetic-Blattengrat flysch | Palaeocene-Eocene carbonate with Eocene sandstone and calcareous shale. | Illite crystallinity[84] | ca. 160-300 | Alpine | Pre-Alpine |
| Orobic | Pre-Alpine pelitic metasediment and orthogneiss, with minor Permian plutons. | Hornblende K-Ar[85]<br>Biotite K-Ar[86] | ca. 450-500<br>ca. 250-300 | ca. 373-358<br>ca. 331-218 | Pre-Alpine |
| Ötztal | Polymetamorphic paragneisses, with subordinate orthogneisses, schists, and metabasites. | Monazite U-Th-Pb[87]<br>Garnet Sm-Nd[88] | ca. 450-730(?)<br>ca. 400-800 | ca. 457-409<br>ca. 343-331 | Pre-Alpine |
| Penninic flysch* | Late Cretaceous to Eocene flysch, comprising sandstone and calcareous shale, with rare conglomerate and basal melanges containing Jurassic ophiolite slices. | Illite crystallinity[89] | ca. 100-300 | Alpine | Pre-Alpine |
| Platta | Mid-Jurassic (?) ophiolite with melange of late Jurassic to mid-Cretaceous pelagic sediment. | Amphibole Ar/Ar[59]<br>Index minerals[59]<br>Illite crystallinity[28] | ca. 450-500<br>ca. 450<br>ca. 280 | ca. 73-69<br>Alpine<br>Alpine | Pre-Alpine (rutile)<br>73-69 (apatite) |
| Prättigau (Blueschist) | Cretaceous-Eocene calcschist, limestone, marl, and ophiolite. | Index minerals[56]<br>White mica Ar/Ar[56]<br>Biotite Ar/Ar[56] | ca. 350-590<br>ca. 300-350<br>ca. 250-300 | Alpine<br>ca. 42-25<br>ca. 18-16 | 42-25 (apatite)<br>Pre-Alpine? (rutile) |

| | | | | | |
|---|---|---|---|---|---|
| Prättigau (lower-greenschist) | Cretaceous-Eocene calcschist, limestone, marl, and ophiolite. | Index minerals[23,33] | <300 | Alpine | Pre-Alpine |
| Préalpes | Triassic to Cretaceous carbonate with minor Permo-Carboniferous clastic units, and ophiolite comprising oceanic crust formed in the Jurassic. . | Zircon U-Pb (ophiolite)[90]<br>Amphibole $^{40}Ar/^{39}Ar$ (ophiolite)[90]<br>Illite crystallinity[91] | ca. 900<br>ca. 450-500<br>ca. 50-250 | 166 ± 1<br>166 ± 2<br>Alpine | Pre-Alpine |
| Sardona flysch | Late Cretaceous carbonate with Palaeocene-Eocene calcareous shale, and rare quartzite and conglomerate. | Illite crystallinity[92] | ca. 300-320 | Alpine | Pre-Alpine |
| Schams | Triassic-Cretaceous marl, carbonate, and flysch. | White mica K-Ar[93] | ca. 300-350 | ca. 45-30 | Pre-Alpine |
| Schistes Lustrés | Interbedded calcschists, shales, carbonates and chert, with rare ophiolite blocks. | Mineral assemblage geothermobarometry[94]<br>Fluid inclusion geothermobarometry[95]<br>White mica $^{40}Ar/^{39}Ar$ [96]<br>“ | ca. 350-475 (W to E)<br>ca. 350-415 (W to E)<br>ca. 300-350<br>“ | Alpine<br>Alpine<br>62-45 (E)<br>38-35 (W) | ca. 62-45 (apatite, high-grade E Schistes Lustrés only)<br>Pre-Alpine (rutile) |
| Schneeberg | Monometamorphic Palaeozoic-Mesozoic schists, quartzites, calcschists, and carbonates. | Garnet Sm-Nd[97]<br>Mineral assemblage geothermobarometry[97] | ca. 400-800<br>ca. 550-600 | ca. 98-86<br>Eoalpine | 98-75 |
| Sesia | Polymetamorphic ortho- and paragneiss with felsic Permian intrusions, scarce Mesozoic clastic and carbonate metasedimentary cover, and minor Oligocene granitoid plutons (Biella and Traversella). | Allanite U-Pb[98]<br>Zircon U-Pb (rim)[98]<br>Zircon U-Pb (rim)[99,100]<br>Garnet Lu-Hf[51]<br>White mica K-Ar[101]<br>Zircon fission track[16] | ca. 450-550<br>ca. 600-900<br>“<br>ca. 400-800<br>ca. 300-350<br>ca. 200-250 | ca. 86-63<br>ca. 75-74<br>ca. 68-65<br>ca. 69<br>ca. 79-61<br>ca. 44-26 | 86-65 |
| Silvretta | Polymetamorphic mafic to felsic ortho- and paragneisses, with minor Permian volcaniclastic and Triassic carbonate cover. | Zircon U-Pb[102,103]<br>Staurolite Pb-Pb[104]<br>Muscovite K-Ar[104] | ca. 900<br>ca. 500<br>ca. 350 | ca. 609-420<br>ca. 306-304<br>ca. 331-297 | Pre-Alpine |
| Siviez-Mischabel | Polymetamorphic ortho- and paragneiss, with minor Permo- | Zircon U-Pb[105]<br>White mica Ar/Ar[106] | ca. 900<br>ca. 300-350 | ca. 505-269<br>ca. 337-252 | Pre-Alpine |

| | | | | | |
|---|---|---|---|---|---|
| | Triassic clastic, Jurassic-Cretaceous carbonate, and Cretaceous-Eocene flysch cover. | White mica Ar/Ar[75]<br>Quartz deformation[75] | "<br>ca. 300 | ca. 40-36<br>Alpine | |
| Southern Campo (/Tonale) | Polymetamorphic gneisses, amphibolites, intruded by Permian granitoids and gabbros. | Muscovite Rb-Sr[40]<br>Index minerals[107]<br>Biotite Rb-Sr[40]<br>Zircon fission track[108] | ca. 450-550<br>ca. 500-600<br>ca. 300-400<br>ca. 200-250 | ca. 282-259<br>Alpine<br>ca. 125-78<br>ca. 84-79 | 125-78 |
| Suretta | Polymetamorphic ortho- and paragneiss, with minor Permo-Triassic clastic and Jurassic-Cretaceous carbonate cover. | Phengite Rb-Sr[109,110]<br>Phengite K-Ar[109,110]<br>Index minerals[111] | ca. 450-550<br>ca. 350<br>ca.400-450 | ca. 46-31<br>ca. 49-38<br>Alpine | 46-31<br>(rutile likely Pre-Alpine) |
| Tambo | Polymetamorphic ortho- and paragneiss, with minor Permo-Triassic clastic and Jurassic-Cretaceous carbonate cover. | Phengite Rb-Sr[109]<br>Biotite Rb-Sr[109] | ca. 450-550<br>ca. 300-400 | ca. 30<br>ca. 22 | 30-22 |
| Teixell | Polymetamorphic orthogneisses and schists. | Garnet Sm-Nd[112]<br>Mineral assemblage geothermobarometry[112]<br>White mica Ar/Ar[113] | ca. 400-800<br>ca. 540-620<br>ca. 300-350 | ca. 90-80<br>Eoalpine<br>ca. 85-81 | 90-80 |
| Voltri | Piedmont-Ligurian metaophiolite with associated calcschists. | Zircon U-Pb (rim)[114]<br>Titanite U-Pb[114]<br>Phengite $^{40}Ar/^{39}Ar$[115]<br>Apatite fission track[114] | ca. 600-900<br>ca. 700-800<br>ca. 300-350<br>ca. 60-120 | ca. 34<br>ca. 30<br>ca. 49-33<br>ca. 24 | ca. 49-30 |
| Zermatt-Saas Fee | Jurassic ophiolite with minor cover of Jurassic-Cretaceous calcschist and carbonate metasediment. | Zircon U-Pb[116]<br>Zircon U-Pb (rim)[116]<br>Ramen spectroscopy[41]<br>White mica Rb-Sr[117] | ca. 900<br>ca. 600-900<br>ca. 495-543<br>ca. 450-550 | ca. 164<br>ca. 44<br>Alpine<br>ca. 45-40 | 45-40 |

*Niesen/Schlieren/Simme/Wagital units. Prättigau, Arblatsch, Arosa, and (possibly) Sardona flysch units are also Penninic, but more strongly metamorphosed by Alpine collision[118].

**Table DR2.** Sample locations and deposition ages, using standard magnetostratigraphic[119] and biostratigraphic schemes[120], updated where indicated. Biostratigraphic abbreviations refer to planktonic foraminifers NP zones, benthic foraminifer zones SBZ, calcareous nannoplankton NN zones, and European mammalian MN-MP zones. Unless constrained by overlying deposits, all biostratigraphic ages are maximum bounds on deposition age. Sample codes: Speer-Hörnli fan system, HS-; Honegg-Napf fan system, HN-; Barrême basin, BA-; Valensole basin, VA-; Alpine source areas 10-. Coordinates are WGS84.

| Sample | Unit | Lat. | Long. | Deposition age (Ma) | Age constraint |
|---|---|---|---|---|---|
| HS01 | Lower Freshwater Molasse, Speer fan (base) | 47.2123 | 9.1352 | 30.07 ± 0.41 | Magnetostratigraphy[12] |
| HS02 | Lower Freshwater Molasse, Speer fan (top) | 47.1956 | 9.1302 | 26.79 ± 0.24 | Magnetostratigraphy[12] |
| HS03* | Lower Freshwater Molasse, Kronberg fan (base) | 47.2687 | 9.2228 | 23.61 ± 0.07 | Magnetostratigraphy[12] |
| HS04 | Lower Freshwater Molasse, Kronberg fan (top) | 47.2687 | 9.2228 | 20.06 ± 0.14 | Magnetostratigraphy[12] |
| HS05 | Upper Freshwater Molasse, Hörnli alluvial fan (base) | 47.2596 | 9.2756 | 16.42 ± 0.13 | Magnetostratigraphy[12] |
| HS06 | Upper Freshwater Molasse, Hörnli alluvial fan (top) | 47.2533 | 8.9110 | 13.61 ± 0.10 | Magnetostratigraphy[12] |
| HN01 | Lower Freshwater Molasse, Honegg fan, Ürscheli Fm. | 47.3719 | 8.9400 | 28.13 ± 0.16 | Magnetostratigraphy[121] |
| HN03 | Lower Freshwater Molasse, Blüme fan, Thun Fm. (base) | 46.8162 | 7.8647 | 25.34 ± 0.16 | Magnetostratigraphy[121] |
| HN02 | Lower Freshwater Molasse, Blüme fan, Thun Fm. (top) | 46.7764 | 7.7323 | 24.76 ± 0.03 | Magnetostratigraphy[121] |
| HN04 | Upper Freshwater | 46.7630 | 7.7468 | 18.53 ±0.25 | Magnetostratigraphy[121] |

| | | | | | |
|---|---|---|---|---|---|
| | Molasse, Napf fan, Schüpferegg Fm. | | | | |
| HN05 | Upper Freshwater Molasse, Napf fan, Napf Fm. | 46.9395 | 7.9509 | 15.09 ± 0.06 | Magnetostratigraphy[121] |
| BA01a,b | Conglomérat de Clumanc | 44.0307<br>44.0338 | 6.3699<br>6.3753 | 28.1 ± 1.1 | Based on presence in intercalated marls of biota from plankton zones P20-P21, and nannoplankton zone NP24[122]. |
| BA02 | Grès de Senez | 43.9162 | 6.4081 | 28.1 ± 1.1 | Poorly fossiliferous. Traditionally correlated with the Conglomérat de Clumanc[122]. Cannot be more than ca. 1.75 Ma younger and likely less, as overlaying basin-blanketing Molasse Rouge units are in turn overlain by Série Grise units no older than 25.18 Ma. |
| BA03 | Molasse Rouge | 43.9654 | 6.3872 | 26.1 ± 0.9 | Constrained by ages of underlying Conglomérat de Clumanc, and overlying Série Grise. |
| BA04 | Série Grise | 43.9523 | 6.3770 | 25.0 ± 0.2 | Based on presence of biota from vertebrate microfauna zone MP28[123] with updated calibration[124]. |
| BA05 | Grès Verts | 43.9480 | 6.3936 | 23.6 ± 1.1 | Constrained by age of underlying Serié Grise, and deposition onset in the Valensole basin during MN2a. Yields the vertebrate microfauna Eucricetodon sp. and Theridomyidae sp., and the charophytes Tectochara meriani and Rhabdochara praelangeri [123]. All of these are non-age diagnostic, but suggest a late Oligocene age. |
| VA02 | Marine Molasse 4 | 44.0651 | 6.1846 | 16.3 ± 1.3 | Yields biota from vertebrate microfauna zone MN4; top of unit at boundary with Lower Conglomérat de Valensole yields biota from MN5-mid[125] with updated calibrations[12,126]. |
| VA03 | Lower Conglomérat de Valensole | 44.0284 | 6.1274 | 13.2 ± 0.4 | Sampled location bracketed by vertebrate microfauna MN7/8 at sites Colombier Haute and Colombier Bas[127] with updated calibrations[12,126]. |
| 102 | Verrucano | 47.1119 | 9.2020 | 276.5 ± 8.5 | Zircons from volcanic tuffs yield U-Pb ages of 285-268 Ma[128]. |
| 105 | Eocene Schlieren flysch | 47.0121 | 8.7301 | 53.2 ± 2.7 | Poorly constrained. Yields biota from larger benthic foraminifer zones SBZ5-8[118]. |
| 106 | Supraquartzite, Sardona flysch | 46.9138 | 9.3412 | 39.1 ± 0.9 | Poorly constrained. Yields biota from plankton zone P14[129]. |

*****Sample HS03 did not yield sufficient apatite or rutile for analysis.

**Table DR3.** Apatite U-Pb data. $^{206}Pb_c$ refers to the $^{206}Pb_c/^{206}Pb_{total}$ ratio, where $Pb_c$ is non-radiogenic common Pb. ρ – error correlation of preceding columns. Pb correction type: 1 – array intercept $Pb_c$ correction; 2 – iterative $Pb_c$ correction using a terrestrial Pb evolution model[8]. All errors are fully propagated and given at the 2σ level. Data for Barrême-Valensole (BA- and VA-) samples available from previously published data repository[10].

| **HN01 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 85.10 | 0.283 | 2.803 | 0.070 | 0.0665 | 0.0031 | 0.0337 | 15.038 | 0.701 | 0.2793 | 0.0077 | 0.6131 | 300.4 | 14.4 | 2 |
| 2 | 60 | 23.13 | 0.486 | 6.010 | 0.200 | 0.0888 | 0.0045 | 0.3635 | 11.261 | 0.571 | 0.4420 | 0.0150 | 0.4404 | 287.8 | 17.9 | 2 |
| 3 | 60 | 6.35 | 0.850 | 39.900 | 1.100 | 0.3527 | 0.0180 | 0.5091 | 2.835 | 0.145 | 0.7370 | 0.0210 | 0.4464 | 332.6 | 62.5 | 2 |
| 4 | 60 | 37.80 | 0.481 | 6.780 | 0.170 | 0.0998 | 0.0048 | -0.0116 | 10.020 | 0.482 | 0.4400 | 0.0150 | 0.6308 | 325.4 | 19.5 | 2 |
| 6 | 60 | 35.71 | 0.666 | 13.460 | 0.260 | 0.1507 | 0.0070 | 0.3171 | 6.636 | 0.308 | 0.5880 | 0.0130 | 0.2860 | 316.8 | 21.9 | 2 |
| 7 | 60 | 55.04 | 0.610 | 10.590 | 0.190 | 0.1287 | 0.0058 | 0.4237 | 7.770 | 0.350 | 0.5430 | 0.0100 | 0.3707 | 315.8 | 17.9 | 2 |
| 8 | 60 | 2.56 | 0.886 | 29.200 | 2.200 | 0.2450 | 0.0160 | 0.0051 | 4.082 | 0.267 | 0.7560 | 0.0600 | 0.5618 | 178.2 | 117.6 | 2 |
| 9 | 60 | 21.40 | 0.754 | 18.380 | 0.580 | 0.1937 | 0.0094 | 0.1124 | 5.163 | 0.251 | 0.6580 | 0.0230 | 0.4944 | 300.0 | 38.5 | 2 |
| 11 | 60 | 21.96 | 0.640 | 10.090 | 0.270 | 0.1218 | 0.0061 | 0.5370 | 8.210 | 0.411 | 0.5650 | 0.0150 | 0.4942 | 276.8 | 20.4 | 2 |
| 12 | 60 | 41.31 | 0.491 | 6.890 | 0.140 | 0.1040 | 0.0047 | 0.2646 | 9.615 | 0.435 | 0.4479 | 0.0094 | 0.4019 | 332.8 | 16.9 | 2 |
| 13 | 60 | 11.64 | 0.910 | 55.100 | 1.900 | 0.5000 | 0.0250 | 0.5280 | 2.000 | 0.100 | 0.7820 | 0.0220 | 0.0670 | 285.1 | 91.5 | 2 |
| 15 | 60 | 35.50 | 0.496 | 6.370 | 0.160 | 0.0984 | 0.0045 | -0.2082 | 10.163 | 0.465 | 0.4510 | 0.0120 | 0.7004 | 312.2 | 17.1 | 2 |
| 16 | 60 | 12.59 | 0.737 | 15.390 | 0.520 | 0.1639 | 0.0087 | -0.1203 | 6.101 | 0.324 | 0.6430 | 0.0300 | 0.7278 | 271.7 | 41.5 | 2 |
| 17 | 60 | 125.40 | 0.225 | 2.062 | 0.064 | 0.0615 | 0.0029 | 0.4646 | 16.255 | 0.766 | 0.2327 | 0.0051 | 0.1532 | 300.4 | 14.2 | 2 |
| 18 | 60 | 34.36 | 0.421 | 5.160 | 0.220 | 0.0906 | 0.0047 | 0.4514 | 11.038 | 0.573 | 0.3920 | 0.0150 | 0.2260 | 329.4 | 20.0 | 2 |
| 19 | 60 | 24.13 | 0.451 | 5.010 | 0.200 | 0.0850 | 0.0045 | 0.1947 | 11.765 | 0.623 | 0.4140 | 0.0190 | 0.4457 | 294.2 | 20.0 | 2 |
| 20 | 60 | 39.31 | 0.445 | 5.560 | 0.130 | 0.1019 | 0.0048 | -0.0127 | 9.814 | 0.462 | 0.4120 | 0.0120 | 0.5685 | 354.8 | 19.1 | 2 |
| 21 | 60 | 67.94 | 0.361 | 4.270 | 0.230 | 0.0917 | 0.0049 | -0.1127 | 10.905 | 0.583 | 0.3450 | 0.0210 | 0.6368 | 367.1 | 24.3 | 2 |
| 22 | 60 | 4.36 | 0.660 | 9.630 | 0.540 | 0.1251 | 0.0078 | 0.2252 | 7.994 | 0.498 | 0.5810 | 0.0330 | 0.5685 | 268.3 | 36.5 | 2 |
| 25 | 60 | 40.61 | 0.630 | 11.650 | 0.200 | 0.1653 | 0.0075 | 0.1309 | 6.050 | 0.274 | 0.5630 | 0.0120 | 0.5317 | 382.3 | 23.8 | 2 |
| 26 | 60 | 22.45 | 0.524 | 6.290 | 0.180 | 0.1067 | 0.0050 | -0.0420 | 9.372 | 0.439 | 0.4740 | 0.0160 | 0.5104 | 319.5 | 20.1 | 2 |
| 27 | 60 | 45.27 | 0.554 | 7.340 | 0.120 | 0.1192 | 0.0055 | 0.5117 | 8.389 | 0.387 | 0.4990 | 0.0096 | 0.4464 | 333.9 | 18.1 | 2 |
| 28 | 60 | 59.35 | 0.373 | 3.865 | 0.084 | 0.0889 | 0.0041 | 0.1142 | 11.249 | 0.519 | 0.3540 | 0.0094 | 0.5026 | 349.6 | 17.2 | 2 |
| 30 | 60 | 6.63 | 0.824 | 25.760 | 0.660 | 0.2938 | 0.0150 | 0.0192 | 3.404 | 0.174 | 0.7160 | 0.0240 | 0.6201 | 324.3 | 58.8 | 2 |
| 32 | 60 | 31.42 | 0.568 | 9.480 | 0.290 | 0.1529 | 0.0077 | 0.4756 | 6.540 | 0.329 | 0.5140 | 0.0160 | 0.3112 | 412.6 | 28.1 | 2 |
| 33 | 60 | 69.70 | 0.273 | 2.110 | 0.100 | 0.0626 | 0.0043 | 0.3891 | 15.974 | 1.097 | 0.2710 | 0.0170 | 0.6279 | 287.0 | 21.1 | 2 |
| 34 | 60 | 0.04 | 1.090 | 740.000 | 450.000 | 11.0000 | 13.0000 | 0.4866 | 0.091 | 0.107 | 0.9100 | 0.3400 | -0.0313 | -28412.6 | 2446433.1 | 2 |
| 35 | 60 | 16.79 | 0.632 | 11.530 | 0.280 | 0.1606 | 0.0081 | 0.0681 | 6.227 | 0.314 | 0.5640 | 0.0210 | 0.7713 | 369.7 | 32.3 | 2 |
| 37 | 60 | 38.28 | 0.435 | 5.990 | 0.160 | 0.1137 | 0.0053 | 0.1553 | 8.795 | 0.410 | 0.4060 | 0.0110 | 0.2901 | 401.5 | 20.9 | 2 |
| 38 | 60 | 2.30 | 0.531 | 6.450 | 0.590 | 0.1090 | 0.0150 | 0.0581 | 9.174 | 1.263 | 0.4800 | 0.0550 | 0.5649 | 321.3 | 63.5 | 2 |
| 39 | 60 | 38.42 | 0.519 | 7.400 | 0.170 | 0.1201 | 0.0059 | 0.2925 | 8.326 | 0.409 | 0.4720 | 0.0140 | 0.4276 | 362.2 | 22.1 | 2 |
| 40 | 60 | 20.02 | 0.648 | 10.610 | 0.360 | 0.1136 | 0.0056 | 0.4802 | 8.803 | 0.434 | 0.5700 | 0.0190 | 0.3490 | 253.1 | 21.4 | 2 |
| 41 | 60 | 9.75 | 0.702 | 13.210 | 0.650 | 0.1254 | 0.0067 | 0.3928 | 7.974 | 0.426 | 0.6130 | 0.0310 | 0.3483 | 236.2 | 33.4 | 2 |
| 43 | 60 | 24.69 | 0.721 | 14.240 | 0.230 | 0.1384 | 0.0066 | 0.4240 | 7.225 | 0.345 | 0.6280 | 0.0140 | 0.5684 | 244.6 | 20.1 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | 60 | 43.60 | 0.627 | 10.050 | 0.240 | 0.1084 | 0.0052 | 0.6879 | 9.225 | 0.443 | 0.5533 | 0.0099 | 0.0751 | 255.8 | 15.4 | 2 |
| 45 | 60 | 23.75 | 0.585 | 9.020 | 0.270 | 0.1051 | 0.0049 | 0.0675 | 9.515 | 0.444 | 0.5210 | 0.0170 | 0.5017 | 275.2 | 19.2 | 2 |
| 46 | 60 | 25.82 | 0.562 | 9.110 | 0.310 | 0.1094 | 0.0053 | 0.3895 | 9.141 | 0.443 | 0.5040 | 0.0150 | 0.3238 | 301.6 | 19.6 | 2 |
| 47 | 60 | 4.22 | 0.868 | 51.100 | 2.000 | 0.4240 | 0.0240 | 0.8670 | 2.358 | 0.133 | 0.7530 | 0.0230 | -0.0878 | 350.2 | 80.9 | 2 |
| 48 | 60 | 27.83 | 0.702 | 15.980 | 0.290 | 0.1555 | 0.0071 | 0.1157 | 6.431 | 0.294 | 0.6160 | 0.0130 | 0.4600 | 291.7 | 21.7 | 2 |
| 49 | 60 | 32.32 | 0.661 | 13.750 | 0.380 | 0.1416 | 0.0068 | 0.6040 | 7.062 | 0.339 | 0.5830 | 0.0140 | 0.1069 | 302.7 | 21.9 | 2 |
| 52 | 60 | 34.85 | 0.486 | 6.640 | 0.200 | 0.0959 | 0.0045 | 0.5239 | 10.428 | 0.489 | 0.4430 | 0.0120 | 0.0838 | 310.3 | 17.1 | 2 |
| 54 | 60 | 27.95 | 0.491 | 6.390 | 0.160 | 0.0940 | 0.0044 | -0.0768 | 10.638 | 0.498 | 0.4470 | 0.0160 | 0.6293 | 301.1 | 18.4 | 2 |
| 55 | 60 | 41.64 | 0.424 | 5.250 | 0.130 | 0.0889 | 0.0042 | 0.0089 | 11.249 | 0.531 | 0.3940 | 0.0120 | 0.6307 | 321.8 | 17.3 | 2 |
| 56 | 60 | 43.58 | 0.417 | 5.130 | 0.130 | 0.0888 | 0.0041 | 0.0458 | 11.261 | 0.520 | 0.3880 | 0.0100 | 0.4606 | 325.6 | 16.5 | 2 |
| 58 | 60 | 6.81 | 0.257 | 1.730 | 0.340 | 0.0477 | 0.0066 | 0.3589 | 20.964 | 2.901 | 0.2560 | 0.0570 | 0.4607 | 224.6 | 37.4 | 2 |
| 60 | 60 | 7.43 | 0.821 | 23.470 | 0.640 | 0.2561 | 0.0130 | 0.3985 | 3.905 | 0.198 | 0.7110 | 0.0210 | 0.4228 | 289.2 | 46.2 | 2 |
| 61 | 60 | 127.00 | 0.271 | 2.390 | 0.220 | 0.0714 | 0.0041 | 0.6302 | 14.006 | 0.804 | 0.2710 | 0.0200 | -0.2926 | 327.1 | 21.5 | 2 |
| 62 | 60 | 31.47 | 0.427 | 4.060 | 0.150 | 0.0791 | 0.0038 | 0.0152 | 12.642 | 0.607 | 0.3950 | 0.0150 | 0.4193 | 285.6 | 16.5 | 2 |
| 64 | 60 | 31.60 | 0.433 | 5.110 | 0.140 | 0.0969 | 0.0045 | 0.1055 | 10.320 | 0.479 | 0.4020 | 0.0120 | 0.4743 | 344.8 | 18.3 | 2 |
| 65 | 60 | 155.40 | 0.196 | 1.873 | 0.043 | 0.0689 | 0.0031 | 0.0551 | 14.520 | 0.654 | 0.2116 | 0.0052 | 0.3309 | 347.3 | 15.6 | 2 |
| 67 | 60 | 10.04 | 0.827 | 30.900 | 1.000 | 0.3259 | 0.0160 | 0.5267 | 3.068 | 0.151 | 0.7200 | 0.0200 | 0.2537 | 353.3 | 55.6 | 2 |
| 68 | 60 | 22.25 | 0.685 | 14.100 | 0.260 | 0.1743 | 0.0080 | -0.1193 | 5.737 | 0.263 | 0.6050 | 0.0140 | 0.6648 | 344.5 | 25.6 | 2 |
| 69 | 60 | 10.37 | 0.764 | 17.090 | 0.570 | 0.1886 | 0.0093 | 0.2483 | 5.302 | 0.261 | 0.6650 | 0.0250 | 0.3907 | 280.5 | 40.2 | 2 |
| 70 | 60 | 23.25 | 0.647 | 10.660 | 0.260 | 0.1408 | 0.0068 | 0.3573 | 7.102 | 0.343 | 0.5730 | 0.0150 | 0.3706 | 312.3 | 22.8 | 2 |
| 71 | 60 | 6.58 | 0.794 | 18.960 | 0.860 | 0.2006 | 0.0110 | 0.2711 | 4.985 | 0.273 | 0.6880 | 0.0360 | 0.4489 | 260.6 | 58.9 | 2 |
| 72 | 60 | 31.13 | 0.532 | 7.030 | 0.220 | 0.1067 | 0.0049 | 0.2204 | 9.372 | 0.430 | 0.4800 | 0.0150 | 0.3244 | 314.4 | 19.2 | 2 |
| 74 | 60 | 28.87 | 0.567 | 6.740 | 0.190 | 0.0967 | 0.0048 | 0.3698 | 10.341 | 0.513 | 0.5060 | 0.0160 | 0.3869 | 264.4 | 18.0 | 2 |
| 76 | 60 | 13.95 | 0.701 | 14.550 | 0.440 | 0.1720 | 0.0087 | 0.5029 | 5.814 | 0.294 | 0.6170 | 0.0220 | 0.4023 | 322.8 | 34.2 | 2 |
| 78 | 60 | 8.98 | 0.795 | 19.550 | 0.500 | 0.2047 | 0.0100 | 0.2053 | 4.885 | 0.239 | 0.6890 | 0.0210 | 0.6277 | 264.7 | 37.4 | 2 |
| 79 | 60 | 70.40 | 0.329 | 3.180 | 0.100 | 0.0786 | 0.0036 | 0.5015 | 12.723 | 0.583 | 0.3174 | 0.0081 | 0.0815 | 331.6 | 15.8 | 2 |
| 81 | 60 | 44.51 | 0.603 | 8.780 | 0.140 | 0.1300 | 0.0059 | 0.1931 | 7.692 | 0.349 | 0.5381 | 0.0096 | 0.5443 | 324.2 | 18.1 | 2 |
| 82 | 60 | 47.40 | 0.434 | 5.660 | 0.130 | 0.1121 | 0.0052 | 0.2953 | 8.921 | 0.414 | 0.4050 | 0.0100 | 0.3479 | 396.7 | 20.2 | 2 |
| 83 | 60 | 19.50 | 0.744 | 16.040 | 0.350 | 0.1988 | 0.0093 | 0.3526 | 5.030 | 0.235 | 0.6510 | 0.0150 | 0.4413 | 320.1 | 29.0 | 2 |
| 84 | 60 | 1.13 | 0.988 | 287.000 | 12.000 | 2.7810 | 0.1500 | 0.7701 | 0.360 | 0.019 | 0.8510 | 0.0170 | 0.0167 | 209.7 | 409.5 | 2 |
| 85 | 60 | 12.02 | 0.722 | 17.020 | 0.540 | 0.2170 | 0.0120 | 0.0585 | 4.608 | 0.255 | 0.6370 | 0.0280 | 0.7074 | 377.0 | 51.7 | 2 |
| 86 | 60 | 8.55 | 0.691 | 52.500 | 1.700 | 0.6320 | 0.0340 | 0.6085 | 1.582 | 0.085 | 0.6610 | 0.0180 | 0.4426 | 1148.4 | 100.7 | 2 |
| 88 | 60 | 30.81 | 0.490 | 6.840 | 0.120 | 0.1242 | 0.0058 | 0.1126 | 8.052 | 0.376 | 0.4500 | 0.0100 | 0.7848 | 396.3 | 20.8 | 2 |
| 89 | 60 | 34.88 | 0.422 | 5.420 | 0.140 | 0.1121 | 0.0052 | 0.0982 | 8.921 | 0.414 | 0.3960 | 0.0110 | 0.4312 | 404.6 | 20.9 | 2 |
| 90 | 60 | 18.04 | 0.666 | 11.210 | 0.300 | 0.1579 | 0.0078 | 0.2884 | 6.333 | 0.313 | 0.5890 | 0.0170 | 0.4934 | 331.3 | 27.1 | 2 |
| 91 | 60 | 27.90 | 0.736 | 17.930 | 0.570 | 0.2293 | 0.0120 | 0.6280 | 4.361 | 0.228 | 0.6480 | 0.0180 | 0.3809 | 379.0 | 38.6 | 2 |
| 92 | 60 | 12.69 | 0.922 | 248.000 | 2.800 | 2.4280 | 0.1100 | 0.4898 | 0.412 | 0.019 | 0.8417 | 0.0064 | -0.0324 | 1117.6 | 182.0 | 2 |
| 93 | 60 | 8.95 | 0.495 | 6.490 | 0.280 | 0.1170 | 0.0062 | 0.1470 | 8.547 | 0.453 | 0.4530 | 0.0230 | 0.4497 | 370.2 | 28.4 | 2 |
| 95 | 60 | 24.30 | 0.540 | 7.110 | 0.370 | 0.1115 | 0.0071 | 0.4419 | 8.969 | 0.571 | 0.4870 | 0.0250 | 0.3600 | 322.6 | 29.7 | 2 |
| 96 | 60 | 18.45 | 0.538 | 7.280 | 0.250 | 0.1146 | 0.0059 | 0.0344 | 8.726 | 0.449 | 0.4860 | 0.0200 | 0.6073 | 332.6 | 24.7 | 2 |
| 97 | 60 | 3.66 | 0.882 | 28.500 | 1.100 | 0.2960 | 0.0170 | 0.0689 | 3.378 | 0.194 | 0.7560 | 0.0390 | 0.7005 | 220.8 | 93.0 | 2 |
| 98 | 60 | 15.17 | 0.650 | 9.650 | 0.330 | 0.1261 | 0.0066 | 0.1653 | 7.930 | 0.415 | 0.5730 | 0.0230 | 0.4486 | 278.7 | 27.2 | 2 |
| 102 | 60 | 33.85 | 0.515 | 5.650 | 0.130 | 0.0812 | 0.0038 | -0.0589 | 12.315 | 0.576 | 0.4640 | 0.0140 | 0.6097 | 248.8 | 14.8 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 105 | 60 | 5.51 | 0.840 | 26.980 | 0.810 | 0.2490 | 0.0130 | 0.2302 | 4.016 | 0.210 | 0.7240 | 0.0250 | 0.6878 | 252.0 | 52.1 | 2 |
| 107 | 60 | 41.58 | 0.456 | 5.570 | 0.150 | 0.0913 | 0.0045 | 0.2160 | 10.953 | 0.540 | 0.4190 | 0.0140 | 0.5158 | 312.6 | 18.3 | 2 |
| 108 | 60 | 42.69 | 0.458 | 5.900 | 0.140 | 0.0952 | 0.0044 | 0.1351 | 10.504 | 0.485 | 0.4210 | 0.0110 | 0.4615 | 324.5 | 17.1 | 2 |
| 109 | 60 | 19.50 | 0.597 | 7.430 | 0.240 | 0.0962 | 0.0049 | 0.0893 | 10.395 | 0.529 | 0.5290 | 0.0220 | 0.6747 | 245.3 | 21.0 | 2 |
| 110 | 60 | 70.10 | 0.349 | 3.626 | 0.078 | 0.0749 | 0.0034 | 0.3298 | 13.360 | 0.607 | 0.3333 | 0.0069 | 0.3550 | 306.5 | 14.4 | 2 |
| 111 | 60 | 26.17 | 0.418 | 4.920 | 0.170 | 0.0875 | 0.0045 | 0.2261 | 11.429 | 0.588 | 0.3890 | 0.0150 | 0.4720 | 320.2 | 19.3 | 2 |
| 112 | 60 | 75.10 | 0.405 | 4.550 | 0.130 | 0.0828 | 0.0038 | 0.4405 | 12.077 | 0.554 | 0.3780 | 0.0100 | 0.0225 | 310.0 | 15.6 | 2 |
| 113 | 60 | 67.60 | 0.455 | 5.100 | 0.150 | 0.0845 | 0.0042 | 0.0851 | 11.834 | 0.588 | 0.4170 | 0.0120 | 0.5121 | 290.5 | 16.5 | 2 |
| 114 | 60 | 27.79 | 0.475 | 6.480 | 0.210 | 0.1046 | 0.0052 | 0.1269 | 9.560 | 0.475 | 0.4360 | 0.0170 | 0.5101 | 344.5 | 21.9 | 2 |
| 115 | 60 | 2.19 | 0.983 | 66.000 | 3.000 | 0.5560 | 0.0410 | 0.2562 | 1.799 | 0.133 | 0.8260 | 0.0450 | 0.7738 | 62.1 | 205.3 | 2 |
| 116 | 60 | 11.64 | 0.661 | 10.040 | 0.280 | 0.1232 | 0.0063 | -0.0628 | 8.117 | 0.415 | 0.5810 | 0.0230 | 0.7179 | 264.1 | 26.3 | 2 |
| 117 | 60 | 5.01 | 0.842 | 29.210 | 0.860 | 0.2871 | 0.0150 | 0.3592 | 3.483 | 0.182 | 0.7280 | 0.0230 | 0.5930 | 285.4 | 55.6 | 2 |
| 118 | 60 | 20.44 | 0.703 | 14.080 | 0.240 | 0.1634 | 0.0076 | 0.1897 | 6.120 | 0.285 | 0.6170 | 0.0140 | 0.5104 | 305.9 | 23.8 | 2 |

| **HN02 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}$Pb corrected Age (Ma)** | **$^{207}$Pb corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 0.368 | 34.78 | 3.540 | 0.100 | 0.0734 | 0.0024 | 0.1234 | 13.624 | 0.445 | 0.3480 | 0.0110 | 0.2025 | 292.1 | 11.4 | 2 |
| 2 | 60 | 0.324 | 97.68 | 2.559 | 0.055 | 0.0600 | 0.0018 | 0.2611 | 16.678 | 0.501 | 0.3106 | 0.0073 | -0.0494 | 256.3 | 8.4 | 2 |
| 3 | 60 | 0.745 | 5.72 | 8.810 | 0.530 | 0.1035 | 0.0051 | 0.2979 | 9.662 | 0.476 | 0.6430 | 0.0380 | 0.0776 | 168.2 | 32.6 | 2 |
| 4 | 60 | 0.334 | 59.90 | 3.010 | 0.220 | 0.0678 | 0.0033 | 0.9288 | 14.749 | 0.718 | 0.3200 | 0.0150 | -0.6488 | 284.7 | 15.8 | 2 |
| 5 | 60 | 0.868 | 4.79 | 25.200 | 1.800 | 0.2500 | 0.0210 | 0.7620 | 4.000 | 0.336 | 0.7440 | 0.0290 | 0.0661 | 209.0 | 61.3 | 2 |
| 6 | 60 | 0.700 | 7.05 | 12.280 | 0.440 | 0.1465 | 0.0064 | 0.7206 | 6.826 | 0.298 | 0.6130 | 0.0250 | 0.0144 | 277.7 | 31.6 | 2 |
| 7 | 60 | 0.768 | 5.57 | 18.730 | 0.570 | 0.2009 | 0.0076 | 0.2476 | 4.978 | 0.188 | 0.6690 | 0.0220 | 0.4562 | 293.4 | 37.3 | 2 |
| 8 | 60 | 0.842 | 7.62 | 27.250 | 0.990 | 0.2950 | 0.0270 | 0.3382 | 3.390 | 0.310 | 0.7280 | 0.0180 | 0.5202 | 294.3 | 51.6 | 2 |
| 9 | 60 | 0.400 | 9.75 | 3.190 | 0.180 | 0.0628 | 0.0028 | 0.6158 | 15.924 | 0.710 | 0.3710 | 0.0210 | 0.2445 | 238.5 | 14.8 | 2 |
| 10 | 60 | 0.578 | 17.46 | 7.570 | 0.190 | 0.1057 | 0.0036 | 0.3444 | 9.461 | 0.322 | 0.5160 | 0.0140 | 0.4273 | 281.0 | 15.4 | 2 |
| 11 | 60 | 0.434 | 30.30 | 4.250 | 0.140 | 0.0768 | 0.0026 | 0.7228 | 13.021 | 0.441 | 0.4000 | 0.0130 | 0.0553 | 274.2 | 12.2 | 2 |
| 12 | 60 | 0.425 | 27.22 | 3.570 | 0.110 | 0.0652 | 0.0024 | 0.3706 | 15.337 | 0.565 | 0.3910 | 0.0130 | 0.3393 | 237.3 | 11.0 | 2 |
| 14 | 60 | 0.441 | 21.78 | 4.000 | 0.130 | 0.0705 | 0.0025 | 0.0020 | 14.184 | 0.503 | 0.4040 | 0.0170 | 0.0856 | 249.4 | 13.0 | 2 |
| 16 | 60 | 0.711 | 13.30 | 12.860 | 0.420 | 0.1474 | 0.0059 | 0.5126 | 6.784 | 0.272 | 0.6220 | 0.0180 | 0.1434 | 268.5 | 24.2 | 2 |
| 17 | 60 | 0.437 | 33.95 | 4.210 | 0.140 | 0.0759 | 0.0027 | 0.7250 | 13.175 | 0.469 | 0.4020 | 0.0140 | -0.0964 | 269.8 | 12.8 | 2 |
| 18 | 60 | 0.809 | 0.47 | 18.400 | 3.200 | 0.2230 | 0.0410 | 0.1862 | 4.484 | 0.824 | 0.7000 | 0.1100 | 0.6431 | 269.4 | 197.1 | 2 |
| 20 | 60 | 0.242 | 88.00 | 2.074 | 0.061 | 0.0611 | 0.0020 | 0.5336 | 16.369 | 0.536 | 0.2462 | 0.0076 | -0.0839 | 291.9 | 10.1 | 2 |
| 21 | 60 | 0.227 | 72.55 | 1.701 | 0.072 | 0.0516 | 0.0017 | 0.3552 | 19.369 | 0.638 | 0.2330 | 0.0094 | -0.1858 | 252.3 | 9.1 | 2 |
| 22 | 60 | 0.382 | 39.05 | 3.530 | 0.100 | 0.0718 | 0.0026 | 0.1386 | 13.928 | 0.504 | 0.3580 | 0.0110 | 0.4530 | 280.1 | 11.9 | 2 |
| 23 | 60 | 0.835 | 5.98 | 29.110 | 0.970 | 0.2900 | 0.0160 | -0.0540 | 3.448 | 0.190 | 0.7230 | 0.0260 | 0.6265 | 301.6 | 62.6 | 2 |
| 24 | 60 | 0.407 | 48.65 | 4.040 | 0.110 | 0.0755 | 0.0024 | 0.7455 | 13.245 | 0.421 | 0.3784 | 0.0089 | -0.1786 | 282.4 | 10.5 | 2 |
| 25 | 60 | 0.557 | 16.30 | 6.690 | 0.540 | 0.0920 | 0.0047 | 0.7264 | 10.870 | 0.555 | 0.4980 | 0.0220 | -0.1114 | 257.3 | 20.7 | 2 |
| 26 | 60 | 0.496 | 28.28 | 5.360 | 0.170 | 0.0844 | 0.0029 | 0.5216 | 11.848 | 0.407 | 0.4490 | 0.0150 | 0.1741 | 268.7 | 13.7 | 2 |
| 27 | 60 | 0.420 | 36.42 | 4.350 | 0.150 | 0.0792 | 0.0028 | 0.8145 | 12.626 | 0.446 | 0.3890 | 0.0130 | -0.2374 | 289.7 | 13.0 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 28 | 60 | 0.691 | 18.16 | 11.070 | 0.410 | 0.1297 | 0.0053 | 0.6178 | 7.710 | 0.315 | 0.6050 | 0.0160 | 0.3891 | 253.1 | 20.0 | 2 |
| 29 | 60 | 0.461 | 22.91 | 4.200 | 0.180 | 0.0700 | 0.0026 | 0.6955 | 14.286 | 0.531 | 0.4200 | 0.0150 | -0.2556 | 238.7 | 12.2 | 2 |
| 30 | 60 | 0.592 | 27.65 | 9.040 | 0.290 | 0.1205 | 0.0042 | 0.4875 | 8.299 | 0.289 | 0.5280 | 0.0150 | -0.0033 | 309.7 | 18.2 | 2 |
| 31 | 60 | 0.433 | 31.30 | 4.300 | 0.130 | 0.0755 | 0.0026 | 0.3586 | 13.245 | 0.456 | 0.3990 | 0.0130 | 0.2706 | 270.1 | 12.1 | 2 |
| 32 | 60 | 0.778 | 6.54 | 19.610 | 0.950 | 0.2030 | 0.0090 | 0.3747 | 4.926 | 0.218 | 0.6760 | 0.0330 | 0.0079 | 284.7 | 54.4 | 2 |
| 33 | 60 | 0.358 | 42.60 | 3.410 | 0.140 | 0.0707 | 0.0024 | 0.1431 | 14.144 | 0.480 | 0.3390 | 0.0110 | -0.0857 | 286.3 | 11.4 | 2 |
| 34 | 60 | 0.343 | 46.56 | 3.140 | 0.110 | 0.0680 | 0.0022 | 0.5117 | 14.706 | 0.476 | 0.3270 | 0.0110 | -0.0610 | 281.8 | 10.8 | 2 |
| 35 | 60 | 0.538 | 22.27 | 6.600 | 0.190 | 0.0975 | 0.0034 | 0.7549 | 10.256 | 0.358 | 0.4840 | 0.0170 | -0.0178 | 283.8 | 16.5 | 2 |
| 37 | 60 | 0.391 | 42.36 | 3.750 | 0.100 | 0.0736 | 0.0024 | 0.3256 | 13.587 | 0.443 | 0.3660 | 0.0110 | 0.2704 | 282.5 | 11.2 | 2 |
| 38 | 60 | 0.695 | 14.49 | 12.010 | 0.300 | 0.1400 | 0.0052 | 0.6418 | 7.143 | 0.265 | 0.6090 | 0.0180 | 0.0380 | 269.4 | 22.9 | 2 |
| 39 | 60 | 0.705 | 12.04 | 13.510 | 0.590 | 0.1549 | 0.0070 | 0.0534 | 6.456 | 0.292 | 0.6180 | 0.0270 | 0.2618 | 288.0 | 35.6 | 2 |
| 40 | 60 | 0.428 | 19.21 | 3.560 | 0.150 | 0.0647 | 0.0026 | 0.2806 | 15.456 | 0.621 | 0.3930 | 0.0190 | 0.2691 | 234.4 | 13.5 | 2 |
| 41 | 60 | 0.147 | 90.30 | 1.111 | 0.037 | 0.0487 | 0.0016 | 0.0041 | 20.521 | 0.674 | 0.1692 | 0.0056 | 0.3411 | 262.6 | 8.8 | 2 |
| 42 | 60 | 0.730 | 10.94 | 13.670 | 0.440 | 0.1605 | 0.0065 | 0.5172 | 6.231 | 0.252 | 0.6370 | 0.0210 | 0.5120 | 273.7 | 29.4 | 2 |
| 44 | 60 | 0.384 | 39.59 | 3.532 | 0.094 | 0.0726 | 0.0024 | 0.6904 | 13.774 | 0.455 | 0.3600 | 0.0100 | 0.0475 | 282.1 | 10.9 | 2 |
| 45 | 60 | 0.460 | 18.85 | 4.270 | 0.240 | 0.0754 | 0.0037 | 0.7590 | 13.263 | 0.651 | 0.4200 | 0.0170 | -0.1652 | 257.2 | 16.1 | 2 |
| 46 | 60 | 0.705 | 12.59 | 12.130 | 0.290 | 0.1477 | 0.0057 | -0.1372 | 6.770 | 0.261 | 0.6170 | 0.0190 | 0.6889 | 275.2 | 25.1 | 2 |
| 49 | 60 | 0.371 | 39.82 | 3.386 | 0.093 | 0.0719 | 0.0025 | 0.0472 | 13.908 | 0.484 | 0.3500 | 0.0120 | 0.4162 | 285.0 | 12.0 | 2 |
| 50 | 60 | 0.604 | 9.14 | 7.220 | 0.390 | 0.0993 | 0.0047 | 0.6725 | 10.070 | 0.477 | 0.5350 | 0.0270 | 0.1215 | 248.5 | 24.2 | 2 |
| 53 | 60 | 0.272 | 60.54 | 2.061 | 0.076 | 0.0564 | 0.0019 | 0.7112 | 17.730 | 0.597 | 0.2690 | 0.0100 | -0.2958 | 259.6 | 9.7 | 2 |
| 57 | 60 | 0.419 | 35.17 | 3.970 | 0.120 | 0.0764 | 0.0031 | 0.1150 | 13.089 | 0.531 | 0.3880 | 0.0140 | 0.4096 | 280.0 | 14.1 | 2 |
| 58 | 60 | 0.173 | 96.70 | 1.317 | 0.034 | 0.0501 | 0.0016 | 0.6268 | 19.976 | 0.638 | 0.1901 | 0.0045 | -0.1506 | 261.5 | 8.5 | 2 |
| 59 | 60 | 0.410 | 31.62 | 3.700 | 0.170 | 0.0707 | 0.0026 | 0.3143 | 14.144 | 0.520 | 0.3800 | 0.0140 | -0.0974 | 263.5 | 12.4 | 2 |
| 60 | 60 | 0.726 | 14.86 | 10.880 | 0.310 | 0.1267 | 0.0050 | 0.7096 | 7.893 | 0.311 | 0.6310 | 0.0210 | 0.3297 | 220.0 | 23.4 | 2 |

**HN03 apatite**

| Grain | Spot size (µm) | U (ppm) | $^{206}Pb_c$ | 207/235 | 207/235 2σ | 206/238 | 206/238 2σ | ρ | 238/206 | 238/206 2σ | 207/206 | 207/206 2σ | ρ | $^{207}$Pb corrected Age (Ma) | $^{207}$Pb corrected Age 2σ | Pb correction type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 3.87 | 1.006 | 131.200 | 4.300 | 1.1300 | 0.0320 | 0.8596 | 0.885 | 0.025 | 0.8400 | 0.0140 | 0.0512 | -44.1 | 151.4 | 2 |
| 2 | 60 | 14.96 | 0.644 | 9.240 | 0.280 | 0.1178 | 0.0031 | 0.5600 | 8.489 | 0.223 | 0.5680 | 0.0150 | 0.3649 | 264.6 | 16.2 | 2 |
| 3 | 60 | 3.30 | 0.968 | 37.500 | 1.300 | 0.3391 | 0.0090 | 0.0700 | 2.949 | 0.078 | 0.8150 | 0.0330 | 0.3932 | 68.8 | 92.9 | 2 |
| 4 | 60 | 82.53 | 0.373 | 3.231 | 0.071 | 0.0676 | 0.0010 | 0.1863 | 14.789 | 0.214 | 0.3510 | 0.0072 | 0.1479 | 267.5 | 5.6 | 2 |
| 5 | 60 | 31.06 | 0.476 | 5.920 | 0.150 | 0.0987 | 0.0026 | 0.0492 | 10.132 | 0.267 | 0.4360 | 0.0110 | 0.2179 | 324.9 | 12.3 | 2 |
| 6 | 60 | 5.76 | 0.935 | 50.700 | 2.300 | 0.4590 | 0.0150 | 0.7970 | 2.179 | 0.071 | 0.7960 | 0.0190 | -0.1044 | 190.5 | 74.7 | 2 |
| 7 | 60 | 35.57 | 0.462 | 4.840 | 0.110 | 0.0836 | 0.0016 | 0.1514 | 11.962 | 0.229 | 0.4230 | 0.0110 | 0.1941 | 283.4 | 9.3 | 2 |
| 8 | 60 | 24.20 | 0.584 | 7.900 | 0.340 | 0.1090 | 0.0030 | 0.7828 | 9.174 | 0.253 | 0.5210 | 0.0160 | -0.3133 | 285.6 | 16.1 | 2 |
| 9 | 60 | 11.55 | 0.764 | 17.360 | 0.430 | 0.1896 | 0.0036 | 0.4980 | 5.274 | 0.100 | 0.6650 | 0.0210 | -0.0036 | 282.1 | 32.7 | 2 |
| 10 | 60 | 2.92 | 0.908 | 40.800 | 1.600 | 0.3890 | 0.0120 | 0.0009 | 2.571 | 0.079 | 0.7770 | 0.0310 | 0.4093 | 226.5 | 97.5 | 2 |
| 11 | 60 | 51.13 | 0.303 | 2.500 | 0.063 | 0.0624 | 0.0011 | 0.2810 | 16.026 | 0.283 | 0.2951 | 0.0089 | 0.3744 | 274.3 | 6.6 | 2 |
| 12 | 60 | 1.66 | 0.678 | 10.920 | 0.820 | 0.1300 | 0.0067 | 0.0356 | 7.692 | 0.396 | 0.5950 | 0.0550 | 0.6241 | 264.3 | 57.5 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | 60 | 7.20 | 0.754 | 21.500 | 2.300 | 0.2270 | 0.0200 | 0.6779 | 4.405 | 0.388 | 0.6610 | 0.0410 | -0.5976 | 350.1 | 78.3 | 2 |
| 14 | 60 | 5.63 | 0.857 | 32.730 | 0.770 | 0.3221 | 0.0073 | 0.7537 | 3.105 | 0.070 | 0.7400 | 0.0200 | -0.1186 | 290.5 | 53.5 | 2 |
| 15 | 60 | 7.20 | 0.785 | 16.060 | 0.630 | 0.1738 | 0.0066 | 0.4057 | 5.754 | 0.218 | 0.6790 | 0.0280 | 0.1037 | 236.7 | 40.1 | 2 |
| 16 | 60 | 17.68 | 0.645 | 10.320 | 0.170 | 0.1332 | 0.0021 | 0.1067 | 7.508 | 0.118 | 0.5700 | 0.0130 | 0.6217 | 298.2 | 15.3 | 2 |
| 17 | 60 | 3.73 | 0.915 | 53.100 | 1.500 | 0.4920 | 0.0130 | 0.4776 | 2.033 | 0.054 | 0.7850 | 0.0240 | 0.4273 | 264.1 | 96.8 | 2 |
| 18 | 60 | 6.70 | 0.840 | 20.300 | 1.200 | 0.2030 | 0.0052 | -0.0031 | 4.926 | 0.126 | 0.7210 | 0.0490 | 0.0187 | 206.6 | 79.2 | 2 |
| 19 | 60 | 16.26 | 0.615 | 8.590 | 0.270 | 0.1136 | 0.0025 | 0.0050 | 8.803 | 0.194 | 0.5450 | 0.0170 | 0.4867 | 276.0 | 16.8 | 2 |
| 20 | 60 | 26.21 | 0.471 | 4.780 | 0.130 | 0.0804 | 0.0012 | 0.0738 | 12.438 | 0.186 | 0.4290 | 0.0120 | 0.4873 | 268.7 | 8.8 | 2 |
| 21 | 60 | 103.20 | 0.297 | 2.540 | 0.066 | 0.0637 | 0.0033 | 0.0117 | 15.699 | 0.813 | 0.2900 | 0.0120 | 0.1080 | 282.5 | 15.7 | 2 |
| 22 | 60 | 108.50 | 0.071 | 0.890 | 0.026 | 0.0582 | 0.0007 | 0.1722 | 17.176 | 0.201 | 0.1105 | 0.0033 | 0.1684 | 339.5 | 4.2 | 2 |
| 23 | 60 | 30.73 | 0.538 | 6.270 | 0.160 | 0.0937 | 0.0019 | -0.0224 | 10.672 | 0.216 | 0.4830 | 0.0130 | 0.5434 | 273.3 | 11.4 | 2 |
| 24 | 60 | 71.45 | 0.396 | 3.612 | 0.065 | 0.0706 | 0.0010 | 0.1904 | 14.170 | 0.193 | 0.3690 | 0.0075 | 0.3038 | 269.2 | 5.8 | 2 |
| 25 | 60 | 82.60 | 0.353 | 3.025 | 0.064 | 0.0653 | 0.0010 | 0.1308 | 15.309 | 0.227 | 0.3342 | 0.0078 | 0.4590 | 267.0 | 5.8 | 2 |
| 26 | 60 | 6.92 | 0.742 | 16.040 | 0.820 | 0.1900 | 0.0140 | 0.1136 | 5.263 | 0.388 | 0.6490 | 0.0310 | 0.5734 | 308.2 | 51.5 | 2 |
| 27 | 60 | 25.90 | 0.499 | 5.950 | 0.370 | 0.0934 | 0.0032 | 0.8017 | 10.707 | 0.367 | 0.4530 | 0.0190 | -0.4488 | 294.7 | 17.2 | 2 |
| 28 | 60 | 31.88 | 0.545 | 6.480 | 0.160 | 0.0967 | 0.0018 | 0.3851 | 10.341 | 0.192 | 0.4890 | 0.0110 | 0.2963 | 277.6 | 10.3 | 2 |
| 29 | 60 | 7.63 | 0.930 | 53.760 | 0.960 | 0.4889 | 0.0087 | 0.7653 | 2.045 | 0.036 | 0.7940 | 0.0150 | 0.1776 | 216.8 | 65.1 | 2 |
| 30 | 60 | 19.74 | 0.670 | 10.530 | 0.260 | 0.1290 | 0.0023 | 0.0059 | 7.752 | 0.138 | 0.5890 | 0.0170 | 0.1292 | 268.5 | 18.6 | 2 |
| 31 | 60 | 7.42 | 0.806 | 20.260 | 0.430 | 0.2099 | 0.0054 | 0.0855 | 4.764 | 0.123 | 0.6970 | 0.0220 | 0.7238 | 257.6 | 38.2 | 2 |
| 32 | 60 | 53.10 | 0.423 | 4.320 | 0.210 | 0.0801 | 0.0022 | 0.8271 | 12.484 | 0.343 | 0.3920 | 0.0120 | -0.4067 | 291.1 | 11.1 | 2 |
| 33 | 60 | 13.72 | 0.915 | 64.790 | 0.670 | 0.5913 | 0.0068 | 0.4910 | 1.691 | 0.019 | 0.7883 | 0.0094 | 0.5952 | 316.9 | 55.8 | 2 |
| 34 | 60 | 9.45 | 0.692 | 11.140 | 0.320 | 0.1332 | 0.0030 | 0.2527 | 7.508 | 0.169 | 0.6060 | 0.0230 | 0.3777 | 259.1 | 25.3 | 2 |
| 35 | 60 | 44.14 | 0.458 | 4.610 | 0.100 | 0.0792 | 0.0014 | 0.1527 | 12.626 | 0.223 | 0.4190 | 0.0100 | 0.5419 | 270.9 | 8.1 | 2 |
| 36 | 60 | 8.58 | 0.751 | 17.770 | 0.480 | 0.1970 | 0.0039 | 0.0684 | 5.076 | 0.100 | 0.6560 | 0.0220 | 0.0865 | 308.8 | 35.3 | 2 |
| 37 | 60 | 3.79 | 0.952 | 142.000 | 2.900 | 1.2360 | 0.0240 | 0.6342 | 0.809 | 0.016 | 0.8230 | 0.0130 | 0.3287 | 371.9 | 144.9 | 2 |
| 38 | 60 | 9.29 | 0.756 | 14.490 | 0.490 | 0.1554 | 0.0043 | 0.3940 | 6.435 | 0.178 | 0.6560 | 0.0210 | 0.3417 | 240.1 | 27.5 | 2 |
| 39 | 60 | 2.77 | 0.877 | 47.500 | 4.200 | 0.4550 | 0.0420 | 0.4697 | 2.198 | 0.203 | 0.7600 | 0.0280 | 0.2227 | 351.2 | 105.9 | 2 |
| 40 | 60 | 0.11 | 1.074 | 1250.000 | 100.000 | 9.7400 | 0.7500 | 0.9214 | 0.103 | 0.008 | 0.8970 | 0.0280 | -0.0210 | -8301.8 | 8112.1 | 2 |
| 41 | 60 | 0.11 | 1.074 | 1250.000 | 100.000 | 9.7400 | 0.7500 | 0.9214 | 0.103 | 0.008 | 0.8970 | 0.0280 | -0.0210 | -8301.8 | 8112.1 | 2 |
| 42 | 60 | 1.11 | 0.957 | 72.000 | 4.500 | 0.6320 | 0.0340 | 0.3463 | 1.582 | 0.085 | 0.8130 | 0.0420 | 0.0855 | 171.6 | 213.9 | 2 |
| 43 | 60 | 3.14 | 0.772 | 19.740 | 0.850 | 0.2058 | 0.0060 | 0.1838 | 4.859 | 0.142 | 0.6720 | 0.0280 | 0.5100 | 295.9 | 46.6 | 2 |
| 44 | 60 | 1.40 | 0.993 | 213.400 | 9.300 | 1.8000 | 0.0750 | 0.4634 | 0.556 | 0.023 | 0.8420 | 0.0230 | 0.3196 | 75.9 | 351.9 | 2 |
| 45 | 60 | 2.19 | 0.816 | 21.230 | 0.930 | 0.2170 | 0.0077 | 0.1820 | 4.608 | 0.164 | 0.7050 | 0.0370 | 0.4876 | 252.2 | 64.3 | 2 |
| 46 | 60 | 3.01 | 0.716 | 17.160 | 0.780 | 0.1963 | 0.0077 | 0.0375 | 5.094 | 0.200 | 0.6300 | 0.0340 | 0.6565 | 350.1 | 53.7 | 2 |
| 47 | 60 | 20.03 | 0.651 | 12.760 | 0.260 | 0.1575 | 0.0029 | 0.5479 | 6.349 | 0.117 | 0.5780 | 0.0120 | 0.3817 | 344.5 | 17.2 | 2 |
| 48 | 60 | 2.02 | 0.844 | 26.500 | 1.600 | 0.2620 | 0.0100 | -0.0386 | 3.817 | 0.146 | 0.7280 | 0.0400 | 0.2318 | 257.5 | 83.5 | 2 |
| 49 | 60 | 7.83 | 0.642 | 11.100 | 0.420 | 0.1397 | 0.0042 | 0.1250 | 7.158 | 0.215 | 0.5690 | 0.0240 | 0.2807 | 314.3 | 28.1 | 2 |
| 50 | 60 | 26.24 | 0.206 | 1.948 | 0.092 | 0.0634 | 0.0015 | 0.1671 | 15.773 | 0.373 | 0.2180 | 0.0100 | 0.0829 | 316.8 | 8.9 | 2 |
| 51 | 60 | 15.40 | 0.581 | 8.220 | 0.420 | 0.1164 | 0.0170 | 0.2008 | 8.591 | 1.255 | 0.5190 | 0.0290 | 0.4285 | 307.3 | 51.5 | 2 |
| 52 | 60 | 0.80 | 0.798 | 251.000 | 16.000 | 2.2200 | 0.3500 | 0.5090 | 0.450 | 0.071 | 0.8250 | 0.0380 | 0.3209 | 2386.7 | 704.8 | 2 |
| 53 | 60 | 2.38 | 0.964 | 56.900 | 2.800 | 0.5100 | 0.0780 | 0.0045 | 1.961 | 0.300 | 0.8150 | 0.0460 | 0.1951 | 115.7 | 191.1 | 2 |
| 54 | 60 | 45.75 | 0.621 | 8.100 | 0.220 | 0.1087 | 0.0160 | -0.0276 | 9.200 | 1.354 | 0.5490 | 0.0180 | 0.5340 | 260.3 | 41.0 | 2 |
| 55 | 60 | 66.87 | 0.299 | 2.510 | 0.120 | 0.0625 | 0.0090 | 0.3030 | 16.000 | 2.304 | 0.2920 | 0.0140 | 0.2127 | 276.2 | 39.8 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 56 | 60 | 44.16 | 0.404 | 3.940 | 0.150 | 0.0755 | 0.0110 | 0.3019 | 13.245 | 1.930 | 0.3760 | 0.0160 | 0.3169 | 283.8 | 41.9 | 2 |
| 57 | 60 | 4.55 | 0.809 | 36.200 | 1.400 | 0.3700 | 0.0540 | 0.3544 | 2.703 | 0.394 | 0.7110 | 0.0300 | 0.5412 | 439.4 | 106.4 | 2 |
| 58 | 60 | 13.04 | 0.721 | 12.740 | 0.490 | 0.1479 | 0.0210 | 0.2609 | 6.761 | 0.960 | 0.6290 | 0.0290 | 0.4869 | 261.0 | 50.0 | 2 |
| 59 | 60 | 24.01 | 0.619 | 7.710 | 0.280 | 0.1036 | 0.0150 | 0.0542 | 9.653 | 1.398 | 0.5470 | 0.0220 | 0.6115 | 249.5 | 40.1 | 2 |
| 60 | 60 | 6.51 | 0.849 | 27.400 | 1.300 | 0.2790 | 0.0410 | 0.0799 | 3.584 | 0.527 | 0.7320 | 0.0410 | 0.3193 | 266.4 | 98.2 | 2 |
| 61 | 60 | 5.68 | 0.778 | 24.900 | 1.100 | 0.2621 | 0.0380 | 0.1734 | 3.815 | 0.553 | 0.6810 | 0.0340 | 0.5915 | 364.8 | 86.7 | 2 |
| 62 | 60 | 10.18 | 0.867 | 41.800 | 1.200 | 0.4060 | 0.0590 | 0.6120 | 2.463 | 0.358 | 0.7510 | 0.0250 | 0.3185 | 339.8 | 94.6 | 2 |
| 63 | 60 | 27.65 | 0.409 | 4.170 | 0.190 | 0.0794 | 0.0120 | -0.0216 | 12.594 | 1.903 | 0.3810 | 0.0160 | 0.3602 | 295.4 | 45.1 | 2 |
| 64 | 60 | 1.05 | 1.038 | 275.000 | 18.000 | 2.3400 | 0.3600 | 0.8255 | 0.427 | 0.066 | 0.8520 | 0.0320 | 0.0407 | -596.3 | 696.5 | 2 |
| 65 | 60 | 23.79 | 0.549 | 6.380 | 0.380 | 0.0908 | 0.0130 | 0.3652 | 11.013 | 1.577 | 0.4910 | 0.0270 | 0.3066 | 259.0 | 41.4 | 2 |
| 66 | 60 | 46.50 | 0.348 | 3.140 | 0.180 | 0.0671 | 0.0097 | 0.0319 | 14.903 | 2.154 | 0.3310 | 0.0200 | 0.0826 | 276.0 | 40.7 | 2 |
| 67 | 60 | 38.10 | 0.625 | 9.090 | 0.310 | 0.1169 | 0.0170 | 0.2306 | 8.554 | 1.244 | 0.5530 | 0.0200 | 0.5367 | 276.7 | 43.9 | 2 |
| 68 | 60 | 34.70 | 0.410 | 4.040 | 0.290 | 0.0753 | 0.0110 | 0.0050 | 13.280 | 1.940 | 0.3810 | 0.0240 | 0.1919 | 280.1 | 42.8 | 2 |
| 69 | 60 | 31.37 | 0.416 | 4.280 | 0.200 | 0.0778 | 0.0110 | 0.2153 | 12.853 | 1.817 | 0.3860 | 0.0200 | 0.3489 | 286.4 | 41.8 | 2 |
| 70 | 60 | 11.07 | 0.680 | 11.490 | 0.540 | 0.1369 | 0.0200 | 0.3547 | 7.305 | 1.067 | 0.5970 | 0.0300 | 0.3327 | 276.7 | 51.4 | 2 |
| 71 | 60 | 3.75 | 1.006 | 156.400 | 6.400 | 1.3180 | 0.2000 | 0.7651 | 0.759 | 0.115 | 0.8410 | 0.0230 | 0.3758 | -54.2 | 265.1 | 2 |
| 72 | 60 | 15.21 | 0.592 | 8.290 | 0.380 | 0.1105 | 0.0160 | 0.4185 | 9.050 | 1.310 | 0.5270 | 0.0240 | 0.4483 | 284.3 | 45.7 | 2 |
| 73 | 60 | 5.62 | 0.877 | 44.900 | 3.800 | 0.4070 | 0.0630 | 0.3313 | 2.457 | 0.380 | 0.7580 | 0.0360 | 0.2658 | 313.8 | 124.9 | 2 |
| 74 | 60 | 6.70 | 0.785 | 20.360 | 0.970 | 0.2143 | 0.0320 | 0.2006 | 4.666 | 0.697 | 0.6820 | 0.0350 | 0.5651 | 290.9 | 73.0 | 2 |
| 75 | 60 | 7.09 | 0.786 | 12.600 | 1.100 | 0.1350 | 0.0210 | 0.1752 | 7.407 | 1.152 | 0.6770 | 0.0640 | 0.0486 | 183.5 | 74.1 | 2 |
| 76 | 60 | 9.53 | 0.807 | 33.700 | 1.000 | 0.3322 | 0.0480 | 0.4393 | 3.010 | 0.435 | 0.7070 | 0.0210 | 0.5353 | 399.7 | 79.5 | 2 |
| 77 | 60 | 16.19 | 0.640 | 8.840 | 0.330 | 0.1105 | 0.0160 | -0.0816 | 9.050 | 1.310 | 0.5640 | 0.0250 | 0.7084 | 251.3 | 42.2 | 2 |
| 78 | 60 | 8.08 | 0.770 | 17.470 | 0.870 | 0.1869 | 0.0270 | 0.1725 | 5.350 | 0.773 | 0.6690 | 0.0350 | 0.3190 | 271.5 | 64.6 | 2 |
| 79 | 60 | 10.79 | 0.857 | 42.500 | 1.200 | 0.4090 | 0.0590 | -0.0352 | 2.445 | 0.353 | 0.7450 | 0.0220 | 0.7382 | 366.0 | 89.1 | 2 |
| 80 | 60 | 31.36 | 0.539 | 7.420 | 0.240 | 0.1077 | 0.0160 | -0.0563 | 9.285 | 1.379 | 0.4860 | 0.0190 | 0.4200 | 312.2 | 48.5 | 2 |
| 81 | 60 | 6.79 | 0.810 | 34.500 | 2.300 | 0.3340 | 0.0500 | 0.8587 | 2.994 | 0.448 | 0.7090 | 0.0270 | 0.0245 | 396.2 | 91.6 | 2 |
| 82 | 60 | 10.11 | 0.645 | 13.580 | 0.730 | 0.1712 | 0.0250 | 0.1866 | 5.841 | 0.853 | 0.5750 | 0.0370 | 0.7496 | 379.9 | 73.1 | 2 |
| 83 | 60 | 25.50 | 0.596 | 8.100 | 1.300 | 0.1020 | 0.0190 | 0.8728 | 9.804 | 1.826 | 0.5290 | 0.0390 | -0.5036 | 260.4 | 57.2 | 2 |
| 84 | 60 | 21.60 | 0.593 | 7.660 | 0.480 | 0.1017 | 0.0150 | 0.4804 | 9.833 | 1.450 | 0.5270 | 0.0290 | 0.1876 | 261.2 | 44.6 | 2 |
| 85 | 60 | 36.70 | 0.787 | 23.600 | 1.200 | 0.2459 | 0.0360 | 0.4657 | 4.067 | 0.595 | 0.6860 | 0.0180 | -0.0521 | 329.5 | 59.8 | 2 |
| 86 | 60 | 7.64 | 0.721 | 16.230 | 0.860 | 0.1875 | 0.0280 | 0.2018 | 5.333 | 0.796 | 0.6330 | 0.0380 | 0.5629 | 328.8 | 73.6 | 2 |
| 87 | 60 | 8.06 | 0.855 | 36.600 | 1.400 | 0.3660 | 0.0530 | 0.2975 | 2.732 | 0.396 | 0.7410 | 0.0290 | 0.3880 | 334.0 | 96.6 | 2 |
| 88 | 60 | 7.10 | 0.823 | 30.600 | 1.700 | 0.3130 | 0.0450 | 0.1430 | 3.195 | 0.459 | 0.7160 | 0.0300 | 0.0119 | 348.4 | 88.8 | 2 |
| 89 | 60 | 76.07 | 0.380 | 3.470 | 0.110 | 0.0729 | 0.0100 | 0.1741 | 13.717 | 1.882 | 0.3570 | 0.0130 | 0.4642 | 284.9 | 39.3 | 2 |
| 90 | 60 | 13.11 | 0.669 | 10.660 | 0.530 | 0.1343 | 0.0200 | 0.3277 | 7.446 | 1.109 | 0.5890 | 0.0300 | 0.5332 | 280.0 | 52.0 | 2 |
| 91 | 60 | 26.22 | 0.795 | 17.020 | 0.450 | 0.1844 | 0.0270 | 0.3005 | 5.423 | 0.794 | 0.6870 | 0.0200 | 0.5601 | 239.7 | 46.1 | 2 |
| 92 | 60 | 4.10 | 0.906 | 23.400 | 1.500 | 0.2410 | 0.0370 | 0.0816 | 4.149 | 0.637 | 0.7700 | 0.0530 | 0.5192 | 144.8 | 104.9 | 2 |
| 93 | 60 | 37.20 | 0.484 | 5.630 | 0.620 | 0.0920 | 0.0140 | 0.5608 | 10.870 | 1.654 | 0.4410 | 0.0350 | -0.2254 | 299.0 | 51.4 | 2 |
| 94 | 60 | 23.52 | 0.623 | 8.680 | 0.360 | 0.1191 | 0.0170 | 0.3874 | 8.396 | 1.198 | 0.5520 | 0.0260 | 0.1692 | 283.0 | 46.8 | 2 |
| 95 | 60 | 37.90 | 0.588 | 6.480 | 0.230 | 0.0951 | 0.0140 | 0.2001 | 10.515 | 1.548 | 0.5220 | 0.0200 | 0.5044 | 247.8 | 39.1 | 2 |
| 96 | 60 | 10.60 | 0.733 | 16.660 | 0.710 | 0.2005 | 0.0290 | 0.2594 | 4.988 | 0.721 | 0.6430 | 0.0360 | 0.1167 | 336.4 | 73.9 | 2 |
| 97 | 60 | 21.63 | 0.797 | 28.200 | 1.100 | 0.3050 | 0.0440 | 0.6231 | 3.279 | 0.473 | 0.6980 | 0.0220 | 0.2505 | 386.7 | 76.5 | 2 |
| 98 | 60 | 5.92 | 0.853 | 22.800 | 1.100 | 0.2420 | 0.0360 | 0.0895 | 4.132 | 0.615 | 0.7330 | 0.0490 | 0.5473 | 225.1 | 99.5 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 99 | 60 | 38.51 | 0.449 | 3.980 | 0.160 | 0.0740 | 0.0110 | 0.2255 | 13.514 | 2.009 | 0.4110 | 0.0180 | 0.5547 | 257.7 | 39.3 | 2 |
| 100 | 60 | 5.64 | 0.817 | 19.700 | 1.000 | 0.2123 | 0.0310 | 0.3241 | 4.710 | 0.688 | 0.7050 | 0.0350 | 0.1265 | 246.2 | 69.0 | 2 |
| 101 | 60 | 25.34 | 0.526 | 5.650 | 0.260 | 0.0944 | 0.0140 | -0.0219 | 10.593 | 1.571 | 0.4740 | 0.0260 | 0.0636 | 282.2 | 45.6 | 2 |

**HN04 apatite**

| Grain | Spot size (μm) | U (ppm) | $^{206}Pb_c$ | 207/235 | 207/235 2σ | 206/238 | 206/238 2σ | ρ | 238/206 | 238/206 2σ | 207/206 | 207/206 2σ | ρ | $^{207}Pb$ corrected Age (Ma) | $^{207}Pb$ corrected Age 2σ | Pb correction type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 25.70 | 0.486 | 5.200 | 1.300 | 0.0733 | 0.0065 | 0.2159 | 13.643 | 1.210 | 0.4400 | 0.1100 | -0.1482 | 238.4 | 66.4 | 2 |
| 2 | 60 | 84.40 | 0.275 | 2.310 | 0.076 | 0.0607 | 0.0017 | 0.1047 | 16.480 | 0.462 | 0.2727 | 0.0083 | 0.0269 | 277.4 | 8.7 | 2 |
| 4 | 60 | 1.94 | 0.925 | 56.800 | 4.700 | 0.5140 | 0.0480 | 0.7073 | 1.946 | 0.182 | 0.7920 | 0.0360 | 0.0577 | 242.4 | 149.5 | 2 |
| 5 | 60 | 1.63 | 0.983 | 172.000 | 14.000 | 1.4700 | 0.1200 | 0.9639 | 0.680 | 0.056 | 0.8360 | 0.0210 | 0.0404 | 157.9 | 262.5 | 2 |
| 6 | 60 | 5.06 | 0.787 | 21.200 | 1.800 | 0.2210 | 0.0130 | 0.9828 | 4.525 | 0.266 | 0.6840 | 0.0300 | 0.1885 | 297.0 | 55.3 | 2 |
| 7 | 60 | 11.16 | 0.770 | 18.120 | 0.420 | 0.1979 | 0.0071 | 0.5089 | 5.053 | 0.181 | 0.6700 | 0.0180 | 0.4813 | 287.0 | 31.1 | 2 |
| 8 | 60 | 75.07 | 0.338 | 3.687 | 0.093 | 0.0823 | 0.0023 | 0.1461 | 12.151 | 0.340 | 0.3253 | 0.0099 | 0.3546 | 342.1 | 11.4 | 2 |
| 9 | 60 | 26.80 | 0.390 | 3.460 | 0.210 | 0.0682 | 0.0031 | 0.6371 | 14.663 | 0.666 | 0.3640 | 0.0180 | -0.1696 | 262.8 | 15.3 | 2 |
| 11 | 60 | 1.46 | 1.021 | 495.000 | 13.000 | 4.1000 | 0.2000 | 0.2972 | 0.244 | 0.012 | 0.8520 | 0.0160 | -0.0248 | -566.2 | 649.1 | 2 |
| 12 | 60 | 0.35 | 0.726 | 12.200 | 1.100 | 0.1410 | 0.0110 | 0.9211 | 7.092 | 0.553 | 0.6320 | 0.0280 | -0.2919 | 244.8 | 36.8 | 2 |
| 13 | 60 | 18.20 | 1.015 | 295.000 | 51.000 | 2.5300 | 0.4300 | 0.9322 | 0.395 | 0.067 | 0.8510 | 0.0480 | 0.2306 | -245.1 | 1031.1 | 2 |
| 14 | 60 | 0.04 | 1.071 | 552.000 | 68.000 | 4.7500 | 0.5100 | 0.9246 | 0.211 | 0.023 | 0.8520 | 0.0380 | -0.0760 | -2638.4 | 2293.4 | 2 |
| 15 | 60 | 0.28 | 1.045 | 2044.000 | 84.000 | 17.3000 | 0.8400 | 0.7046 | 0.058 | 0.003 | 0.8730 | 0.0120 | 0.0497 | -9836.5 | 9178.4 | 2 |
| 16 | 60 | 0.40 | 0.905 | 48.900 | 3.500 | 0.4600 | 0.0300 | 0.9726 | 2.174 | 0.142 | 0.7780 | 0.0200 | -0.1703 | 274.4 | 78.6 | 2 |
| 18 | 60 | 0.87 | 0.939 | 183.300 | 4.700 | 1.5700 | 0.0670 | 0.8672 | 0.637 | 0.027 | 0.8270 | 0.0150 | 0.3411 | 587.9 | 198.7 | 2 |
| 19 | 60 | 0.20 | 1.017 | 388.000 | 23.000 | 3.2600 | 0.2500 | 0.8238 | 0.307 | 0.024 | 0.8490 | 0.0200 | -0.0518 | -368.3 | 603.9 | 1 |
| 20 | 60 | 0.54 | 0.562 | 9.190 | 0.480 | 0.1252 | 0.0059 | 0.4242 | 7.987 | 0.376 | 0.5060 | 0.0190 | -0.0490 | 344.1 | 24.7 | 2 |
| 21 | 60 | 6.59 | 0.841 | 31.000 | 0.670 | 0.2966 | 0.0130 | 0.2022 | 3.372 | 0.148 | 0.7280 | 0.0150 | 0.4269 | 296.2 | 40.2 | 2 |
| 22 | 60 | 2.59 | 1.011 | 194.400 | 5.300 | 1.6170 | 0.0780 | 0.7825 | 0.618 | 0.030 | 0.8440 | 0.0170 | -0.1015 | -117.9 | 254.1 | 2 |
| 23 | 60 | 0.47 | 0.944 | 172.900 | 9.000 | 1.4770 | 0.1000 | 0.3875 | 0.677 | 0.046 | 0.8260 | 0.0170 | 0.2698 | 513.8 | 210.0 | 2 |
| 24 | 60 | 1.20 | 0.999 | 260.600 | 7.200 | 2.2480 | 0.1000 | 0.8932 | 0.445 | 0.020 | 0.8350 | 0.0130 | -0.0553 | 8.2 | 283.4 | 1 |
| 25 | 60 | 27.90 | 1.030 | 1018.000 | 36.000 | 8.6500 | 0.4800 | 0.8551 | 0.116 | 0.006 | 0.8597 | 0.0093 | 0.1385 | -1911.8 | 1156.7 | 2 |
| 26 | 60 | 14.23 | 0.443 | 4.390 | 0.250 | 0.0770 | 0.0031 | 0.3458 | 12.987 | 0.523 | 0.4070 | 0.0180 | -0.0357 | 270.6 | 15.4 | 2 |
| 29 | 60 | 3.15 | 0.305 | 2.440 | 0.130 | 0.0597 | 0.0025 | 0.6906 | 16.750 | 0.701 | 0.2960 | 0.0120 | -0.1533 | 262.0 | 12.2 | 2 |
| 31 | 60 | 2.71 | 0.546 | 6.820 | 0.430 | 0.1002 | 0.0052 | 0.8398 | 9.980 | 0.518 | 0.4900 | 0.0230 | -0.1934 | 287.0 | 23.4 | 2 |
| 32 | 60 | 2.78 | 0.990 | 137.400 | 8.100 | 1.1840 | 0.0760 | 0.1182 | 0.845 | 0.054 | 0.8350 | 0.0380 | 0.0267 | 72.4 | 370.0 | 2 |
| 33 | 60 | 1.63 | 0.484 | 6.060 | 0.200 | 0.0980 | 0.0039 | 0.4203 | 10.204 | 0.406 | 0.4420 | 0.0110 | 0.3217 | 317.9 | 15.3 | 2 |
| 35 | 60 | 0.61 | 1.136 | 851.000 | 55.000 | 7.1400 | 0.6000 | 0.9862 | 0.140 | 0.012 | 0.8590 | 0.0150 | 0.1589 | -22670.8 | 39499.9 | 2 |
| 36 | 60 | 64.81 | 1.128 | 778.000 | 22.000 | 6.4500 | 0.2800 | 0.9338 | 0.155 | 0.007 | 0.8595 | 0.0092 | 0.3355 | -11368.3 | 4223.4 | 2 |
| 37 | 60 | 54.17 | 1.004 | 1630.000 | 260.000 | 13.3000 | 2.0000 | 0.9911 | 0.075 | 0.011 | 0.8390 | 0.0140 | 0.1132 | -374.8 | 1850.6 | 2 |
| 38 | 60 | 12.38 | 0.989 | 550.000 | 30.000 | 4.7000 | 0.3600 | 0.9423 | 0.213 | 0.016 | 0.8620 | 0.0170 | 0.0621 | 330.1 | 677.2 | 2 |
| 40 | 60 | 3.32 | 1.040 | 267.000 | 20.000 | 2.2900 | 0.1700 | 0.9699 | 0.437 | 0.032 | 0.8520 | 0.0170 | 0.3136 | -618.5 | 392.6 | 2 |
| 41 | 60 | 36.99 | 0.990 | 27.300 | 1.500 | 0.2420 | 0.0140 | 0.8982 | 4.132 | 0.239 | 0.8290 | 0.0180 | 0.1491 | 15.0 | 39.1 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | 60 | 0.88 | 0.529 | 21.800 | 7.200 | 0.2240 | 0.0610 | 0.9977 | 4.464 | 1.216 | 0.4950 | 0.0510 | -0.9692 | 646.0 | 190.3 | 2 |
| 44 | 60 | 1.91 | 0.885 | 31.100 | 1.300 | 0.3140 | 0.0170 | 0.7754 | 3.185 | 0.172 | 0.7590 | 0.0290 | 0.5538 | 227.8 | 74.6 | 2 |
| 46 | 60 | 0.84 | 0.984 | 169.000 | 4.100 | 1.5380 | 0.0620 | 0.4946 | 0.650 | 0.026 | 0.8370 | 0.0150 | 0.0504 | 159.1 | 208.4 | 2 |
| 47 | 60 | 1.12 | 1.055 | 487.000 | 19.000 | 4.2600 | 0.2200 | 0.7608 | 0.235 | 0.012 | 0.8800 | 0.0220 | 0.2047 | -1712.8 | 1034.4 | 2 |
| 48 | 60 | 2.08 | 0.966 | 40.600 | 1.900 | 0.3800 | 0.0190 | 0.9613 | 2.632 | 0.132 | 0.8142 | 0.0094 | 0.0568 | 82.1 | 38.2 | 2 |
| 49 | 60 | 16.33 | 1.081 | 193.200 | 5.800 | 1.7310 | 0.0790 | 0.4139 | 0.578 | 0.026 | 0.8580 | 0.0210 | 0.0252 | -968.5 | 382.3 | 2 |
| 50 | 60 | 90.20 | 0.723 | 10.300 | 1.300 | 0.1183 | 0.0110 | 0.9026 | 8.453 | 0.786 | 0.6280 | 0.0270 | -0.2396 | 207.8 | 32.1 | 2 |
| 52 | 60 | 3.02 | 0.955 | 222.000 | 11.000 | 2.0400 | 0.1400 | 0.2204 | 0.490 | 0.034 | 0.8390 | 0.0350 | 0.0897 | 572.1 | 541.2 | 2 |
| 53 | 60 | 3.67 | 0.739 | 18.790 | 0.770 | 0.2193 | 0.0110 | 0.1214 | 4.560 | 0.229 | 0.6490 | 0.0270 | -0.0694 | 359.3 | 49.8 | 2 |
| 54 | 60 | 0.81 | 0.347 | 4.060 | 0.130 | 0.0895 | 0.0035 | 0.3145 | 11.173 | 0.437 | 0.3337 | 0.0076 | 0.0839 | 366.1 | 15.1 | 2 |
| 55 | 60 | 49.60 | 1.046 | 1010.000 | 36.000 | 8.3600 | 0.7100 | 0.6734 | 0.120 | 0.010 | 0.8730 | 0.0140 | 0.3337 | -3105.0 | 1761.9 | 2 |
| 56 | 60 | 1.99 | 0.537 | 6.120 | 0.240 | 0.0925 | 0.0079 | 0.4878 | 10.811 | 0.923 | 0.4820 | 0.0120 | 0.3726 | 270.5 | 24.6 | 2 |
| 57 | 60 | 16.90 | 0.710 | 13.470 | 0.560 | 0.1578 | 0.0140 | 0.2479 | 6.337 | 0.562 | 0.6220 | 0.0210 | 0.4514 | 288.4 | 36.7 | 2 |
| 59 | 60 | 0.64 | 0.654 | 4.800 | 0.190 | 0.0610 | 0.0052 | 0.3058 | 16.393 | 1.397 | 0.5690 | 0.0140 | 0.5067 | 134.7 | 13.5 | 2 |
| 60 | 60 | 6.67 | 0.441 | 4.660 | 0.220 | 0.0829 | 0.0071 | 0.4148 | 12.063 | 1.033 | 0.4060 | 0.0140 | 0.1835 | 292.2 | 26.4 | 2 |
| 61 | 60 | 81.10 | 1.020 | 434.000 | 19.000 | 3.7300 | 0.3300 | 0.8128 | 0.268 | 0.024 | 0.8410 | 0.0170 | 0.2816 | -498.0 | 621.6 | 2 |
| 62 | 60 | 3.01 | 0.973 | 635.000 | 61.000 | 5.6000 | 0.7500 | 0.9128 | 0.179 | 0.024 | 0.8150 | 0.0250 | 0.5595 | 904.7 | 1123.6 | 2 |
| 63 | 60 | 26.15 | 0.802 | 20.760 | 0.890 | 0.2177 | 0.0190 | 0.7048 | 4.593 | 0.401 | 0.6950 | 0.0230 | 0.4731 | 271.8 | 46.8 | 2 |
| 64 | 60 | 1.24 | 0.877 | 56.500 | 2.000 | 0.5305 | 0.0450 | 0.2963 | 1.885 | 0.160 | 0.7640 | 0.0140 | 0.5617 | 406.0 | 72.4 | 2 |
| 65 | 60 | 0.68 | 1.082 | 1178.000 | 65.000 | 10.0900 | 0.9500 | 0.9422 | 0.099 | 0.009 | 0.8360 | 0.0130 | 0.0537 | -11411.5 | 8177.9 | 2 |
| 66 | 60 | 10.83 | 0.937 | 107.600 | 6.200 | 0.9290 | 0.0880 | 0.9465 | 1.076 | 0.102 | 0.8100 | 0.0140 | 0.1070 | 365.0 | 119.5 | 2 |
| 67 | 60 | 36.82 | 0.870 | 60.100 | 3.100 | 0.5610 | 0.0510 | 0.8482 | 1.783 | 0.162 | 0.7610 | 0.0150 | -0.0128 | 454.3 | 81.5 | 2 |
| 68 | 60 | 22.21 | 1.028 | 193.000 | 14.000 | 1.7300 | 0.1900 | 0.6071 | 0.578 | 0.063 | 0.8480 | 0.0260 | 0.3050 | -321.0 | 407.1 | 2 |
| 69 | 60 | 1.63 | 0.718 | 12.170 | 0.680 | 0.1478 | 0.0130 | 0.2986 | 6.766 | 0.595 | 0.6270 | 0.0300 | 0.1420 | 263.2 | 42.0 | 2 |
| 70 | 60 | 0.81 | 0.439 | 3.820 | 0.160 | 0.0717 | 0.0062 | 0.3965 | 13.947 | 1.206 | 0.4030 | 0.0130 | 0.4923 | 254.2 | 23.0 | 2 |
| 71 | 60 | 9.15 | 0.951 | 36.500 | 2.900 | 0.3530 | 0.0390 | 0.6511 | 2.833 | 0.313 | 0.8040 | 0.0260 | 0.2144 | 110.1 | 77.8 | 2 |
| 72 | 60 | 0.50 | 0.493 | 122.600 | 9.200 | 1.3160 | 0.1400 | 0.8644 | 0.760 | 0.081 | 0.6900 | 0.0230 | 0.1599 | 3293.8 | 635.0 | 2 |
| 73 | 60 | 13.05 | 0.549 | 6.280 | 0.310 | 0.0970 | 0.0086 | 0.7875 | 10.309 | 0.914 | 0.4920 | 0.0110 | -0.0239 | 276.1 | 25.8 | 2 |
| 74 | 60 | 1.29 | 1.064 | 105.400 | 3.900 | 0.9500 | 0.0820 | 0.8804 | 1.053 | 0.091 | 0.8630 | 0.0150 | 0.3740 | -405.6 | 149.1 | 2 |
| 75 | 60 | 0.66 | 0.611 | 7.560 | 0.310 | 0.1071 | 0.0092 | 0.3332 | 9.337 | 0.802 | 0.5410 | 0.0170 | 0.3852 | 263.3 | 26.8 | 2 |
| 76 | 60 | 0.66 | 0.868 | 10.260 | 0.460 | 0.1057 | 0.0094 | 0.9176 | 9.461 | 0.841 | 0.7370 | 0.0120 | -0.1025 | 89.0 | 14.3 | 2 |
| 78 | 60 | 4.59 | 1.029 | 580.000 | 46.000 | 5.2100 | 0.5700 | 0.9267 | 0.192 | 0.021 | 0.8590 | 0.0170 | 0.0346 | -1058.2 | 931.8 | 2 |
| 79 | 60 | 8.88 | 0.781 | 20.180 | 0.830 | 0.2262 | 0.0200 | 0.5097 | 4.421 | 0.391 | 0.6800 | 0.0160 | 0.2842 | 312.3 | 40.7 | 2 |
| 80 | 60 | 0.21 | 1.020 | 106.200 | 7.700 | 0.9970 | 0.1200 | 0.9896 | 1.003 | 0.121 | 0.8450 | 0.0210 | 0.0965 | -129.0 | 189.0 | 2 |
| 81 | 60 | 1.84 | 1.077 | 367.000 | 11.000 | 3.1500 | 0.1400 | 0.5826 | 0.317 | 0.014 | 0.8580 | 0.0250 | 0.5878 | -1794.9 | 904.6 | 2 |
| 82 | 60 | 6.93 | 0.916 | 61.100 | 1.500 | 0.5640 | 0.0210 | 0.4523 | 1.773 | 0.066 | 0.7880 | 0.0210 | 0.1762 | 298.8 | 98.3 | 2 |
| 83 | 60 | 34.29 | 0.824 | 29.090 | 0.820 | 0.2981 | 0.0120 | 0.3263 | 3.355 | 0.135 | 0.7160 | 0.0230 | 0.5802 | 329.6 | 56.6 | 2 |
| 85 | 60 | 0.32 | 1.054 | 555.000 | 26.000 | 4.8200 | 0.3400 | 0.6662 | 0.207 | 0.015 | 0.8480 | 0.0340 | 0.5936 | -1947.0 | 1855.7 | 2 |
| 86 | 60 | 3.78 | 0.963 | 122.000 | 24.000 | 1.0400 | 0.2000 | 0.9929 | 0.962 | 0.185 | 0.8230 | 0.0270 | -0.7086 | 244.7 | 233.4 | 2 |
| 87 | 60 | 2.09 | 0.999 | 2930.000 | 210.000 | 25.8000 | 2.0000 | 0.9175 | 0.039 | 0.003 | 0.8350 | 0.0170 | 0.0913 | 129.6 | 3936.2 | 2 |
| 88 | 60 | 1.83 | 0.323 | 3.270 | 0.130 | 0.0764 | 0.0029 | 0.2478 | 13.089 | 0.497 | 0.3130 | 0.0130 | 0.3306 | 324.9 | 14.4 | 2 |
| 89 | 60 | 41.20 | 0.900 | 55.100 | 1.100 | 0.5173 | 0.0180 | 0.3086 | 1.933 | 0.067 | 0.7770 | 0.0170 | 0.5364 | 324.7 | 75.1 | 2 |
| 90 | 60 | 0.41 | 0.485 | 4.430 | 0.120 | 0.0732 | 0.0027 | 0.4491 | 13.661 | 0.504 | 0.4390 | 0.0110 | 0.4219 | 238.6 | 11.0 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 60 | 6.96 | 1.030 | 930.000 | 30.000 | 7.9200 | 0.3600 | 0.8910 | 0.126 | 0.006 | 0.8600 | 0.0160 | -0.0664 | -1754.0 | 1478.9 | 2 |
| 92 | 60 | 19.75 | 0.506 | 5.960 | 0.300 | 0.0936 | 0.0044 | 0.6335 | 10.684 | 0.502 | 0.4580 | 0.0160 | 0.0778 | 291.7 | 18.1 | 2 |
| 94 | 60 | 147.10 | 0.393 | 4.988 | 0.095 | 0.0979 | 0.0034 | 0.1024 | 10.215 | 0.355 | 0.3707 | 0.0079 | 0.6011 | 372.4 | 14.2 | 2 |
| 95 | 60 | 1.51 | 0.840 | 17.860 | 0.630 | 0.1799 | 0.0079 | 0.4783 | 5.559 | 0.244 | 0.7200 | 0.0130 | -0.0399 | 182.8 | 22.5 | 2 |
| 96 | 60 | 0.39 | 1.006 | 286.000 | 27.000 | 2.5100 | 0.2800 | 0.9849 | 0.398 | 0.044 | 0.8400 | 0.0210 | 0.1754 | -93.8 | 468.5 | 1 |
| 97 | 60 | 11.86 | 0.680 | 17.700 | 3.500 | 0.2000 | 0.0360 | 0.9754 | 5.000 | 0.900 | 0.6040 | 0.0300 | -0.7226 | 400.0 | 84.5 | 2 |
| 98 | 60 | 4.23 | 1.000 | 3880.000 | 250.000 | 33.7000 | 2.4000 | 0.9632 | 0.030 | 0.002 | 0.8360 | 0.0160 | 0.0987 | -105.3 | 5024.3 | 2 |
| 99 | 60 | 0.85 | 0.774 | 7.960 | 0.210 | 0.0873 | 0.0035 | 0.2214 | 11.455 | 0.459 | 0.6640 | 0.0170 | 0.6233 | 126.0 | 13.6 | 2 |
| 100 | 60 | 5.56 | 0.779 | 16.530 | 0.320 | 0.1774 | 0.0061 | 0.5024 | 5.637 | 0.194 | 0.6750 | 0.0120 | 0.4372 | 247.9 | 20.8 | 2 |
| 101 | 60 | 7.71 | 1.023 | 98.900 | 8.900 | 0.8520 | 0.0730 | 0.6036 | 1.174 | 0.101 | 0.8470 | 0.0530 | -0.0366 | -130.0 | 382.3 | 2 |
| 102 | 60 | 1.25 | 1.036 | 2130.000 | 460.000 | 16.2000 | 3.3000 | 0.9954 | 0.062 | 0.013 | 0.8650 | 0.0140 | 0.2661 | -5565.2 | 5192.3 | 2 |
| 103 | 60 | 33.00 | 0.851 | 37.200 | 2.200 | 0.3590 | 0.0210 | 0.7182 | 2.786 | 0.163 | 0.7380 | 0.0170 | 0.1352 | 336.3 | 54.5 | 2 |
| 104 | 60 | 0.33 | 1.003 | 1830.000 | 190.000 | 15.8000 | 1.7000 | 0.9839 | 0.063 | 0.007 | 0.8380 | 0.0150 | 0.1112 | -312.4 | 2296.3 | 2 |
| 105 | 60 | 29.50 | 0.376 | 3.521 | 0.090 | 0.0721 | 0.0025 | 0.0623 | 13.870 | 0.481 | 0.3540 | 0.0100 | 0.6194 | 283.5 | 11.3 | 2 |
| 106 | 60 | 13.88 | 0.573 | 7.380 | 0.530 | 0.1021 | 0.0058 | 0.9058 | 9.794 | 0.556 | 0.5110 | 0.0180 | -0.4638 | 275.4 | 21.4 | 2 |
| 107 | 60 | 0.65 | 0.927 | 147.000 | 33.000 | 1.3100 | 0.3000 | 0.9967 | 0.763 | 0.175 | 0.7790 | 0.0180 | -0.4188 | 586.8 | 238.0 | 1 |
| 108 | 60 | 0.14 | 1.093 | 211.500 | 6.100 | 1.7770 | 0.0720 | 0.7957 | 0.563 | 0.023 | 0.8600 | 0.0180 | 0.0881 | -1169.8 | 358.9 | 2 |
| 110 | 60 | 45.49 | 1.081 | 896.000 | 42.000 | 7.6000 | 0.4400 | 0.6954 | 0.132 | 0.008 | 0.8690 | 0.0180 | 0.3407 | -6139.7 | 3209.1 | 2 |
| 111 | 60 | 1.32 | 0.148 | 1.192 | 0.052 | 0.0504 | 0.0019 | 0.2497 | 19.841 | 0.748 | 0.1706 | 0.0069 | 0.0428 | 270.9 | 10.4 | 2 |
| 115 | 60 | 22.89 | 0.910 | 530.000 | 120.000 | 4.3800 | 0.9100 | 0.9872 | 0.228 | 0.047 | 0.8280 | 0.0200 | 0.0464 | 2143.2 | 840.1 | 2 |
| 117 | 60 | 0.55 | 0.990 | 331.000 | 63.000 | 2.8900 | 0.5600 | 0.9967 | 0.346 | 0.067 | 0.8280 | 0.0160 | 0.1563 | 178.1 | 418.7 | 2 |
| 118 | 60 | 54.02 | 0.980 | 226.000 | 15.000 | 1.9700 | 0.1300 | 0.8944 | 0.508 | 0.033 | 0.8200 | 0.0190 | 0.0535 | 245.4 | 325.1 | 1 |
| 121 | 60 | 54.90 | 0.258 | 2.120 | 0.120 | 0.0587 | 0.0022 | -0.0864 | 17.036 | 0.638 | 0.2590 | 0.0120 | 0.1301 | 274.7 | 11.6 | 2 |
| 122 | 60 | 1.35 | 0.955 | 380.000 | 12.000 | 3.2200 | 0.1400 | 0.5357 | 0.311 | 0.014 | 0.8530 | 0.0210 | 0.0495 | 878.0 | 517.6 | 2 |
| 123 | 60 | 31.20 | 0.357 | 4.155 | 0.093 | 0.0877 | 0.0031 | 0.3076 | 11.403 | 0.403 | 0.3413 | 0.0070 | 0.2447 | 353.6 | 13.3 | 2 |
| 124 | 60 | 0.25 | 0.461 | 4.810 | 0.190 | 0.0818 | 0.0035 | 0.1846 | 12.225 | 0.523 | 0.4220 | 0.0170 | 0.2361 | 277.9 | 16.1 | 2 |
| 126 | 60 | 46.67 | 0.824 | 26.970 | 0.990 | 0.2708 | 0.0120 | 0.5877 | 3.693 | 0.164 | 0.7140 | 0.0180 | 0.0639 | 300.6 | 42.5 | 2 |
| 127 | 60 | 53.96 | 1.000 | 6290.000 | 290.000 | 54.5000 | 2.9000 | 0.9362 | 0.018 | 0.001 | 0.8360 | 0.0170 | 0.1820 | -170.8 | 8589.7 | 2 |
| 128 | 60 | 0.40 | 0.721 | 19.950 | 0.520 | 0.2278 | 0.0088 | 0.4808 | 4.390 | 0.170 | 0.6370 | 0.0160 | 0.4704 | 397.2 | 33.3 | 2 |
| 129 | 60 | 0.77 | 0.955 | 238.000 | 34.000 | 2.0400 | 0.3000 | 0.9769 | 0.490 | 0.072 | 0.8390 | 0.0190 | 0.0171 | 572.1 | 322.0 | 2 |
| 130 | 60 | 1.98 | 0.793 | 12.900 | 0.380 | 0.1348 | 0.0052 | 0.6100 | 7.418 | 0.286 | 0.6820 | 0.0140 | 0.2226 | 177.5 | 17.9 | 2 |
| 131 | 60 | 0.07 | 0.754 | 20.020 | 0.580 | 0.2179 | 0.0086 | 0.7833 | 4.589 | 0.181 | 0.6600 | 0.0130 | 0.1558 | 336.8 | 27.6 | 2 |
| 132 | 60 | 12.99 | 0.095 | 0.878 | 0.027 | 0.0492 | 0.0017 | 0.2462 | 20.321 | 0.702 | 0.1284 | 0.0039 | 0.0339 | 280.8 | 9.7 | 2 |
| 135 | 60 | 0.72 | 1.025 | 1140.000 | 190.000 | 9.7000 | 1.7000 | 0.9705 | 0.103 | 0.018 | 0.8560 | 0.0390 | -0.0512 | -1801.3 | 4016.7 | 2 |
| 136 | 60 | 66.83 | 1.021 | 1323.000 | 54.000 | 11.1600 | 0.5800 | 0.8695 | 0.090 | 0.005 | 0.8530 | 0.0170 | 0.0092 | -1763.0 | 2183.1 | 2 |
| 139 | 60 | 27.90 | 0.739 | 14.150 | 0.450 | 0.1580 | 0.0059 | 0.1969 | 6.329 | 0.236 | 0.6440 | 0.0200 | 0.0415 | 260.1 | 27.5 | 2 |
| 140 | 60 | 0.99 | 0.475 | 4.970 | 0.230 | 0.0825 | 0.0034 | 0.1763 | 12.121 | 0.500 | 0.4330 | 0.0190 | 0.1817 | 273.1 | 16.7 | 2 |
| 141 | 60 | 2.25 | 0.921 | 87.400 | 4.800 | 0.7800 | 0.0440 | 0.8263 | 1.282 | 0.072 | 0.7980 | 0.0240 | 0.0328 | 385.3 | 151.5 | 2 |
| 142 | 60 | 10.76 | 0.999 | 2000.000 | 130.000 | 17.1000 | 1.1000 | 0.6257 | 0.058 | 0.004 | 0.8350 | 0.0150 | -0.0653 | 86.1 | 2375.2 | 2 |
| 143 | 60 | 6.87 | 0.922 | 61.500 | 6.600 | 0.5450 | 0.0580 | 0.7521 | 1.835 | 0.195 | 0.7910 | 0.0140 | -0.0733 | 267.9 | 73.6 | 2 |
| 144 | 60 | 0.66 | 0.894 | 106.000 | 21.000 | 0.9800 | 0.1900 | 0.9904 | 1.020 | 0.198 | 0.7930 | 0.0220 | -0.4189 | 638.6 | 205.7 | 2 |
| 145 | 60 | 96.90 | 1.035 | 1220.000 | 180.000 | 9.9000 | 1.4000 | 0.9936 | 0.101 | 0.014 | 0.8640 | 0.0170 | 0.2273 | -2720.9 | 2283.4 | 2 |
| 146 | 60 | 0.04 | 1.043 | 2000.000 | 100.000 | 16.5200 | 0.9900 | 0.9215 | 0.061 | 0.004 | 0.8710 | 0.0210 | 0.0683 | -7938.6 | 9971.8 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 147 | 60 | 1.50 | 0.486 | 5.200 | 1.300 | 0.0733 | 0.0065 | 0.2159 | 13.643 | 1.210 | 0.4400 | 0.1100 | -0.1482 | 238.4 | 66.4 | 2 |
| 148 | 60 | 4.31 | 0.275 | 2.310 | 0.076 | 0.0607 | 0.0017 | 0.1047 | 16.480 | 0.462 | 0.2727 | 0.0083 | 0.0269 | 277.4 | 8.7 | 2 |
| 149 | 60 | 3.04 | 0.925 | 56.800 | 4.700 | 0.5140 | 0.0480 | 0.7073 | 1.946 | 0.182 | 0.7920 | 0.0360 | 0.0577 | 242.4 | 149.5 | 2 |
| 150 | 60 | 2.62 | 0.983 | 172.000 | 14.000 | 1.4700 | 0.1200 | 0.9639 | 0.680 | 0.056 | 0.8360 | 0.0210 | 0.0404 | 157.9 | 262.5 | 2 |
| 151 | 60 | 94.90 | 0.787 | 21.200 | 1.800 | 0.2210 | 0.0130 | 0.9828 | 4.525 | 0.266 | 0.6840 | 0.0300 | 0.1885 | 297.0 | 55.3 | 2 |
| 152 | 60 | 1.30 | 0.770 | 18.120 | 0.420 | 0.1979 | 0.0071 | 0.5089 | 5.053 | 0.181 | 0.6700 | 0.0180 | 0.4813 | 287.0 | 31.1 | 2 |
| 153 | 60 | 82.10 | 0.338 | 3.687 | 0.093 | 0.0823 | 0.0023 | 0.1461 | 12.151 | 0.340 | 0.3253 | 0.0099 | 0.3546 | 342.1 | 11.4 | 2 |
| 154 | 60 | 21.10 | 0.390 | 3.460 | 0.210 | 0.0682 | 0.0031 | 0.6371 | 14.663 | 0.666 | 0.3640 | 0.0180 | -0.1696 | 262.8 | 15.3 | 2 |
| 155 | 60 | 11.72 | 1.021 | 495.000 | 13.000 | 4.1000 | 0.2000 | 0.2972 | 0.244 | 0.012 | 0.8520 | 0.0160 | -0.0248 | -566.2 | 649.1 | 2 |
| 156 | 60 | 1.15 | 0.726 | 12.200 | 1.100 | 0.1410 | 0.0110 | 0.9211 | 7.092 | 0.553 | 0.6320 | 0.0280 | -0.2919 | 244.8 | 36.8 | 2 |
| 157 | 60 | 12.02 | 1.015 | 295.000 | 51.000 | 2.5300 | 0.4300 | 0.9322 | 0.395 | 0.067 | 0.8510 | 0.0480 | 0.2306 | -245.1 | 1031.1 | 2 |
| 158 | 60 | 8.30 | 1.071 | 552.000 | 68.000 | 4.7500 | 0.5100 | 0.9246 | 0.211 | 0.023 | 0.8520 | 0.0380 | -0.0760 | -2638.4 | 2293.4 | 2 |
| 160 | 60 | 54.60 | 1.045 | 2044.000 | 84.000 | 17.3000 | 0.8400 | 0.7046 | 0.058 | 0.003 | 0.8730 | 0.0120 | 0.0497 | -9836.5 | 9178.4 | 2 |
| 161 | 60 | 41.30 | 0.905 | 48.900 | 3.500 | 0.4600 | 0.0300 | 0.9726 | 2.174 | 0.142 | 0.7780 | 0.0200 | -0.1703 | 274.4 | 78.6 | 2 |
| 162 | 60 | 232.40 | 0.939 | 183.300 | 4.700 | 1.5700 | 0.0670 | 0.8672 | 0.637 | 0.027 | 0.8270 | 0.0150 | 0.3411 | 587.9 | 198.7 | 2 |
| 163 | 60 | 0.50 | 1.017 | 388.000 | 23.000 | 3.2600 | 0.2500 | 0.8238 | 0.307 | 0.024 | 0.8490 | 0.0200 | -0.0518 | -368.3 | 603.9 | 1 |
| 166 | 60 | 0.82 | 0.562 | 9.190 | 0.480 | 0.1252 | 0.0059 | 0.4242 | 7.987 | 0.376 | 0.5060 | 0.0190 | -0.0490 | 344.1 | 24.7 | 2 |
| 167 | 60 | 17.25 | 0.841 | 31.000 | 0.670 | 0.2966 | 0.0130 | 0.2022 | 3.372 | 0.148 | 0.7280 | 0.0150 | 0.4269 | 296.2 | 40.2 | 2 |
| 168 | 60 | 32.40 | 1.011 | 194.400 | 5.300 | 1.6170 | 0.0780 | 0.7825 | 0.618 | 0.030 | 0.8440 | 0.0170 | -0.1015 | -117.9 | 254.1 | 2 |
| 169 | 60 | 0.84 | 0.944 | 172.900 | 9.000 | 1.4770 | 0.1000 | 0.3875 | 0.677 | 0.046 | 0.8260 | 0.0170 | 0.2698 | 513.8 | 210.0 | 2 |
| 170 | 60 | 3.76 | 0.999 | 260.600 | 7.200 | 2.2480 | 0.1000 | 0.8932 | 0.445 | 0.020 | 0.8350 | 0.0130 | -0.0553 | 8.2 | 283.4 | 1 |
| 171 | 60 | 0.69 | 1.030 | 1018.000 | 36.000 | 8.6500 | 0.4800 | 0.8551 | 0.116 | 0.006 | 0.8597 | 0.0093 | 0.1385 | -1911.8 | 1156.7 | 2 |
| 172 | 60 | 16.60 | 0.443 | 4.390 | 0.250 | 0.0770 | 0.0031 | 0.3458 | 12.987 | 0.523 | 0.4070 | 0.0180 | -0.0357 | 270.6 | 15.4 | 2 |
| 173 | 60 | 4.50 | 0.305 | 2.440 | 0.130 | 0.0597 | 0.0025 | 0.6906 | 16.750 | 0.701 | 0.2960 | 0.0120 | -0.1533 | 262.0 | 12.2 | 2 |
| 176 | 60 | 0.66 | 0.546 | 6.820 | 0.430 | 0.1002 | 0.0052 | 0.8398 | 9.980 | 0.518 | 0.4900 | 0.0230 | -0.1934 | 287.0 | 23.4 | 2 |
| 177 | 60 | 0.59 | 0.990 | 137.400 | 8.100 | 1.1840 | 0.0760 | 0.1182 | 0.845 | 0.054 | 0.8350 | 0.0380 | 0.0267 | 72.4 | 370.0 | 2 |

| **HN05 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 20.93 | 0.346 | 2.910 | 0.110 | 0.0638 | 0.0022 | 0.3332 | 15.674 | 0.540 | 0.3290 | 0.0140 | 0.4772 | 263.4 | 11.4 | 2 |
| 2 | 60 | 8.84 | 0.864 | 40.500 | 1.700 | 0.3830 | 0.0150 | 0.1231 | 2.611 | 0.102 | 0.7480 | 0.0200 | 0.0552 | 327.5 | 64.0 | 2 |
| 3 | 60 | 53.60 | 0.545 | 13.800 | 5.500 | 0.1570 | 0.0420 | 0.9989 | 6.369 | 1.704 | 0.4970 | 0.0310 | -0.8006 | 445.1 | 122.4 | 2 |
| 4 | 60 | 12.52 | 0.854 | 17.160 | 0.980 | 0.1708 | 0.0100 | 0.6588 | 5.855 | 0.343 | 0.7300 | 0.0190 | 0.0454 | 158.3 | 29.0 | 2 |
| 5 | 60 | 6.55 | 0.740 | 15.900 | 1.700 | 0.1750 | 0.0160 | 0.9887 | 5.714 | 0.522 | 0.6460 | 0.0240 | 0.6897 | 286.8 | 42.4 | 2 |
| 6 | 60 | 10.85 | 0.855 | 33.210 | 0.770 | 0.3244 | 0.0098 | 0.3182 | 3.083 | 0.093 | 0.7390 | 0.0180 | 0.0555 | 295.9 | 49.5 | 2 |
| 7 | 60 | 32.40 | 0.630 | 7.420 | 0.530 | 0.0988 | 0.0072 | 0.5718 | 10.121 | 0.738 | 0.5550 | 0.0160 | -0.0045 | 231.3 | 21.2 | 2 |
| 8 | 60 | 30.12 | 0.975 | 42.880 | 0.530 | 0.3792 | 0.0110 | 0.8567 | 2.637 | 0.076 | 0.8199 | 0.0100 | 0.2282 | 60.3 | 39.6 | 2 |
| 9 | 60 | 27.12 | 0.358 | 3.410 | 0.210 | 0.0749 | 0.0035 | 0.1934 | 13.351 | 0.624 | 0.3400 | 0.0170 | -0.1929 | 302.8 | 17.1 | 2 |
| 10 | 60 | 40.00 | 0.440 | 4.910 | 0.160 | 0.0871 | 0.0028 | 0.3218 | 11.481 | 0.369 | 0.4060 | 0.0120 | 0.0539 | 307.0 | 12.9 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | 60 | 10.49 | 0.587 | 7.670 | 0.510 | 0.1113 | 0.0084 | 0.3693 | 8.985 | 0.678 | 0.5230 | 0.0280 | 0.1698 | 290.0 | 32.6 | 2 |
| 12 | 60 | 18.40 | 0.539 | 5.800 | 1.100 | 0.0800 | 0.0110 | 0.9901 | 12.500 | 1.719 | 0.4820 | 0.0270 | -0.5753 | 233.5 | 36.1 | 2 |
| 13 | 60 | 10.48 | 0.700 | 15.500 | 1.700 | 0.1790 | 0.0160 | 0.9426 | 5.587 | 0.499 | 0.6170 | 0.0250 | -0.1322 | 336.7 | 46.1 | 2 |
| 14 | 60 | 5.02 | 0.807 | 27.300 | 2.000 | 0.2850 | 0.0200 | 0.9833 | 3.509 | 0.246 | 0.7030 | 0.0220 | 0.0450 | 345.8 | 55.7 | 2 |
| 15 | 60 | 16.00 | 0.555 | 8.300 | 1.300 | 0.1120 | 0.0120 | 0.9610 | 8.929 | 0.957 | 0.4990 | 0.0300 | -0.7136 | 313.3 | 42.2 | 2 |
| 16 | 60 | 11.35 | 0.646 | 10.900 | 1.400 | 0.1470 | 0.0180 | 0.5821 | 6.803 | 0.833 | 0.5730 | 0.0280 | -0.3647 | 326.6 | 50.9 | 2 |
| 17 | 60 | 27.66 | 0.533 | 7.140 | 0.480 | 0.1077 | 0.0053 | 0.9746 | 9.285 | 0.457 | 0.4810 | 0.0180 | -0.6024 | 316.5 | 21.7 | 2 |
| 18 | 60 | 19.66 | 0.664 | 11.870 | 0.470 | 0.1539 | 0.0076 | 0.6212 | 6.498 | 0.321 | 0.5870 | 0.0170 | -0.0712 | 325.0 | 26.5 | 2 |
| 19 | 60 | 8.38 | 0.763 | 16.900 | 2.200 | 0.1910 | 0.0280 | 0.9097 | 5.236 | 0.768 | 0.6640 | 0.0230 | -0.1948 | 285.9 | 54.4 | 2 |
| 20 | 60 | 14.34 | 0.642 | 9.900 | 1.300 | 0.1154 | 0.0066 | 0.4741 | 8.666 | 0.496 | 0.5660 | 0.0250 | -0.2004 | 260.9 | 27.3 | 2 |
| 21 | 60 | 1.19 | 0.917 | 84.000 | 14.000 | 0.9600 | 0.2100 | 0.7946 | 1.042 | 0.228 | 0.8020 | 0.0330 | 0.2079 | 496.6 | 265.2 | 2 |
| 22 | 60 | 45.24 | 0.801 | 12.510 | 0.230 | 0.1375 | 0.0056 | 0.2800 | 7.273 | 0.296 | 0.6880 | 0.0130 | 0.6056 | 174.4 | 17.4 | 2 |
| 23 | 60 | 9.74 | 0.895 | 30.800 | 1.300 | 0.3030 | 0.0170 | 0.9732 | 3.300 | 0.185 | 0.7650 | 0.0170 | 0.1090 | 201.9 | 45.8 | 2 |
| 24 | 60 | 2.86 | 0.917 | 51.600 | 6.000 | 0.4790 | 0.0490 | 0.9368 | 2.088 | 0.214 | 0.7860 | 0.0410 | 0.0682 | 250.2 | 157.9 | 2 |
| 25 | 60 | 40.24 | 0.580 | 6.430 | 0.360 | 0.0903 | 0.0029 | 0.5634 | 11.074 | 0.356 | 0.5150 | 0.0160 | -0.1081 | 240.1 | 14.1 | 2 |
| 26 | 60 | 6.63 | 0.775 | 17.000 | 1.400 | 0.1920 | 0.0170 | 0.9740 | 5.208 | 0.461 | 0.6730 | 0.0260 | 0.0530 | 273.0 | 46.6 | 2 |
| 27 | 60 | 12.22 | 0.642 | 8.050 | 0.990 | 0.0999 | 0.0091 | 0.9481 | 10.010 | 0.912 | 0.5640 | 0.0240 | -0.0577 | 226.7 | 28.1 | 2 |
| 28 | 60 | 2.73 | 0.816 | 44.500 | 6.800 | 0.4590 | 0.0660 | 0.9718 | 2.179 | 0.313 | 0.7220 | 0.0270 | -0.3282 | 521.4 | 120.1 | 2 |
| 29 | 60 | 9.47 | 1.002 | 75.000 | 2.500 | 0.6580 | 0.0230 | 0.8599 | 1.520 | 0.053 | 0.8370 | 0.0130 | 0.3991 | -8.1 | 83.2 | 2 |
| 30 | 60 | 9.83 | 0.673 | 9.200 | 0.540 | 0.1163 | 0.0066 | 0.9717 | 8.598 | 0.488 | 0.5900 | 0.0240 | -0.0464 | 240.3 | 26.2 | 2 |
| 31 | 60 | 8.22 | 0.706 | 12.100 | 1.400 | 0.1470 | 0.0140 | 0.9437 | 6.803 | 0.648 | 0.6180 | 0.0280 | -0.0813 | 272.6 | 41.5 | 2 |
| 32 | 60 | 25.80 | 0.653 | 8.000 | 0.620 | 0.1050 | 0.0069 | 0.9624 | 9.524 | 0.626 | 0.5730 | 0.0190 | -0.3389 | 230.9 | 22.1 | 2 |
| 33 | 60 | 21.46 | 0.636 | 10.600 | 1.200 | 0.1360 | 0.0110 | 0.9605 | 7.353 | 0.595 | 0.5640 | 0.0210 | -0.5208 | 311.2 | 33.6 | 2 |
| 34 | 60 | 12.19 | 0.644 | 11.200 | 1.800 | 0.1460 | 0.0180 | 0.9917 | 6.849 | 0.844 | 0.5710 | 0.0250 | -0.5997 | 326.7 | 49.0 | 2 |
| 35 | 60 | 19.64 | 0.590 | 7.940 | 0.550 | 0.1140 | 0.0051 | 0.8349 | 8.772 | 0.392 | 0.5260 | 0.0240 | -0.2191 | 294.4 | 25.2 | 2 |
| 36 | 60 | 6.44 | 0.776 | 15.300 | 1.600 | 0.1650 | 0.0140 | 0.6883 | 6.061 | 0.514 | 0.6720 | 0.0270 | -0.0173 | 233.7 | 40.9 | 2 |
| 37 | 60 | 3.36 | 0.907 | 38.800 | 3.900 | 0.3770 | 0.0370 | 0.9375 | 2.653 | 0.260 | 0.7760 | 0.0330 | 0.0466 | 221.7 | 102.4 | 2 |
| 38 | 60 | 16.27 | 0.596 | 8.280 | 0.370 | 0.1191 | 0.0048 | 0.9435 | 8.396 | 0.338 | 0.5310 | 0.0180 | -0.3543 | 303.1 | 21.0 | 2 |
| 39 | 60 | 3.21 | 0.829 | 30.500 | 4.100 | 0.3540 | 0.0620 | 0.0981 | 2.825 | 0.495 | 0.7230 | 0.0510 | 0.0544 | 379.2 | 153.4 | 2 |
| 40 | 60 | 51.72 | 0.759 | 16.620 | 0.260 | 0.1904 | 0.0049 | 0.4289 | 5.252 | 0.135 | 0.6611 | 0.0099 | 0.2473 | 289.6 | 18.9 | 2 |
| 41 | 60 | 60.40 | 0.463 | 4.540 | 0.140 | 0.0784 | 0.0032 | 0.5934 | 12.755 | 0.521 | 0.4230 | 0.0110 | 0.0478 | 265.7 | 12.9 | 2 |
| 42 | 60 | 9.38 | 0.833 | 27.450 | 0.640 | 0.2795 | 0.0120 | 0.4704 | 3.578 | 0.154 | 0.7210 | 0.0180 | 0.4208 | 294.2 | 43.7 | 2 |
| 43 | 60 | 2.32 | 0.935 | 44.300 | 3.500 | 0.4020 | 0.0330 | 0.8506 | 2.488 | 0.204 | 0.7950 | 0.0320 | 0.2757 | 165.1 | 105.8 | 2 |
| 44 | 60 | 78.92 | 0.221 | 2.030 | 0.150 | 0.0632 | 0.0028 | 0.9362 | 15.823 | 0.701 | 0.2300 | 0.0100 | -0.6644 | 309.9 | 14.4 | 2 |
| 45 | 60 | 6.05 | 0.737 | 13.100 | 1.100 | 0.1466 | 0.0096 | 0.9718 | 6.821 | 0.447 | 0.6410 | 0.0300 | -0.0515 | 244.0 | 38.5 | 2 |
| 46 | 60 | 6.72 | 0.810 | 22.300 | 1.700 | 0.2390 | 0.0230 | 0.7690 | 4.184 | 0.403 | 0.7020 | 0.0200 | 0.0437 | 286.5 | 47.7 | 2 |
| 47 | 60 | 31.29 | 0.590 | 7.380 | 0.230 | 0.1015 | 0.0042 | 0.9517 | 9.852 | 0.408 | 0.5240 | 0.0120 | -0.1896 | 263.1 | 14.9 | 2 |
| 48 | 60 | 9.69 | 0.690 | 13.210 | 0.740 | 0.1587 | 0.0081 | 0.9078 | 6.301 | 0.322 | 0.6070 | 0.0220 | 0.0323 | 309.7 | 31.9 | 2 |
| 49 | 60 | 26.00 | 0.400 | 3.670 | 0.310 | 0.0709 | 0.0034 | 0.8620 | 14.104 | 0.676 | 0.3720 | 0.0200 | -0.2206 | 268.7 | 16.9 | 2 |
| 50 | 60 | 18.52 | 0.602 | 9.460 | 0.430 | 0.1313 | 0.0076 | 0.4793 | 7.616 | 0.441 | 0.5370 | 0.0150 | 0.0589 | 328.7 | 24.6 | 2 |
| 51 | 60 | 37.45 | 0.726 | 7.340 | 0.160 | 0.0862 | 0.0037 | -0.0224 | 11.601 | 0.498 | 0.6270 | 0.0160 | 0.6988 | 150.6 | 13.4 | 2 |
| 52 | 60 | 4.33 | 0.915 | 30.200 | 2.500 | 0.2840 | 0.0210 | 0.8376 | 3.521 | 0.260 | 0.7780 | 0.0350 | 0.0736 | 153.6 | 81.6 | 2 |
| 53 | 60 | 14.77 | 0.577 | 7.850 | 0.710 | 0.1051 | 0.0052 | 0.3383 | 9.515 | 0.471 | 0.5150 | 0.0190 | -0.0700 | 280.2 | 21.0 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | 60 | 11.95 | 0.678 | 12.000 | 1.700 | 0.1420 | 0.0150 | 0.9610 | 7.042 | 0.744 | 0.5960 | 0.0200 | -0.5117 | 288.5 | 37.8 | 2 |
| 55 | 60 | 20.86 | 0.586 | 5.410 | 0.280 | 0.0773 | 0.0038 | 0.1019 | 12.937 | 0.636 | 0.5180 | 0.0210 | 0.0754 | 203.2 | 16.4 | 2 |
| 56 | 60 | 16.37 | 0.629 | 10.100 | 1.200 | 0.1227 | 0.0071 | 0.4933 | 8.150 | 0.472 | 0.5570 | 0.0200 | -0.0464 | 286.8 | 25.6 | 2 |
| 57 | 60 | 33.78 | 0.544 | 6.290 | 0.160 | 0.0953 | 0.0040 | 0.8192 | 10.493 | 0.440 | 0.4880 | 0.0130 | 0.1242 | 274.3 | 15.3 | 2 |
| 58 | 60 | 11.54 | 0.606 | 9.280 | 0.440 | 0.1231 | 0.0058 | 0.0915 | 8.123 | 0.383 | 0.5390 | 0.0210 | 0.1836 | 305.7 | 25.0 | 2 |
| 59 | 60 | 4.77 | 0.806 | 20.570 | 0.800 | 0.2120 | 0.0100 | 0.2749 | 4.717 | 0.222 | 0.6970 | 0.0320 | 0.5594 | 260.4 | 55.3 | 2 |
| 60 | 60 | 4.46 | 0.766 | 14.500 | 0.600 | 0.1608 | 0.0080 | 0.6564 | 6.219 | 0.309 | 0.6640 | 0.0290 | 0.1363 | 238.1 | 39.1 | 2 |
| 61 | 60 | 3.44 | 0.941 | 27.400 | 1.300 | 0.2564 | 0.0130 | -0.1057 | 3.900 | 0.198 | 0.7950 | 0.0390 | -0.0109 | 96.9 | 82.0 | 2 |
| 62 | 60 | 3.62 | 1.015 | 126.000 | 2.200 | 1.0980 | 0.0450 | 0.2985 | 0.911 | 0.037 | 0.8430 | 0.0150 | 0.7385 | -104.9 | 156.9 | 2 |
| 63 | 60 | 10.73 | 0.694 | 13.950 | 0.620 | 0.1672 | 0.0077 | 0.9743 | 5.981 | 0.275 | 0.6110 | 0.0180 | -0.1533 | 321.6 | 28.4 | 2 |
| 64 | 60 | 1.73 | 0.935 | 75.000 | 16.000 | 0.6800 | 0.1500 | 0.9884 | 1.471 | 0.324 | 0.8020 | 0.0420 | 0.0564 | 280.0 | 233.4 | 2 |
| 65 | 60 | 2.88 | 0.844 | 36.700 | 2.900 | 0.3650 | 0.0290 | 0.9703 | 2.740 | 0.218 | 0.7340 | 0.0330 | -0.0071 | 356.4 | 98.3 | 2 |
| 66 | 60 | 20.60 | 0.429 | 5.000 | 0.980 | 0.0834 | 0.0095 | 0.9962 | 11.990 | 1.366 | 0.3970 | 0.0220 | -0.7396 | 299.8 | 36.6 | 2 |
| 67 | 60 | 4.11 | 0.932 | 48.700 | 1.400 | 0.4540 | 0.0200 | 0.6469 | 2.203 | 0.097 | 0.7940 | 0.0190 | 0.4350 | 197.0 | 74.0 | 2 |
| 68 | 60 | 3.51 | 0.925 | 24.300 | 1.100 | 0.2320 | 0.0140 | 0.5996 | 4.310 | 0.260 | 0.7830 | 0.0430 | 0.3069 | 111.7 | 81.3 | 2 |
| 69 | 60 | 7.34 | 0.942 | 57.700 | 2.400 | 0.5120 | 0.0250 | 0.8820 | 1.953 | 0.095 | 0.8020 | 0.0160 | -0.0280 | 187.4 | 72.8 | 2 |
| 70 | 60 | 12.25 | 0.566 | 7.230 | 0.900 | 0.1007 | 0.0085 | 0.9578 | 9.930 | 0.838 | 0.5060 | 0.0300 | -0.2423 | 275.6 | 33.0 | 2 |
| 71 | 60 | 13.23 | 0.637 | 9.600 | 0.880 | 0.1221 | 0.0075 | 0.9582 | 8.190 | 0.503 | 0.5630 | 0.0230 | -0.0849 | 279.5 | 28.1 | 2 |
| 72 | 60 | 5.04 | 1.002 | 138.500 | 3.000 | 1.2030 | 0.0520 | 0.5274 | 0.831 | 0.036 | 0.8390 | 0.0150 | 0.6065 | -15.8 | 168.7 | 2 |
| 73 | 60 | 7.06 | 0.827 | 26.500 | 2.500 | 0.2680 | 0.0240 | 0.8788 | 3.731 | 0.334 | 0.7160 | 0.0230 | 0.1247 | 292.4 | 56.2 | 2 |
| 74 | 60 | 4.15 | 0.935 | 65.400 | 2.900 | 0.6030 | 0.0340 | 0.8351 | 1.658 | 0.094 | 0.8000 | 0.0230 | 0.2335 | 248.2 | 115.3 | 2 |
| 75 | 60 | 3.32 | 0.774 | 26.400 | 2.800 | 0.2680 | 0.0220 | 0.9851 | 3.731 | 0.306 | 0.6790 | 0.0250 | 0.0650 | 378.4 | 61.0 | 2 |
| 76 | 60 | 4.97 | 0.934 | 33.500 | 6.600 | 0.2900 | 0.0480 | 0.6034 | 3.448 | 0.571 | 0.7910 | 0.0460 | 0.2651 | 122.4 | 109.9 | 2 |
| 77 | 60 | 5.75 | 0.783 | 20.900 | 2.300 | 0.2180 | 0.0170 | 0.9859 | 4.587 | 0.358 | 0.6810 | 0.0230 | -0.1312 | 298.2 | 46.4 | 2 |
| 78 | 60 | 6.11 | 0.587 | 9.180 | 0.500 | 0.1271 | 0.0070 | 0.0080 | 7.868 | 0.433 | 0.5250 | 0.0310 | 0.0256 | 330.1 | 35.5 | 2 |
| 79 | 60 | 24.21 | 0.617 | 9.400 | 1.300 | 0.1148 | 0.0096 | 0.9792 | 8.711 | 0.728 | 0.5470 | 0.0210 | -0.6242 | 277.2 | 29.9 | 2 |
| 80 | 60 | 4.29 | 0.770 | 18.600 | 1.700 | 0.1990 | 0.0160 | 0.8664 | 5.025 | 0.404 | 0.6700 | 0.0280 | 0.2705 | 288.7 | 49.9 | 2 |
| 81 | 60 | 44.70 | 0.437 | 4.320 | 0.160 | 0.0776 | 0.0034 | 0.8661 | 12.887 | 0.565 | 0.4020 | 0.0100 | -0.1732 | 275.8 | 13.5 | 2 |
| 82 | 60 | 14.49 | 0.690 | 13.600 | 1.000 | 0.1642 | 0.0110 | 0.9088 | 6.090 | 0.408 | 0.6080 | 0.0210 | -0.0258 | 319.6 | 34.7 | 2 |
| 83 | 60 | 16.33 | 0.479 | 5.630 | 0.690 | 0.0910 | 0.0075 | 0.9664 | 10.989 | 0.906 | 0.4370 | 0.0250 | -0.5234 | 298.6 | 30.1 | 2 |
| 84 | 60 | 30.39 | 0.588 | 7.720 | 0.240 | 0.1083 | 0.0044 | 0.8835 | 9.234 | 0.375 | 0.5240 | 0.0140 | -0.2848 | 281.1 | 16.8 | 2 |
| 85 | 60 | 29.01 | 0.839 | 14.370 | 0.320 | 0.1485 | 0.0083 | 0.2706 | 6.734 | 0.376 | 0.7170 | 0.0140 | 0.5981 | 152.7 | 20.3 | 2 |
| 86 | 60 | 7.33 | 0.965 | 96.000 | 20.000 | 0.9310 | 0.1000 | 0.7601 | 1.074 | 0.115 | 0.8220 | 0.0220 | 0.0792 | 206.8 | 173.0 | 2 |
| 87 | 60 | 1.07 | 0.927 | 52.400 | 3.200 | 0.4780 | 0.0290 | 0.6212 | 2.092 | 0.127 | 0.7920 | 0.0390 | -0.0852 | 220.3 | 149.6 | 2 |
| 88 | 60 | 25.40 | 0.497 | 5.360 | 0.570 | 0.0846 | 0.0059 | 0.9243 | 11.820 | 0.824 | 0.4500 | 0.0260 | -0.5782 | 268.7 | 25.3 | 2 |
| 89 | 60 | 8.13 | 0.804 | 24.350 | 0.910 | 0.2531 | 0.0120 | 0.9150 | 3.951 | 0.187 | 0.6990 | 0.0180 | 0.1225 | 311.8 | 40.3 | 2 |
| 90 | 60 | 1.37 | 0.977 | 93.100 | 3.700 | 0.8430 | 0.0510 | 0.0811 | 1.186 | 0.072 | 0.8260 | 0.0330 | 0.6693 | 124.4 | 228.7 | 2 |
| 91 | 60 | 4.23 | 0.775 | 15.240 | 0.850 | 0.1730 | 0.0095 | 0.6938 | 5.780 | 0.317 | 0.6720 | 0.0330 | 0.1081 | 245.7 | 47.3 | 2 |
| 92 | 60 | 43.87 | 0.502 | 6.060 | 0.130 | 0.0972 | 0.0038 | 0.3499 | 10.288 | 0.402 | 0.4560 | 0.0100 | 0.3808 | 304.5 | 14.3 | 2 |
| 93 | 60 | 8.45 | 0.921 | 22.000 | 2.100 | 0.2090 | 0.0190 | 0.5436 | 4.785 | 0.435 | 0.7800 | 0.0220 | -0.0625 | 105.0 | 40.2 | 2 |
| 94 | 60 | 69.43 | 0.290 | 2.552 | 0.087 | 0.0661 | 0.0026 | 0.2639 | 15.129 | 0.595 | 0.2851 | 0.0088 | 0.0960 | 295.7 | 12.4 | 2 |
| 95 | 60 | 6.42 | 0.787 | 12.800 | 0.630 | 0.1383 | 0.0070 | 0.4247 | 7.231 | 0.366 | 0.6780 | 0.0310 | 0.3792 | 187.0 | 35.8 | 2 |
| 96 | 60 | 32.74 | 0.310 | 2.710 | 0.100 | 0.0657 | 0.0028 | 0.6669 | 15.221 | 0.649 | 0.3010 | 0.0110 | 0.0695 | 285.7 | 13.3 | 2 |

| HS01 apatite | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grain | Spot size (μm) | U (ppm) | $^{206}Pb_c$ | 207/235 | 207/235 2σ | 206/238 | 206/238 2σ | ρ | 238/206 | 238/206 2σ | 207/206 | 207/206 2σ | ρ | $^{207}Pb$ corrected Age (Ma) | $^{207}Pb$ corrected Age 2σ | Pb correction type |
| 1 | 60 | 17.01 | 0.826 | 27.240 | 0.470 | 0.2651 | 0.0040 | 0.2417 | 3.772 | 0.057 | 0.7150 | 0.0120 | 0.6913 | 291.2 | 28.9 | 2 |
| 2 | 60 | 2.66 | 0.964 | 70.300 | 2.300 | 0.5950 | 0.0190 | 0.1390 | 1.681 | 0.054 | 0.8160 | 0.0220 | 0.4667 | 136.9 | 111.1 | 2 |
| 3 | 60 | 75.80 | 0.854 | 2.930 | 0.200 | 0.0286 | 0.0018 | 0.7861 | 34.965 | 2.201 | 0.7220 | 0.0290 | 0.0466 | 26.8 | 7.1 | 2 |
| 4 | 60 | 0.33 | 1.099 | 188.000 | 13.000 | 1.5300 | 0.1100 | -0.1104 | 0.654 | 0.047 | 0.8640 | 0.0710 | 0.2591 | -1063.7 | 1084.2 | 2 |
| 5 | 60 | 1.25 | 1.025 | 98.200 | 5.100 | 0.8260 | 0.0360 | 0.3420 | 1.211 | 0.053 | 0.8480 | 0.0440 | 0.3729 | -136.4 | 309.7 | 2 |
| 6 | 60 | 57.80 | 0.975 | 38.730 | 0.440 | 0.3336 | 0.0035 | 0.3039 | 2.998 | 0.031 | 0.8190 | 0.0110 | 0.5199 | 54.5 | 37.0 | 2 |
| 7 | 60 | 74.82 | 0.370 | 3.364 | 0.071 | 0.0694 | 0.0012 | 0.0602 | 14.409 | 0.249 | 0.3486 | 0.0075 | 0.5234 | 275.8 | 6.4 | 2 |
| 8 | 60 | 2.71 | 1.032 | 77.900 | 7.900 | 0.6440 | 0.0750 | 0.5326 | 1.553 | 0.181 | 0.8530 | 0.0310 | 0.0042 | -136.3 | 174.1 | 2 |
| 9 | 60 | 0.70 | 1.238 | 362.000 | 25.000 | 3.0000 | 0.1200 | 0.3844 | 0.333 | 0.013 | 0.8660 | 0.0210 | -0.0154 | -8084.2 | 2286.6 | 2 |
| 10 | 60 | 1.31 | 1.030 | 87.800 | 7.600 | 0.8460 | 0.0900 | 0.0153 | 1.182 | 0.126 | 0.8500 | 0.0410 | 0.5360 | -166.4 | 298.6 | 2 |
| 11 | 60 | 1.35 | 0.774 | 2.570 | 0.540 | 0.0332 | 0.0057 | -0.1081 | 30.120 | 5.171 | 0.6600 | 0.2300 | 0.9276 | 48.1 | 62.4 | 2 |
| 12 | 60 | 11.99 | 0.120 | 10.650 | 0.340 | 0.3874 | 0.0270 | 0.4870 | 2.581 | 0.180 | 0.2205 | 0.0066 | 0.2047 | 1891.7 | 130.9 | 2 |
| 13 | 60 | 4.25 | 0.877 | 48.900 | 1.500 | 0.5180 | 0.0360 | 0.3362 | 1.931 | 0.134 | 0.7630 | 0.0220 | 0.5975 | 398.7 | 95.4 | 2 |
| 14 | 60 | 3.00 | 1.011 | 184.000 | 39.000 | 1.7700 | 0.4100 | 0.9845 | 0.565 | 0.131 | 0.8450 | 0.0320 | 0.1853 | -128.5 | 485.7 | 2 |
| 15 | 60 | 73.60 | 0.262 | 2.282 | 0.077 | 0.0637 | 0.0044 | -0.0206 | 15.699 | 1.084 | 0.2624 | 0.0084 | 0.1947 | 296.3 | 20.6 | 2 |
| 16 | 60 | 6.92 | 0.940 | 43.900 | 1.300 | 0.4056 | 0.0280 | 0.2098 | 2.465 | 0.170 | 0.7980 | 0.0240 | 0.2770 | 154.8 | 82.0 | 2 |
| 17 | 60 | 64.20 | 0.364 | 3.283 | 0.086 | 0.0710 | 0.0050 | 0.3245 | 14.085 | 0.992 | 0.3439 | 0.0090 | 0.5200 | 284.8 | 20.5 | 2 |
| 18 | 60 | 2.00 | 0.968 | 170.700 | 4.600 | 1.4860 | 0.1000 | 0.5732 | 0.673 | 0.045 | 0.8060 | 0.0180 | 0.4157 | 300.4 | 234.4 | 1 |
| 19 | 60 | 3.85 | 1.070 | 105.400 | 3.200 | 0.9190 | 0.0680 | 0.7939 | 1.088 | 0.081 | 0.8660 | 0.0190 | 0.4981 | -429.5 | 172.8 | 2 |
| 20 | 60 | 51.21 | 0.371 | 3.630 | 0.160 | 0.0732 | 0.0018 | 0.1709 | 13.661 | 0.336 | 0.3500 | 0.0120 | 0.2320 | 290.1 | 9.9 | 2 |
| 21 | 60 | 3.49 | 0.842 | 76.200 | 3.700 | 0.6960 | 0.0410 | 0.5169 | 1.437 | 0.085 | 0.7530 | 0.0420 | 0.7123 | 672.1 | 218.4 | 2 |
| 22 | 60 | 2.07 | 0.810 | 26.800 | 1.100 | 0.2670 | 0.0110 | 0.4053 | 3.745 | 0.154 | 0.7040 | 0.0310 | 0.5171 | 319.2 | 66.6 | 2 |
| 23 | 60 | 13.21 | 0.537 | 41.500 | 1.100 | 0.5700 | 0.0420 | 0.6758 | 1.754 | 0.129 | 0.5560 | 0.0130 | 0.2289 | 1508.4 | 119.1 | 2 |
| 24 | 60 | 9.32 | 0.668 | 16.270 | 0.540 | 0.1724 | 0.0130 | 0.2512 | 5.800 | 0.437 | 0.5920 | 0.0170 | 0.4977 | 358.9 | 35.6 | 2 |
| 25 | 60 | 28.84 | 0.564 | 8.080 | 0.170 | 0.1161 | 0.0021 | 0.5232 | 8.613 | 0.156 | 0.5065 | 0.0093 | 0.2281 | 318.1 | 11.0 | 2 |
| 26 | 60 | 5.84 | 0.760 | 13.600 | 0.740 | 0.1390 | 0.0100 | 0.0217 | 7.194 | 0.518 | 0.6580 | 0.0470 | 0.2228 | 211.2 | 53.9 | 2 |
| 27 | 60 | 18.05 | 0.755 | 18.670 | 0.310 | 0.2057 | 0.0034 | 0.5599 | 4.861 | 0.080 | 0.6600 | 0.0120 | 0.3452 | 316.5 | 22.2 | 2 |
| 28 | 60 | 44.93 | 0.393 | 3.988 | 0.087 | 0.0783 | 0.0011 | 0.3724 | 12.771 | 0.179 | 0.3679 | 0.0086 | 0.1454 | 299.4 | 7.0 | 2 |
| 29 | 60 | 77.81 | 0.534 | 5.590 | 0.130 | 0.0841 | 0.0009 | 0.4252 | 11.895 | 0.133 | 0.4786 | 0.0089 | 0.0683 | 247.8 | 7.1 | 2 |
| 30 | 60 | 1.00 | 0.951 | 90.500 | 4.700 | 0.8010 | 0.0300 | 0.2812 | 1.248 | 0.047 | 0.8130 | 0.0450 | 0.3629 | 249.9 | 285.5 | 2 |

| HS02 apatite | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grain | Spot size (μm) | U (ppm) | $^{206}Pb_c$ | 207/235 | 207/235 2σ | 206/238 | 206/238 2σ | ρ | 238/206 | 238/206 2σ | 207/206 | 207/206 2σ | ρ | $^{207}Pb$ corrected Age (Ma) | $^{207}Pb$ corrected Age 2σ | Pb correction type |
| 1 | 60 | 7.86 | 0.841 | 27.000 | 1.100 | 0.2695 | 0.0110 | 0.7451 | 3.711 | 0.151 | 0.7260 | 0.0240 | 0.0929 | 270.5 | 53.6 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 60 | 5.91 | 0.846 | 36.400 | 1.200 | 0.3596 | 0.0130 | 0.3240 | 2.781 | 0.101 | 0.7350 | 0.0240 | 0.3865 | 346.9 | 70.2 | 2 |
| 3 | 60 | 8.40 | 0.894 | 57.900 | 1.100 | 0.5370 | 0.0170 | 0.4214 | 1.862 | 0.059 | 0.7740 | 0.0150 | 0.5712 | 357.7 | 70.1 | 2 |
| 4 | 60 | 27.26 | 0.697 | 13.400 | 0.290 | 0.1591 | 0.0044 | 0.1029 | 6.285 | 0.174 | 0.6120 | 0.0160 | 0.1428 | 304.0 | 22.5 | 2 |
| 5 | 60 | 0.75 | 0.993 | 85.300 | 3.800 | 0.7550 | 0.0380 | 0.5338 | 1.325 | 0.067 | 0.8330 | 0.0400 | 0.5915 | 32.3 | 250.2 | 2 |
| 6 | 60 | 1.32 | 0.907 | 147.900 | 5.000 | 1.3210 | 0.0530 | 0.4845 | 0.757 | 0.030 | 0.8110 | 0.0230 | 0.4534 | 750.0 | 232.1 | 2 |
| 7 | 60 | 0.95 | 0.457 | 4.550 | 0.960 | 0.0900 | 0.0100 | 0.0524 | 11.111 | 1.235 | 0.4200 | 0.1100 | 0.6036 | 307.4 | 83.5 | 2 |
| 8 | 60 | 11.58 | 0.850 | 31.700 | 1.400 | 0.3130 | 0.0140 | 0.9814 | 3.195 | 0.143 | 0.7350 | 0.0190 | -0.0321 | 295.2 | 50.9 | 2 |
| 9 | 60 | 4.08 | 0.876 | 33.200 | 1.300 | 0.3230 | 0.0140 | -0.0235 | 3.096 | 0.134 | 0.7530 | 0.0400 | 0.1826 | 253.2 | 103.0 | 2 |
| 10 | 60 | 23.66 | 0.279 | 2.670 | 0.120 | 0.0696 | 0.0021 | -0.0724 | 14.368 | 0.434 | 0.2770 | 0.0150 | 0.1277 | 315.6 | 12.4 | 2 |
| 11 | 60 | 25.47 | 0.574 | 9.560 | 0.250 | 0.1340 | 0.0042 | 0.1687 | 7.463 | 0.234 | 0.5160 | 0.0140 | 0.4479 | 358.2 | 18.8 | 2 |
| 12 | 60 | 22.44 | 0.609 | 10.120 | 0.230 | 0.1362 | 0.0045 | 0.3156 | 7.342 | 0.243 | 0.5430 | 0.0160 | 0.5785 | 334.8 | 20.7 | 2 |
| 13 | 60 | 14.90 | 0.648 | 12.440 | 0.430 | 0.1557 | 0.0054 | 0.1346 | 6.423 | 0.223 | 0.5750 | 0.0220 | 0.4107 | 344.2 | 29.5 | 2 |
| 14 | 60 | 1.29 | 0.305 | 3.590 | 0.960 | 0.0782 | 0.0085 | 0.1048 | 12.788 | 1.390 | 0.2990 | 0.0900 | 0.1671 | 341.1 | 65.2 | 2 |
| 15 | 60 | 37.00 | 0.663 | 12.550 | 0.660 | 0.1522 | 0.0061 | 0.8429 | 6.570 | 0.263 | 0.5860 | 0.0190 | -0.4891 | 322.5 | 26.5 | 2 |
| 16 | 60 | 19.90 | 0.309 | 3.360 | 0.280 | 0.0783 | 0.0036 | 0.5730 | 12.771 | 0.587 | 0.3020 | 0.0190 | -0.1756 | 339.7 | 19.2 | 2 |
| 17 | 60 | 8.55 | 0.929 | 72.100 | 1.200 | 0.6550 | 0.0190 | 0.4752 | 1.527 | 0.044 | 0.7980 | 0.0130 | 0.4306 | 294.7 | 77.6 | 2 |
| 18 | 60 | 18.12 | 0.773 | 16.760 | 0.340 | 0.1796 | 0.0057 | 0.0481 | 5.568 | 0.177 | 0.6710 | 0.0170 | 0.6729 | 257.2 | 26.7 | 2 |
| 19 | 60 | 15.40 | 0.582 | 9.640 | 0.860 | 0.1318 | 0.0091 | 0.7199 | 7.587 | 0.524 | 0.5220 | 0.0280 | -0.1218 | 345.8 | 37.1 | 2 |
| 20 | 60 | 18.53 | 0.581 | 7.670 | 0.320 | 0.1079 | 0.0045 | 0.2440 | 9.268 | 0.387 | 0.5180 | 0.0230 | 0.3533 | 285.3 | 22.9 | 2 |
| 21 | 60 | 2.68 | 1.050 | 171.000 | 4.900 | 1.4570 | 0.0530 | 0.6611 | 0.686 | 0.025 | 0.8530 | 0.0190 | 0.2137 | -491.1 | 270.2 | 2 |
| 22 | 60 | 24.58 | 0.828 | 30.000 | 1.600 | 0.3030 | 0.0150 | 0.9312 | 3.300 | 0.163 | 0.7190 | 0.0130 | -0.1167 | 327.7 | 38.0 | 2 |
| 23 | 60 | 3.82 | 0.061 | 0.160 | 0.460 | 0.0412 | 0.0085 | 0.0790 | 24.272 | 5.008 | 0.1000 | 0.1700 | 0.2711 | 244.7 | 74.0 | 2 |
| 24 | 60 | 0.04 | -0.160 | 1.000 | 25.000 | -0.2000 | 0.2800 | -0.2095 | -5.000 | 7.000 | -0.0900 | 0.2100 | 0.1280 | -1701.1 | 2715.2 | 2 |
| 25 | 60 | 18.70 | 0.891 | 11.100 | 0.590 | 0.1056 | 0.0050 | 0.1913 | 9.470 | 0.448 | 0.7540 | 0.0310 | 0.1262 | 73.7 | 27.3 | 2 |
| 26 | 60 | 2.38 | 0.886 | 206.000 | 16.000 | 1.8500 | 0.1100 | 0.4590 | 0.541 | 0.032 | 0.8240 | 0.0420 | 0.1532 | 1231.3 | 537.3 | 2 |
| 27 | 60 | 52.60 | 0.496 | 6.400 | 0.260 | 0.1040 | 0.0040 | 0.2833 | 9.615 | 0.370 | 0.4520 | 0.0150 | 0.0183 | 329.4 | 17.6 | 2 |
| 28 | 60 | 16.89 | 0.691 | 12.400 | 0.380 | 0.1504 | 0.0049 | 0.2223 | 6.649 | 0.217 | 0.6070 | 0.0180 | 0.4644 | 292.8 | 24.0 | 2 |
| 29 | 60 | 14.65 | -0.051 | 0.047 | 0.057 | 0.0440 | 0.0120 | 0.1788 | 22.727 | 6.198 | 0.0110 | 0.0160 | -0.0658 | 291.5 | 78.5 | 2 |
| 30 | 60 | 15.08 | 0.765 | 18.810 | 0.850 | 0.2075 | 0.0100 | 0.7391 | 4.819 | 0.232 | 0.6670 | 0.0170 | 0.2866 | 307.3 | 32.6 | 2 |
| 31 | 60 | -0.01 | 0.268 | -2.000 | 39.000 | -0.3100 | 0.6000 | 0.5795 | -3.226 | 6.243 | 0.2200 | 0.2500 | -0.0543 | -1658.6 | 3696.1 | 2 |
| 32 | 60 | 0.96 | 0.369 | 53.000 | 26.000 | 0.8100 | 0.1100 | 0.6444 | 1.235 | 0.168 | 0.5100 | 0.2100 | 0.6580 | 2661.2 | 1181.4 | 2 |
| 33 | 60 | 33.91 | 0.280 | 3.630 | 1.700 | 0.1028 | 0.0073 | 0.1557 | 9.728 | 0.691 | 0.2830 | 0.1100 | 0.5106 | 460.5 | 90.8 | 2 |

| **HS04 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 8.35 | 0.596 | 8.480 | 0.430 | 0.1170 | 0.0049 | 0.5222 | 8.547 | 0.358 | 0.5310 | 0.0200 | 0.2564 | 297.7 | 22.3 | 2 |
| 2 | 60 | 5.33 | 0.867 | 40.960 | 1.500 | 0.3981 | 0.0150 | 0.4815 | 2.512 | 0.095 | 0.7510 | 0.0160 | 0.4010 | 331.8 | 55.3 | 2 |
| 3 | 60 | 10.73 | 0.837 | 24.400 | 1.000 | 0.2470 | 0.0098 | 0.7225 | 4.049 | 0.161 | 0.7220 | 0.0140 | 0.2293 | 254.1 | 31.8 | 2 |
| 4 | 60 | 6.47 | 0.823 | 23.120 | 0.930 | 0.2342 | 0.0089 | 0.5490 | 4.270 | 0.162 | 0.7110 | 0.0200 | 0.1352 | 262.0 | 39.8 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 60 | 42.12 | 0.655 | 10.750 | 0.380 | 0.1340 | 0.0048 | 0.5703 | 7.463 | 0.267 | 0.5781 | 0.0079 | 0.4794 | 291.2 | 14.4 | 2 |
| 6 | 60 | 4.46 | 0.855 | 28.960 | 1.100 | 0.2857 | 0.0110 | 0.5612 | 3.500 | 0.135 | 0.7370 | 0.0190 | 0.4745 | 260.9 | 46.3 | 2 |
| 7 | 60 | 4.99 | 0.847 | 24.100 | 0.940 | 0.2471 | 0.0095 | 0.1320 | 4.047 | 0.156 | 0.7290 | 0.0210 | 0.6600 | 239.0 | 43.8 | 2 |
| 8 | 60 | 13.55 | 0.829 | 22.430 | 0.870 | 0.2268 | 0.0084 | 0.3779 | 4.409 | 0.163 | 0.7150 | 0.0170 | 0.2554 | 245.0 | 33.8 | 2 |
| 9 | 60 | 2.20 | 1.004 | 147.400 | 5.600 | 1.2880 | 0.0530 | 0.7622 | 0.776 | 0.032 | 0.8400 | 0.0180 | 0.2305 | -29.9 | 209.2 | 2 |
| 10 | 60 | 2.84 | 1.060 | 335.100 | 12.000 | 2.8480 | 0.1000 | 0.8796 | 0.351 | 0.012 | 0.8560 | 0.0100 | 0.1258 | -1214.1 | 371.5 | 2 |
| 11 | 60 | 8.19 | 0.846 | 33.400 | 1.200 | 0.3280 | 0.0120 | 0.2740 | 3.049 | 0.112 | 0.7330 | 0.0140 | 0.6231 | 317.5 | 41.4 | 2 |
| 12 | 60 | 1.84 | 0.987 | 90.100 | 3.500 | 0.7840 | 0.0300 | 0.4971 | 1.276 | 0.049 | 0.8300 | 0.0170 | 0.4395 | 66.8 | 119.5 | 2 |
| 13 | 60 | 4.21 | 0.949 | 62.800 | 2.400 | 0.5610 | 0.0220 | 0.6044 | 1.783 | 0.070 | 0.8070 | 0.0180 | 0.4603 | 181.6 | 87.6 | 2 |
| 14 | 60 | 5.17 | 0.898 | 53.900 | 2.200 | 0.4990 | 0.0190 | 0.6215 | 2.004 | 0.076 | 0.7750 | 0.0160 | 0.3638 | 319.8 | 69.2 | 2 |
| 15 | 60 | 4.77 | 0.923 | 53.300 | 2.300 | 0.4890 | 0.0200 | 0.6166 | 2.045 | 0.084 | 0.7900 | 0.0180 | 0.3903 | 237.0 | 75.7 | 2 |
| 16 | 60 | 8.51 | 0.846 | 30.160 | 1.200 | 0.2980 | 0.0110 | 0.5189 | 3.356 | 0.124 | 0.7310 | 0.0160 | 0.3637 | 289.8 | 41.8 | 2 |
| 17 | 60 | 11.34 | 0.767 | 20.540 | 0.800 | 0.2219 | 0.0080 | -0.0526 | 4.507 | 0.162 | 0.6700 | 0.0200 | 0.1252 | 324.7 | 37.7 | 2 |
| 18 | 60 | 10.53 | 0.715 | 14.310 | 0.650 | 0.1689 | 0.0071 | 0.9628 | 5.921 | 0.249 | 0.6270 | 0.0170 | -0.2881 | 302.8 | 26.7 | 2 |
| 19 | 60 | 6.31 | 0.803 | 29.400 | 1.300 | 0.3170 | 0.0240 | 0.1271 | 3.155 | 0.239 | 0.7030 | 0.0230 | 0.6694 | 390.0 | 64.7 | 2 |
| 20 | 60 | 7.45 | 0.816 | 28.180 | 1.000 | 0.2883 | 0.0099 | 0.2729 | 3.469 | 0.119 | 0.7100 | 0.0170 | 0.4654 | 332.6 | 42.2 | 2 |
| 21 | 60 | 21.15 | 0.633 | 11.810 | 0.540 | 0.1548 | 0.0062 | 0.4988 | 6.460 | 0.259 | 0.5640 | 0.0130 | 0.1736 | 355.9 | 21.8 | 2 |
| 22 | 60 | 2.04 | 0.934 | 48.200 | 2.000 | 0.4421 | 0.0160 | 0.1864 | 2.262 | 0.082 | 0.7950 | 0.0270 | 0.3684 | 186.0 | 98.3 | 2 |
| 23 | 60 | 6.41 | 0.805 | 28.790 | 1.200 | 0.2973 | 0.0110 | 0.6712 | 3.364 | 0.124 | 0.7030 | 0.0160 | 0.2247 | 362.7 | 41.7 | 2 |
| 24 | 60 | 4.11 | 0.795 | 41.300 | 3.600 | 0.4210 | 0.0330 | 0.9280 | 2.375 | 0.186 | 0.7050 | 0.0180 | -0.2455 | 534.9 | 72.8 | 2 |
| 25 | 60 | 5.94 | 0.852 | 39.140 | 1.500 | 0.3849 | 0.0140 | 0.4950 | 2.598 | 0.095 | 0.7400 | 0.0170 | 0.3751 | 358.1 | 55.9 | 2 |
| 26 | 60 | 2.81 | 0.910 | 69.500 | 2.800 | 0.6310 | 0.0240 | 0.3488 | 1.585 | 0.060 | 0.7870 | 0.0220 | 0.5138 | 356.4 | 113.4 | 2 |
| 27 | 60 | 8.53 | 0.733 | 19.460 | 0.740 | 0.2185 | 0.0078 | 0.3561 | 4.577 | 0.163 | 0.6450 | 0.0160 | 0.3704 | 365.2 | 31.4 | 2 |
| 28 | 60 | 36.70 | 0.525 | 6.360 | 0.590 | 0.0956 | 0.0074 | 0.9524 | 10.460 | 0.810 | 0.4730 | 0.0140 | -0.4278 | 286.6 | 24.4 | 2 |
| 29 | 60 | 120.60 | 0.234 | 2.370 | 0.140 | 0.0713 | 0.0028 | 0.7379 | 14.025 | 0.551 | 0.2414 | 0.0090 | -0.3166 | 343.0 | 14.2 | 2 |
| 30 | 60 | 6.70 | 0.908 | 56.540 | 2.000 | 0.5263 | 0.0190 | 0.5861 | 1.900 | 0.069 | 0.7820 | 0.0130 | 0.4840 | 305.0 | 62.5 | 2 |
| 31 | 60 | 13.80 | 0.765 | 18.520 | 0.890 | 0.2072 | 0.0088 | 0.5386 | 4.826 | 0.205 | 0.6670 | 0.0160 | 0.1915 | 306.8 | 30.5 | 2 |
| 32 | 60 | 9.21 | 0.860 | 34.870 | 1.500 | 0.3348 | 0.0130 | 0.3498 | 2.987 | 0.116 | 0.7430 | 0.0160 | -0.0070 | 294.7 | 47.0 | 2 |
| 33 | 60 | 13.47 | 0.687 | 13.840 | 0.650 | 0.1670 | 0.0065 | 0.1659 | 5.988 | 0.233 | 0.6060 | 0.0180 | 0.0975 | 328.0 | 27.4 | 2 |
| 34 | 60 | 5.46 | 0.926 | 75.700 | 2.700 | 0.6920 | 0.0240 | 0.5151 | 1.445 | 0.050 | 0.7980 | 0.0150 | 0.3684 | 319.9 | 91.0 | 2 |
| 35 | 60 | 4.65 | 0.879 | 49.400 | 3.300 | 0.5540 | 0.0750 | 0.0058 | 1.805 | 0.244 | 0.7660 | 0.0180 | 0.2900 | 418.5 | 98.9 | 2 |
| 36 | 60 | 17.07 | 0.709 | 13.180 | 0.540 | 0.1531 | 0.0059 | 0.5798 | 6.532 | 0.252 | 0.6210 | 0.0160 | 0.2280 | 280.7 | 22.9 | 2 |
| 37 | 60 | 13.27 | 0.900 | 41.730 | 1.500 | 0.3899 | 0.0130 | 0.4245 | 2.565 | 0.086 | 0.7720 | 0.0120 | 0.0196 | 245.9 | 44.1 | 2 |
| 38 | 60 | 6.80 | 0.823 | 19.970 | 0.770 | 0.2062 | 0.0077 | 0.3731 | 4.850 | 0.181 | 0.7090 | 0.0200 | 0.4623 | 231.5 | 35.2 | 2 |
| 39 | 60 | 9.66 | 0.943 | 49.740 | 1.700 | 0.4509 | 0.0150 | 0.4260 | 2.218 | 0.074 | 0.8010 | 0.0120 | 0.4749 | 163.2 | 51.7 | 2 |
| 40 | 60 | 5.62 | 0.830 | 26.110 | 1.000 | 0.2629 | 0.0110 | 0.0714 | 3.804 | 0.159 | 0.7180 | 0.0220 | 0.1371 | 281.6 | 48.5 | 2 |
| 41 | 60 | 5.07 | 0.927 | 42.300 | 1.600 | 0.3860 | 0.0180 | 0.1865 | 2.591 | 0.121 | 0.7890 | 0.0190 | 0.0825 | 179.6 | 63.2 | 2 |
| 42 | 60 | 7.74 | 0.836 | 22.750 | 0.870 | 0.2320 | 0.0087 | 0.5635 | 4.310 | 0.162 | 0.7200 | 0.0160 | 0.3959 | 241.1 | 33.0 | 2 |
| 43 | 60 | 6.39 | 0.855 | 35.000 | 1.600 | 0.3400 | 0.0150 | 0.7399 | 2.941 | 0.130 | 0.7400 | 0.0180 | 0.0626 | 309.4 | 52.7 | 2 |
| 44 | 60 | 5.27 | 0.844 | 28.330 | 1.100 | 0.2835 | 0.0100 | 0.2116 | 3.527 | 0.124 | 0.7290 | 0.0200 | 0.4206 | 278.9 | 47.7 | 2 |
| 45 | 60 | 5.14 | 0.917 | 58.800 | 2.900 | 0.5410 | 0.0260 | 0.3972 | 1.848 | 0.089 | 0.7880 | 0.0150 | 0.3789 | 282.4 | 72.2 | 2 |
| 46 | 60 | 19.32 | 0.589 | 8.150 | 0.290 | 0.1139 | 0.0039 | 0.1510 | 8.780 | 0.301 | 0.5250 | 0.0110 | 0.5262 | 295.1 | 14.6 | 2 |
| 47 | 60 | 7.86 | 0.895 | 39.770 | 1.500 | 0.3775 | 0.0130 | 0.6227 | 2.649 | 0.091 | 0.7680 | 0.0150 | 0.3867 | 250.9 | 50.2 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 48 | 60 | 9.13 | 0.769 | 18.030 | 0.770 | 0.1943 | 0.0078 | 0.0288 | 5.147 | 0.207 | 0.6690 | 0.0240 | 0.2244 | 283.1 | 39.1 | 2 |
| 49 | 60 | 5.85 | 0.813 | 29.150 | 1.200 | 0.2967 | 0.0120 | 0.5802 | 3.370 | 0.136 | 0.7080 | 0.0180 | 0.2725 | 348.8 | 46.0 | 2 |
| 50 | 60 | 12.08 | 0.896 | 43.540 | 1.500 | 0.4114 | 0.0140 | 0.6134 | 2.431 | 0.083 | 0.7700 | 0.0120 | 0.3509 | 270.6 | 46.4 | 2 |
| 51 | 60 | 9.57 | 0.734 | 18.160 | 0.680 | 0.2045 | 0.0074 | 0.2798 | 4.890 | 0.177 | 0.6440 | 0.0150 | 0.5041 | 341.9 | 28.3 | 2 |
| 52 | 60 | 14.27 | 0.707 | 16.080 | 0.560 | 0.1886 | 0.0066 | 0.0480 | 5.302 | 0.186 | 0.6230 | 0.0130 | 0.7462 | 346.5 | 23.9 | 2 |
| 53 | 60 | 8.26 | 0.942 | 104.000 | 3.500 | 0.9270 | 0.0310 | 0.5835 | 1.079 | 0.036 | 0.8120 | 0.0120 | 0.1816 | 337.5 | 103.5 | 2 |
| 54 | 60 | 12.19 | 0.638 | 12.440 | 0.600 | 0.1592 | 0.0063 | 0.6243 | 6.281 | 0.249 | 0.5680 | 0.0140 | 0.1284 | 361.2 | 23.1 | 2 |
| 55 | 60 | 13.80 | 0.709 | 16.660 | 0.610 | 0.1924 | 0.0071 | 0.3991 | 5.198 | 0.192 | 0.6250 | 0.0140 | 0.6009 | 350.7 | 25.8 | 2 |
| 56 | 60 | 1.55 | 1.127 | 812.000 | 29.000 | 6.8400 | 0.2400 | 0.8376 | 0.146 | 0.005 | 0.8582 | 0.0088 | 0.3913 | -13066.4 | 5596.7 | 2 |
| 57 | 60 | 9.76 | 0.857 | 38.400 | 2.000 | 0.3710 | 0.0180 | 0.5710 | 2.695 | 0.131 | 0.7430 | 0.0140 | -0.0142 | 332.5 | 47.8 | 2 |
| 58 | 60 | 2.42 | 0.964 | 116.700 | 4.700 | 1.0190 | 0.0460 | 0.2114 | 0.981 | 0.044 | 0.8230 | 0.0200 | 0.0646 | 233.9 | 172.3 | 2 |
| 59 | 60 | 10.06 | 0.924 | 60.100 | 2.200 | 0.5474 | 0.0190 | 0.5288 | 1.827 | 0.063 | 0.7920 | 0.0140 | 0.2489 | 263.7 | 69.0 | 2 |
| 60 | 60 | 10.31 | 0.827 | 32.500 | 1.400 | 0.3320 | 0.0150 | 0.8306 | 3.012 | 0.136 | 0.7200 | 0.0130 | 0.3322 | 360.9 | 40.9 | 2 |
| 61 | 60 | 5.06 | 0.950 | 86.400 | 3.100 | 0.7790 | 0.0290 | 0.4176 | 1.284 | 0.048 | 0.8120 | 0.0140 | 0.6123 | 248.3 | 98.6 | 2 |
| 62 | 60 | 7.55 | 0.816 | 32.700 | 1.500 | 0.3321 | 0.0140 | 0.7339 | 3.011 | 0.127 | 0.7130 | 0.0170 | 0.0462 | 381.8 | 49.1 | 2 |
| 63 | 60 | 8.63 | 0.953 | 83.100 | 2.800 | 0.7422 | 0.0250 | 0.2121 | 1.347 | 0.045 | 0.8130 | 0.0120 | 0.4154 | 220.2 | 84.5 | 2 |
| 64 | 60 | 5.91 | 0.821 | 27.880 | 1.100 | 0.2858 | 0.0110 | 0.3134 | 3.499 | 0.135 | 0.7130 | 0.0190 | 0.7478 | 321.9 | 46.2 | 2 |
| 65 | 60 | 5.69 | 0.821 | 30.060 | 1.200 | 0.3100 | 0.0120 | 0.3320 | 3.226 | 0.125 | 0.7150 | 0.0180 | 0.4227 | 347.4 | 47.8 | 2 |
| 66 | 60 | 4.74 | 0.917 | 55.300 | 2.300 | 0.5130 | 0.0210 | -0.0118 | 1.949 | 0.080 | 0.7870 | 0.0180 | 0.4987 | 268.4 | 79.0 | 2 |
| 67 | 60 | 6.89 | 0.749 | 23.560 | 0.910 | 0.2579 | 0.0091 | 0.2513 | 3.877 | 0.137 | 0.6600 | 0.0150 | 0.1766 | 404.4 | 34.9 | 2 |
| 68 | 60 | 5.38 | 0.815 | 27.900 | 1.100 | 0.2901 | 0.0120 | 0.5762 | 3.447 | 0.143 | 0.7090 | 0.0180 | 0.4845 | 337.5 | 45.1 | 2 |
| 69 | 60 | 4.07 | 0.981 | 184.300 | 6.600 | 1.5970 | 0.0560 | 0.6721 | 0.626 | 0.022 | 0.8370 | 0.0120 | 0.3485 | 197.7 | 183.0 | 2 |
| 70 | 60 | 5.61 | 0.817 | 24.370 | 1.000 | 0.2548 | 0.0100 | 0.0119 | 3.925 | 0.154 | 0.7080 | 0.0220 | 0.6260 | 294.2 | 46.9 | 2 |
| 71 | 60 | 5.01 | 0.818 | 25.280 | 1.000 | 0.2601 | 0.0120 | 0.3406 | 3.845 | 0.177 | 0.7090 | 0.0230 | 0.2493 | 298.7 | 50.2 | 2 |
| 72 | 60 | 6.83 | 0.832 | 25.670 | 1.200 | 0.2628 | 0.0110 | 0.6100 | 3.805 | 0.159 | 0.7190 | 0.0240 | 0.0614 | 279.2 | 52.3 | 2 |
| 73 | 60 | 12.72 | 0.754 | 16.620 | 0.640 | 0.1848 | 0.0068 | 0.1296 | 5.411 | 0.199 | 0.6570 | 0.0130 | 0.5082 | 286.9 | 23.2 | 2 |
| 74 | 60 | 8.40 | 0.806 | 22.640 | 0.860 | 0.2356 | 0.0087 | 0.3657 | 4.244 | 0.157 | 0.6990 | 0.0170 | 0.2587 | 288.1 | 35.1 | 2 |
| 75 | 60 | 8.84 | 0.842 | 27.230 | 1.000 | 0.2725 | 0.0095 | 0.1076 | 3.670 | 0.128 | 0.7270 | 0.0130 | 0.0069 | 271.5 | 32.8 | 2 |
| 76 | 60 | 3.07 | 0.833 | 58.400 | 4.200 | 0.5720 | 0.0360 | 0.9370 | 1.748 | 0.110 | 0.7400 | 0.0210 | 0.0040 | 587.4 | 100.1 | 2 |
| 77 | 60 | 10.43 | 0.933 | 58.220 | 1.900 | 0.5306 | 0.0170 | 0.3578 | 1.885 | 0.060 | 0.7970 | 0.0110 | 0.4875 | 224.8 | 56.8 | 2 |
| 78 | 60 | 2.80 | 0.988 | 119.400 | 4.200 | 1.0470 | 0.0370 | 0.4573 | 0.955 | 0.034 | 0.8330 | 0.0150 | 0.5053 | 77.6 | 144.3 | 2 |
| 79 | 60 | 8.56 | 0.857 | 37.860 | 1.300 | 0.3714 | 0.0130 | 0.2529 | 2.693 | 0.094 | 0.7430 | 0.0140 | 0.5138 | 332.9 | 46.5 | 2 |
| 80 | 60 | 5.55 | 0.850 | 33.210 | 1.200 | 0.3288 | 0.0120 | 0.5245 | 3.041 | 0.111 | 0.7360 | 0.0170 | 0.3724 | 309.5 | 48.2 | 2 |
| 81 | 60 | 3.32 | 0.911 | 53.800 | 2.100 | 0.5010 | 0.0190 | 0.2978 | 1.996 | 0.076 | 0.7830 | 0.0200 | 0.3241 | 280.7 | 84.0 | 2 |
| 82 | 60 | 4.69 | 0.860 | 30.900 | 1.400 | 0.3035 | 0.0130 | 0.6880 | 3.295 | 0.141 | 0.7410 | 0.0190 | 0.2995 | 268.6 | 49.4 | 2 |
| 83 | 60 | 4.06 | 0.965 | 90.100 | 4.200 | 0.8060 | 0.0370 | 0.3116 | 1.241 | 0.057 | 0.8200 | 0.0170 | 0.4448 | 178.7 | 120.3 | 2 |
| 84 | 60 | 3.45 | 0.752 | 18.100 | 0.950 | 0.1992 | 0.0091 | -0.0241 | 5.020 | 0.229 | 0.6570 | 0.0380 | 0.1908 | 310.8 | 60.8 | 2 |
| 85 | 60 | 1.00 | 1.123 | 431.000 | 19.000 | 3.6000 | 0.1400 | 0.8372 | 0.278 | 0.011 | 0.8610 | 0.0120 | 0.0743 | -3781.4 | 828.4 | 2 |
| 86 | 60 | 8.90 | 0.728 | 22.800 | 2.200 | 0.2490 | 0.0180 | 0.8520 | 4.016 | 0.290 | 0.6440 | 0.0310 | -0.6180 | 422.7 | 66.6 | 2 |
| 87 | 60 | 9.25 | 0.814 | 24.240 | 0.980 | 0.2499 | 0.0094 | 0.4573 | 4.002 | 0.151 | 0.7060 | 0.0170 | 0.2787 | 292.3 | 37.1 | 2 |
| 88 | 60 | 13.15 | 0.800 | 24.390 | 0.860 | 0.2548 | 0.0086 | 0.5008 | 3.925 | 0.132 | 0.6960 | 0.0130 | 0.1811 | 320.7 | 30.7 | 2 |
| 89 | 60 | 5.36 | 0.876 | 41.450 | 1.600 | 0.4004 | 0.0160 | 0.6464 | 2.498 | 0.100 | 0.7570 | 0.0170 | 0.4671 | 311.4 | 58.7 | 2 |
| 90 | 60 | 4.96 | 0.830 | 38.530 | 1.400 | 0.3837 | 0.0150 | 0.4481 | 2.606 | 0.102 | 0.7260 | 0.0200 | 0.4472 | 406.3 | 63.7 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 91 | 60 | 7.69 | 0.804 | 24.220 | 1.200 | 0.2527 | 0.0110 | 0.6700 | 3.957 | 0.172 | 0.6990 | 0.0200 | 0.1144 | 311.2 | 43.3 | 2 |
| 92 | 60 | 12.73 | 0.866 | 36.680 | 1.300 | 0.3558 | 0.0120 | 0.5673 | 2.811 | 0.095 | 0.7480 | 0.0110 | 0.3225 | 300.1 | 37.8 | 2 |
| 93 | 60 | 10.26 | 0.847 | 37.010 | 1.200 | 0.3655 | 0.0130 | 0.1377 | 2.736 | 0.097 | 0.7360 | 0.0150 | 0.7110 | 350.2 | 48.2 | 2 |
| 94 | 60 | 57.20 | 0.255 | 2.450 | 0.140 | 0.0680 | 0.0027 | 0.7613 | 14.706 | 0.584 | 0.2575 | 0.0098 | -0.4997 | 318.7 | 13.5 | 2 |
| 95 | 60 | 4.72 | 0.997 | 174.300 | 6.400 | 1.4980 | 0.0560 | 0.8818 | 0.668 | 0.025 | 0.8399 | 0.0099 | 0.1940 | 24.8 | 157.1 | 2 |
| 96 | 60 | 6.29 | 0.794 | 26.800 | 1.600 | 0.2700 | 0.0140 | 0.8628 | 3.704 | 0.192 | 0.6930 | 0.0240 | -0.4529 | 349.0 | 54.6 | 2 |
| 97 | 60 | 5.36 | 0.839 | 30.410 | 1.100 | 0.3043 | 0.0110 | 0.4006 | 3.286 | 0.119 | 0.7270 | 0.0150 | 0.4440 | 307.6 | 40.6 | 2 |
| 98 | 60 | 13.80 | 0.666 | 15.800 | 1.500 | 0.1920 | 0.0140 | 0.1671 | 5.208 | 0.380 | 0.5930 | 0.0290 | -0.1511 | 400.3 | 51.7 | 2 |

| **HS05 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 4.19 | 0.671 | 183.400 | 4.500 | 1.7700 | 0.0750 | 0.0437 | 0.565 | 0.024 | 0.7850 | 0.0150 | 0.2804 | 118.5 | 255.6 | 2 |
| 2 | 60 | 8.04 | 0.773 | 22.400 | 1.500 | 0.2430 | 0.0160 | 0.8579 | 4.115 | 0.271 | 0.6760 | 0.0210 | -0.2611 | 346.0 | 46.7 | 2 |
| 3 | 60 | 90.40 | 0.266 | 2.675 | 0.075 | 0.0711 | 0.0027 | 0.1465 | 14.067 | 0.534 | 0.2672 | 0.0048 | 0.1883 | 327.8 | 12.6 | 2 |
| 4 | 60 | 4.53 | 0.940 | 76.800 | 2.100 | 0.6950 | 0.0290 | 0.6436 | 1.439 | 0.060 | 0.8050 | 0.0140 | 0.4420 | 264.8 | 87.8 | 2 |
| 5 | 60 | 9.31 | 0.360 | 2.710 | 0.190 | 0.0520 | 0.0029 | 0.0832 | 19.231 | 1.072 | 0.3380 | 0.0250 | 0.3757 | 211.1 | 15.5 | 2 |
| 6 | 60 | 3.51 | 0.831 | 24.630 | 0.950 | 0.2487 | 0.0120 | 0.8879 | 4.021 | 0.194 | 0.7180 | 0.0310 | -0.0146 | 264.7 | 62.8 | 2 |
| 7 | 60 | 0.95 | 1.082 | 944.000 | 31.000 | 7.4400 | 0.3500 | 0.7416 | 0.134 | 0.006 | 0.8390 | 0.0160 | 0.2172 | -6074.3 | 2903.7 | 2 |
| 8 | 60 | 83.84 | 0.356 | 4.070 | 0.110 | 0.0848 | 0.0034 | 0.0066 | 11.792 | 0.473 | 0.3400 | 0.0110 | 0.0500 | 342.8 | 15.4 | 2 |
| 9 | 60 | 19.74 | 0.775 | 19.420 | 0.300 | 0.2120 | 0.0085 | 0.1445 | 4.717 | 0.189 | 0.6750 | 0.0100 | 0.3640 | 300.1 | 23.0 | 2 |
| 10 | 60 | 70.40 | 0.452 | 1.500 | 0.072 | 0.0237 | 0.0012 | -0.1423 | 42.248 | 2.142 | 0.4060 | 0.0200 | 0.2866 | 83.1 | 5.7 | 2 |
| 11 | 60 | 23.53 | 0.487 | 4.830 | 0.340 | 0.0738 | 0.0037 | -0.1237 | 13.550 | 0.679 | 0.4410 | 0.0220 | -0.0277 | 239.4 | 17.5 | 2 |
| 12 | 60 | 136.93 | 0.096 | 0.900 | 0.051 | 0.0442 | 0.0018 | 0.0221 | 22.640 | 0.923 | 0.1284 | 0.0078 | 0.2707 | 252.3 | 10.5 | 2 |
| 13 | 60 | 4.10 | 0.912 | 39.900 | 2.300 | 0.3770 | 0.0220 | 0.2128 | 2.653 | 0.155 | 0.7790 | 0.0420 | 0.4753 | 210.9 | 127.0 | 2 |
| 14 | 60 | 17.76 | 0.649 | 10.530 | 0.720 | 0.1229 | 0.0080 | 0.2157 | 8.137 | 0.530 | 0.5720 | 0.0400 | 0.2274 | 272.4 | 42.3 | 2 |
| 15 | 60 | 0.33 | 1.007 | 1176.000 | 69.000 | 11.5500 | 0.8300 | 0.6986 | 0.087 | 0.006 | 0.8410 | 0.0260 | 0.3756 | -522.5 | 2738.6 | 2 |
| 16 | 60 | 0.28 | 0.999 | 3130.000 | 170.000 | 26.6000 | 1.6000 | 0.2476 | 0.038 | 0.002 | 0.8350 | 0.0190 | -0.0981 | 133.6 | 4445.1 | 2 |
| 17 | 60 | 0.20 | 1.072 | 715.000 | 48.000 | 6.8700 | 0.6200 | 0.6137 | 0.146 | 0.013 | 0.8390 | 0.0440 | 0.4584 | -4393.0 | 5042.8 | 2 |
| 18 | 60 | 2.96 | 0.955 | 134.600 | 3.400 | 1.1870 | 0.0490 | 0.0070 | 0.842 | 0.035 | 0.8230 | 0.0150 | 0.2392 | 335.2 | 156.2 | 2 |
| 19 | 60 | 94.17 | 0.201 | 1.680 | 0.069 | 0.0524 | 0.0022 | 0.1919 | 19.088 | 0.802 | 0.2127 | 0.0078 | 0.1618 | 264.3 | 11.4 | 2 |
| 20 | 60 | 8.57 | 0.713 | 13.590 | 0.580 | 0.1432 | 0.0071 | -0.1571 | 6.983 | 0.346 | 0.6230 | 0.0330 | 0.6276 | 259.4 | 39.5 | 2 |
| 21 | 60 | 9.80 | 0.803 | 21.640 | 0.540 | 0.2242 | 0.0097 | 0.1125 | 4.460 | 0.193 | 0.6960 | 0.0190 | 0.2681 | 278.7 | 37.1 | 2 |
| 22 | 60 | 14.44 | 0.724 | 13.980 | 0.460 | 0.1495 | 0.0066 | 0.1598 | 6.689 | 0.295 | 0.6320 | 0.0250 | 0.5052 | 260.2 | 32.0 | 2 |
| 23 | 60 | 9.59 | 0.896 | 95.600 | 2.800 | 0.8430 | 0.0350 | 0.7416 | 1.186 | 0.049 | 0.7880 | 0.0110 | 0.3426 | 543.9 | 87.0 | 2 |
| 24 | 60 | 62.90 | 0.865 | 18.700 | 0.330 | 0.1904 | 0.0079 | 0.4564 | 5.252 | 0.218 | 0.7390 | 0.0100 | 0.3815 | 163.1 | 19.9 | 2 |
| 25 | 60 | 10.90 | 1.046 | 649.500 | 7.800 | 5.4310 | 0.2100 | -0.0417 | 0.184 | 0.007 | 0.8729 | 0.0045 | 0.2721 | -1850.9 | 561.4 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26 | 60 | 26.40 | 0.588 | 8.760 | 0.460 | 0.1246 | 0.0063 | 0.8571 | 8.026 | 0.406 | 0.5260 | 0.0110 | -0.5807 | 322.5 | 19.8 | 2 |
| 27 | 60 | 135.00 | 0.232 | 1.800 | 0.140 | 0.0522 | 0.0034 | 0.6381 | 19.157 | 1.248 | 0.2370 | 0.0170 | -0.0979 | 253.4 | 17.7 | 2 |
| 28 | 60 | 33.30 | 0.512 | 6.530 | 0.140 | 0.1027 | 0.0042 | 0.1064 | 9.737 | 0.398 | 0.4640 | 0.0110 | 0.7059 | 315.5 | 15.8 | 2 |
| 29 | 60 | 0.34 | 0.973 | 68.900 | 6.100 | 0.6900 | 0.0640 | 0.4222 | 1.449 | 0.134 | 0.8220 | 0.0820 | 0.6068 | 120.8 | 453.9 | 2 |
| 30 | 60 | 32.56 | 0.655 | 6.410 | 0.150 | 0.0838 | 0.0034 | 0.0502 | 11.933 | 0.484 | 0.5720 | 0.0150 | 0.3095 | 184.0 | 12.9 | 2 |
| 31 | 60 | 25.50 | 0.387 | 3.940 | 0.150 | 0.0814 | 0.0034 | 0.0123 | 12.285 | 0.513 | 0.3640 | 0.0130 | 0.4983 | 313.7 | 15.4 | 2 |
| 32 | 60 | 13.39 | 0.621 | 9.300 | 0.300 | 0.1249 | 0.0052 | 0.2844 | 8.006 | 0.333 | 0.5510 | 0.0160 | 0.5518 | 298.2 | 20.4 | 2 |
| 33 | 60 | 12.85 | 0.945 | 105.100 | 2.800 | 0.9218 | 0.0350 | 0.6133 | 1.085 | 0.041 | 0.8130 | 0.0100 | 0.4055 | 321.1 | 92.0 | 2 |
| 34 | 60 | 1.39 | 0.812 | 102.700 | 3.800 | 0.9200 | 0.0550 | 0.4470 | 1.087 | 0.065 | 0.7530 | 0.0330 | 0.6867 | 1029.4 | 221.2 | 2 |
| 35 | 60 | 4.22 | 0.940 | 81.200 | 1.600 | 0.7290 | 0.0300 | -0.3275 | 1.372 | 0.056 | 0.8060 | 0.0140 | 0.6041 | 276.3 | 91.9 | 2 |
| 36 | 60 | 0.48 | 1.099 | 720.000 | 28.000 | 6.2900 | 0.4100 | 0.3576 | 0.159 | 0.010 | 0.8410 | 0.0160 | 0.2484 | -6266.8 | 2619.6 | 2 |
| 37 | 60 | 19.67 | 0.435 | 2.590 | 0.130 | 0.0472 | 0.0021 | 0.0011 | 21.186 | 0.943 | 0.3960 | 0.0200 | 0.3671 | 169.8 | 10.7 | 2 |
| 38 | 60 | 42.72 | 0.389 | 4.101 | 0.095 | 0.0808 | 0.0033 | 0.0907 | 12.376 | 0.505 | 0.3650 | 0.0085 | 0.5611 | 310.8 | 13.7 | 2 |
| 39 | 60 | 5.26 | 0.934 | 166.400 | 6.700 | 1.4200 | 0.1200 | -0.7422 | 0.704 | 0.060 | 0.8220 | 0.0210 | 0.2553 | 577.2 | 240.1 | 2 |
| 40 | 60 | 10.97 | 0.584 | 7.820 | 0.260 | 0.1089 | 0.0050 | 0.3656 | 9.183 | 0.422 | 0.5210 | 0.0180 | 0.0457 | 285.3 | 20.4 | 2 |
| 41 | 60 | 0.60 | 1.017 | 1246.000 | 42.000 | 10.2400 | 0.5200 | 0.2983 | 0.098 | 0.005 | 0.8490 | 0.0120 | 0.6084 | -1201.1 | 1429.9 | 2 |
| 42 | 60 | 13.28 | 0.802 | 19.900 | 1.600 | 0.1890 | 0.0160 | 0.8910 | 5.291 | 0.448 | 0.6930 | 0.0200 | -0.2151 | 236.4 | 37.0 | 2 |
| 43 | 60 | 2.91 | 0.894 | 84.000 | 14.000 | 0.8800 | 0.1300 | 0.9499 | 1.136 | 0.168 | 0.7890 | 0.0730 | -0.4110 | 573.1 | 482.8 | 2 |
| 44 | 60 | 65.00 | 0.326 | 3.270 | 0.140 | 0.0746 | 0.0032 | 0.5653 | 13.405 | 0.575 | 0.3151 | 0.0077 | -0.2986 | 316.1 | 14.2 | 2 |
| 45 | 60 | 7.55 | 0.795 | 22.520 | 0.460 | 0.2376 | 0.0098 | 0.2531 | 4.209 | 0.174 | 0.6910 | 0.0180 | 0.1975 | 307.2 | 37.4 | 2 |
| 46 | 60 | 11.05 | 0.654 | 11.160 | 0.600 | 0.1315 | 0.0068 | 0.3816 | 7.605 | 0.393 | 0.5770 | 0.0320 | 0.1804 | 286.8 | 36.2 | 2 |
| 47 | 60 | 61.70 | 0.171 | 1.695 | 0.061 | 0.0641 | 0.0025 | 0.0856 | 15.605 | 0.609 | 0.1905 | 0.0055 | 0.0520 | 333.8 | 13.1 | 2 |
| 48 | 60 | 18.95 | 0.705 | 15.260 | 0.900 | 0.1765 | 0.0100 | 0.8192 | 5.666 | 0.321 | 0.6200 | 0.0160 | -0.0888 | 327.4 | 29.5 | 2 |
| 49 | 60 | 0.79 | 0.991 | 1172.000 | 39.000 | 9.7100 | 0.4600 | 0.8596 | 0.103 | 0.005 | 0.8290 | 0.0120 | 0.1539 | 511.7 | 1102.1 | 2 |
| 50 | 60 | 1.52 | 0.979 | 220.000 | 81.000 | 2.4500 | 0.2700 | 0.0615 | 0.408 | 0.045 | 0.8190 | 0.0320 | -0.0691 | 326.9 | 640.6 | 2 |

| **HS06 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}$Pb corrected Age (Ma)** | **$^{207}$Pb corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 8.09 | 0.780 | 20.110 | 0.650 | 0.2188 | 0.0160 | -0.0308 | 4.570 | 0.334 | 0.6790 | 0.0220 | 0.7204 | 303.1 | 44.6 | 2 |
| 2 | 60 | 198.60 | 0.122 | 1.136 | 0.031 | 0.0565 | 0.0036 | 0.4070 | 17.699 | 1.128 | 0.1508 | 0.0033 | -0.0275 | 312.1 | 19.6 | 2 |
| 3 | 60 | 44.45 | 0.262 | 2.550 | 0.077 | 0.0720 | 0.0041 | 0.2117 | 13.889 | 0.791 | 0.2640 | 0.0073 | 0.4187 | 333.7 | 19.2 | 2 |
| 4 | 60 | 7.24 | 0.787 | 20.480 | 0.540 | 0.2189 | 0.0140 | -0.0371 | 4.568 | 0.292 | 0.6840 | 0.0220 | 0.2381 | 293.9 | 43.1 | 2 |
| 5 | 60 | 84.50 | 0.401 | 4.350 | 0.150 | 0.0840 | 0.0049 | -0.0332 | 11.905 | 0.694 | 0.3750 | 0.0100 | 0.2135 | 316.5 | 19.4 | 2 |
| 6 | 60 | 8.27 | 0.759 | 18.900 | 0.570 | 0.2077 | 0.0120 | 0.3039 | 4.815 | 0.278 | 0.6630 | 0.0190 | 0.3851 | 314.6 | 36.8 | 2 |
| 7 | 60 | 372.00 | 0.102 | 1.007 | 0.067 | 0.0553 | 0.0033 | 0.6941 | 18.083 | 1.079 | 0.1349 | 0.0050 | -0.3678 | 312.3 | 18.5 | 2 |
| 8 | 60 | 19.81 | 0.689 | 12.050 | 0.660 | 0.1481 | 0.0140 | 0.5253 | 6.752 | 0.638 | 0.6050 | 0.0150 | 0.1085 | 290.5 | 32.8 | 2 |
| 9 | 60 | 8.17 | 0.791 | 22.030 | 0.440 | 0.2337 | 0.0140 | 0.1394 | 4.279 | 0.256 | 0.6880 | 0.0170 | 0.6712 | 307.7 | 37.7 | 2 |
| 10 | 60 | 7.56 | 0.996 | 73.000 | 1.000 | 0.6360 | 0.0370 | 0.5094 | 1.572 | 0.091 | 0.8340 | 0.0140 | 0.4559 | 15.1 | 84.3 | 2 |
| 11 | 60 | 2.97 | 0.996 | 76.800 | 14.000 | 0.6850 | 0.1500 | 0.0284 | 1.460 | 0.320 | 0.8340 | 0.0180 | 0.5114 | 17.7 | 110.6 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | 60 | 9.20 | 0.730 | 18.750 | 0.400 | 0.2153 | 0.0130 | -0.0621 | 4.645 | 0.280 | 0.6420 | 0.0170 | 0.6465 | 364.9 | 36.8 | 2 |
| 13 | 60 | 123.60 | 0.159 | 1.496 | 0.058 | 0.0607 | 0.0035 | 0.3619 | 16.464 | 0.949 | 0.1809 | 0.0055 | 0.0956 | 321.1 | 18.4 | 2 |
| 14 | 60 | 15.59 | 0.859 | 34.620 | 0.670 | 0.3497 | 0.0220 | 0.1569 | 2.860 | 0.180 | 0.7430 | 0.0130 | 0.6328 | 310.1 | 44.6 | 2 |
| 15 | 60 | 47.20 | 0.407 | 4.860 | 6.100 | 0.0940 | 0.0510 | -0.1718 | 10.638 | 5.772 | 0.3810 | 0.0320 | 0.6723 | 349.9 | 188.1 | 2 |
| 16 | 60 | 5.07 | 0.823 | 24.680 | 0.620 | 0.2527 | 0.0160 | 0.6945 | 3.957 | 0.251 | 0.7120 | 0.0210 | -0.1424 | 282.7 | 46.8 | 2 |
| 17 | 60 | 5.21 | 0.777 | 23.870 | 0.700 | 0.2607 | 0.0160 | 0.0412 | 3.836 | 0.235 | 0.6800 | 0.0240 | 0.6732 | 364.8 | 54.3 | 2 |
| 18 | 60 | 17.76 | 0.756 | 19.370 | 0.330 | 0.2151 | 0.0130 | 0.2551 | 4.649 | 0.281 | 0.6610 | 0.0130 | 0.5984 | 330.3 | 31.0 | 2 |
| 19 | 60 | 6.15 | 0.821 | 29.100 | 0.850 | 0.2990 | 0.0190 | 0.0700 | 3.344 | 0.213 | 0.7140 | 0.0230 | 0.5679 | 336.1 | 59.1 | 2 |
| 20 | 60 | 8.46 | 0.908 | 52.100 | 1.000 | 0.4950 | 0.0320 | 0.6627 | 2.020 | 0.131 | 0.7810 | 0.0110 | 0.4088 | 286.4 | 54.7 | 2 |
| 21 | 60 | 3.57 | 0.716 | 13.670 | 0.590 | 0.1650 | 0.0110 | -0.0982 | 6.061 | 0.404 | 0.6270 | 0.0350 | 0.2807 | 295.4 | 49.3 | 2 |
| 22 | 60 | 49.00 | 0.485 | 5.630 | 0.560 | 0.0952 | 0.0070 | 0.8846 | 10.504 | 0.772 | 0.4420 | 0.0250 | -0.3963 | 308.8 | 29.1 | 2 |
| 23 | 60 | 5.05 | 0.769 | 21.810 | 0.560 | 0.2405 | 0.0150 | 0.1463 | 4.158 | 0.259 | 0.6730 | 0.0200 | 0.5719 | 348.3 | 44.3 | 2 |
| 24 | 60 | 0.67 | 0.892 | 35.900 | 1.900 | 0.3560 | 0.0270 | 0.2606 | 2.809 | 0.213 | 0.7650 | 0.0510 | 0.7021 | 243.9 | 144.4 | 2 |
| 25 | 60 | 7.67 | 0.710 | 15.660 | 0.430 | 0.1862 | 0.0110 | 0.1580 | 5.371 | 0.317 | 0.6250 | 0.0160 | 0.4473 | 338.7 | 31.4 | 2 |
| 26 | 60 | 14.02 | 0.640 | 4.870 | 0.470 | 0.0659 | 0.0068 | 0.2661 | 15.175 | 1.566 | 0.5590 | 0.1500 | 0.5259 | 151.0 | 80.0 | 2 |
| 27 | 60 | 189.10 | 0.214 | 1.959 | 0.038 | 0.0651 | 0.0038 | 0.5594 | 15.352 | 0.896 | 0.2252 | 0.0036 | 0.2746 | 321.8 | 18.6 | 2 |
| 28 | 60 | 36.26 | 0.394 | 3.648 | 0.083 | 0.0742 | 0.0044 | 0.4569 | 13.477 | 0.799 | 0.3680 | 0.0085 | 0.2858 | 283.6 | 17.4 | 2 |
| 29 | 60 | 24.99 | 0.466 | 5.280 | 0.520 | 0.0919 | 0.0053 | 0.3257 | 10.881 | 0.628 | 0.4270 | 0.0450 | 0.3208 | 308.9 | 36.5 | 2 |
| 30 | 60 | 52.15 | 0.462 | 5.530 | 0.120 | 0.0970 | 0.0057 | 0.1890 | 10.309 | 0.606 | 0.4248 | 0.0081 | 0.2421 | 327.8 | 20.1 | 2 |
| 31 | 60 | 49.19 | 0.556 | 7.180 | 0.110 | 0.1074 | 0.0069 | 0.3256 | 9.311 | 0.598 | 0.4990 | 0.0079 | 0.4672 | 300.2 | 20.5 | 2 |
| 32 | 60 | 7.33 | 0.833 | 22.470 | 0.660 | 0.2336 | 0.0140 | 0.1232 | 4.281 | 0.257 | 0.7180 | 0.0220 | 0.0243 | 247.0 | 44.6 | 2 |
| 33 | 60 | 8.89 | 0.808 | 23.220 | 0.570 | 0.2459 | 0.0150 | 0.0108 | 4.067 | 0.248 | 0.7010 | 0.0220 | 0.2879 | 297.8 | 47.3 | 2 |
| 34 | 60 | 74.30 | 0.139 | 1.276 | 0.041 | 0.0574 | 0.0034 | 0.2181 | 17.425 | 1.032 | 0.1646 | 0.0048 | 0.2873 | 310.8 | 18.3 | 2 |
| 35 | 60 | 27.41 | 0.746 | 16.110 | 0.230 | 0.1837 | 0.0100 | 0.1874 | 5.444 | 0.296 | 0.6510 | 0.0097 | 0.4662 | 294.3 | 22.8 | 2 |
| 36 | 60 | 8.89 | 0.911 | 58.300 | 1.300 | 0.5620 | 0.0400 | 0.4920 | 1.779 | 0.127 | 0.7850 | 0.0120 | 0.4932 | 315.2 | 65.8 | 2 |
| 37 | 60 | 9.08 | 0.660 | 11.300 | 0.340 | 0.1451 | 0.0089 | 0.2646 | 6.892 | 0.423 | 0.5830 | 0.0190 | 0.4119 | 310.4 | 29.0 | 2 |
| 38 | 60 | 5.41 | 0.842 | 24.550 | 0.760 | 0.2533 | 0.0160 | 0.0143 | 3.948 | 0.249 | 0.7260 | 0.0220 | 0.4877 | 252.4 | 48.3 | 2 |
| 39 | 60 | 16.17 | 0.852 | 30.810 | 0.590 | 0.3111 | 0.0190 | 0.5034 | 3.214 | 0.196 | 0.7360 | 0.0140 | 0.2581 | 290.4 | 41.8 | 2 |
| 40 | 60 | 25.44 | 0.511 | 6.320 | 0.290 | 0.0998 | 0.0060 | 0.4175 | 10.020 | 0.602 | 0.4630 | 0.0140 | 0.0596 | 307.2 | 21.4 | 2 |
| 41 | 60 | 29.25 | 0.171 | 1.583 | 0.064 | 0.0607 | 0.0036 | 0.1572 | 16.474 | 0.977 | 0.1901 | 0.0073 | 0.3714 | 316.5 | 18.8 | 2 |
| 42 | 60 | 155.00 | 0.142 | 1.319 | 0.032 | 0.0586 | 0.0035 | 0.6423 | 17.062 | 1.019 | 0.1671 | 0.0035 | -0.0781 | 316.2 | 18.7 | 2 |
| 43 | 60 | 6.90 | 0.831 | 30.800 | 1.600 | 0.3185 | 0.0270 | 0.3252 | 3.140 | 0.266 | 0.7220 | 0.0160 | 0.3960 | 338.4 | 51.3 | 2 |
| 44 | 60 | 1.73 | 0.997 | 95.100 | 4.600 | 0.8480 | 0.0760 | 0.4907 | 1.179 | 0.106 | 0.8350 | 0.0210 | 0.4809 | 18.5 | 155.8 | 2 |
| 45 | 60 | 18.19 | 0.823 | 30.000 | 8.800 | 0.3060 | 0.0740 | 0.9445 | 3.268 | 0.790 | 0.7160 | 0.0150 | -0.2469 | 339.6 | 89.7 | 2 |
| 46 | 60 | 21.22 | 0.226 | 2.045 | 0.091 | 0.0644 | 0.0040 | 0.0090 | 15.528 | 0.964 | 0.2340 | 0.0100 | 0.4051 | 313.7 | 19.8 | 2 |
| 47 | 60 | 150.80 | 0.241 | 2.273 | 0.094 | 0.0668 | 0.0041 | 0.8471 | 14.970 | 0.919 | 0.2469 | 0.0069 | -0.6082 | 318.6 | 19.6 | 2 |
| 48 | 60 | 4.42 | 0.842 | 28.600 | 0.880 | 0.2891 | 0.0180 | 0.1445 | 3.459 | 0.215 | 0.7280 | 0.0240 | 0.3634 | 287.7 | 58.8 | 2 |
| 49 | 60 | 0.74 | 0.889 | 65.700 | 4.600 | 0.6040 | 0.0780 | 0.6820 | 1.656 | 0.214 | 0.7740 | 0.0350 | 0.4564 | 419.3 | 172.1 | 2 |
| 50 | 60 | 0.21 | 0.966 | 447.000 | 31.000 | 3.7300 | 0.3400 | 0.7346 | 0.268 | 0.024 | 0.8570 | 0.0350 | 0.3107 | 765.0 | 966.7 | 2 |
| 51 | 60 | 23.89 | 0.720 | 15.900 | 0.340 | 0.1825 | 0.0110 | 0.2913 | 5.479 | 0.330 | 0.6317 | 0.0098 | 0.4257 | 321.5 | 25.1 | 2 |
| 52 | 60 | 16.50 | 0.588 | 8.020 | 1.000 | 0.1121 | 0.0098 | 0.6604 | 8.921 | 0.780 | 0.5240 | 0.0220 | -0.0144 | 291.2 | 31.8 | 2 |
| 53 | 60 | 4.42 | 0.659 | 12.090 | 0.760 | 0.1504 | 0.0130 | 0.1707 | 6.649 | 0.575 | 0.5830 | 0.0280 | 0.6084 | 322.2 | 42.9 | 2 |
| 54 | 60 | 5.56 | 0.994 | 51.100 | 1.300 | 0.4390 | 0.0400 | 0.2544 | 2.278 | 0.208 | 0.8320 | 0.0180 | 0.4280 | 17.2 | 70.9 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 55 | 60 | 61.10 | 0.268 | 2.640 | 0.380 | 0.0718 | 0.0054 | 0.4741 | 13.928 | 1.047 | 0.2690 | 0.0160 | 0.0044 | 330.0 | 26.0 | 2 |
| 56 | 60 | 105.35 | 0.230 | 2.205 | 0.140 | 0.0668 | 0.0041 | 0.2894 | 14.977 | 0.920 | 0.2381 | 0.0093 | 0.1499 | 323.1 | 20.1 | 2 |
| 57 | 60 | 28.50 | 0.628 | 10.770 | 0.190 | 0.1374 | 0.0083 | 0.6266 | 7.278 | 0.440 | 0.5580 | 0.0110 | 0.4757 | 321.2 | 23.1 | 2 |
| 58 | 60 | 7.04 | 0.903 | 17.850 | 0.570 | 0.1642 | 0.0110 | 0.2943 | 6.090 | 0.408 | 0.7650 | 0.0230 | 0.4050 | 102.1 | 32.6 | 2 |
| 59 | 60 | 49.81 | 0.593 | 8.870 | 0.160 | 0.1211 | 0.0071 | 0.1927 | 8.258 | 0.484 | 0.5292 | 0.0095 | 0.5256 | 310.1 | 20.5 | 2 |
| 60 | 60 | 4.44 | 0.877 | 36.400 | 0.920 | 0.3461 | 0.0220 | 0.1327 | 2.889 | 0.184 | 0.7550 | 0.0210 | 0.7025 | 268.1 | 62.3 | 2 |
| 61 | 60 | 3.94 | 0.852 | 29.700 | 0.760 | 0.2940 | 0.0180 | 0.1031 | 3.401 | 0.208 | 0.7350 | 0.0220 | 0.6707 | 274.8 | 55.4 | 2 |
| 62 | 60 | 7.54 | 0.810 | 21.250 | 1.900 | 0.2139 | 0.0210 | 0.2962 | 4.675 | 0.459 | 0.7000 | 0.0180 | 0.3995 | 257.4 | 40.7 | 2 |
| 63 | 60 | 12.59 | 0.599 | 9.870 | 0.280 | 0.1307 | 0.0080 | 0.0996 | 7.651 | 0.468 | 0.5350 | 0.0160 | 0.4100 | 329.3 | 26.0 | 2 |
| 64 | 60 | 11.52 | 0.943 | 25.010 | 0.480 | 0.2270 | 0.0170 | 0.3814 | 4.405 | 0.330 | 0.7960 | 0.0150 | 0.7116 | 82.4 | 31.6 | 2 |
| 65 | 60 | 22.99 | 0.890 | 42.790 | 0.640 | 0.3986 | 0.0230 | 0.1543 | 2.509 | 0.145 | 0.7660 | 0.0100 | 0.1459 | 275.6 | 41.9 | 2 |
| 66 | 60 | 51.85 | 0.506 | 6.470 | 0.180 | 0.1005 | 0.0059 | 0.1256 | 9.950 | 0.584 | 0.4593 | 0.0090 | 0.5210 | 312.4 | 19.6 | 2 |
| 67 | 60 | 4.72 | 0.780 | 20.780 | 0.750 | 0.2177 | 0.0130 | -0.0690 | 4.593 | 0.274 | 0.6790 | 0.0260 | 0.2197 | 301.5 | 48.5 | 2 |
| 68 | 60 | 1.75 | 0.910 | 294.100 | 4.700 | 2.4510 | 0.1400 | 0.3955 | 0.408 | 0.023 | 0.8410 | 0.0110 | 0.6542 | 1289.0 | 239.1 | 2 |
| 69 | 60 | 11.69 | 0.822 | 28.730 | 0.670 | 0.2839 | 0.0170 | -0.0364 | 3.522 | 0.211 | 0.7140 | 0.0220 | 0.3412 | 317.0 | 53.9 | 2 |
| 70 | 60 | 2.67 | 0.991 | 42.300 | 1.700 | 0.3600 | 0.0280 | 0.4540 | 2.778 | 0.216 | 0.8300 | 0.0230 | 0.4505 | 20.4 | 71.6 | 2 |
| 71 | 60 | 209.60 | 0.177 | 1.684 | 0.048 | 0.0608 | 0.0035 | -0.2451 | 16.461 | 0.948 | 0.1949 | 0.0042 | 0.5677 | 314.5 | 18.0 | 2 |
| 72 | 60 | 12.67 | 0.673 | 13.080 | 0.390 | 0.1555 | 0.0095 | 0.1586 | 6.431 | 0.393 | 0.5940 | 0.0150 | 0.5245 | 319.7 | 27.2 | 2 |
| 73 | 60 | 68.03 | 0.405 | 4.487 | 0.083 | 0.0836 | 0.0049 | 0.1679 | 11.967 | 0.702 | 0.3785 | 0.0061 | 0.4863 | 312.6 | 18.6 | 2 |
| 74 | 60 | 0.70 | 1.076 | 176.000 | 23.000 | 1.4100 | 0.2800 | 0.7347 | 0.709 | 0.141 | 0.8600 | 0.0230 | 0.2187 | -734.0 | 356.5 | 2 |
| 75 | 60 | 23.64 | 0.371 | 3.700 | 0.140 | 0.0746 | 0.0045 | 0.2763 | 13.405 | 0.809 | 0.3500 | 0.0120 | 0.0239 | 295.7 | 19.0 | 2 |
| 76 | 60 | 27.58 | 0.344 | 3.760 | 0.110 | 0.0811 | 0.0048 | 0.0559 | 12.330 | 0.730 | 0.3300 | 0.0100 | 0.1649 | 334.1 | 20.5 | 2 |
| 77 | 60 | 12.05 | 0.837 | 32.400 | 0.810 | 0.3154 | 0.0190 | 0.2602 | 3.171 | 0.191 | 0.7260 | 0.0140 | 0.5862 | 323.3 | 42.7 | 2 |
| 78 | 60 | 41.20 | 0.253 | 2.399 | 0.300 | 0.0666 | 0.0047 | 0.4448 | 15.015 | 1.060 | 0.2560 | 0.0180 | 0.3349 | 313.0 | 23.7 | 2 |
| 79 | 60 | 32.32 | 0.509 | 6.440 | 0.091 | 0.0993 | 0.0059 | 0.1654 | 10.070 | 0.598 | 0.4615 | 0.0092 | 0.6310 | 306.9 | 19.6 | 2 |
| 80 | 60 | 3.70 | 0.936 | 28.500 | 2.500 | 0.2420 | 0.0220 | 0.1011 | 4.132 | 0.376 | 0.7910 | 0.0340 | 0.0328 | 99.5 | 68.3 | 2 |
| 81 | 60 | 9.53 | 0.896 | 34.170 | 0.640 | 0.3163 | 0.0200 | 0.3010 | 3.162 | 0.200 | 0.7660 | 0.0120 | 0.5062 | 209.3 | 37.6 | 2 |
| 82 | 60 | 219.00 | 0.088 | 0.991 | 0.024 | 0.0566 | 0.0033 | 0.3646 | 17.671 | 1.030 | 0.1238 | 0.0035 | -0.0613 | 324.3 | 18.7 | 2 |
| 83 | 60 | 14.02 | 0.832 | 24.020 | 0.410 | 0.2386 | 0.0130 | 0.3461 | 4.191 | 0.228 | 0.7180 | 0.0120 | 0.3711 | 252.9 | 29.3 | 2 |
| 84 | 60 | 4.84 | 0.840 | 26.200 | 0.700 | 0.2617 | 0.0160 | 0.7254 | 3.821 | 0.234 | 0.7250 | 0.0180 | 0.0639 | 264.1 | 42.5 | 2 |
| 85 | 60 | 0.44 | 1.142 | 224.000 | 14.000 | 1.8730 | 0.1900 | 0.6658 | 0.534 | 0.054 | 0.8670 | 0.0290 | 0.2281 | -1986.2 | 699.6 | 2 |
| 86 | 60 | 5.45 | 0.838 | 28.100 | 1.300 | 0.2731 | 0.0200 | 0.1944 | 3.662 | 0.268 | 0.7240 | 0.0190 | 0.5674 | 279.4 | 47.5 | 2 |
| 87 | 60 | 0.71 | 1.069 | 656.000 | 25.000 | 5.5400 | 0.3700 | 0.8865 | 0.181 | 0.012 | 0.8500 | 0.0120 | 0.3163 | -3115.0 | 1106.3 | 2 |
| 88 | 60 | 943.00 | 0.034 | 0.559 | 0.009 | 0.0500 | 0.0029 | 0.4727 | 20.020 | 1.162 | 0.0799 | 0.0008 | 0.1662 | 303.7 | 17.4 | 2 |
| 89 | 60 | 16.98 | 0.771 | 20.840 | 0.510 | 0.2217 | 0.0130 | 0.3581 | 4.511 | 0.264 | 0.6730 | 0.0140 | 0.2335 | 318.8 | 32.2 | 2 |
| 90 | 60 | 30.34 | 0.493 | 5.990 | 0.130 | 0.0962 | 0.0056 | 0.3069 | 10.395 | 0.605 | 0.4490 | 0.0110 | 0.3565 | 306.7 | 19.6 | 2 |
| 91 | 60 | 12.48 | 0.844 | 30.070 | 0.450 | 0.2955 | 0.0180 | 0.6086 | 3.384 | 0.206 | 0.7300 | 0.0120 | 0.4438 | 289.6 | 36.4 | 2 |
| 92 | 60 | 106.17 | 0.424 | 4.731 | 0.100 | 0.0859 | 0.0050 | 0.0231 | 11.641 | 0.678 | 0.3937 | 0.0068 | 0.5316 | 311.1 | 18.6 | 2 |
| 93 | 60 | 2.46 | 0.945 | 226.000 | 33.000 | 2.0300 | 0.3200 | 0.9354 | 0.493 | 0.078 | 0.7930 | 0.0120 | 0.1444 | 683.6 | 247.4 | 2 |
| 94 | 60 | 8.98 | 0.682 | 12.630 | 0.430 | 0.1502 | 0.0095 | 0.1689 | 6.658 | 0.421 | 0.6000 | 0.0200 | 0.6150 | 301.0 | 30.6 | 2 |
| 95 | 60 | 35.50 | 0.258 | 2.436 | 0.140 | 0.0677 | 0.0040 | -0.0307 | 14.771 | 0.873 | 0.2600 | 0.0130 | 0.4327 | 316.0 | 19.6 | 2 |
| 96 | 60 | 15.87 | 0.687 | 12.890 | 0.370 | 0.1533 | 0.0099 | 0.4092 | 6.523 | 0.421 | 0.6040 | 0.0170 | 0.2648 | 302.4 | 28.7 | 2 |
| 97 | 60 | 29.15 | 0.700 | 14.190 | 0.260 | 0.1649 | 0.0094 | 0.3066 | 6.064 | 0.346 | 0.6150 | 0.0130 | 0.4340 | 311.5 | 25.2 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 98 | 60 | 5.89 | 0.827 | 23.470 | 0.550 | 0.2327 | 0.0140 | 0.0846 | 4.297 | 0.259 | 0.7140 | 0.0200 | 0.6880 | 254.1 | 41.3 | 2 |
| 99 | 60 | 15.41 | 0.734 | 15.800 | 0.370 | 0.1796 | 0.0110 | 0.0470 | 5.568 | 0.341 | 0.6420 | 0.0160 | 0.1897 | 300.7 | 30.0 | 2 |
| 100 | 60 | 31.98 | 0.124 | 1.179 | 0.067 | 0.0559 | 0.0034 | -0.1371 | 17.889 | 1.088 | 0.1520 | 0.0085 | 0.1644 | 308.3 | 18.8 | 2 |
| 101 | 60 | 63.17 | 0.318 | 2.852 | 0.061 | 0.0672 | 0.0038 | -0.0274 | 14.885 | 0.842 | 0.3074 | 0.0071 | 0.5416 | 288.8 | 16.6 | 2 |

| **102 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 40.67 | 0.376 | 3.900 | 0.085 | 0.0813 | 0.0019 | 0.1848 | 12.300 | 0.287 | 0.3551 | 0.0089 | 0.4803 | 319.0 | 9.4 | 1 |
| 2 | 60 | 180.00 | 0.178 | 1.660 | 0.026 | 0.0624 | 0.0013 | 0.0955 | 16.028 | 0.334 | 0.1964 | 0.0035 | 0.4360 | 322.2 | 6.9 | 1 |
| 3 | 60 | 72.00 | 0.400 | 4.042 | 0.091 | 0.0795 | 0.0021 | 0.4772 | 12.579 | 0.332 | 0.3736 | 0.0075 | 0.3254 | 300.4 | 9.3 | 1 |
| 4 | 60 | 21.19 | 0.648 | 11.190 | 0.230 | 0.1429 | 0.0036 | 0.2868 | 6.998 | 0.176 | 0.5740 | 0.0120 | 0.5383 | 316.0 | 16.5 | 1 |
| 5 | 60 | 10.06 | 0.786 | 23.250 | 0.940 | 0.2496 | 0.0100 | 0.5700 | 4.006 | 0.161 | 0.6860 | 0.0150 | -0.1001 | 335.0 | 34.2 | 1 |
| 6 | 60 | 32.52 | 0.514 | 6.770 | 0.260 | 0.1063 | 0.0034 | 0.6794 | 9.407 | 0.301 | 0.4660 | 0.0120 | 0.0326 | 325.0 | 14.6 | 1 |
| 7 | 60 | 26.36 | 0.574 | 8.310 | 0.170 | 0.1189 | 0.0030 | 0.2082 | 8.410 | 0.212 | 0.5140 | 0.0120 | 0.5522 | 318.8 | 14.3 | 1 |
| 8 | 60 | 10.96 | 0.851 | 34.110 | 0.720 | 0.3389 | 0.0083 | 0.3105 | 2.951 | 0.072 | 0.7370 | 0.0130 | 0.2459 | 317.5 | 39.6 | 1 |
| 9 | 60 | 34.21 | 0.580 | 9.430 | 0.160 | 0.1328 | 0.0031 | 0.2675 | 7.530 | 0.176 | 0.5205 | 0.0094 | 0.5788 | 350.1 | 13.5 | 1 |
| 10 | 60 | 61.60 | 0.464 | 5.750 | 0.100 | 0.0990 | 0.0024 | 0.3946 | 10.101 | 0.245 | 0.4267 | 0.0083 | 0.4820 | 333.2 | 10.6 | 1 |
| 11 | 60 | 15.41 | 0.811 | 28.940 | 0.730 | 0.2984 | 0.0083 | 0.8155 | 3.351 | 0.093 | 0.7070 | 0.0130 | 0.2352 | 353.7 | 35.0 | 1 |
| 12 | 60 | 37.75 | 0.413 | 4.280 | 0.170 | 0.0821 | 0.0029 | 0.7304 | 12.180 | 0.430 | 0.3840 | 0.0110 | -0.0823 | 303.5 | 12.9 | 1 |
| 13 | 60 | 71.30 | 0.256 | 2.327 | 0.051 | 0.0659 | 0.0016 | -0.0752 | 15.175 | 0.368 | 0.2584 | 0.0062 | 0.4504 | 308.5 | 8.1 | 1 |
| 14 | 60 | 10.70 | 0.603 | 10.400 | 0.630 | 0.1394 | 0.0054 | 0.6361 | 7.174 | 0.278 | 0.5390 | 0.0240 | -0.0146 | 347.3 | 29.4 | 1 |
| 15 | 60 | 42.51 | 0.543 | 7.730 | 0.150 | 0.1153 | 0.0027 | 0.3233 | 8.673 | 0.203 | 0.4900 | 0.0100 | 0.4345 | 331.0 | 12.4 | 1 |
| 16 | 60 | 33.10 | 0.532 | 7.330 | 0.160 | 0.1116 | 0.0027 | 0.3789 | 8.961 | 0.217 | 0.4810 | 0.0110 | 0.3700 | 328.2 | 12.9 | 1 |
| 17 | 60 | 11.50 | 0.690 | 12.960 | 0.360 | 0.1579 | 0.0054 | 0.8289 | 6.333 | 0.217 | 0.6070 | 0.0170 | 0.3842 | 308.1 | 24.3 | 1 |
| 18 | 60 | 4.09 | 0.760 | 18.480 | 0.880 | 0.2051 | 0.0089 | 0.6704 | 4.876 | 0.212 | 0.6630 | 0.0280 | 0.2376 | 310.3 | 47.4 | 1 |
| 20 | 60 | 13.73 | 0.567 | 7.280 | 0.280 | 0.1044 | 0.0034 | 0.4675 | 9.579 | 0.312 | 0.5070 | 0.0190 | 0.3037 | 285.0 | 18.3 | 1 |
| 21 | 60 | 9.75 | 0.749 | 17.420 | 0.560 | 0.1941 | 0.0056 | 0.4591 | 5.152 | 0.149 | 0.6540 | 0.0190 | 0.1959 | 307.2 | 31.3 | 1 |
| 22 | 60 | 110.39 | 0.272 | 2.628 | 0.061 | 0.0698 | 0.0017 | 0.6260 | 14.327 | 0.349 | 0.2715 | 0.0049 | -0.1035 | 319.5 | 8.2 | 1 |
| 23 | 60 | 16.94 | 0.665 | 12.140 | 0.300 | 0.1497 | 0.0039 | 0.5091 | 6.680 | 0.174 | 0.5870 | 0.0160 | 0.4196 | 315.8 | 21.2 | 1 |
| 24 | 60 | 24.17 | 0.649 | 12.500 | 0.410 | 0.1575 | 0.0057 | 0.8064 | 6.349 | 0.230 | 0.5760 | 0.0130 | 0.2054 | 347.0 | 21.1 | 1 |
| 26 | 60 | 46.10 | 0.548 | 7.980 | 0.310 | 0.1166 | 0.0037 | 0.4397 | 8.576 | 0.272 | 0.4940 | 0.0110 | -0.2897 | 331.1 | 14.9 | 1 |
| 27 | 60 | 51.57 | 0.519 | 7.900 | 0.150 | 0.1208 | 0.0030 | 0.5671 | 8.278 | 0.206 | 0.4723 | 0.0074 | 0.1487 | 364.0 | 11.9 | 1 |
| 28 | 60 | 43.95 | 0.552 | 8.200 | 0.160 | 0.1199 | 0.0028 | 0.4828 | 8.340 | 0.195 | 0.4977 | 0.0094 | 0.1725 | 337.1 | 12.4 | 1 |
| 29 | 60 | 78.80 | 0.325 | 3.286 | 0.071 | 0.0756 | 0.0017 | 0.4297 | 13.229 | 0.298 | 0.3139 | 0.0065 | 0.1843 | 321.0 | 8.2 | 1 |
| 30 | 60 | 22.73 | 0.745 | 19.150 | 0.450 | 0.2122 | 0.0056 | 0.6122 | 4.713 | 0.124 | 0.6530 | 0.0120 | 0.1724 | 339.7 | 23.8 | 1 |
| 31 | 60 | 95.34 | 0.316 | 3.061 | 0.060 | 0.0721 | 0.0017 | 0.2059 | 13.864 | 0.327 | 0.3062 | 0.0065 | 0.4007 | 310.6 | 8.2 | 1 |
| 32 | 60 | 4.79 | 0.822 | 24.060 | 0.770 | 0.2455 | 0.0081 | 0.4535 | 4.073 | 0.134 | 0.7110 | 0.0270 | 0.4237 | 275.9 | 53.9 | 1 |
| 33 | 60 | 95.40 | 0.268 | 2.589 | 0.083 | 0.0693 | 0.0021 | 0.6948 | 14.430 | 0.437 | 0.2681 | 0.0058 | 0.0633 | 319.1 | 10.1 | 1 |
| 34 | 60 | 5.86 | 0.907 | 56.100 | 1.000 | 0.5225 | 0.0130 | 0.3495 | 1.914 | 0.048 | 0.7810 | 0.0160 | 0.4844 | 307.5 | 72.1 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 60 | 11.08 | 0.505 | 6.450 | 0.250 | 0.1028 | 0.0036 | 0.2670 | 9.728 | 0.341 | 0.4590 | 0.0210 | 0.4873 | 319.9 | 20.2 | 1 |
| 36 | 60 | 30.89 | 0.323 | 3.072 | 0.095 | 0.0706 | 0.0020 | 0.4562 | 14.164 | 0.401 | 0.3121 | 0.0094 | 0.1969 | 300.8 | 10.0 | 1 |
| 37 | 60 | 17.27 | 0.788 | 23.850 | 0.290 | 0.2508 | 0.0058 | 0.4722 | 3.987 | 0.092 | 0.6870 | 0.0110 | 0.5730 | 334.6 | 26.0 | 1 |
| 38 | 60 | 17.80 | 0.679 | 14.580 | 0.520 | 0.1768 | 0.0073 | 0.9375 | 5.656 | 0.234 | 0.6010 | 0.0140 | -0.0256 | 355.5 | 25.1 | 1 |
| 39 | 60 | 52.18 | 0.538 | 7.890 | 0.130 | 0.1170 | 0.0027 | 0.3935 | 8.547 | 0.197 | 0.4864 | 0.0085 | 0.4443 | 339.3 | 11.6 | 1 |
| 40 | 60 | 56.33 | 0.326 | 3.290 | 0.110 | 0.0761 | 0.0025 | 0.7615 | 13.141 | 0.432 | 0.3148 | 0.0081 | 0.0096 | 322.6 | 11.6 | 1 |
| 41 | 60 | 19.01 | 0.636 | 13.750 | 0.950 | 0.1705 | 0.0085 | 0.8130 | 5.865 | 0.292 | 0.5680 | 0.0180 | -0.3634 | 388.0 | 30.9 | 1 |
| 44 | 60 | 104.70 | 0.333 | 3.610 | 0.200 | 0.0798 | 0.0030 | 0.8954 | 12.531 | 0.471 | 0.3208 | 0.0083 | -0.5874 | 334.5 | 13.5 | 1 |
| 45 | 60 | 48.43 | 0.408 | 4.563 | 0.094 | 0.0862 | 0.0021 | 0.3343 | 11.601 | 0.283 | 0.3810 | 0.0087 | 0.4355 | 320.8 | 9.9 | 1 |
| 46 | 60 | 89.28 | 0.307 | 2.973 | 0.096 | 0.0716 | 0.0020 | 0.6766 | 13.966 | 0.390 | 0.2991 | 0.0082 | -0.0567 | 312.3 | 9.8 | 1 |
| 47 | 60 | 11.94 | 0.784 | 24.150 | 0.820 | 0.2539 | 0.0100 | 0.8257 | 3.939 | 0.155 | 0.6850 | 0.0170 | 0.3747 | 343.5 | 38.0 | 1 |
| 48 | 60 | 33.77 | 0.407 | 4.780 | 0.190 | 0.0893 | 0.0029 | 0.5290 | 11.198 | 0.364 | 0.3810 | 0.0110 | -0.2986 | 332.4 | 13.2 | 1 |
| 49 | 60 | 79.60 | 0.370 | 3.916 | 0.070 | 0.0802 | 0.0019 | 0.2884 | 12.469 | 0.295 | 0.3506 | 0.0066 | 0.4491 | 317.5 | 8.7 | 1 |
| 50 | 60 | 23.53 | 0.636 | 11.640 | 0.200 | 0.1481 | 0.0037 | 0.5087 | 6.752 | 0.169 | 0.5650 | 0.0120 | 0.2848 | 338.7 | 17.1 | 1 |
| 51 | 60 | 30.25 | 0.710 | 17.110 | 0.370 | 0.1954 | 0.0049 | 0.6125 | 5.118 | 0.128 | 0.6260 | 0.0110 | 0.2316 | 354.9 | 20.7 | 1 |
| 52 | 60 | 113.90 | 0.142 | 1.359 | 0.032 | 0.0584 | 0.0013 | 0.4075 | 17.135 | 0.382 | 0.1669 | 0.0037 | 0.1449 | 314.9 | 7.1 | 1 |
| 53 | 60 | 41.50 | 0.400 | 4.380 | 0.150 | 0.0843 | 0.0023 | 0.8391 | 11.862 | 0.324 | 0.3740 | 0.0100 | -0.3834 | 318.3 | 11.0 | 1 |
| 54 | 60 | 37.41 | 0.544 | 8.370 | 0.210 | 0.1230 | 0.0036 | 0.6196 | 8.130 | 0.238 | 0.4920 | 0.0110 | 0.1906 | 351.6 | 15.1 | 1 |
| 55 | 60 | 25.40 | 0.493 | 5.920 | 0.420 | 0.0941 | 0.0052 | 0.4617 | 10.627 | 0.587 | 0.4480 | 0.0150 | 0.0043 | 300.7 | 19.9 | 1 |
| 56 | 60 | 33.48 | 0.374 | 4.010 | 0.130 | 0.0819 | 0.0021 | 0.6419 | 12.210 | 0.313 | 0.3540 | 0.0110 | -0.1527 | 322.1 | 10.9 | 1 |
| 57 | 60 | 9.90 | 0.721 | 16.340 | 0.440 | 0.1846 | 0.0053 | 0.6563 | 5.417 | 0.156 | 0.6330 | 0.0180 | 0.4009 | 323.4 | 28.5 | 1 |
| 58 | 60 | 39.90 | 0.510 | 6.650 | 0.260 | 0.1028 | 0.0037 | 0.8347 | 9.728 | 0.350 | 0.4630 | 0.0110 | -0.1554 | 316.6 | 14.6 | 1 |
| 60 | 60 | 27.86 | 0.438 | 5.110 | 0.160 | 0.0908 | 0.0023 | 0.2968 | 11.013 | 0.279 | 0.4050 | 0.0130 | 0.2824 | 320.9 | 12.4 | 1 |
| 61 | 60 | 16.19 | 0.713 | 15.350 | 0.460 | 0.1774 | 0.0061 | 0.8523 | 5.637 | 0.194 | 0.6260 | 0.0140 | 0.1726 | 320.4 | 23.5 | 1 |
| 62 | 60 | 15.19 | 0.641 | 11.830 | 0.400 | 0.1492 | 0.0052 | 0.8202 | 6.702 | 0.234 | 0.5690 | 0.0150 | 0.1666 | 336.5 | 21.6 | 1 |
| 63 | 60 | 24.04 | 0.664 | 13.420 | 0.250 | 0.1629 | 0.0038 | 0.2555 | 6.139 | 0.143 | 0.5880 | 0.0120 | 0.3953 | 343.5 | 18.4 | 1 |
| 64 | 60 | 14.24 | 0.774 | 22.510 | 0.480 | 0.2379 | 0.0061 | 0.4478 | 4.203 | 0.108 | 0.6760 | 0.0140 | 0.3858 | 338.1 | 29.5 | 1 |
| 66 | 60 | 36.58 | 0.546 | 8.370 | 0.180 | 0.1215 | 0.0030 | 0.5005 | 8.230 | 0.203 | 0.4930 | 0.0100 | 0.4800 | 346.3 | 13.3 | 1 |
| 67 | 60 | 83.63 | 0.340 | 3.459 | 0.066 | 0.0761 | 0.0018 | 0.3574 | 13.141 | 0.311 | 0.3263 | 0.0066 | 0.4100 | 315.8 | 8.5 | 1 |
| 68 | 60 | 30.00 | 0.281 | 2.900 | 0.150 | 0.0741 | 0.0020 | 0.3802 | 13.495 | 0.364 | 0.2790 | 0.0130 | 0.0080 | 334.8 | 11.6 | 1 |
| 69 | 60 | 41.11 | 0.515 | 7.220 | 0.130 | 0.1107 | 0.0027 | 0.1324 | 9.033 | 0.220 | 0.4680 | 0.0110 | 0.5097 | 336.9 | 12.9 | 1 |
| 70 | 60 | 20.65 | 0.551 | 7.850 | 0.170 | 0.1137 | 0.0031 | 0.1289 | 8.795 | 0.240 | 0.4960 | 0.0150 | 0.5549 | 320.9 | 16.2 | 1 |
| 71 | 60 | 78.57 | 0.260 | 2.532 | 0.057 | 0.0692 | 0.0016 | 0.3288 | 14.451 | 0.334 | 0.2619 | 0.0062 | 0.3066 | 322.0 | 8.1 | 1 |
| 73 | 60 | 152.00 | 0.195 | 1.872 | 0.065 | 0.0641 | 0.0015 | 0.6700 | 15.605 | 0.365 | 0.2094 | 0.0059 | -0.2949 | 324.4 | 8.1 | 1 |
| 74 | 60 | 12.15 | 0.608 | 9.430 | 0.280 | 0.1259 | 0.0042 | 0.3674 | 7.943 | 0.265 | 0.5410 | 0.0190 | 0.5097 | 310.8 | 21.7 | 1 |
| 75 | 60 | 6.81 | 0.777 | 20.590 | 0.610 | 0.2202 | 0.0076 | 0.6948 | 4.541 | 0.157 | 0.6770 | 0.0220 | 0.4006 | 309.0 | 40.4 | 1 |
| 76 | 60 | 23.82 | 0.450 | 5.450 | 0.150 | 0.0942 | 0.0024 | 0.1318 | 10.616 | 0.270 | 0.4150 | 0.0120 | 0.4374 | 325.6 | 12.2 | 1 |
| 78 | 60 | 48.90 | 0.509 | 7.270 | 0.220 | 0.1115 | 0.0028 | 0.6008 | 8.969 | 0.225 | 0.4630 | 0.0100 | 0.0612 | 343.8 | 12.6 | 1 |
| 79 | 60 | 126.20 | 0.194 | 1.866 | 0.031 | 0.0636 | 0.0013 | 0.1249 | 15.728 | 0.322 | 0.2089 | 0.0036 | 0.4155 | 322.1 | 6.8 | 1 |
| 80 | 60 | 23.76 | 0.549 | 8.750 | 0.340 | 0.1254 | 0.0040 | 0.8999 | 7.974 | 0.254 | 0.4960 | 0.0110 | -0.3192 | 354.6 | 16.0 | 1 |
| 81 | 60 | 30.33 | 0.557 | 8.340 | 0.200 | 0.1193 | 0.0033 | 0.7386 | 8.382 | 0.232 | 0.5015 | 0.0095 | 0.0033 | 331.8 | 13.3 | 1 |
| 82 | 60 | 2.91 | 0.905 | 125.200 | 2.600 | 1.1150 | 0.0310 | 0.5875 | 0.897 | 0.025 | 0.8030 | 0.0150 | 0.3434 | 647.9 | 138.8 | 1 |
| 83 | 60 | 20.12 | 0.630 | 10.030 | 0.260 | 0.1288 | 0.0036 | 0.4515 | 7.764 | 0.217 | 0.5580 | 0.0150 | 0.2740 | 300.5 | 17.9 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 84 | 60 | 43.07 | 0.510 | 6.710 | 0.130 | 0.1046 | 0.0027 | 0.7028 | 9.560 | 0.247 | 0.4632 | 0.0088 | 0.0163 | 322.1 | 11.4 | 1 |
| 85 | 60 | 58.60 | 0.218 | 2.250 | 0.110 | 0.0696 | 0.0018 | 0.6297 | 14.368 | 0.372 | 0.2288 | 0.0087 | -0.2427 | 341.7 | 9.9 | 1 |
| 87 | 60 | 67.07 | 0.345 | 3.780 | 0.140 | 0.0810 | 0.0025 | 0.9072 | 12.346 | 0.381 | 0.3310 | 0.0074 | -0.4502 | 333.1 | 11.3 | 1 |
| 88 | 60 | 22.62 | 0.707 | 17.170 | 0.970 | 0.1972 | 0.0097 | 0.9322 | 5.071 | 0.249 | 0.6240 | 0.0150 | -0.3171 | 361.6 | 30.0 | 1 |
| 90 | 60 | 48.90 | 0.539 | 8.370 | 0.130 | 0.1229 | 0.0029 | 0.3523 | 8.137 | 0.192 | 0.4882 | 0.0089 | 0.5602 | 355.0 | 12.5 | 1 |
| 92 | 60 | 19.35 | 0.594 | 9.620 | 0.310 | 0.1291 | 0.0043 | 0.8122 | 7.746 | 0.258 | 0.5310 | 0.0140 | 0.2324 | 329.3 | 18.3 | 1 |
| 94 | 60 | 20.35 | 0.531 | 7.330 | 0.270 | 0.1101 | 0.0039 | 0.4787 | 9.083 | 0.322 | 0.4800 | 0.0170 | 0.1782 | 324.6 | 18.7 | 1 |
| 95 | 60 | 27.60 | 0.596 | 9.780 | 0.260 | 0.1309 | 0.0035 | 0.6519 | 7.639 | 0.204 | 0.5330 | 0.0130 | 0.1772 | 331.9 | 16.5 | 1 |
| 96 | 60 | 19.32 | 0.543 | 7.880 | 0.160 | 0.1158 | 0.0030 | 0.3488 | 8.636 | 0.224 | 0.4900 | 0.0110 | 0.5151 | 332.5 | 13.6 | 1 |
| 97 | 60 | 20.33 | 0.713 | 18.260 | 0.350 | 0.2081 | 0.0055 | 0.6112 | 4.805 | 0.127 | 0.6290 | 0.0110 | 0.3196 | 374.3 | 22.2 | 1 |
| 98 | 60 | 65.20 | 0.534 | 7.720 | 0.360 | 0.1148 | 0.0036 | 0.8944 | 8.711 | 0.273 | 0.4830 | 0.0130 | -0.5019 | 335.9 | 16.0 | 1 |
| 99 | 60 | 37.30 | 0.398 | 4.500 | 0.100 | 0.0867 | 0.0022 | 0.1130 | 11.534 | 0.293 | 0.3730 | 0.0100 | 0.5430 | 328.1 | 10.8 | 1 |
| 100 | 60 | 21.50 | 0.528 | 7.530 | 0.180 | 0.1138 | 0.0033 | 0.3521 | 8.787 | 0.255 | 0.4780 | 0.0140 | 0.4265 | 337.5 | 16.1 | 1 |
| 102 | 60 | 17.58 | 0.539 | 8.520 | 0.450 | 0.1237 | 0.0051 | 0.5092 | 8.084 | 0.333 | 0.4880 | 0.0190 | 0.1023 | 357.6 | 23.5 | 1 |
| 103 | 60 | 23.77 | 0.283 | 2.730 | 0.083 | 0.0708 | 0.0019 | 0.0220 | 14.124 | 0.379 | 0.2800 | 0.0100 | 0.5404 | 319.4 | 10.1 | 1 |
| 104 | 60 | 9.15 | 0.700 | 13.890 | 0.440 | 0.1623 | 0.0049 | 0.3823 | 6.161 | 0.186 | 0.6150 | 0.0200 | 0.3411 | 306.4 | 27.7 | 1 |
| 105 | 60 | 10.84 | 0.661 | 13.440 | 0.340 | 0.1636 | 0.0040 | 0.2101 | 6.112 | 0.149 | 0.5860 | 0.0160 | 0.4789 | 347.7 | 22.9 | 1 |
| 106 | 60 | 68.40 | 0.199 | 1.865 | 0.076 | 0.0627 | 0.0018 | 0.5878 | 15.949 | 0.458 | 0.2127 | 0.0071 | -0.2456 | 315.9 | 9.6 | 1 |
| 107 | 60 | 39.69 | 0.548 | 8.870 | 0.180 | 0.1280 | 0.0032 | 0.4614 | 7.813 | 0.195 | 0.4952 | 0.0096 | 0.5282 | 362.9 | 13.7 | 1 |
| 109 | 60 | 20.82 | 0.611 | 9.850 | 0.210 | 0.1296 | 0.0033 | 0.5168 | 7.716 | 0.196 | 0.5440 | 0.0120 | 0.3584 | 317.0 | 15.3 | 1 |
| 110 | 60 | 182.70 | 0.050 | 0.734 | 0.028 | 0.0565 | 0.0019 | 0.7763 | 17.699 | 0.595 | 0.0936 | 0.0025 | -0.2754 | 337.0 | 11.2 | 1 |
| 111 | 60 | 17.78 | 0.543 | 7.880 | 0.220 | 0.1148 | 0.0029 | 0.2524 | 8.711 | 0.220 | 0.4900 | 0.0130 | 0.4440 | 329.5 | 14.7 | 1 |
| 113 | 60 | 33.13 | 0.626 | 11.530 | 0.190 | 0.1482 | 0.0034 | 0.5321 | 6.748 | 0.155 | 0.5578 | 0.0089 | 0.2888 | 347.6 | 14.2 | 1 |
| 114 | 60 | 57.11 | 0.363 | 3.749 | 0.089 | 0.0774 | 0.0019 | 0.3694 | 12.920 | 0.317 | 0.3440 | 0.0078 | 0.2888 | 310.4 | 9.0 | 1 |
| 115 | 60 | 35.56 | 0.571 | 9.430 | 0.190 | 0.1323 | 0.0036 | 0.3445 | 7.559 | 0.206 | 0.5140 | 0.0120 | 0.5366 | 355.6 | 16.2 | 1 |
| 118 | 60 | 12.65 | 0.832 | 35.560 | 0.960 | 0.3550 | 0.0130 | 0.5276 | 2.817 | 0.103 | 0.7250 | 0.0140 | 0.5218 | 374.0 | 44.6 | 1 |
| 119 | 60 | 62.50 | 0.308 | 3.088 | 0.070 | 0.0739 | 0.0017 | 0.2843 | 13.532 | 0.311 | 0.3007 | 0.0069 | 0.2565 | 321.4 | 8.4 | 1 |
| 120 | 60 | 98.97 | 0.204 | 1.934 | 0.047 | 0.0643 | 0.0015 | 0.4416 | 15.562 | 0.363 | 0.2169 | 0.0053 | 0.1750 | 321.6 | 7.9 | 1 |
| 121 | 60 | 25.44 | 0.542 | 8.440 | 0.650 | 0.1207 | 0.0059 | 0.9354 | 8.285 | 0.405 | 0.4900 | 0.0160 | -0.5371 | 346.8 | 22.7 | 1 |
| 122 | 60 | 11.86 | 0.830 | 29.400 | 1.800 | 0.2960 | 0.0180 | 0.9820 | 3.378 | 0.205 | 0.7200 | 0.0140 | -0.0714 | 316.5 | 40.5 | 1 |
| 123 | 60 | 32.45 | 0.506 | 6.640 | 0.320 | 0.1031 | 0.0039 | 0.8767 | 9.699 | 0.367 | 0.4600 | 0.0120 | -0.3160 | 320.0 | 15.6 | 1 |
| 124 | 60 | 44.48 | 0.442 | 5.050 | 0.160 | 0.0880 | 0.0025 | 0.6339 | 11.364 | 0.323 | 0.4074 | 0.0098 | 0.0308 | 309.3 | 11.2 | 1 |
| 125 | 60 | 22.20 | 0.695 | 14.340 | 0.290 | 0.1689 | 0.0040 | 0.2700 | 5.921 | 0.140 | 0.6120 | 0.0140 | 0.3977 | 323.6 | 21.2 | 1 |
| 126 | 60 | 14.41 | 0.599 | 10.300 | 0.260 | 0.1393 | 0.0043 | 0.4207 | 7.179 | 0.222 | 0.5360 | 0.0160 | 0.2408 | 350.4 | 20.8 | 1 |
| 127 | 60 | 7.61 | 0.745 | 27.100 | 2.800 | 0.2860 | 0.0240 | 0.9541 | 3.497 | 0.293 | 0.6600 | 0.0230 | -0.4208 | 453.2 | 63.4 | 1 |
| 128 | 60 | 110.90 | 0.228 | 2.147 | 0.043 | 0.0655 | 0.0014 | 0.3019 | 15.265 | 0.326 | 0.2361 | 0.0050 | 0.2525 | 318.0 | 7.2 | 1 |
| 129 | 60 | 20.70 | 0.674 | 13.860 | 0.280 | 0.1676 | 0.0043 | 0.5306 | 5.967 | 0.153 | 0.5960 | 0.0120 | 0.5545 | 343.0 | 19.2 | 1 |
| 130 | 60 | 23.56 | 0.331 | 3.430 | 0.350 | 0.0785 | 0.0047 | 0.9152 | 12.739 | 0.763 | 0.3190 | 0.0190 | -0.6275 | 330.2 | 22.6 | 1 |
| 132 | 60 | 131.80 | 0.190 | 1.790 | 0.100 | 0.0626 | 0.0020 | 0.3419 | 15.974 | 0.510 | 0.2053 | 0.0082 | -0.2305 | 319.0 | 10.8 | 1 |
| 133 | 60 | 7.28 | 0.778 | 23.430 | 0.550 | 0.2500 | 0.0070 | 0.1888 | 4.000 | 0.112 | 0.6800 | 0.0200 | 0.5647 | 348.4 | 41.5 | 1 |
| 134 | 60 | 36.20 | 0.277 | 2.820 | 0.210 | 0.0728 | 0.0023 | 0.8093 | 13.736 | 0.434 | 0.2760 | 0.0130 | -0.4914 | 330.6 | 12.7 | 1 |
| 135 | 60 | 48.97 | 0.534 | 7.760 | 0.170 | 0.1168 | 0.0032 | 0.6480 | 8.562 | 0.235 | 0.4830 | 0.0100 | 0.1614 | 341.9 | 13.5 | 1 |
| 136 | 60 | 31.80 | 0.503 | 6.800 | 0.200 | 0.1081 | 0.0030 | 0.5342 | 9.251 | 0.257 | 0.4580 | 0.0130 | 0.2082 | 337.4 | 14.6 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 137 | 60 | 11.30 | 0.657 | 13.420 | 0.480 | 0.1664 | 0.0055 | 0.6948 | 6.010 | 0.199 | 0.5830 | 0.0160 | 0.0694 | 358.0 | 24.5 | 1 |
| 138 | 60 | 22.40 | 0.714 | 15.460 | 0.410 | 0.1785 | 0.0053 | 0.6547 | 5.602 | 0.166 | 0.6270 | 0.0140 | 0.1631 | 321.0 | 23.0 | 1 |
| 139 | 60 | 51.18 | 0.502 | 6.750 | 0.130 | 0.1064 | 0.0024 | 0.3948 | 9.398 | 0.212 | 0.4571 | 0.0091 | 0.3793 | 332.8 | 11.1 | 1 |
| 140 | 60 | 36.16 | 0.559 | 7.790 | 0.350 | 0.1112 | 0.0035 | 0.5650 | 8.993 | 0.283 | 0.5020 | 0.0130 | -0.1183 | 308.4 | 15.3 | 1 |
| 141 | 60 | 41.50 | 0.421 | 4.760 | 0.130 | 0.0882 | 0.0025 | 0.6623 | 11.338 | 0.321 | 0.3912 | 0.0093 | 0.1713 | 321.2 | 11.2 | 1 |
| 142 | 60 | 9.58 | 0.650 | 12.280 | 0.350 | 0.1557 | 0.0047 | 0.3024 | 6.423 | 0.194 | 0.5770 | 0.0200 | 0.5813 | 341.6 | 26.8 | 1 |
| 143 | 60 | 7.12 | 0.830 | 27.750 | 0.710 | 0.2820 | 0.0091 | 0.5022 | 3.546 | 0.114 | 0.7190 | 0.0200 | 0.4301 | 302.2 | 47.2 | 1 |
| 144 | 60 | 6.20 | 0.691 | 15.090 | 0.450 | 0.1814 | 0.0060 | 0.2735 | 5.513 | 0.182 | 0.6100 | 0.0210 | 0.4923 | 351.9 | 32.4 | 1 |
| 145 | 60 | 44.33 | 0.481 | 5.924 | 0.094 | 0.0977 | 0.0023 | 0.2320 | 10.235 | 0.241 | 0.4392 | 0.0089 | 0.5313 | 319.1 | 10.4 | 1 |
| 146 | 60 | 16.54 | 0.582 | 11.550 | 0.360 | 0.1594 | 0.0051 | 0.6462 | 6.274 | 0.201 | 0.5260 | 0.0150 | 0.2096 | 415.4 | 23.1 | 1 |
| 147 | 60 | 28.30 | 0.692 | 12.730 | 0.780 | 0.1519 | 0.0097 | 0.9219 | 6.583 | 0.420 | 0.6080 | 0.0130 | -0.0039 | 294.6 | 25.0 | 1 |
| 148 | 60 | 54.49 | 0.363 | 3.790 | 0.120 | 0.0797 | 0.0024 | 0.8422 | 12.547 | 0.378 | 0.3448 | 0.0079 | -0.1436 | 319.2 | 10.8 | 1 |
| 149 | 60 | 23.02 | 0.684 | 14.150 | 0.230 | 0.1699 | 0.0040 | 0.1051 | 5.886 | 0.139 | 0.6040 | 0.0130 | 0.6374 | 336.8 | 20.2 | 1 |
| 150 | 60 | 47.65 | 0.482 | 6.130 | 0.100 | 0.1008 | 0.0022 | 0.5237 | 9.921 | 0.217 | 0.4404 | 0.0067 | 0.2728 | 328.4 | 9.3 | 1 |
| 152 | 60 | 43.26 | 0.624 | 12.300 | 2.100 | 0.1550 | 0.0190 | 0.9970 | 6.452 | 0.791 | 0.5570 | 0.0200 | -0.8204 | 365.1 | 50.3 | 1 |
| 153 | 60 | 88.80 | 0.280 | 2.687 | 0.069 | 0.0700 | 0.0015 | 0.1205 | 14.294 | 0.306 | 0.2777 | 0.0069 | 0.3154 | 316.9 | 7.8 | 1 |
| 154 | 60 | 20.48 | 0.626 | 10.290 | 0.230 | 0.1350 | 0.0036 | 0.4257 | 7.407 | 0.198 | 0.5560 | 0.0130 | 0.4273 | 317.6 | 16.8 | 1 |
| 155 | 60 | 27.62 | 0.642 | 11.950 | 0.240 | 0.1512 | 0.0034 | 0.3541 | 6.614 | 0.149 | 0.5700 | 0.0110 | 0.3356 | 340.0 | 16.1 | 1 |

| **105 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 1.74 | 0.992 | 562.000 | 11.000 | 4.8700 | 0.3700 | 0.6793 | 0.205 | 0.016 | 0.8350 | 0.0140 | 0.4033 | 242.2 | 628.1 | 2 |
| 2 | 60 | 22.59 | 0.241 | 2.690 | 0.110 | 0.0781 | 0.0061 | 0.0206 | 12.804 | 1.000 | 0.2480 | 0.0120 | 0.5536 | 371.5 | 29.4 | 2 |
| 3 | 60 | 1.40 | 1.020 | 625.000 | 17.000 | 5.3300 | 0.4200 | 0.7263 | 0.188 | 0.015 | 0.8370 | 0.0170 | 0.2882 | -720.5 | 916.6 | 2 |
| 4 | 60 | 53.87 | 0.344 | 3.380 | 0.100 | 0.0735 | 0.0056 | 0.1298 | 13.605 | 1.037 | 0.3290 | 0.0110 | 0.3666 | 303.4 | 23.7 | 2 |
| 5 | 60 | 82.80 | 0.273 | 2.755 | 0.073 | 0.0722 | 0.0054 | 0.3342 | 13.850 | 1.036 | 0.2728 | 0.0070 | 0.2571 | 329.7 | 24.6 | 2 |
| 6 | 60 | 18.63 | 0.726 | 17.650 | 0.350 | 0.1993 | 0.0150 | 0.4138 | 5.018 | 0.378 | 0.6380 | 0.0120 | 0.3008 | 342.6 | 32.7 | 2 |
| 7 | 60 | 1.38 | 0.988 | 733.000 | 19.000 | 6.3300 | 0.5100 | 0.5637 | 0.158 | 0.013 | 0.8350 | 0.0180 | 0.6495 | 473.5 | 969.7 | 2 |
| 8 | 60 | 9.14 | 0.747 | 5.630 | 0.310 | 0.0641 | 0.0055 | 0.2631 | 15.601 | 1.339 | 0.6410 | 0.0380 | 0.4248 | 103.9 | 21.7 | 2 |
| 9 | 60 | 6.48 | 0.866 | 10.040 | 0.450 | 0.0991 | 0.0084 | 0.3348 | 10.091 | 0.855 | 0.7350 | 0.0380 | 0.5491 | 84.9 | 31.6 | 2 |
| 10 | 60 | 17.63 | 0.726 | 15.510 | 0.400 | 0.1769 | 0.0140 | 0.1374 | 5.653 | 0.447 | 0.6360 | 0.0200 | 0.6073 | 304.8 | 37.2 | 2 |
| 11 | 60 | 131.10 | 0.359 | 3.745 | 0.061 | 0.0797 | 0.0060 | 0.3723 | 12.547 | 0.945 | 0.3418 | 0.0063 | 0.5925 | 321.0 | 24.2 | 2 |
| 12 | 60 | 1.18 | 0.958 | 836.000 | 28.000 | 7.2700 | 0.5800 | 0.7846 | 0.138 | 0.011 | 0.8340 | 0.0170 | 0.2281 | 1723.2 | 1016.4 | 2 |
| 13 | 60 | 29.90 | 0.488 | 6.330 | 0.140 | 0.1028 | 0.0078 | 0.2434 | 9.728 | 0.738 | 0.4460 | 0.0110 | 0.4416 | 330.4 | 26.4 | 2 |
| 14 | 60 | 1.02 | 1.031 | 805.000 | 34.000 | 7.0000 | 0.6000 | 0.7723 | 0.143 | 0.012 | 0.8370 | 0.0240 | 0.4011 | -1558.0 | 1831.3 | 2 |
| 15 | 60 | 23.99 | 0.715 | 16.820 | 0.300 | 0.1942 | 0.0150 | 0.5394 | 5.149 | 0.398 | 0.6294 | 0.0097 | 0.3543 | 347.1 | 31.4 | 2 |
| 16 | 60 | 5.93 | 0.802 | 23.170 | 0.600 | 0.2446 | 0.0190 | 0.1184 | 4.088 | 0.318 | 0.6970 | 0.0240 | 0.6655 | 304.5 | 52.6 | 2 |
| 17 | 60 | 32.80 | 0.512 | 6.900 | 0.140 | 0.1085 | 0.0083 | 0.1211 | 9.217 | 0.705 | 0.4650 | 0.0120 | 0.6546 | 332.7 | 27.2 | 2 |
| 18 | 60 | 59.30 | 0.943 | 2.620 | 0.130 | 0.0243 | 0.0021 | 0.5175 | 41.152 | 3.556 | 0.7910 | 0.0400 | 0.4920 | 9.0 | 8.1 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 60 | 35.20 | 0.429 | 5.020 | 0.130 | 0.0919 | 0.0070 | 0.0713 | 10.881 | 0.829 | 0.3980 | 0.0130 | 0.5628 | 329.8 | 26.5 | 2 |
| 20 | 60 | 16.54 | 0.563 | 8.350 | 0.250 | 0.1212 | 0.0094 | 0.3220 | 8.251 | 0.640 | 0.5060 | 0.0160 | 0.5014 | 332.8 | 29.8 | 2 |
| 21 | 60 | 0.79 | 1.014 | 523.000 | 42.000 | 4.5400 | 0.5000 | 0.9852 | 0.220 | 0.024 | 0.8390 | 0.0180 | 0.0030 | -433.1 | 783.0 | 2 |
| 22 | 60 | 37.82 | 0.404 | 4.820 | 0.130 | 0.0930 | 0.0071 | 0.2913 | 10.753 | 0.821 | 0.3790 | 0.0100 | 0.4112 | 347.6 | 27.2 | 2 |
| 23 | 60 | 16.93 | 0.510 | 11.640 | 0.250 | 0.1791 | 0.0140 | 0.2024 | 5.583 | 0.436 | 0.4740 | 0.0120 | 0.5190 | 541.9 | 44.7 | 2 |
| 24 | 60 | 4.46 | 1.118 | 288.000 | 14.000 | 2.4600 | 0.2200 | 0.9496 | 0.407 | 0.036 | 0.8598 | 0.0095 | 0.1847 | -2201.2 | 439.6 | 2 |

| **106 apatite** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 33.90 | 0.342 | 3.250 | 0.150 | 0.0711 | 0.0023 | 0.3413 | 14.065 | 0.455 | 0.3270 | 0.0130 | 0.3218 | 294.7 | 11.9 | 2 |
| 2 | 60 | 5.10 | 0.783 | 13.830 | 0.770 | 0.1503 | 0.0095 | 0.3101 | 6.653 | 0.421 | 0.6760 | 0.0470 | 0.6831 | 206.7 | 57.5 | 2 |
| 4 | 60 | 10.54 | 0.456 | 1.850 | 0.130 | 0.0328 | 0.0015 | -0.1764 | 30.488 | 1.394 | 0.4110 | 0.0350 | 0.6553 | 113.9 | 10.6 | 2 |
| 5 | 60 | 16.02 | 0.329 | 3.160 | 0.120 | 0.0723 | 0.0022 | 0.2699 | 13.831 | 0.421 | 0.3170 | 0.0120 | 0.4245 | 305.3 | 11.4 | 2 |
| 6 | 60 | 11.35 | 0.815 | 23.480 | 0.810 | 0.2409 | 0.0086 | 0.6180 | 4.151 | 0.148 | 0.7060 | 0.0210 | 0.3614 | 280.7 | 42.5 | 2 |
| 7 | 60 | 13.92 | 0.938 | 15.040 | 0.620 | 0.1356 | 0.0077 | 0.4590 | 7.375 | 0.419 | 0.7900 | 0.0450 | 0.4011 | 54.0 | 50.2 | 2 |
| 8 | 60 | 2.95 | 1.014 | 37.900 | 3.400 | 0.3290 | 0.0340 | 0.6777 | 3.040 | 0.314 | 0.8450 | 0.0560 | 0.5213 | -30.4 | 153.0 | 2 |
| 9 | 60 | 90.50 | 0.276 | 2.546 | 0.064 | 0.0672 | 0.0015 | 0.3170 | 14.881 | 0.332 | 0.2739 | 0.0069 | 0.2629 | 306.4 | 7.7 | 2 |
| 10 | 60 | 1.38 | 0.992 | 112.700 | 3.900 | 0.9770 | 0.0390 | 0.3751 | 1.024 | 0.041 | 0.8340 | 0.0330 | 0.5820 | 47.5 | 268.7 | 2 |
| 11 | 60 | 10.76 | 0.847 | 32.170 | 0.770 | 0.3191 | 0.0093 | 0.4613 | 3.134 | 0.091 | 0.7330 | 0.0180 | 0.4816 | 307.6 | 48.6 | 2 |
| 12 | 60 | 7.07 | 0.919 | 14.920 | 0.900 | 0.1422 | 0.0093 | 0.7536 | 7.032 | 0.460 | 0.7760 | 0.0350 | 0.3520 | 74.0 | 41.3 | 2 |
| 13 | 60 | 8.61 | 1.001 | 34.900 | 3.600 | 0.3050 | 0.0340 | 0.8142 | 3.279 | 0.365 | 0.8360 | 0.0580 | 0.3844 | -1.1 | 145.9 | 2 |
| 14 | 60 | 1.70 | 0.959 | 18.300 | 1.200 | 0.1670 | 0.0097 | 0.3648 | 5.988 | 0.348 | 0.8060 | 0.0590 | 0.5479 | 44.0 | 80.6 | 2 |
| 16 | 60 | 18.40 | 0.524 | 6.330 | 0.230 | 0.0972 | 0.0029 | 0.5496 | 10.288 | 0.307 | 0.4730 | 0.0140 | 0.1676 | 291.4 | 14.0 | 2 |
| 17 | 60 | 25.22 | 0.548 | 7.730 | 0.280 | 0.1148 | 0.0040 | 0.3263 | 8.711 | 0.304 | 0.4940 | 0.0190 | 0.4404 | 325.9 | 20.6 | 2 |
| 18 | 60 | 40.80 | 0.309 | 3.018 | 0.097 | 0.0725 | 0.0019 | 0.3709 | 13.793 | 0.361 | 0.3007 | 0.0096 | 0.3828 | 315.3 | 9.9 | 2 |
| 19 | 60 | 31.88 | 0.472 | 5.490 | 0.140 | 0.0930 | 0.0025 | 0.3967 | 10.753 | 0.289 | 0.4320 | 0.0110 | 0.4199 | 308.9 | 11.7 | 2 |
| 20 | 60 | 1.08 | 1.125 | 337.200 | 12.000 | 2.9300 | 0.1200 | 0.6763 | 0.341 | 0.014 | 0.8600 | 0.0250 | 0.7908 | -2930.4 | 1042.5 | 2 |
| 21 | 60 | 17.84 | 0.617 | 3.110 | 0.120 | 0.0432 | 0.0018 | 0.1091 | 23.148 | 0.965 | 0.5380 | 0.0300 | 0.6526 | 105.9 | 11.4 | 2 |
| 22 | 60 | 16.06 | 0.776 | 19.930 | 0.460 | 0.2162 | 0.0071 | 0.5182 | 4.625 | 0.152 | 0.6760 | 0.0170 | 0.6218 | 304.7 | 32.0 | 2 |
| 23 | 60 | 14.50 | 0.356 | 1.224 | 0.082 | 0.0278 | 0.0015 | -0.1485 | 35.971 | 1.941 | 0.3310 | 0.0290 | 0.7525 | 114.4 | 8.9 | 2 |
| 24 | 60 | 1.27 | 1.056 | 160.200 | 8.800 | 1.3780 | 0.0770 | 0.6842 | 0.726 | 0.041 | 0.8550 | 0.0370 | 0.3173 | -520.0 | 468.9 | 2 |
| 25 | 60 | 15.23 | 0.582 | 2.430 | 0.150 | 0.0352 | 0.0020 | 0.4827 | 28.409 | 1.614 | 0.5100 | 0.0310 | 0.5086 | 94.1 | 10.3 | 2 |
| 26 | 60 | 7.46 | 0.982 | 24.000 | 1.200 | 0.2148 | 0.0096 | 0.3669 | 4.655 | 0.208 | 0.8230 | 0.0430 | 0.4518 | 24.8 | 76.4 | 2 |
| 27 | 60 | 1.44 | 0.883 | 635.000 | 21.000 | 5.6100 | 0.2100 | 0.7610 | 0.178 | 0.007 | 0.8300 | 0.0170 | 0.1511 | 3260.3 | 1911.1 | 2 |
| 28 | 60 | 13.68 | 0.775 | 17.460 | 0.390 | 0.1897 | 0.0045 | 0.1472 | 5.271 | 0.125 | 0.6730 | 0.0170 | 0.5306 | 269.5 | 27.6 | 2 |
| 29 | 60 | 16.92 | 0.739 | 14.540 | 0.360 | 0.1654 | 0.0045 | 0.3505 | 6.046 | 0.164 | 0.6440 | 0.0170 | 0.4764 | 272.9 | 24.4 | 2 |
| 30 | 60 | 9.70 | 0.610 | 8.860 | 0.380 | 0.1201 | 0.0042 | 0.4224 | 8.326 | 0.291 | 0.5420 | 0.0210 | 0.2882 | 295.1 | 22.5 | 2 |
| 31 | 60 | 8.42 | 0.676 | 10.820 | 0.420 | 0.1349 | 0.0049 | 0.0441 | 7.413 | 0.269 | 0.5940 | 0.0280 | 0.6035 | 275.8 | 31.5 | 2 |
| 32 | 60 | 5.12 | 0.870 | 22.540 | 0.980 | 0.2230 | 0.0190 | 0.4972 | 4.484 | 0.382 | 0.7440 | 0.0590 | 0.9009 | 184.1 | 105.8 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 60 | 26.45 | 0.611 | 9.480 | 0.250 | 0.1274 | 0.0032 | 0.4624 | 7.849 | 0.197 | 0.5440 | 0.0130 | 0.2729 | 311.5 | 15.8 | 2 |
| 34 | 60 | 3.52 | 1.001 | 89.900 | 2.500 | 0.7880 | 0.0240 | 0.3288 | 1.269 | 0.039 | 0.8370 | 0.0260 | 0.5961 | -7.2 | 175.8 | 2 |
| 35 | 60 | 38.13 | 0.378 | 4.170 | 0.110 | 0.0852 | 0.0021 | 0.0487 | 11.737 | 0.289 | 0.3570 | 0.0100 | 0.5760 | 333.1 | 10.6 | 2 |
| 36 | 60 | 30.38 | 0.570 | 7.760 | 0.240 | 0.1113 | 0.0029 | 0.1706 | 8.985 | 0.234 | 0.5100 | 0.0190 | 0.4145 | 301.6 | 18.6 | 2 |
| 37 | 60 | 8.36 | 0.840 | 25.970 | 0.670 | 0.2625 | 0.0077 | 0.3375 | 3.810 | 0.112 | 0.7250 | 0.0220 | 0.4510 | 265.0 | 47.8 | 2 |
| 38 | 60 | 10.95 | 0.673 | 9.670 | 0.440 | 0.1203 | 0.0062 | 0.0500 | 8.313 | 0.428 | 0.5900 | 0.0400 | 0.7540 | 248.9 | 40.0 | 2 |
| 39 | 60 | 22.97 | 0.516 | 6.720 | 0.150 | 0.1045 | 0.0028 | 0.4175 | 9.569 | 0.256 | 0.4680 | 0.0120 | 0.5618 | 317.8 | 13.3 | 2 |
| 40 | 60 | 7.22 | 0.745 | 16.720 | 0.640 | 0.1887 | 0.0060 | 0.3385 | 5.299 | 0.169 | 0.6510 | 0.0260 | 0.3209 | 302.8 | 40.1 | 2 |
| 42 | 60 | 18.66 | 0.374 | 3.730 | 0.210 | 0.0764 | 0.0035 | 0.4633 | 13.089 | 0.600 | 0.3530 | 0.0190 | 0.3272 | 301.0 | 17.7 | 2 |
| 44 | 60 | 11.21 | 0.821 | 28.320 | 0.540 | 0.2872 | 0.0067 | 0.3430 | 3.482 | 0.081 | 0.7130 | 0.0140 | 0.4626 | 323.6 | 35.4 | 2 |
| 45 | 60 | 1.83 | 0.928 | 52.300 | 2.300 | 0.4720 | 0.0280 | 0.3408 | 2.119 | 0.126 | 0.7920 | 0.0340 | 0.7247 | 216.8 | 129.8 | 2 |
| 46 | 60 | 2.11 | 0.914 | 19.800 | 1.300 | 0.1824 | 0.0093 | 0.3091 | 5.482 | 0.280 | 0.7740 | 0.0500 | 0.4877 | 100.0 | 74.1 | 2 |
| 47 | 60 | 40.36 | 0.528 | 6.820 | 0.140 | 0.1031 | 0.0037 | 0.4188 | 9.699 | 0.348 | 0.4770 | 0.0130 | 0.6842 | 306.1 | 15.4 | 2 |
| 48 | 60 | 46.8 | 0.880 | 2.810 | 0.110 | 0.0279 | 0.0018 | -0.1285 | 35.842 | 2.312 | 0.7420 | 0.0550 | 0.8552 | 21.6 | 12.7 | 2 |
| 49 | 60 | 13.10 | 0.594 | 2.380 | 0.190 | 0.0328 | 0.0017 | 0.0595 | 30.488 | 1.580 | 0.5190 | 0.0430 | 0.4880 | 85.3 | 12.2 | 2 |
| 50 | 60 | 1.88 | 0.980 | 102.900 | 5.900 | 0.9030 | 0.0700 | 0.8352 | 1.107 | 0.086 | 0.8280 | 0.0350 | 0.5728 | 116.5 | 259.3 | 2 |
| 51 | 60 | 6.50 | 0.796 | 22.780 | 0.660 | 0.2384 | 0.0093 | 0.2750 | 4.195 | 0.164 | 0.6920 | 0.0290 | 0.5906 | 306.2 | 56.1 | 2 |
| 52 | 60 | 40.80 | 0.438 | 5.240 | 0.130 | 0.0928 | 0.0024 | 0.1439 | 10.776 | 0.279 | 0.4050 | 0.0120 | 0.5302 | 328.0 | 12.3 | 2 |

**Table DR4.** Rutile U-Pb data. $^{206}Pb_c$ refers to the $^{206}Pb_c/^{206}Pb_{total}$ ratio, where $Pb_c$ is non-radiogenic common Pb. ρ – error correlation of preceding columns. Pb correction type: 1 – array intercept $Pb_c$ correction; 2 – iterative $Pb_c$ correction using a terrestrial Pb evolution model[8]. All errors are fully propagated and given at the 2σ level. Data for Barrême-Valensole (BA- and VA-) samples available from previously published data repository[10].

| **HN01 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| g1 | 60 | 2.04 | 0.368 | 4.460 | 0.770 | 0.0951 | 0.0088 | 0.0042 | 10.515 | 0.973 | 0.3450 | 0.0650 | 0.7317 | 376.4 | 59.0 | 1 |
| g2 | 60 | 1.78 | 0.659 | 1.410 | 0.340 | 0.0340 | 0.0060 | 0.2412 | 29.412 | 5.190 | 0.5500 | 0.1700 | 0.5278 | 74.3 | 50.2 | 1 |
| g3 | 60 | 3.56 | 0.932 | 30.000 | 4.300 | 0.2880 | 0.0290 | 0.5262 | 3.472 | 0.350 | 0.7900 | 0.1200 | -0.1285 | 124.1 | 276.6 | 2 |
| g4 | 60 | 27.35 | 0.162 | 0.954 | 0.082 | 0.0388 | 0.0015 | 0.3200 | 25.773 | 0.996 | 0.1800 | 0.0130 | 0.0648 | 206.2 | 8.8 | 2 |
| g5 | 60 | 12.03 | 0.027 | 0.431 | 0.071 | 0.0434 | 0.0023 | 0.0327 | 23.041 | 1.221 | 0.0720 | 0.0120 | -0.0496 | 266.6 | 14.6 | 1 |
| g6 | 60 | 7.34 | 0.553 | 9.300 | 1.600 | 0.1230 | 0.0140 | 0.9233 | 8.130 | 0.925 | 0.4910 | 0.0390 | -0.4652 | 345.3 | 54.0 | 1 |
| g7 | 60 | 0.47 | 0.949 | 62.300 | 8.600 | 0.5820 | 0.0750 | 0.7327 | 1.718 | 0.221 | 0.8050 | 0.0820 | 0.5525 | 186.9 | 380.2 | 1 |
| g8 | 60 | 4.70 | 0.654 | 11.880 | 1.000 | 0.1544 | 0.0100 | 0.5500 | 6.477 | 0.419 | 0.5710 | 0.0420 | 0.3431 | 335.7 | 55.3 | 1 |
| g9 | 60 | 1.04 | 1.056 | 15.200 | 1.800 | 0.1540 | 0.0180 | 0.0384 | 6.494 | 0.759 | 0.8900 | 0.1300 | 0.9834 | -55.8 | 163.0 | 1 |
| g10 | 60 | 3.50 | 0.418 | 4.490 | 0.470 | 0.0859 | 0.0052 | 0.1099 | 11.641 | 0.705 | 0.3840 | 0.0420 | 0.5416 | 314.4 | 33.9 | 1 |
| g11 | 60 | 1.57 | 0.899 | 10.600 | 1.300 | 0.1110 | 0.0120 | 0.0944 | 9.009 | 0.974 | 0.7600 | 0.1200 | 0.7781 | 72.0 | 107.8 | 2 |
| g12 | 60 | 3.00 | 0.739 | 16.100 | 1.600 | 0.1830 | 0.0150 | 0.0380 | 5.464 | 0.448 | 0.6380 | 0.0700 | 0.3946 | 301.2 | 103.6 | 1 |
| g13 | 60 | 9.50 | 0.035 | 0.631 | 0.096 | 0.0589 | 0.0032 | 0.0446 | 16.978 | 0.922 | 0.0800 | 0.0120 | 0.1502 | 356.4 | 19.9 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| g14 | 60 | 2.92 | 0.987 | 35.700 | 6.500 | 0.3670 | 0.0890 | 0.8905 | 2.725 | 0.661 | 0.8350 | 0.0980 | 0.2246 | 30.1 | 290.3 | 1 |
| g15 | 60 | 0.65 | 0.420 | 1.010 | 0.610 | 0.0700 | 0.0120 | -0.0321 | 14.286 | 2.449 | 0.3700 | 0.1400 | 0.2196 | 256.5 | 91.6 | 1 |
| g16 | 60 | 8.61 | 0.228 | 0.740 | 0.130 | 0.0263 | 0.0023 | -0.0358 | 38.023 | 3.325 | 0.2300 | 0.0450 | 0.0590 | 129.6 | 14.7 | 2 |
| g17 | 60 | 1.31 | -0.564 | 1.620 | 0.590 | 0.0186 | 0.0056 | -0.0880 | 53.763 | 16.187 | -0.4000 | 1.0000 | 0.7173 | 184.8 | 156.8 | 2 |
| g18 | 60 | 2.82 | 0.835 | 11.200 | 1.400 | 0.1190 | 0.0110 | 0.6711 | 8.403 | 0.777 | 0.7140 | 0.0670 | 0.4671 | 125.1 | 64.9 | 1 |
| g19 | 60 | 0.97 | 1.016 | 75.800 | 7.500 | 0.6700 | 0.0670 | 0.6993 | 1.493 | 0.149 | 0.8580 | 0.0550 | 0.3510 | -69.4 | 303.2 | 1 |
| g20 | 60 | 12.99 | 0.051 | 1.940 | 0.540 | 0.1240 | 0.0140 | 0.1209 | 8.065 | 0.911 | 0.1030 | 0.0270 | 0.2797 | 717.3 | 82.7 | 1 |
| g21 | 60 | 0.34 | -0.563 | 2.000 | 1.600 | 0.0310 | 0.0140 | 0.0811 | 32.258 | 14.568 | -0.4000 | 0.8600 | 0.2434 | 305.0 | 246.5 | 2 |
| g22 | 60 | 3.19 | 0.182 | 1.880 | 0.290 | 0.0739 | 0.0052 | 0.0668 | 13.532 | 0.952 | 0.1980 | 0.0310 | 0.1944 | 378.4 | 31.7 | 1 |
| g23 | 60 | 4.23 | 0.069 | 0.890 | 0.190 | 0.0554 | 0.0040 | 0.3499 | 18.051 | 1.303 | 0.1050 | 0.0250 | -0.1386 | 324.3 | 25.7 | 1 |
| g24 | 60 | 1.28 | 0.172 | 4.180 | 0.980 | 0.0530 | 0.0093 | 0.3852 | 18.868 | 3.311 | 0.1900 | 0.4200 | 0.5833 | 276.8 | 179.2 | 2 |
| g25 | 60 | 17.82 | 0.008 | 0.418 | 0.062 | 0.0524 | 0.0024 | -0.1548 | 19.084 | 0.874 | 0.0587 | 0.0090 | 0.3154 | 326.8 | 15.2 | 1 |
| g26 | 60 | 1.38 | 1.019 | 29.900 | 6.700 | 0.2480 | 0.0440 | 0.9017 | 4.032 | 0.715 | 0.8600 | 0.1200 | 0.3016 | -29.7 | 241.5 | 1 |
| g27 | 60 | 10.35 | 0.007 | 0.390 | 0.075 | 0.0493 | 0.0030 | -0.0447 | 20.284 | 1.234 | 0.0580 | 0.0120 | 0.2331 | 308.0 | 19.1 | 1 |
| g28 | 60 | 0.29 | 0.605 | 17.400 | 5.300 | 0.1350 | 0.0340 | 0.0722 | 7.407 | 1.866 | 0.5400 | 0.6200 | 0.6135 | 335.0 | 647.9 | 2 |
| g29 | 60 | 25.59 | 0.029 | 0.521 | 0.052 | 0.0512 | 0.0023 | 0.2506 | 19.531 | 0.877 | 0.0743 | 0.0067 | 0.1431 | 312.9 | 14.1 | 1 |
| g30 | 60 | 10.36 | 0.463 | 5.510 | 0.390 | 0.0978 | 0.0045 | 0.0064 | 10.225 | 0.470 | 0.4200 | 0.0260 | 0.4772 | 329.8 | 25.0 | 1 |
| g31 | 60 | 14.65 | 0.235 | 2.040 | 0.360 | 0.0602 | 0.0033 | 0.5319 | 16.611 | 0.911 | 0.2300 | 0.0280 | -0.1771 | 290.3 | 20.9 | 1 |
| g32 | 60 | 16.00 | 0.551 | 6.400 | 0.390 | 0.0932 | 0.0038 | 0.2296 | 10.730 | 0.437 | 0.4890 | 0.0260 | 0.5703 | 264.2 | 22.1 | 1 |
| g33 | 60 | 20.74 | 0.039 | 0.318 | 0.040 | 0.0282 | 0.0017 | 0.2067 | 35.461 | 2.138 | 0.0810 | 0.0100 | 0.1114 | 172.3 | 10.5 | 2 |
| g34 | 60 | 3.26 | 0.370 | 4.150 | 0.890 | 0.0929 | 0.0086 | 0.4994 | 10.764 | 0.996 | 0.3470 | 0.0650 | -0.0427 | 366.4 | 57.6 | 1 |
| g35 | 60 | 4.91 | 0.056 | 0.640 | 0.260 | 0.0547 | 0.0062 | -0.0137 | 18.282 | 2.072 | 0.0950 | 0.0420 | 0.6753 | 324.7 | 40.8 | 1 |
| g36 | 60 | 3.31 | 0.914 | 23.500 | 2.400 | 0.2150 | 0.0150 | 0.3165 | 4.651 | 0.324 | 0.7770 | 0.0710 | 0.3596 | 117.5 | 122.6 | 1 |
| g37 | 60 | 6.83 | 0.101 | 1.090 | 0.200 | 0.0577 | 0.0039 | 0.1327 | 17.331 | 1.171 | 0.1290 | 0.0210 | -0.0028 | 326.2 | 23.9 | 1 |
| g38 | 60 | 24.67 | 0.264 | 2.260 | 0.220 | 0.0638 | 0.0023 | 0.0068 | 15.674 | 0.565 | 0.2520 | 0.0220 | 0.2678 | 295.9 | 15.6 | 1 |
| g39 | 60 | 13.80 | 0.238 | 2.150 | 0.330 | 0.0651 | 0.0037 | 0.4665 | 15.361 | 0.873 | 0.2330 | 0.0310 | -0.1051 | 312.0 | 24.1 | 1 |
| g40 | 60 | 0.26 | 0.905 | 74.000 | 14.000 | 0.6900 | 0.1100 | 0.6689 | 1.449 | 0.231 | 0.7700 | 0.1400 | 0.9956 | 409.9 | 752.5 | 1 |
| g41 | 60 | 3.38 | 0.444 | 1.090 | 0.650 | 0.0213 | 0.0046 | -0.0229 | 46.948 | 10.139 | 0.4000 | 0.4100 | 0.2714 | 75.8 | 72.2 | 2 |
| g42 | 60 | 0.24 | -0.183 | 14.400 | 4.200 | 0.1450 | 0.0410 | 0.5613 | 6.897 | 1.950 | -0.0800 | 0.6500 | 0.6195 | 1020.6 | 703.2 | 2 |
| g43 | 60 | 11.03 | 0.225 | 1.990 | 0.270 | 0.0632 | 0.0032 | 0.3104 | 15.823 | 0.801 | 0.2230 | 0.0250 | -0.1138 | 308.2 | 20.1 | 1 |
| g44 | 60 | 5.17 | 0.380 | 4.280 | 0.520 | 0.0876 | 0.0055 | 0.2031 | 11.416 | 0.717 | 0.3540 | 0.0410 | 0.0743 | 341.1 | 35.1 | 1 |
| g45 | 60 | 4.33 | 0.806 | 9.800 | 1.200 | 0.1040 | 0.0120 | 0.6604 | 9.615 | 1.109 | 0.6910 | 0.0560 | 0.4702 | 128.5 | 49.0 | 1 |
| g46 | 60 | 13.14 | 0.307 | 3.210 | 0.710 | 0.0734 | 0.0072 | 0.9242 | 13.624 | 1.336 | 0.2960 | 0.0400 | -0.5748 | 319.9 | 38.5 | 1 |
| g47 | 60 | 8.51 | 0.929 | 59.000 | 3.500 | 0.5450 | 0.0280 | 0.8761 | 1.835 | 0.094 | 0.7890 | 0.0200 | 0.2663 | 244.0 | 93.0 | 1 |
| g48 | 60 | 18.02 | 0.941 | 19.490 | 0.980 | 0.1768 | 0.0069 | 0.4781 | 5.656 | 0.221 | 0.7980 | 0.0260 | 0.4639 | 67.1 | 38.6 | 1 |
| g49 | 60 | 35.44 | 0.073 | 0.831 | 0.074 | 0.0561 | 0.0025 | 0.0369 | 17.825 | 0.794 | 0.1080 | 0.0084 | 0.2014 | 326.9 | 14.9 | 1 |
| g50 | 60 | 6.57 | 0.707 | 14.490 | 1.000 | 0.1715 | 0.0087 | 0.2143 | 5.831 | 0.296 | 0.6130 | 0.0340 | 0.3230 | 316.0 | 48.9 | 1 |
| g51 | 60 | 0.28 | -1.712 | 6.600 | 3.000 | 0.0630 | 0.0230 | -0.0241 | 15.873 | 5.795 | -1.3600 | 0.9900 | 0.0886 | 1016.9 | 557.7 | 2 |
| g52 | 60 | 7.63 | 0.169 | 1.200 | 1.100 | 0.0535 | 0.0029 | 0.1359 | 18.692 | 1.013 | 0.1800 | 0.1600 | -0.0907 | 280.4 | 71.9 | 1 |
| g53 | 60 | 34.62 | 0.009 | 0.250 | 0.030 | 0.0312 | 0.0015 | -0.1030 | 32.051 | 1.541 | 0.0574 | 0.0069 | 0.3975 | 196.3 | 9.5 | 2 |
| g54 | 60 | 3.95 | 0.670 | 8.170 | 0.630 | 0.1039 | 0.0063 | 0.2793 | 9.625 | 0.584 | 0.5830 | 0.0460 | 0.4664 | 217.3 | 40.2 | 1 |
| g55 | 60 | 4.92 | 0.922 | 3.660 | 0.490 | 0.0432 | 0.0045 | 0.0433 | 23.148 | 2.411 | 0.7500 | 0.1300 | 0.1558 | 21.8 | 47.4 | 1 |
| g56 | 60 | 0.56 | 1.068 | 23.900 | 4.600 | 0.2270 | 0.0420 | 0.5973 | 4.405 | 0.815 | 0.9000 | 0.1900 | 0.9670 | -100.9 | 352.7 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| g57 | 60 | 10.66 | 0.340 | 3.580 | 0.440 | 0.0772 | 0.0050 | 0.7839 | 12.953 | 0.839 | 0.3220 | 0.0250 | -0.1780 | 320.5 | 25.5 | 1 |
| g58 | 60 | 0.37 | 1.118 | 36.900 | 4.900 | 0.3180 | 0.0370 | 0.3093 | 3.145 | 0.366 | 0.9400 | 0.1300 | 0.5916 | -246.5 | 344.9 | 1 |
| g59 | 60 | 18.90 | 0.662 | 10.630 | 0.630 | 0.1338 | 0.0068 | 0.5188 | 7.474 | 0.380 | 0.5770 | 0.0260 | 0.5126 | 285.2 | 31.3 | 1 |
| g60 | 60 | 0.78 | 0.272 | 4.700 | 1.000 | 0.0590 | 0.0094 | 0.1709 | 16.949 | 2.700 | 0.2700 | 0.3900 | 0.4979 | 271.0 | 183.7 | 2 |
| g61 | 60 | 2.96 | 0.867 | 6.490 | 0.720 | 0.0727 | 0.0075 | 0.4154 | 13.755 | 1.419 | 0.7080 | 0.0900 | 0.6641 | 62.2 | 55.4 | 1 |
| g62 | 60 | 0.16 | 6.301 | 4.300 | 4.700 | 0.1260 | 0.0450 | -0.1836 | 7.937 | 2.834 | -0.4200 | 0.7200 | 0.3884 | 1177.9 | 730.5 | 2 |
| g63 | 60 | 2.72 | 0.267 | 2.150 | 0.430 | 0.0607 | 0.0048 | -0.0198 | 16.474 | 1.303 | 0.2540 | 0.0580 | 0.3770 | 280.7 | 36.3 | 1 |
| g64 | 60 | 2.25 | 0.173 | 1.540 | 0.390 | 0.0641 | 0.0062 | 0.2902 | 15.601 | 1.509 | 0.1840 | 0.0460 | 0.3909 | 333.0 | 39.8 | 1 |
| g65 | 60 | 2.34 | 0.868 | 13.700 | 1.800 | 0.1350 | 0.0130 | 0.5448 | 7.407 | 0.713 | 0.7400 | 0.0780 | 0.1672 | 113.9 | 84.6 | 1 |
| g66 | 60 | 11.20 | 0.558 | 7.240 | 0.480 | 0.1069 | 0.0049 | 0.4995 | 9.355 | 0.429 | 0.4950 | 0.0260 | 0.4286 | 297.4 | 25.6 | 1 |
| g67 | 60 | 1.48 | 0.439 | 10.600 | 2.200 | 0.1720 | 0.0220 | 0.6035 | 5.814 | 0.744 | 0.4180 | 0.0760 | 0.1538 | 594.3 | 121.3 | 2 |
| g68 | 60 | 50.30 | 0.012 | 0.280 | 0.034 | 0.0344 | 0.0015 | 0.1903 | 29.070 | 1.268 | 0.0599 | 0.0067 | 0.0915 | 215.5 | 9.5 | 2 |
| g69 | 60 | 16.51 | 0.025 | 0.423 | 0.062 | 0.0451 | 0.0023 | 0.1610 | 22.173 | 1.131 | 0.0708 | 0.0096 | 0.1531 | 277.4 | 14.4 | 1 |
| g70 | 60 | 6.94 | 0.096 | 0.560 | 0.088 | 0.0344 | 0.0024 | 0.0950 | 29.070 | 2.028 | 0.1270 | 0.0230 | 0.4666 | 197.3 | 15.0 | 2 |
| g71 | 60 | 10.11 | 0.295 | 2.790 | 0.360 | 0.0712 | 0.0045 | 0.6046 | 14.045 | 0.888 | 0.2760 | 0.0270 | -0.1441 | 315.7 | 25.2 | 1 |
| g72 | 60 | 0.74 | 0.956 | 14.900 | 1.800 | 0.1510 | 0.0150 | 0.0294 | 6.623 | 0.658 | 0.8100 | 0.1300 | 0.5997 | 42.8 | 157.7 | 1 |
| g73 | 60 | 4.19 | 0.037 | 0.440 | 0.120 | 0.0534 | 0.0043 | -0.1859 | 18.727 | 1.508 | 0.0810 | 0.0220 | 0.5454 | 323.2 | 27.4 | 1 |
| g74 | 60 | 4.02 | 0.339 | 3.520 | 0.510 | 0.0841 | 0.0068 | 0.2901 | 11.891 | 0.961 | 0.3220 | 0.0460 | 0.4747 | 348.7 | 41.0 | 1 |
| g75 | 60 | 2.31 | 0.016 | 0.420 | 0.190 | 0.0580 | 0.0054 | -0.0720 | 17.241 | 1.605 | 0.0660 | 0.0320 | 0.2769 | 357.7 | 36.1 | 1 |
| g76 | 60 | 2.80 | 0.879 | 38.900 | 4.200 | 0.3860 | 0.0380 | 0.5320 | 2.591 | 0.255 | 0.7490 | 0.0410 | 0.1520 | 295.0 | 127.2 | 1 |
| g77 | 60 | 0.44 | 0.654 | 4.900 | 1.700 | 0.1020 | 0.0170 | 0.3336 | 9.804 | 1.634 | 0.5700 | 0.1600 | 0.5435 | 223.8 | 133.8 | 1 |
| g78 | 60 | 4.93 | 0.062 | 0.880 | 0.160 | 0.0650 | 0.0039 | 0.3259 | 15.385 | 0.923 | 0.1030 | 0.0180 | 0.2792 | 381.7 | 24.3 | 1 |
| g79 | 60 | 2.32 | 0.899 | 22.700 | 1.700 | 0.2180 | 0.0140 | 0.2504 | 4.587 | 0.295 | 0.7650 | 0.0580 | 0.6502 | 140.0 | 100.9 | 1 |
| g80 | 60 | 2.48 | 0.084 | 0.760 | 0.850 | 0.0550 | 0.0270 | 0.7293 | 18.182 | 8.926 | 0.1200 | 0.1700 | -0.7264 | 317.0 | 169.3 | 2 |
| g81 | 60 | 1.04 | 1.235 | 10.500 | 1.600 | 0.1010 | 0.0110 | -0.0218 | 9.901 | 1.078 | 0.9900 | 0.2200 | 0.8191 | -154.9 | 191.5 | 1 |
| g82 | 60 | 1.41 | 0.958 | 50.300 | 5.500 | 0.4530 | 0.0480 | 0.4123 | 2.208 | 0.234 | 0.8120 | 0.0880 | 0.4432 | 120.5 | 317.8 | 1 |
| g83 | 60 | 7.18 | 0.230 | 1.940 | 0.260 | 0.0629 | 0.0034 | 0.1705 | 15.898 | 0.859 | 0.2270 | 0.0290 | -0.1195 | 304.7 | 22.1 | 1 |
| g84 | 60 | 29.30 | 0.074 | 1.400 | 0.140 | 0.0905 | 0.0047 | 0.1838 | 11.050 | 0.574 | 0.1160 | 0.0120 | 0.2762 | 518.8 | 27.6 | 1 |
| g85 | 60 | 0.30 | -0.747 | 6.900 | 3.300 | 0.0500 | 0.0160 | -0.0292 | 20.000 | 6.400 | -0.5500 | 0.6300 | 0.1079 | 539.8 | 287.8 | 2 |
| g86 | 60 | 12.08 | 0.295 | 2.880 | 0.280 | 0.0753 | 0.0037 | 0.5437 | 13.280 | 0.653 | 0.2870 | 0.0230 | -0.1459 | 333.3 | 21.0 | 1 |
| g87 | 60 | 0.52 | 0.897 | 105.000 | 12.000 | 0.9260 | 0.0920 | 0.7355 | 1.080 | 0.107 | 0.7640 | 0.0760 | 0.5348 | 589.2 | 540.7 | 1 |
| g88 | 60 | 0.47 | 1.062 | 128.000 | 28.000 | 1.0200 | 0.2000 | 0.9279 | 0.980 | 0.192 | 0.8960 | 0.0950 | 0.0346 | -1134.2 | 1013.3 | 1 |
| g89 | 60 | 0.07 | 1.067 | 400.000 | 110.000 | 3.8000 | 1.2000 | 0.9948 | 0.263 | 0.083 | 0.8900 | 0.1700 | 0.4294 | -1894.5 | 6807.1 | 2 |
| g90 | 60 | 0.33 | 0.977 | 128.000 | 21.000 | 1.1600 | 0.2100 | 0.6528 | 0.862 | 0.156 | 0.8300 | 0.1400 | 0.2333 | 172.2 | 1283.9 | 2 |
| g91 | 60 | 0.24 | 0.932 | 320.000 | 34.000 | 2.9700 | 0.3400 | 0.8719 | 0.337 | 0.039 | 0.8150 | 0.0450 | 0.3904 | 1190.1 | 985.4 | 2 |
| g92 | 60 | 1.97 | 1.022 | 660.000 | 35.000 | 5.6300 | 0.2400 | 0.8337 | 0.178 | 0.008 | 0.8370 | 0.0170 | 0.1316 | -836.4 | 983.3 | 2 |
| g93 | 60 | 3.63 | 0.069 | 0.310 | 0.160 | 0.0132 | 0.0022 | 0.1605 | 75.758 | 12.626 | 0.1000 | 0.1800 | 0.4106 | 78.8 | 23.8 | 1 |
| g94 | 60 | 32.90 | 0.024 | 0.109 | 0.021 | 0.0125 | 0.0007 | 0.0123 | 80.000 | 4.608 | 0.0660 | 0.0140 | 0.2127 | 78.2 | 4.7 | 1 |
| g95 | 60 | 7.74 | 0.397 | 0.500 | 0.140 | 0.0153 | 0.0015 | -0.1099 | 65.359 | 6.408 | 0.3500 | 0.3100 | 0.5339 | 59.2 | 40.2 | 1 |
| g96 | 60 | 16.14 | 0.533 | 1.720 | 0.170 | 0.0261 | 0.0015 | 0.4331 | 38.314 | 2.202 | 0.4540 | 0.0390 | 0.2137 | 78.1 | 9.6 | 1 |
| g97 | 60 | 4.61 | 0.773 | 4.210 | 0.500 | 0.0496 | 0.0040 | 0.3409 | 20.161 | 1.626 | 0.6370 | 0.0760 | 0.2332 | 72.1 | 32.1 | 1 |
| g98 | 60 | 23.50 | 0.123 | 0.244 | 0.042 | 0.0137 | 0.0011 | 0.0088 | 72.993 | 5.861 | 0.1410 | 0.0300 | 0.1262 | 77.0 | 7.1 | 1 |
| g99 | 60 | 6.98 | 0.734 | 4.680 | 0.490 | 0.0555 | 0.0043 | 0.6985 | 18.018 | 1.396 | 0.6070 | 0.0490 | 0.2506 | 94.5 | 23.9 | 1 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| g100 | 60 | 7.18 | 0.636 | 2.160 | 0.260 | 0.0325 | 0.0030 | 0.0748 | 30.769 | 2.840 | 0.5320 | 0.0710 | 0.5097 | 75.9 | 20.5 | 1 |
| g101 | 60 | 5.57 | 0.147 | 0.380 | 0.100 | 0.0153 | 0.0020 | -0.0183 | 65.359 | 8.544 | 0.1600 | 0.1600 | 0.3486 | 83.5 | 23.2 | 1 |
| g102 | 60 | 12.86 | 0.136 | 0.236 | 0.062 | 0.0142 | 0.0010 | -0.0083 | 70.671 | 4.994 | 0.1510 | 0.0480 | 0.0256 | 78.4 | 7.9 | 1 |
| g103 | 60 | 13.93 | 0.684 | 2.230 | 0.220 | 0.0304 | 0.0026 | 0.6132 | 32.895 | 2.813 | 0.5690 | 0.0550 | 0.5708 | 61.6 | 15.0 | 1 |
| g104 | 60 | 8.97 | 0.839 | 6.290 | 0.410 | 0.0674 | 0.0039 | 0.4208 | 14.837 | 0.859 | 0.6870 | 0.0470 | 0.5284 | 69.6 | 26.8 | 1 |
| g105 | 60 | 7.82 | 0.209 | 0.369 | 0.074 | 0.0159 | 0.0013 | 0.1360 | 62.893 | 5.142 | 0.2070 | 0.0570 | 0.9637 | 80.6 | 10.0 | 1 |
| g106 | 60 | 17.98 | 0.566 | 2.150 | 0.170 | 0.0331 | 0.0016 | 0.0841 | 30.211 | 1.460 | 0.4790 | 0.0360 | 0.0356 | 96.8 | 10.7 | 1 |
| g107 | 60 | 6.68 | 0.393 | 0.670 | 0.130 | 0.0190 | 0.0024 | -0.0070 | 52.632 | 6.648 | 0.3470 | 0.1100 | -0.0039 | 75.8 | 19.3 | 1 |

| **HN02 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 13.76 | 0.917 | 89.900 | 12.000 | 0.8330 | 0.1100 | 0.6414 | 1.200 | 0.159 | 0.7980 | 0.0120 | 0.3224 | 429.1 | 106.1 | 2 |
| 2 | 60 | 2.29 | 0.242 | 1.740 | 0.440 | 0.0577 | 0.0082 | 0.0135 | 17.331 | 2.463 | 0.2460 | 0.0660 | 0.2010 | 275.9 | 48.7 | 2 |
| 3 | 60 | 9.87 | 0.000 | 0.390 | 0.088 | 0.0540 | 0.0073 | -0.0055 | 18.519 | 2.503 | 0.0531 | 0.0098 | 0.2130 | 339.1 | 45.3 | 2 |
| 4 | 60 | 8.93 | 0.036 | 0.710 | 0.210 | 0.0570 | 0.0083 | -0.0016 | 17.544 | 2.555 | 0.0820 | 0.0190 | 0.0130 | 345.0 | 50.1 | 2 |
| 5 | 60 | 4.31 | 0.174 | 1.170 | 0.290 | 0.0482 | 0.0074 | 0.6016 | 20.747 | 3.185 | 0.1910 | 0.0340 | 0.0143 | 251.5 | 40.2 | 2 |
| 6 | 60 | 0.51 | 0.975 | 110.900 | 16.000 | 0.9860 | 0.1400 | 0.6539 | 1.014 | 0.144 | 0.8270 | 0.0480 | 0.3860 | 157.2 | 380.9 | 2 |
| 7 | 60 | 14.87 | 0.001 | 0.438 | 0.091 | 0.0600 | 0.0080 | 0.0271 | 16.667 | 2.222 | 0.0547 | 0.0088 | 0.2859 | 375.4 | 49.3 | 2 |
| 8 | 60 | 5.95 | 0.634 | 12.500 | 2.000 | 0.1650 | 0.0240 | 0.8757 | 6.061 | 0.882 | 0.5660 | 0.0290 | -0.0906 | 377.6 | 65.5 | 2 |
| 9 | 60 | 0.10 | 0.248 | 1.400 | 5.500 | 0.1160 | 0.0540 | -0.9113 | 8.621 | 4.013 | 0.2600 | 0.2100 | 0.0811 | 539.3 | 304.3 | 2 |
| 10 | 60 | 0.87 | 0.758 | 32.900 | 5.400 | 0.3630 | 0.0540 | 0.5308 | 2.755 | 0.410 | 0.6760 | 0.0560 | 0.0755 | 542.0 | 170.7 | 2 |
| 11 | 60 | 3.89 | 0.957 | 29.000 | 4.300 | 0.2680 | 0.0390 | 0.7639 | 3.731 | 0.543 | 0.8060 | 0.0340 | 0.2662 | 74.6 | 76.2 | 2 |
| 12 | 60 | 27.65 | 0.019 | 0.523 | 0.088 | 0.0555 | 0.0074 | 0.1069 | 18.018 | 2.402 | 0.0687 | 0.0068 | 0.1163 | 341.7 | 44.9 | 2 |
| 13 | 60 | 16.66 | 0.050 | 0.470 | 0.220 | 0.0373 | 0.0050 | 0.0847 | 26.810 | 3.594 | 0.0910 | 0.0380 | -0.0778 | 224.4 | 31.7 | 2 |
| 14 | 60 | 3.00 | 0.812 | 32.800 | 5.300 | 0.3490 | 0.0550 | 0.8398 | 2.865 | 0.452 | 0.7110 | 0.0350 | 0.3687 | 410.5 | 113.7 | 2 |
| 15 | 60 | 3.11 | 0.022 | 0.530 | 0.160 | 0.0623 | 0.0091 | -0.0765 | 16.051 | 2.345 | 0.0720 | 0.0210 | 0.3678 | 381.3 | 55.6 | 2 |
| 16 | 60 | 40.33 | 0.036 | 0.655 | 0.095 | 0.0584 | 0.0077 | 0.1327 | 17.123 | 2.258 | 0.0822 | 0.0047 | 0.2830 | 353.2 | 45.8 | 2 |
| 17 | 60 | 1.26 | 0.797 | 25.400 | 4.100 | 0.2780 | 0.0430 | 0.8295 | 3.597 | 0.556 | 0.6960 | 0.0440 | 0.4175 | 353.3 | 108.9 | 2 |
| 18 | 60 | 46.98 | 0.010 | 0.488 | 0.077 | 0.0579 | 0.0077 | 0.1526 | 17.271 | 2.297 | 0.0615 | 0.0048 | 0.0172 | 359.4 | 47.0 | 2 |
| 19 | 60 | 1.53 | 0.149 | 1.310 | 0.400 | 0.0642 | 0.0110 | 0.0424 | 15.576 | 2.669 | 0.1730 | 0.0520 | 0.0445 | 343.1 | 63.2 | 2 |
| 20 | 60 | 29.17 | 0.018 | 0.457 | 0.073 | 0.0516 | 0.0069 | 0.1093 | 19.380 | 2.591 | 0.0669 | 0.0059 | 0.1595 | 318.8 | 42.0 | 2 |
| 21 | 60 | 1.12 | 0.888 | 65.600 | 9.800 | 0.6390 | 0.0920 | 0.6702 | 1.565 | 0.225 | 0.7750 | 0.0390 | 0.4028 | 446.7 | 201.3 | 2 |
| 22 | 60 | 1.33 | 0.845 | 63.000 | 13.000 | 0.6260 | 0.1200 | 0.9652 | 1.597 | 0.306 | 0.7500 | 0.0380 | 0.0580 | 598.7 | 209.9 | 2 |
| 23 | 60 | 3.21 | 0.604 | 15.800 | 3.500 | 0.1950 | 0.0350 | 0.9053 | 5.128 | 0.920 | 0.5470 | 0.0470 | -0.3042 | 479.3 | 108.8 | 2 |
| 24 | 60 | 5.34 | 0.043 | 0.650 | 0.140 | 0.0554 | 0.0079 | 0.2269 | 18.051 | 2.574 | 0.0880 | 0.0150 | 0.1434 | 332.9 | 47.1 | 2 |
| 25 | 60 | 2.46 | 0.519 | 6.480 | 1.300 | 0.1036 | 0.0170 | 0.6765 | 9.653 | 1.584 | 0.4700 | 0.0530 | 0.1092 | 313.4 | 66.1 | 2 |
| 26 | 60 | 2.75 | 0.554 | 8.880 | 1.500 | 0.1317 | 0.0190 | 0.2660 | 7.593 | 1.095 | 0.5010 | 0.0420 | 0.1980 | 367.6 | 67.2 | 2 |
| 27 | 60 | 8.80 | 0.077 | 0.790 | 0.160 | 0.0493 | 0.0068 | 0.1851 | 20.284 | 2.798 | 0.1140 | 0.0160 | 0.2315 | 286.8 | 39.5 | 2 |
| 28 | 60 | 0.18 | 1.287 | 92.000 | 17.000 | 0.8080 | 0.1400 | 0.8689 | 1.238 | 0.214 | 0.9600 | 0.1200 | 0.0737 | -1700.3 | 1151.1 | 2 |
| 29 | 60 | 8.80 | 0.130 | 1.410 | 0.240 | 0.0676 | 0.0092 | 0.2008 | 14.793 | 2.013 | 0.1590 | 0.0160 | 0.2469 | 368.3 | 49.9 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 60 | 22.59 | 0.139 | 1.220 | 0.190 | 0.0548 | 0.0073 | 0.0534 | 18.248 | 2.431 | 0.1640 | 0.0130 | 0.0214 | 297.2 | 39.4 | 2 |
| 31 | 60 | 3.50 | 0.120 | 1.220 | 0.300 | 0.0604 | 0.0089 | 0.4084 | 16.556 | 2.440 | 0.1500 | 0.0290 | 0.2088 | 333.7 | 50.2 | 2 |
| 32 | 60 | 1.76 | 0.067 | 0.850 | 0.290 | 0.0683 | 0.0110 | 0.3400 | 14.641 | 2.358 | 0.1090 | 0.0380 | 0.7555 | 398.1 | 65.9 | 2 |
| 33 | 60 | 9.95 | 0.038 | 0.666 | 0.130 | 0.0588 | 0.0080 | 0.0465 | 17.007 | 2.314 | 0.0840 | 0.0120 | 0.1162 | 354.8 | 47.8 | 2 |
| 34 | 60 | 1.58 | 0.469 | 4.510 | 0.980 | 0.0918 | 0.0150 | 0.0242 | 10.893 | 1.780 | 0.4290 | 0.0940 | 0.0399 | 307.1 | 83.0 | 2 |
| 35 | 60 | 0.69 | 1.063 | 15.200 | 3.700 | 0.2000 | 0.0420 | -0.0320 | 5.000 | 1.050 | 0.8800 | 0.3000 | 0.1171 | -81.8 | 498.0 | 2 |
| 36 | 60 | 22.02 | 0.112 | 1.250 | 0.220 | 0.0647 | 0.0087 | 0.2747 | 15.456 | 2.078 | 0.1440 | 0.0160 | -0.1483 | 360.1 | 48.2 | 2 |
| 37 | 60 | 0.06 | -0.067 | 17.000 | 15.000 | 0.4100 | 0.7500 | 0.3155 | 2.439 | 4.462 | 0.0900 | 0.5600 | 0.0845 | 2339.0 | 4671.0 | 2 |
| 38 | 60 | 14.60 | 0.228 | 2.710 | 0.420 | 0.0853 | 0.0120 | 0.8085 | 11.723 | 1.649 | 0.2390 | 0.0160 | -0.3089 | 411.3 | 57.7 | 2 |
| 39 | 60 | 12.39 | 0.068 | 0.529 | 0.120 | 0.0522 | 0.0073 | -0.0557 | 19.157 | 2.679 | 0.1070 | 0.0410 | 0.2508 | 306.3 | 45.3 | 2 |
| 40 | 60 | 22.82 | 0.139 | 1.430 | 0.220 | 0.0639 | 0.0085 | 0.2819 | 15.649 | 2.082 | 0.1650 | 0.0110 | 0.0765 | 345.4 | 45.5 | 2 |
| 41 | 60 | 1.99 | 0.033 | 0.500 | 0.230 | 0.0615 | 0.0100 | -0.0837 | 16.260 | 2.644 | 0.0810 | 0.0320 | 0.2249 | 372.2 | 61.3 | 2 |
| 42 | 60 | 7.15 | 0.141 | 1.620 | 0.320 | 0.0684 | 0.0095 | 0.5737 | 14.620 | 2.031 | 0.1680 | 0.0210 | -0.1724 | 367.9 | 51.4 | 2 |

| **HN03 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 7.09 | 0.044 | 0.370 | 0.160 | 0.0311 | 0.0025 | 0.1530 | 32.154 | 2.585 | 0.0850 | 0.0430 | -0.0619 | 188.9 | 18.4 | 2 |
| 2 | 60 | 3.17 | 0.292 | 2.560 | 0.330 | 0.0696 | 0.0055 | 0.0286 | 14.368 | 1.135 | 0.2870 | 0.0350 | 0.1800 | 310.2 | 30.6 | 2 |
| 3 | 60 | 2.22 | 0.360 | 4.180 | 0.550 | 0.0991 | 0.0075 | -0.0448 | 10.091 | 0.764 | 0.3450 | 0.0540 | 0.0906 | 396.7 | 50.2 | 2 |
| 4 | 60 | 0.78 | 0.820 | 8.570 | 1.100 | 0.0990 | 0.0120 | 0.0864 | 10.101 | 1.224 | 0.7000 | 0.0740 | 0.2575 | 113.8 | 60.4 | 2 |
| 5 | 60 | 1.22 | 0.390 | 3.410 | 0.460 | 0.0784 | 0.0079 | -0.0113 | 12.755 | 1.285 | 0.3660 | 0.0490 | -0.0001 | 300.9 | 42.2 | 2 |
| 6 | 60 | 1.18 | 0.338 | 2.760 | 0.430 | 0.0735 | 0.0074 | -0.0688 | 13.605 | 1.370 | 0.3240 | 0.0580 | 0.1905 | 306.3 | 44.8 | 2 |
| 7 | 60 | 2.11 | 0.110 | 1.190 | 0.190 | 0.0616 | 0.0056 | 0.1231 | 16.234 | 1.476 | 0.1420 | 0.0230 | 0.2772 | 344.0 | 32.6 | 2 |
| 8 | 60 | 2.76 | 0.013 | 0.250 | 0.130 | 0.0546 | 0.0055 | -0.1072 | 18.315 | 1.845 | 0.0640 | 0.0290 | 0.9981 | 338.2 | 35.6 | 2 |
| 9 | 60 | 4.91 | 0.684 | 9.610 | 1.100 | 0.1146 | 0.0082 | 0.4476 | 8.726 | 0.624 | 0.5980 | 0.0370 | 0.2528 | 229.2 | 37.3 | 2 |
| 10 | 60 | 1.02 | -0.229 | -0.460 | 0.430 | 0.0511 | 0.0073 | 0.1400 | 19.569 | 2.796 | -0.1300 | 0.1100 | -0.0993 | 392.5 | 69.7 | 2 |
| 11 | 60 | 0.31 | 0.204 | -1.800 | 1.400 | 0.0850 | 0.0180 | 0.0344 | 11.765 | 2.491 | 0.2200 | 0.3700 | -0.1350 | 422.2 | 253.4 | 2 |
| 12 | 60 | 1.58 | 0.319 | 4.020 | 0.750 | 0.1020 | 0.0130 | 0.0965 | 9.804 | 1.250 | 0.3140 | 0.0540 | 0.1040 | 432.7 | 68.2 | 2 |
| 13 | 60 | 5.68 | 0.108 | 1.120 | 0.170 | 0.0608 | 0.0044 | 0.2046 | 16.447 | 1.190 | 0.1400 | 0.0180 | 0.3474 | 340.6 | 25.7 | 2 |
| 14 | 60 | 0.42 | 1.166 | 99.000 | 14.000 | 0.9400 | 0.1200 | 0.4130 | 1.064 | 0.136 | 0.9030 | 0.0990 | 0.7363 | -1095.8 | 951.4 | 2 |
| 15 | 60 | 17.25 | 0.025 | 0.592 | 0.081 | 0.0595 | 0.0032 | 0.0768 | 16.807 | 0.904 | 0.0743 | 0.0083 | 0.3220 | 363.4 | 19.6 | 2 |
| 16 | 60 | 1.19 | 0.123 | 0.530 | 0.330 | 0.0616 | 0.0075 | 0.2518 | 16.234 | 1.977 | 0.1520 | 0.0710 | 0.0683 | 339.3 | 52.7 | 2 |
| 17 | 60 | 2.16 | 1.024 | 51.400 | 6.100 | 0.4510 | 0.0440 | 0.7024 | 2.217 | 0.216 | 0.8500 | 0.0470 | 0.1432 | -69.3 | 178.3 | 2 |
| 18 | 60 | 7.57 | 0.078 | 0.830 | 0.150 | 0.0514 | 0.0033 | 0.0947 | 19.455 | 1.249 | 0.1150 | 0.0180 | 0.1385 | 298.5 | 20.2 | 2 |
| 19 | 60 | 6.96 | 0.799 | 8.700 | 1.600 | 0.0940 | 0.0150 | 0.1990 | 10.638 | 1.698 | 0.6840 | 0.0600 | 0.1668 | 120.4 | 49.2 | 2 |
| 20 | 60 | 12.27 | 0.362 | 3.570 | 0.520 | 0.0735 | 0.0058 | 0.1431 | 13.605 | 1.074 | 0.3430 | 0.0290 | 0.0116 | 295.4 | 28.3 | 2 |
| 21 | 60 | 3.25 | -0.038 | 0.300 | 0.160 | 0.0600 | 0.0053 | 0.1335 | 16.667 | 1.472 | 0.0240 | 0.0190 | 0.1068 | 389.4 | 34.9 | 2 |
| 22 | 60 | 8.76 | 0.003 | 0.457 | 0.089 | 0.0582 | 0.0038 | -0.0115 | 17.182 | 1.122 | 0.0560 | 0.0110 | 0.2495 | 363.7 | 23.8 | 2 |
| 23 | 60 | 9.89 | 0.206 | 2.000 | 0.290 | 0.0654 | 0.0043 | 0.3958 | 15.291 | 1.005 | 0.2190 | 0.0240 | 0.0738 | 326.2 | 24.3 | 2 |
| 24 | 60 | 3.13 | 0.035 | 0.500 | 0.180 | 0.0520 | 0.0053 | 0.1482 | 19.231 | 1.960 | 0.0810 | 0.0320 | 0.1190 | 315.6 | 34.2 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 25 | 60 | 16.06 | 0.027 | 0.640 | 0.090 | 0.0613 | 0.0033 | -0.0342 | 16.313 | 0.878 | 0.0757 | 0.0091 | 0.1523 | 373.5 | 20.2 | 2 |
| 26 | 60 | 27.81 | 0.005 | 0.465 | 0.060 | 0.0578 | 0.0030 | 0.1229 | 17.301 | 0.898 | 0.0579 | 0.0060 | 0.0581 | 360.4 | 18.6 | 2 |
| 27 | 60 | 0.19 | -0.611 | 12.400 | 6.000 | 0.2100 | 0.1300 | -0.0014 | 4.762 | 2.948 | -0.4200 | 0.5000 | 0.0812 | 1879.0 | 1319.7 | 2 |
| 28 | 60 | 200.90 | 0.140 | 0.643 | 0.057 | 0.0290 | 0.0015 | 0.3516 | 34.459 | 1.781 | 0.1607 | 0.0061 | 0.1567 | 158.9 | 8.3 | 2 |
| 29 | 60 | 5.59 | 0.232 | 1.230 | 0.230 | 0.0405 | 0.0034 | 0.2499 | 24.691 | 2.073 | 0.2350 | 0.0390 | 0.2590 | 197.6 | 20.6 | 2 |
| 30 | 60 | 1.29 | 0.009 | 0.660 | 0.470 | 0.0695 | 0.0074 | 0.2021 | 14.388 | 1.532 | 0.0630 | 0.0840 | 0.5242 | 429.2 | 62.8 | 2 |
| 31 | 60 | 5.69 | -0.036 | 0.230 | 0.120 | 0.0570 | 0.0041 | 0.1135 | 17.544 | 1.262 | 0.0250 | 0.0150 | -0.0345 | 369.8 | 26.9 | 2 |
| 32 | 60 | 22.83 | 0.009 | 0.445 | 0.066 | 0.0540 | 0.0029 | 0.1808 | 18.519 | 0.995 | 0.0601 | 0.0077 | 0.0249 | 336.2 | 18.0 | 2 |
| 33 | 60 | 7.56 | 0.018 | 0.476 | 0.110 | 0.0501 | 0.0036 | 0.1271 | 19.960 | 1.434 | 0.0670 | 0.0150 | 0.2103 | 309.6 | 22.7 | 2 |
| 34 | 60 | 0.38 | -0.143 | 1.800 | 1.600 | 0.0650 | 0.0160 | 0.0428 | 15.385 | 3.787 | -0.0600 | 0.3000 | 0.0919 | 462.1 | 183.9 | 2 |
| 35 | 60 | 0.05 | 1.100 | -50.000 | 37.000 | 0.1100 | 0.2300 | 0.5194 | 9.091 | 19.008 | 0.9100 | 0.5800 | -0.0847 | -71.5 | 549.0 | 2 |
| 36 | 60 | 0.04 | 0.308 | -50.000 | 170.000 | -0.8000 | 1.1000 | 0.5167 | -1.250 | 1.719 | 0.2100 | 0.5600 | 0.1767 | -5194.3 | 14647.4 | 2 |
| 37 | 60 | 1.33 | 0.819 | 8.100 | 1.300 | 0.1110 | 0.0130 | 0.2804 | 9.009 | 1.055 | 0.7000 | 0.1400 | 0.9724 | 128.2 | 124.9 | 2 |
| 38 | 60 | 19.10 | 0.402 | 3.050 | 0.430 | 0.0590 | 0.0042 | 0.1983 | 16.949 | 1.207 | 0.3720 | 0.0350 | 0.0244 | 223.6 | 22.6 | 2 |
| 39 | 60 | 1.93 | 0.491 | 5.560 | 0.870 | 0.1000 | 0.0120 | 0.0505 | 10.000 | 1.200 | 0.4480 | 0.0600 | 0.6719 | 319.8 | 59.8 | 2 |
| 40 | 60 | 7.13 | 0.126 | 0.240 | 0.120 | 0.0166 | 0.0021 | -0.0696 | 60.241 | 7.621 | 0.1480 | 0.0860 | 0.1419 | 92.8 | 16.4 | 2 |
| 41 | 60 | 16.63 | 0.013 | 0.505 | 0.083 | 0.0603 | 0.0034 | 0.0955 | 16.584 | 0.935 | 0.0647 | 0.0095 | 0.1734 | 372.6 | 21.1 | 2 |
| 42 | 60 | 6.67 | 0.375 | 3.600 | 0.710 | 0.0791 | 0.0081 | 0.8266 | 12.642 | 1.295 | 0.3540 | 0.0440 | -0.4615 | 311.1 | 41.3 | 2 |
| 43 | 60 | 1.34 | 0.072 | 0.940 | 0.510 | 0.0526 | 0.0075 | 0.0158 | 19.011 | 2.711 | 0.1100 | 0.1400 | -0.0258 | 307.4 | 71.4 | 2 |
| 44 | 60 | 8.10 | 0.988 | 25.300 | 2.400 | 0.2290 | 0.0160 | 0.8342 | 4.367 | 0.305 | 0.8270 | 0.0310 | 0.1386 | 18.3 | 59.8 | 2 |
| 45 | 60 | 1.71 | 0.809 | 26.300 | 2.800 | 0.2750 | 0.0200 | 0.5940 | 3.636 | 0.264 | 0.7040 | 0.0490 | 0.3057 | 329.9 | 107.2 | 2 |
| 46 | 60 | 0.27 | 0.724 | -27.900 | 4.600 | -0.3610 | 0.0470 | -0.0295 | -2.770 | 0.361 | 0.5860 | 0.0730 | 0.1943 | -677.2 | 262.5 | 2 |
| 47 | 60 | 7.33 | 0.017 | 0.480 | 0.140 | 0.0506 | 0.0036 | 0.2718 | 19.763 | 1.406 | 0.0660 | 0.0190 | -0.0534 | 313.0 | 23.2 | 2 |
| 48 | 60 | 2.50 | 0.924 | 22.700 | 2.500 | 0.2130 | 0.0170 | 0.6254 | 4.695 | 0.375 | 0.7820 | 0.0490 | 0.3138 | 103.4 | 85.0 | 2 |
| 49 | 60 | 1.55 | 0.799 | 27.300 | 6.100 | 0.2630 | 0.0470 | 0.9301 | 3.802 | 0.679 | 0.6960 | 0.0760 | 0.3052 | 332.1 | 164.8 | 2 |
| 50 | 60 | 8.11 | 0.001 | 0.375 | 0.090 | 0.0517 | 0.0035 | 0.0579 | 19.342 | 1.309 | 0.0540 | 0.0120 | -0.0389 | 324.5 | 22.1 | 2 |
| 51 | 60 | 63.30 | 0.151 | 1.442 | 0.130 | 0.0594 | 0.0029 | 0.0840 | 16.835 | 0.822 | 0.1740 | 0.0072 | 0.3571 | 317.2 | 15.6 | 2 |
| 52 | 60 | 6.84 | 0.002 | 0.360 | 0.110 | 0.0461 | 0.0033 | 0.1086 | 21.692 | 1.553 | 0.0540 | 0.0160 | 0.1857 | 289.9 | 21.2 | 2 |
| 53 | 60 | 1.36 | 0.210 | 1.400 | 1.100 | 0.0553 | 0.0075 | 0.0066 | 18.083 | 2.453 | 0.2200 | 0.1300 | -0.0056 | 275.7 | 66.9 | 2 |
| 54 | 60 | 5.06 | 0.268 | 2.870 | 0.610 | 0.0727 | 0.0073 | 0.5094 | 13.755 | 1.381 | 0.2690 | 0.0410 | -0.1667 | 334.1 | 40.2 | 2 |
| 55 | 60 | 0.42 | 0.758 | 15.900 | 3.100 | 0.1790 | 0.0310 | 0.6375 | 5.587 | 0.968 | 0.6600 | 0.2100 | 0.6960 | 272.8 | 295.7 | 2 |
| 56 | 60 | 2.94 | 0.715 | 11.860 | 1.300 | 0.1398 | 0.0099 | 0.3782 | 7.153 | 0.507 | 0.6240 | 0.0480 | 0.3564 | 251.8 | 55.6 | 2 |
| 57 | 60 | 11.42 | 0.676 | 16.300 | 2.600 | 0.1910 | 0.0210 | 0.9596 | 5.236 | 0.576 | 0.6000 | 0.0360 | -0.7111 | 387.2 | 67.5 | 2 |
| 58 | 60 | 1.41 | 0.326 | 2.350 | 0.510 | 0.0701 | 0.0095 | -0.0253 | 14.265 | 1.933 | 0.3140 | 0.0810 | 0.5023 | 297.6 | 59.2 | 2 |
| 59 | 60 | 1.27 | 0.510 | 3.210 | 0.810 | 0.0810 | 0.0210 | -0.0285 | 12.346 | 3.201 | 0.4600 | 0.1700 | 0.5280 | 250.7 | 125.1 | 2 |
| 60 | 60 | 7.52 | 0.168 | 1.480 | 0.230 | 0.0574 | 0.0040 | 0.2399 | 17.422 | 1.214 | 0.1870 | 0.0250 | 0.1429 | 300.9 | 23.5 | 2 |
| 61 | 60 | 8.00 | 1.048 | 4.230 | 0.450 | 0.0365 | 0.0030 | 0.2521 | 27.397 | 2.252 | 0.8730 | 0.0770 | 0.4564 | -11.4 | 23.2 | 2 |
| 62 | 60 | 3.38 | 1.054 | 43.400 | 5.400 | 0.3590 | 0.0350 | 0.8356 | 2.786 | 0.272 | 0.8700 | 0.0430 | -0.0413 | -125.8 | 132.3 | 2 |
| 63 | 60 | 0.48 | 1.350 | 20.400 | 3.100 | 0.1800 | 0.0290 | 0.1527 | 5.556 | 0.895 | 1.0800 | 0.3400 | 0.5639 | -418.9 | 545.9 | 2 |
| 64 | 60 | 3.30 | 0.201 | 1.650 | 0.280 | 0.0597 | 0.0046 | 0.1160 | 16.750 | 1.291 | 0.2140 | 0.0370 | -0.0080 | 300.3 | 28.5 | 2 |
| 65 | 60 | 21.59 | -0.005 | 0.370 | 0.063 | 0.0541 | 0.0032 | -0.0796 | 18.484 | 1.093 | 0.0489 | 0.0075 | 0.0031 | 341.5 | 20.1 | 2 |
| 66 | 60 | 1.94 | 0.468 | 5.400 | 1.300 | 0.0902 | 0.0099 | -0.0432 | 11.086 | 1.217 | 0.4280 | 0.0850 | 0.1960 | 302.4 | 67.7 | 2 |
| 67 | 60 | 15.03 | -0.055 | 0.105 | 0.079 | 0.0530 | 0.0034 | 0.0145 | 18.868 | 1.210 | 0.0090 | 0.0110 | -0.1531 | 350.8 | 22.6 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 68 | 60 | 67.50 | 0.281 | 2.520 | 0.340 | 0.0641 | 0.0041 | 0.7554 | 15.601 | 0.998 | 0.2780 | 0.0220 | -0.4515 | 290.3 | 21.3 | 2 |
| 69 | 60 | 3.97 | 0.756 | 25.800 | 3.100 | 0.2700 | 0.0230 | 0.8585 | 3.704 | 0.316 | 0.6660 | 0.0320 | -0.0341 | 411.5 | 75.1 | 2 |
| 70 | 60 | 11.50 | 0.103 | 1.210 | 0.170 | 0.0642 | 0.0038 | -0.0965 | 15.576 | 0.922 | 0.1370 | 0.0160 | 0.0937 | 360.8 | 22.4 | 2 |
| 71 | 60 | 4.07 | 0.092 | 0.820 | 0.220 | 0.0503 | 0.0051 | -0.0761 | 19.881 | 2.016 | 0.1260 | 0.0340 | 0.0440 | 287.9 | 31.7 | 2 |
| 72 | 60 | 1.50 | 0.139 | 1.050 | 0.370 | 0.0634 | 0.0078 | 0.0403 | 15.773 | 1.941 | 0.1650 | 0.0770 | 0.1770 | 342.7 | 55.9 | 2 |
| 73 | 60 | 5.34 | 0.076 | 0.970 | 0.180 | 0.0602 | 0.0041 | 0.0846 | 16.611 | 1.131 | 0.1150 | 0.0190 | 0.0211 | 348.8 | 24.9 | 2 |
| 74 | 60 | 2.43 | 0.123 | 0.820 | 0.360 | 0.0541 | 0.0059 | -0.0189 | 18.484 | 2.016 | 0.1510 | 0.0680 | 0.4974 | 298.9 | 42.9 | 2 |
| 75 | 60 | 2.30 | 0.771 | 5.240 | 0.830 | 0.0685 | 0.0070 | 0.0545 | 14.599 | 1.492 | 0.6600 | 0.1600 | 0.6092 | 100.5 | 88.5 | 2 |
| 76 | 60 | 12.77 | -0.003 | 0.333 | 0.080 | 0.0485 | 0.0030 | -0.0092 | 20.619 | 1.275 | 0.0500 | 0.0120 | -0.0427 | 306.2 | 19.2 | 2 |
| 77 | 60 | 13.79 | 0.643 | 8.950 | 1.100 | 0.1088 | 0.0077 | 0.4726 | 9.191 | 0.650 | 0.5660 | 0.0290 | 0.0035 | 245.6 | 30.4 | 2 |
| 78 | 60 | 9.38 | -0.116 | -0.210 | 0.150 | 0.0482 | 0.0031 | -0.0406 | 20.747 | 1.334 | -0.0400 | 0.0230 | 0.0023 | 337.7 | 23.0 | 2 |
| 79 | 60 | 10.74 | 0.123 | 1.290 | 0.220 | 0.0608 | 0.0038 | 0.1076 | 16.447 | 1.028 | 0.1520 | 0.0240 | -0.0394 | 334.9 | 23.5 | 2 |
| 80 | 60 | 1.52 | 1.146 | 36.200 | 4.000 | 0.2930 | 0.0290 | 0.4462 | 3.413 | 0.338 | 0.9320 | 0.0740 | -0.0092 | -282.4 | 190.4 | 2 |
| 81 | 60 | 2.18 | 0.414 | 6.800 | 1.800 | 0.1070 | 0.0160 | 0.7509 | 9.346 | 1.398 | 0.3890 | 0.0620 | -0.0627 | 391.9 | 76.5 | 2 |
| 82 | 60 | 5.10 | 0.346 | 3.050 | 0.400 | 0.0713 | 0.0071 | -0.0036 | 14.025 | 1.397 | 0.3300 | 0.0390 | 0.3109 | 293.8 | 36.0 | 2 |
| 83 | 60 | 1.43 | 0.412 | 3.300 | 0.730 | 0.0805 | 0.0088 | -0.0059 | 12.422 | 1.358 | 0.3830 | 0.0970 | -0.8474 | 298.2 | 68.4 | 2 |
| 84 | 60 | 5.23 | 0.373 | 5.700 | 1.600 | 0.0870 | 0.0110 | 0.6588 | 11.494 | 1.453 | 0.3540 | 0.0540 | 0.0765 | 342.2 | 55.8 | 2 |
| 85 | 60 | 0.49 | 0.615 | 7.700 | 2.800 | 0.1540 | 0.0280 | 0.0286 | 6.494 | 1.181 | 0.5500 | 0.1700 | 0.1512 | 371.3 | 210.5 | 2 |
| 86 | 60 | 2.83 | 0.004 | 0.470 | 0.200 | 0.0599 | 0.0056 | -0.0688 | 16.694 | 1.561 | 0.0570 | 0.0270 | 0.3848 | 373.7 | 36.5 | 2 |
| 87 | 60 | 1.96 | -0.014 | 0.300 | 0.210 | 0.0544 | 0.0052 | 0.0541 | 18.382 | 1.757 | 0.0420 | 0.0380 | 0.4497 | 346.2 | 36.2 | 2 |
| 88 | 60 | 54.60 | 0.287 | 2.660 | 0.290 | 0.0674 | 0.0037 | 0.6274 | 14.837 | 0.814 | 0.2830 | 0.0160 | -0.2519 | 302.5 | 18.4 | 2 |
| 89 | 60 | 14.65 | 0.061 | 1.440 | 0.190 | 0.0952 | 0.0053 | -0.0707 | 10.504 | 0.585 | 0.1080 | 0.0110 | 0.1591 | 552.2 | 31.0 | 2 |
| 90 | 60 | 1.96 | 0.094 | 0.720 | 0.250 | 0.0590 | 0.0069 | 0.0157 | 16.949 | 1.982 | 0.1290 | 0.0560 | 0.4832 | 335.6 | 46.2 | 2 |
| 91 | 60 | 3.08 | 0.136 | 1.080 | 0.370 | 0.0496 | 0.0051 | 0.9137 | 20.161 | 2.073 | 0.1610 | 0.0470 | 0.2858 | 270.4 | 32.9 | 2 |
| 92 | 60 | 0.21 | -0.064 | -0.100 | 5.400 | -0.0590 | 0.0330 | 0.3812 | -16.949 | 9.480 | -0.0100 | 0.3500 | 0.0366 | -417.7 | 301.1 | 2 |
| 93 | 60 | 9.33 | -0.014 | 0.200 | 0.089 | 0.0402 | 0.0028 | -0.1337 | 24.876 | 1.733 | 0.0400 | 0.0170 | 0.1725 | 257.6 | 18.5 | 2 |
| 94 | 60 | 4.85 | 0.607 | 10.600 | 1.400 | 0.1390 | 0.0120 | 0.6798 | 7.194 | 0.621 | 0.5420 | 0.0430 | 0.0264 | 343.0 | 54.6 | 2 |
| 95 | 60 | 0.40 | 0.110 | 2.800 | 1.700 | 0.1090 | 0.0200 | 0.1269 | 9.174 | 1.683 | 0.1500 | 0.1800 | 0.3749 | 596.6 | 179.1 | 2 |
| 96 | 60 | 3.25 | 0.071 | 0.850 | 0.230 | 0.0568 | 0.0054 | 0.0509 | 17.606 | 1.674 | 0.1100 | 0.0300 | 0.4566 | 331.6 | 33.7 | 2 |
| 97 | 60 | 15.25 | 0.506 | 6.140 | 0.610 | 0.0986 | 0.0060 | 0.1578 | 10.142 | 0.617 | 0.4590 | 0.0240 | 0.2618 | 306.6 | 26.1 | 2 |
| 98 | 60 | 3.05 | 0.092 | 0.900 | 0.220 | 0.0596 | 0.0058 | 0.0975 | 16.779 | 1.633 | 0.1270 | 0.0310 | 0.4774 | 339.9 | 35.5 | 2 |

| **HN04 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}$Pb corrected Age (Ma)** | **$^{207}$Pb corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 5.86 | 0.032 | 0.536 | 0.097 | 0.0501 | 0.0041 | -0.0091 | 19.960 | 1.633 | 0.0780 | 0.0150 | 0.2248 | 305.4 | 25.3 | 2 |
| 2 | 60 | 2.21 | 0.980 | 6.530 | 0.790 | 0.0634 | 0.0072 | 0.5859 | 15.773 | 1.791 | 0.8200 | 0.1100 | 0.6117 | 8.4 | 57.0 | 2 |
| 3 | 60 | 4.39 | 0.845 | 26.900 | 1.700 | 0.2680 | 0.0180 | 0.6231 | 3.731 | 0.251 | 0.7290 | 0.0300 | 0.2726 | 261.7 | 66.6 | 2 |
| 4 | 60 | 1.82 | 0.059 | 0.960 | 0.220 | 0.0642 | 0.0055 | 0.0965 | 15.576 | 1.334 | 0.1020 | 0.0250 | 0.1550 | 378.0 | 34.1 | 2 |
| 5 | 60 | 0.94 | 0.704 | 13.200 | 1.700 | 0.1640 | 0.0200 | 0.5992 | 6.098 | 0.744 | 0.6180 | 0.0830 | 0.3723 | 305.7 | 111.5 | 2 |
| 6 | 60 | 18.89 | 0.060 | 0.673 | 0.072 | 0.0498 | 0.0032 | 0.0660 | 20.080 | 1.290 | 0.1000 | 0.0110 | -0.0592 | 295.1 | 19.2 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | 60 | 0.26 | 1.142 | 121.000 | 11.000 | 1.0300 | 0.1100 | 0.7119 | 0.971 | 0.104 | 0.8900 | 0.0780 | 0.4273 | -1023.0 | 808.9 | 2 |
| 8 | 60 | 7.39 | 0.019 | 0.499 | 0.085 | 0.0525 | 0.0035 | 0.1275 | 19.048 | 1.270 | 0.0680 | 0.0120 | 0.1234 | 323.8 | 21.8 | 2 |
| 9 | 60 | 1.15 | 0.310 | 1.500 | 0.410 | 0.0616 | 0.0074 | 0.2637 | 16.234 | 1.950 | 0.3000 | 0.1000 | 0.7797 | 268.4 | 57.5 | 2 |
| 10 | 60 | 8.36 | 0.080 | 0.740 | 0.130 | 0.0481 | 0.0034 | 0.2078 | 20.790 | 1.470 | 0.1160 | 0.0190 | -0.1210 | 279.1 | 20.7 | 2 |
| 11 | 60 | 0.61 | 0.334 | 2.930 | 0.830 | 0.0671 | 0.0100 | -0.0760 | 14.903 | 2.221 | 0.3200 | 0.1100 | 0.6502 | 281.8 | 70.6 | 2 |
| 12 | 60 | 15.25 | 0.023 | 0.515 | 0.069 | 0.0544 | 0.0032 | -0.1595 | 18.382 | 1.081 | 0.0720 | 0.0100 | 0.3642 | 333.7 | 19.8 | 2 |
| 13 | 60 | 1.18 | 0.127 | 0.680 | 0.260 | 0.0475 | 0.0064 | 0.0855 | 21.053 | 2.837 | 0.1530 | 0.0590 | 0.5436 | 262.0 | 41.1 | 2 |
| 14 | 60 | 17.84 | 0.012 | 0.433 | 0.050 | 0.0512 | 0.0031 | 0.0306 | 19.531 | 1.183 | 0.0627 | 0.0074 | 0.1573 | 318.0 | 19.2 | 2 |
| 15 | 60 | 9.13 | 0.745 | 18.500 | 1.100 | 0.2005 | 0.0130 | 0.7005 | 4.988 | 0.323 | 0.6520 | 0.0230 | 0.0852 | 321.4 | 42.2 | 2 |
| 16 | 60 | 0.64 | 0.651 | 4.800 | 1.100 | 0.0930 | 0.0140 | -0.0757 | 10.753 | 1.619 | 0.5700 | 0.1400 | 0.6677 | 206.1 | 106.9 | 2 |
| 17 | 60 | 0.68 | 0.829 | 51.600 | 4.400 | 0.5360 | 0.0470 | -0.0401 | 1.866 | 0.164 | 0.7350 | 0.0650 | 0.0128 | 565.8 | 262.9 | 2 |
| 18 | 60 | 1.37 | 0.400 | 1.890 | 0.440 | 0.0581 | 0.0086 | 0.1968 | 17.212 | 2.548 | 0.3700 | 0.1100 | 0.6693 | 221.1 | 59.7 | 2 |
| 19 | 60 | 6.21 | 0.861 | 14.380 | 0.940 | 0.1416 | 0.0100 | 0.6685 | 7.062 | 0.499 | 0.7330 | 0.0370 | 0.3288 | 125.9 | 43.5 | 2 |
| 20 | 60 | 1.14 | 0.901 | 100.800 | 9.000 | 0.9270 | 0.0930 | 0.5157 | 1.079 | 0.108 | 0.7940 | 0.0400 | 0.2850 | 565.6 | 284.0 | 2 |
| 21 | 60 | 15.93 | 0.406 | 4.420 | 0.420 | 0.0835 | 0.0056 | 0.6206 | 11.976 | 0.803 | 0.3790 | 0.0260 | -0.1208 | 312.0 | 26.6 | 2 |
| 22 | 60 | 2.16 | 0.838 | 12.800 | 2.100 | 0.1356 | 0.0120 | 0.0361 | 7.375 | 0.653 | 0.7160 | 0.0930 | 0.0125 | 139.8 | 101.4 | 2 |
| 23 | 60 | 7.72 | 0.030 | 0.570 | 0.100 | 0.0547 | 0.0039 | 0.0376 | 18.282 | 1.303 | 0.0770 | 0.0140 | 0.2812 | 333.4 | 24.1 | 2 |
| 24 | 60 | 2.74 | 0.850 | 23.400 | 2.200 | 0.2310 | 0.0210 | 0.6670 | 4.329 | 0.394 | 0.7300 | 0.0460 | 0.2721 | 219.8 | 86.6 | 2 |
| 25 | 60 | 0.61 | -1.320 | 2.800 | 0.720 | 0.0439 | 0.0090 | 0.0258 | 22.779 | 4.670 | -1.0200 | 0.9600 | 0.5097 | 625.3 | 331.9 | 2 |
| 26 | 60 | 2.94 | 0.801 | 11.110 | 1.000 | 0.1239 | 0.0092 | 0.1857 | 8.071 | 0.599 | 0.6870 | 0.0650 | 0.0034 | 157.3 | 65.2 | 2 |
| 27 | 60 | 7.04 | 0.239 | 2.150 | 0.200 | 0.0673 | 0.0046 | 0.0025 | 14.859 | 1.016 | 0.2450 | 0.0240 | 0.3289 | 322.0 | 25.0 | 2 |
| 28 | 60 | 6.53 | 0.737 | 16.980 | 0.950 | 0.1870 | 0.0120 | 0.5868 | 5.348 | 0.343 | 0.6450 | 0.0260 | 0.2651 | 309.2 | 43.3 | 2 |
| 29 | 60 | 1.39 | 0.851 | 34.400 | 2.300 | 0.3540 | 0.0300 | 0.2677 | 2.825 | 0.239 | 0.7380 | 0.0530 | 0.6086 | 330.8 | 148.1 | 2 |
| 30 | 60 | 8.23 | 0.447 | 4.680 | 0.380 | 0.0834 | 0.0054 | 0.4109 | 11.990 | 0.776 | 0.4110 | 0.0290 | 0.2227 | 290.6 | 26.5 | 2 |
| 31 | 60 | 4.64 | 0.247 | 2.370 | 0.280 | 0.0696 | 0.0050 | -0.0508 | 14.368 | 1.032 | 0.2520 | 0.0330 | 0.4495 | 329.2 | 29.2 | 2 |
| 32 | 60 | 4.72 | 0.861 | 27.300 | 1.600 | 0.2710 | 0.0180 | 0.4021 | 3.690 | 0.245 | 0.7400 | 0.0370 | 0.3697 | 238.5 | 81.4 | 2 |
| 33 | 60 | 4.44 | 0.189 | 1.780 | 0.260 | 0.0645 | 0.0050 | 0.0606 | 15.504 | 1.202 | 0.2050 | 0.0300 | 0.2568 | 328.7 | 29.2 | 2 |
| 34 | 60 | 23.92 | 0.024 | 0.632 | 0.064 | 0.0620 | 0.0041 | -0.0987 | 16.129 | 1.067 | 0.0739 | 0.0076 | 0.3970 | 378.6 | 24.8 | 2 |
| 35 | 60 | 1.64 | 0.147 | 1.160 | 0.290 | 0.0595 | 0.0069 | -0.0603 | 16.807 | 1.949 | 0.1710 | 0.0510 | 0.4219 | 319.1 | 43.3 | 2 |
| 36 | 60 | 21.54 | 0.658 | 7.050 | 0.330 | 0.0883 | 0.0051 | 0.4788 | 11.325 | 0.654 | 0.5750 | 0.0200 | 0.3096 | 191.9 | 18.1 | 2 |
| 37 | 60 | 4.76 | 0.596 | 7.970 | 0.590 | 0.1080 | 0.0078 | 0.3866 | 9.259 | 0.669 | 0.5300 | 0.0380 | 0.4313 | 275.1 | 37.6 | 2 |
| 38 | 60 | 4.21 | 0.186 | 1.550 | 0.230 | 0.0597 | 0.0045 | -0.0078 | 16.750 | 1.263 | 0.2020 | 0.0310 | 0.5785 | 305.9 | 26.8 | 2 |
| 39 | 60 | 0.14 | -0.279 | 20.000 | 6.900 | 0.1880 | 0.0400 | 0.1226 | 5.319 | 1.132 | -0.1500 | 0.7100 | 0.4622 | 1389.0 | 916.1 | 2 |
| 40 | 60 | 22.09 | 0.247 | 2.220 | 0.150 | 0.0635 | 0.0038 | 0.0448 | 15.748 | 0.942 | 0.2510 | 0.0160 | 0.3016 | 301.0 | 19.4 | 2 |
| 41 | 60 | 35.59 | 0.045 | 0.635 | 0.056 | 0.0524 | 0.0029 | -0.0698 | 19.084 | 1.056 | 0.0892 | 0.0079 | 0.3239 | 314.6 | 17.4 | 2 |
| 42 | 60 | 0.83 | 0.599 | 5.800 | 1.100 | 0.0940 | 0.0120 | 0.4493 | 10.638 | 1.358 | 0.5300 | 0.1300 | 0.7719 | 238.8 | 100.2 | 2 |
| 43 | 60 | 2.79 | 0.442 | 4.910 | 0.500 | 0.1007 | 0.0079 | -0.0471 | 9.930 | 0.779 | 0.4100 | 0.0590 | 0.0689 | 352.1 | 53.0 | 2 |
| 44 | 60 | 1.28 | 0.062 | 0.660 | 0.270 | 0.0541 | 0.0066 | -0.0106 | 18.484 | 2.255 | 0.1030 | 0.0400 | -0.3499 | 318.9 | 41.8 | 2 |
| 45 | 60 | 2.41 | 0.042 | 0.670 | 0.170 | 0.0628 | 0.0060 | 0.0847 | 15.924 | 1.521 | 0.0880 | 0.0230 | 0.3709 | 376.6 | 37.0 | 2 |
| 46 | 60 | 8.75 | 0.234 | 2.420 | 0.190 | 0.0737 | 0.0049 | 0.0874 | 13.569 | 0.902 | 0.2420 | 0.0200 | 0.4139 | 354.1 | 25.8 | 2 |
| 47 | 60 | 0.41 | 0.241 | 5.600 | 1.400 | 0.0880 | 0.0160 | 0.0230 | 11.364 | 2.066 | 0.2500 | 0.4100 | 0.6092 | 416.8 | 282.9 | 2 |
| 48 | 60 | 10.20 | 0.581 | 8.720 | 0.490 | 0.1210 | 0.0075 | 0.4066 | 8.264 | 0.512 | 0.5200 | 0.0260 | 0.3406 | 318.8 | 31.4 | 2 |
| 49 | 60 | 3.74 | 0.043 | 0.610 | 0.160 | 0.0527 | 0.0042 | 0.1436 | 18.975 | 1.512 | 0.0870 | 0.0220 | 0.2200 | 317.3 | 26.5 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 | 60 | 0.38 | -1.082 | 3.400 | 1.500 | 0.0710 | 0.0150 | -0.0043 | 14.085 | 2.976 | -0.8300 | 0.8500 | 0.1253 | 888.6 | 459.3 | 2 |
| 51 | 60 | 9.15 | 0.646 | 11.110 | 0.800 | 0.1409 | 0.0090 | 0.1649 | 7.097 | 0.453 | 0.5720 | 0.0280 | 0.0266 | 313.7 | 36.7 | 2 |
| 52 | 60 | 1.03 | 1.019 | 7.400 | 1.200 | 0.0738 | 0.0096 | 0.0041 | 13.550 | 1.763 | 0.8500 | 0.1700 | 0.2359 | -9.0 | 102.7 | 2 |
| 53 | 60 | 4.40 | 0.549 | 6.940 | 0.840 | 0.1046 | 0.0097 | 0.6315 | 9.560 | 0.887 | 0.4930 | 0.0460 | 0.5089 | 297.3 | 46.2 | 2 |
| 54 | 60 | 0.93 | 0.450 | 5.500 | 1.500 | 0.1080 | 0.0160 | 0.6128 | 9.259 | 1.372 | 0.4170 | 0.0940 | 0.7664 | 371.9 | 94.5 | 2 |
| 55 | 60 | 14.80 | 0.008 | 0.434 | 0.057 | 0.0548 | 0.0033 | 0.0537 | 18.248 | 1.099 | 0.0597 | 0.0079 | 0.3519 | 341.3 | 20.5 | 2 |
| 56 | 60 | 0.61 | -0.195 | 2.570 | 0.710 | 0.0770 | 0.0120 | -0.1508 | 12.987 | 2.024 | -0.1000 | 0.4300 | 0.6717 | 567.4 | 258.8 | 2 |
| 57 | 60 | 12.33 | 0.009 | 0.454 | 0.068 | 0.0545 | 0.0034 | -0.0985 | 18.349 | 1.145 | 0.0608 | 0.0093 | 0.3503 | 339.0 | 21.2 | 2 |
| 58 | 60 | 0.22 | -0.541 | 6.400 | 2.300 | 0.1080 | 0.0280 | 0.0305 | 9.259 | 2.401 | -0.3800 | 0.5600 | 0.3820 | 992.4 | 484.6 | 2 |
| 59 | 60 | 0.76 | 0.361 | 2.070 | 0.650 | 0.0589 | 0.0083 | 0.1102 | 16.978 | 2.392 | 0.3400 | 0.1100 | 0.5868 | 238.1 | 60.5 | 2 |
| 60 | 60 | 8.33 | 0.285 | 2.490 | 0.350 | 0.0697 | 0.0056 | 0.7001 | 14.347 | 1.153 | 0.2820 | 0.0370 | 0.0394 | 313.4 | 31.8 | 2 |
| 61 | 60 | 2.78 | 0.516 | 7.670 | 0.770 | 0.1220 | 0.0093 | 0.0962 | 8.197 | 0.625 | 0.4700 | 0.0470 | 0.3262 | 369.9 | 51.9 | 2 |
| 62 | 60 | 10.55 | 0.519 | 6.170 | 0.380 | 0.0991 | 0.0064 | 0.5700 | 10.091 | 0.652 | 0.4690 | 0.0260 | 0.2776 | 300.3 | 27.8 | 2 |
| 63 | 60 | 0.07 | -0.470 | 60.000 | 33.000 | 0.3300 | 0.1800 | 0.3763 | 3.030 | 1.653 | -0.2500 | 0.5500 | 0.3287 | 2549.6 | 1903.1 | 2 |
| 64 | 60 | 4.11 | 0.934 | 318.700 | 12.000 | 2.8570 | 0.1600 | 0.7823 | 0.350 | 0.020 | 0.8150 | 0.0140 | 0.3649 | 1121.0 | 338.9 | 2 |
| 65 | 60 | 1.44 | 0.151 | 1.600 | 0.360 | 0.0766 | 0.0075 | 0.0010 | 13.055 | 1.278 | 0.1770 | 0.0460 | 0.1619 | 406.1 | 47.3 | 2 |
| 66 | 60 | 8.96 | 0.036 | 0.592 | 0.093 | 0.0550 | 0.0036 | -0.0051 | 18.182 | 1.190 | 0.0820 | 0.0130 | 0.3223 | 333.1 | 22.1 | 2 |
| 67 | 60 | 23.60 | 0.320 | 3.060 | 0.190 | 0.0724 | 0.0045 | 0.0474 | 13.812 | 0.858 | 0.3100 | 0.0170 | 0.4723 | 309.7 | 21.3 | 2 |
| 68 | 60 | 7.26 | 0.027 | 0.513 | 0.098 | 0.0491 | 0.0037 | 0.0220 | 20.367 | 1.535 | 0.0740 | 0.0150 | 0.2072 | 300.9 | 23.1 | 2 |
| 69 | 60 | 0.93 | 0.509 | 5.580 | 0.980 | 0.0900 | 0.0110 | -0.0253 | 11.111 | 1.358 | 0.4600 | 0.2800 | 0.5778 | 278.9 | 198.3 | 2 |
| 70 | 60 | 2.39 | 0.828 | 36.300 | 2.600 | 0.3670 | 0.0260 | 0.5857 | 2.725 | 0.193 | 0.7230 | 0.0370 | 0.3199 | 395.5 | 108.6 | 2 |
| 71 | 60 | 7.82 | 0.078 | 0.880 | 0.130 | 0.0584 | 0.0041 | -0.0373 | 17.123 | 1.202 | 0.1160 | 0.0180 | 0.1005 | 338.1 | 24.7 | 2 |
| 72 | 60 | 19.06 | 0.097 | 0.990 | 0.130 | 0.0583 | 0.0036 | 0.4029 | 17.153 | 1.059 | 0.1310 | 0.0150 | -0.1969 | 330.8 | 21.2 | 2 |
| 73 | 60 | 15.04 | 0.013 | 0.447 | 0.058 | 0.0529 | 0.0034 | 0.0978 | 18.904 | 1.215 | 0.0633 | 0.0080 | 0.3462 | 328.1 | 21.0 | 2 |
| 74 | 60 | 0.82 | 0.224 | 2.710 | 0.940 | 0.0471 | 0.0093 | -0.0774 | 21.231 | 4.192 | 0.2300 | 0.3600 | 0.2731 | 231.4 | 140.1 | 2 |
| 75 | 60 | 0.06 | -1.322 | 63.000 | 31.000 | 0.1800 | 0.1200 | 0.2246 | 5.556 | 3.704 | -1.0300 | 0.6300 | 0.3446 | 2251.2 | 1692.0 | 2 |
| 76 | 60 | 5.77 | 0.023 | 0.500 | 0.120 | 0.0501 | 0.0038 | 0.0236 | 19.960 | 1.514 | 0.0710 | 0.0170 | 0.1151 | 308.1 | 23.9 | 2 |
| 77 | 60 | 0.49 | 0.687 | 9.800 | 1.800 | 0.1120 | 0.0170 | -0.1085 | 8.929 | 1.355 | 0.6000 | 0.3400 | 0.6866 | 222.1 | 300.3 | 2 |
| 78 | 60 | 9.79 | 0.833 | 51.700 | 6.800 | 0.5010 | 0.0640 | 0.9809 | 1.996 | 0.255 | 0.7350 | 0.0190 | -0.2858 | 519.1 | 99.6 | 2 |
| 79 | 60 | 3.55 | 0.583 | 7.390 | 0.590 | 0.0991 | 0.0078 | 0.3503 | 10.091 | 0.794 | 0.5190 | 0.0430 | 0.1829 | 260.8 | 39.0 | 2 |
| 80 | 60 | 0.38 | 1.059 | 54.700 | 6.900 | 0.4990 | 0.0510 | 0.0220 | 2.004 | 0.205 | 0.8700 | 0.1300 | 0.0947 | -192.9 | 550.8 | 2 |
| 81 | 60 | 2.97 | 0.452 | 7.100 | 1.100 | 0.1300 | 0.0160 | 0.9733 | 7.692 | 0.947 | 0.4220 | 0.0460 | 0.5055 | 443.5 | 70.0 | 2 |
| 82 | 60 | 0.97 | 0.287 | 0.620 | 0.370 | 0.0510 | 0.0082 | -0.0594 | 19.608 | 3.153 | 0.2800 | 0.1100 | 0.3640 | 230.4 | 57.2 | 2 |
| 83 | 60 | 0.41 | 1.157 | 116.000 | 11.000 | 0.9720 | 0.0840 | 0.3820 | 1.029 | 0.089 | 0.8980 | 0.0790 | 0.1048 | -1069.7 | 779.0 | 2 |
| 84 | 60 | 1.28 | 0.884 | 32.900 | 2.900 | 0.3200 | 0.0270 | 0.4355 | 3.125 | 0.264 | 0.7580 | 0.0590 | 0.3974 | 235.8 | 150.1 | 2 |
| 85 | 60 | 9.53 | 0.446 | 4.240 | 0.300 | 0.0777 | 0.0054 | -0.0305 | 12.870 | 0.894 | 0.4090 | 0.0300 | 0.1832 | 271.9 | 26.1 | 2 |
| 86 | 60 | 16.96 | 0.299 | 2.610 | 0.190 | 0.0653 | 0.0040 | 0.0553 | 15.314 | 0.938 | 0.2920 | 0.0180 | 0.0392 | 288.6 | 19.7 | 2 |
| 87 | 60 | 0.79 | 0.780 | 20.000 | 2.400 | 0.2410 | 0.0240 | 0.2207 | 4.149 | 0.413 | 0.6810 | 0.0890 | 0.7784 | 332.6 | 168.4 | 2 |
| 88 | 60 | 0.09 | 0.008 | 52.000 | 19.000 | 0.5200 | 0.1300 | 0.2516 | 1.923 | 0.481 | 0.1900 | 0.3900 | 0.5646 | 2682.5 | 1527.8 | 2 |
| 89 | 60 | 9.83 | 0.785 | 22.200 | 1.400 | 0.2360 | 0.0160 | 0.8223 | 4.237 | 0.287 | 0.6840 | 0.0230 | 0.1151 | 319.0 | 48.5 | 2 |
| 90 | 60 | 9.18 | 0.019 | 0.455 | 0.082 | 0.0504 | 0.0037 | -0.0278 | 19.841 | 1.457 | 0.0680 | 0.0120 | 0.2696 | 311.0 | 23.0 | 2 |
| 91 | 60 | 5.50 | 0.038 | 0.500 | 0.110 | 0.0505 | 0.0040 | -0.1003 | 19.802 | 1.568 | 0.0830 | 0.0190 | 0.2655 | 305.8 | 25.0 | 2 |
| 92 | 60 | 16.61 | 0.880 | 38.900 | 1.700 | 0.3770 | 0.0210 | 0.7632 | 2.653 | 0.148 | 0.7580 | 0.0150 | 0.2916 | 286.1 | 51.4 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 93 | 60 | 5.98 | 0.093 | 0.710 | 0.160 | 0.0498 | 0.0037 | -0.1614 | 20.080 | 1.492 | 0.1270 | 0.0360 | 0.1798 | 284.6 | 25.1 | 2 |
| 94 | 60 | 0.23 | 1.402 | 291.000 | 40.000 | 2.4900 | 0.3200 | 0.9061 | 0.402 | 0.052 | 0.8830 | 0.0640 | 0.2637 | -58834.3 | 16865416.4 | 2 |
| 95 | 60 | 9.88 | 0.180 | 1.540 | 0.140 | 0.0585 | 0.0041 | -0.0598 | 17.094 | 1.198 | 0.1970 | 0.0190 | 0.4642 | 302.0 | 22.6 | 2 |
| 96 | 60 | 3.87 | 0.181 | 1.280 | 0.230 | 0.0531 | 0.0047 | 0.0372 | 18.832 | 1.667 | 0.1970 | 0.0420 | 0.1489 | 274.4 | 29.6 | 2 |
| 97 | 60 | 1.45 | 0.700 | 11.300 | 1.400 | 0.1510 | 0.0140 | 0.3640 | 6.623 | 0.614 | 0.6140 | 0.0740 | 0.2070 | 285.3 | 90.7 | 2 |
| 98 | 60 | 7.46 | 0.001 | 0.390 | 0.089 | 0.0481 | 0.0036 | 0.1218 | 20.790 | 1.556 | 0.0530 | 0.0130 | 0.1411 | 302.6 | 22.8 | 2 |
| 99 | 60 | 3.78 | 0.028 | 0.540 | 0.180 | 0.0554 | 0.0056 | -0.0215 | 18.051 | 1.825 | 0.0760 | 0.0270 | 0.0403 | 338.0 | 35.5 | 2 |
| 100 | 60 | 11.74 | 0.029 | 0.556 | 0.087 | 0.0538 | 0.0035 | 0.1135 | 18.587 | 1.209 | 0.0760 | 0.0120 | 0.0691 | 328.4 | 21.6 | 2 |
| 101 | 60 | 5.71 | 0.222 | 2.070 | 0.260 | 0.0693 | 0.0051 | 0.2549 | 14.430 | 1.062 | 0.2320 | 0.0300 | 0.5488 | 338.5 | 29.3 | 2 |
| 102 | 60 | 2.01 | 0.746 | 21.800 | 2.800 | 0.2470 | 0.0310 | 0.3290 | 4.049 | 0.508 | 0.6570 | 0.0750 | 0.5090 | 392.0 | 149.3 | 2 |
| 103 | 60 | 0.91 | 1.034 | 73.200 | 5.200 | 0.6430 | 0.0480 | 0.4741 | 1.555 | 0.116 | 0.8540 | 0.0530 | -0.0270 | -144.1 | 289.6 | 2 |
| 104 | 60 | 0.37 | 0.948 | 23.700 | 3.600 | 0.2740 | 0.0360 | 0.6283 | 3.650 | 0.480 | 0.8000 | 0.1400 | 0.7981 | 91.8 | 308.6 | 2 |
| 105 | 60 | 0.19 | -0.369 | 3.200 | 2.100 | 0.0920 | 0.0320 | -0.0924 | 10.870 | 3.781 | -0.2400 | 0.3600 | 0.3456 | 764.9 | 349.6 | 2 |
| 106 | 60 | 5.69 | 0.078 | 0.880 | 0.130 | 0.0581 | 0.0044 | 0.0716 | 17.212 | 1.303 | 0.1160 | 0.0190 | 0.3147 | 336.4 | 26.5 | 2 |
| 107 | 60 | 0.75 | 0.006 | 1.490 | 0.740 | 0.0657 | 0.0099 | -0.0762 | 15.221 | 2.294 | 0.0600 | 0.2300 | 0.0164 | 407.7 | 129.4 | 2 |
| 108 | 60 | 0.19 | -0.453 | 13.000 | 5.500 | 0.0680 | 0.0250 | -0.5062 | 14.706 | 5.407 | -0.3100 | 0.5000 | 0.4573 | 607.3 | 330.4 | 2 |
| 109 | 60 | 4.79 | 0.717 | 19.100 | 1.200 | 0.2200 | 0.0140 | 0.2607 | 4.545 | 0.289 | 0.6330 | 0.0300 | 0.3016 | 389.9 | 56.7 | 2 |
| 110 | 60 | 0.16 | 0.987 | 101.000 | 18.000 | 0.7700 | 0.1200 | 0.0993 | 1.299 | 0.202 | 0.8300 | 0.4200 | 0.2427 | 64.5 | 2607.3 | 2 |
| 111 | 60 | 2.16 | 0.427 | 3.570 | 0.490 | 0.0732 | 0.0076 | 0.1812 | 13.661 | 1.418 | 0.3940 | 0.0600 | 0.4727 | 264.8 | 43.7 | 2 |
| 112 | 60 | 6.58 | 0.083 | 0.820 | 0.140 | 0.0536 | 0.0041 | -0.0004 | 18.657 | 1.427 | 0.1190 | 0.0210 | 0.0791 | 309.4 | 24.9 | 2 |
| 113 | 60 | 0.28 | 0.289 | 5.800 | 2.200 | 0.1030 | 0.0220 | -0.0646 | 9.709 | 2.074 | 0.2900 | 0.2800 | 0.5061 | 455.8 | 236.7 | 2 |
| 114 | 60 | 0.32 | 1.531 | 31.700 | 4.400 | 0.2960 | 0.0440 | -0.1052 | 3.378 | 0.502 | 1.1700 | 0.2200 | 0.8990 | -1101.9 | 682.4 | 2 |

| **HN05 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (µm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}$Pb corrected Age (Ma)** | **$^{207}$Pb corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 4.06 | 0.238 | 2.390 | 0.300 | 0.0697 | 0.0065 | 0.1280 | 14.347 | 1.338 | 0.2450 | 0.0290 | 0.2423 | 333.4 | 34.3 | 2 |
| 2 | 60 | 5.14 | 0.663 | 0.456 | 0.096 | 0.0066 | 0.0011 | 0.1943 | 151.515 | 25.253 | 0.5700 | 0.1200 | 0.5657 | 14.3 | 6.9 | 2 |
| 3 | 60 | 0.88 | -0.501 | 1.440 | 0.480 | 0.0168 | 0.0057 | -0.0103 | 59.524 | 20.196 | -0.3500 | 0.6000 | 0.3430 | 160.6 | 96.4 | 2 |
| 4 | 60 | 29.24 | 0.221 | 0.594 | 0.060 | 0.0192 | 0.0015 | 0.1408 | 52.165 | 4.082 | 0.2230 | 0.0210 | 0.2582 | 95.6 | 8.1 | 2 |
| 5 | 60 | 12.89 | 0.012 | 0.441 | 0.059 | 0.0520 | 0.0045 | -0.1791 | 19.231 | 1.664 | 0.0626 | 0.0084 | 0.4105 | 322.9 | 27.7 | 2 |
| 6 | 60 | 12.52 | 0.772 | 14.810 | 0.970 | 0.1593 | 0.0120 | 0.3968 | 6.277 | 0.473 | 0.6680 | 0.0320 | 0.3369 | 230.5 | 44.2 | 2 |
| 7 | 60 | 2.86 | 0.713 | 0.700 | 0.180 | 0.0113 | 0.0018 | 0.1609 | 88.496 | 14.097 | 0.6100 | 0.1800 | 0.6035 | 20.9 | 16.9 | 2 |
| 8 | 60 | 8.15 | 0.828 | 0.103 | 0.038 | 0.0050 | 0.0008 | -0.0390 | 199.601 | 31.474 | 0.7000 | 1.4000 | 0.3526 | 5.6 | 57.2 | 2 |
| 9 | 60 | 2.18 | 0.064 | 0.580 | 0.200 | 0.0550 | 0.0063 | 0.0405 | 18.182 | 2.083 | 0.1040 | 0.0450 | -0.0016 | 323.8 | 41.2 | 2 |
| 10 | 60 | 8.51 | 0.891 | 0.775 | 0.100 | 0.0095 | 0.0012 | 0.0322 | 104.822 | 13.185 | 0.7500 | 0.1300 | 0.9670 | 6.7 | 10.2 | 2 |
| 11 | 60 | 2.35 | -0.665 | 0.310 | 0.130 | 0.0060 | 0.0017 | 0.0003 | 166.667 | 47.222 | -0.4800 | 0.6200 | 0.4046 | 64.1 | 35.0 | 2 |
| 12 | 60 | 0.74 | -1.188 | 0.980 | 0.390 | 0.0170 | 0.0120 | -0.0704 | 58.824 | 41.522 | -0.9000 | 0.7000 | 0.1656 | 235.5 | 188.8 | 2 |
| 13 | 60 | 9.19 | 1.031 | 3.040 | 0.510 | 0.0297 | 0.0055 | 0.0479 | 33.670 | 6.235 | 0.8600 | 0.1500 | 0.1146 | -6.0 | 36.5 | 2 |
| 14 | 60 | 2.11 | 0.095 | 0.900 | 0.240 | 0.0527 | 0.0061 | 0.1063 | 18.975 | 2.196 | 0.1290 | 0.0370 | 0.0217 | 300.2 | 37.4 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 60 | 0.49 | -1.117 | 1.580 | 0.720 | 0.0099 | 0.0046 | 0.2633 | 101.010 | 46.934 | -0.8400 | 0.7500 | 0.3585 | 133.7 | 85.5 | 2 |
| 16 | 60 | 2.27 | 0.485 | 0.190 | 0.110 | 0.0067 | 0.0014 | 0.1994 | 149.254 | 31.187 | 0.4300 | 0.1200 | 0.2903 | 22.2 | 8.0 | 2 |
| 17 | 60 | 5.04 | 0.071 | 0.420 | 0.100 | 0.0327 | 0.0032 | -0.1521 | 30.581 | 2.993 | 0.1070 | 0.0290 | 0.1882 | 192.8 | 20.1 | 2 |
| 18 | 60 | 3.80 | 0.789 | 28.100 | 2.700 | 0.2850 | 0.0290 | 0.6430 | 3.509 | 0.357 | 0.6910 | 0.0410 | 0.1290 | 375.6 | 97.8 | 2 |
| 19 | 60 | 0.52 | -0.287 | 0.720 | 0.470 | 0.0134 | 0.0051 | -0.0330 | 74.627 | 28.403 | -0.1800 | 0.5300 | 0.2124 | 110.2 | 70.5 | 2 |
| 20 | 60 | 3.78 | 0.622 | 6.780 | 0.630 | 0.0903 | 0.0085 | -0.0452 | 11.074 | 1.042 | 0.5480 | 0.0470 | 0.4293 | 216.1 | 39.1 | 2 |
| 21 | 60 | 4.22 | 0.427 | 2.900 | 1.600 | 0.0499 | 0.0087 | -0.0211 | 20.040 | 3.494 | 0.3900 | 0.1500 | -0.0514 | 181.9 | 66.9 | 2 |
| 22 | 60 | 5.93 | 0.272 | 2.400 | 1.500 | 0.0628 | 0.0054 | 0.1138 | 15.924 | 1.369 | 0.2700 | 0.1500 | -0.1244 | 288.4 | 76.9 | 2 |
| 23 | 60 | 16.85 | 0.813 | 21.730 | 1.300 | 0.2207 | 0.0160 | 0.3319 | 4.531 | 0.328 | 0.7030 | 0.0290 | 0.3743 | 260.7 | 54.5 | 2 |
| 24 | 60 | 0.78 | 0.249 | 0.730 | 0.350 | 0.0489 | 0.0077 | 0.0877 | 20.450 | 3.220 | 0.2500 | 0.1000 | 0.3604 | 232.5 | 52.7 | 2 |
| 25 | 60 | 67.00 | 0.005 | 0.197 | 0.021 | 0.0265 | 0.0020 | 0.1240 | 37.722 | 2.846 | 0.0536 | 0.0053 | -0.0576 | 167.8 | 12.6 | 2 |
| 26 | 60 | 8.43 | 0.025 | 0.471 | 0.090 | 0.0457 | 0.0045 | 0.3274 | 21.882 | 2.155 | 0.0720 | 0.0130 | -0.2093 | 281.0 | 27.7 | 2 |
| 27 | 60 | 8.50 | 0.276 | 2.130 | 0.230 | 0.0555 | 0.0046 | 0.4782 | 18.018 | 1.493 | 0.2720 | 0.0260 | 0.1677 | 254.1 | 23.7 | 2 |
| 28 | 60 | 12.87 | 0.043 | 0.043 | 0.023 | 0.0049 | 0.0007 | 0.0285 | 202.840 | 27.155 | 0.0810 | 0.0450 | -0.1892 | 30.3 | 4.4 | 2 |
| 29 | 60 | 9.10 | 0.013 | 0.442 | 0.089 | 0.0513 | 0.0043 | -0.0127 | 19.493 | 1.634 | 0.0630 | 0.0120 | 0.1201 | 318.5 | 26.7 | 2 |
| 30 | 60 | 14.24 | 0.669 | 7.190 | 0.520 | 0.0903 | 0.0074 | 0.7594 | 11.074 | 0.908 | 0.5840 | 0.0310 | 0.3080 | 189.7 | 27.2 | 2 |
| 31 | 60 | 4.17 | 0.027 | 0.480 | 0.120 | 0.0543 | 0.0051 | 0.0895 | 18.416 | 1.730 | 0.0750 | 0.0190 | 0.2193 | 331.8 | 31.7 | 2 |
| 32 | 60 | 10.01 | 0.062 | 0.769 | 0.100 | 0.0548 | 0.0047 | 0.0149 | 18.248 | 1.565 | 0.1030 | 0.0130 | 0.1482 | 323.0 | 27.8 | 2 |
| 33 | 60 | 0.64 | -1.676 | 2.370 | 0.710 | 0.0247 | 0.0068 | -0.0721 | 40.486 | 11.146 | -1.3000 | 1.6000 | 0.2227 | 412.6 | 319.3 | 2 |
| 34 | 60 | 2.83 | 0.143 | 1.260 | 0.260 | 0.0560 | 0.0061 | -0.0004 | 17.857 | 1.945 | 0.1670 | 0.0370 | -0.0513 | 302.3 | 36.2 | 2 |
| 35 | 60 | 3.30 | -0.060 | 0.700 | 0.160 | 0.0084 | 0.0017 | 0.3532 | 119.048 | 24.093 | 0.0000 | 0.5600 | 0.5938 | 57.1 | 39.7 | 2 |
| 36 | 60 | 0.58 | -2.435 | 2.900 | 1.500 | 0.0119 | 0.0052 | 0.0610 | 84.034 | 36.721 | -1.9000 | 1.2000 | 0.2082 | 258.3 | 157.4 | 2 |
| 37 | 60 | 3.73 | 0.799 | 19.900 | 1.700 | 0.2070 | 0.0200 | 0.2563 | 4.831 | 0.467 | 0.6920 | 0.0440 | 0.2660 | 262.6 | 75.9 | 2 |
| 38 | 60 | 14.70 | 0.254 | 1.650 | 0.150 | 0.0478 | 0.0036 | 0.1553 | 20.921 | 1.576 | 0.2540 | 0.0210 | 0.2520 | 225.8 | 18.6 | 2 |
| 39 | 60 | 1.19 | -1.227 | 1.470 | 0.550 | 0.0142 | 0.0060 | 0.1792 | 70.423 | 29.756 | -0.9300 | 0.7500 | 0.3329 | 200.7 | 118.6 | 2 |
| 40 | 60 | 9.88 | 0.045 | 0.646 | 0.093 | 0.0531 | 0.0044 | 0.1886 | 18.832 | 1.561 | 0.0890 | 0.0130 | 0.1757 | 318.9 | 26.6 | 2 |
| 41 | 60 | 1.08 | -1.702 | 1.160 | 0.430 | 0.0129 | 0.0049 | 0.0539 | 77.519 | 29.445 | -1.3100 | 0.9300 | 0.2989 | 220.8 | 125.4 | 2 |
| 42 | 60 | 7.91 | 0.221 | 1.840 | 0.200 | 0.0577 | 0.0051 | 0.2739 | 17.331 | 1.532 | 0.2290 | 0.0230 | 0.4954 | 283.6 | 26.8 | 2 |
| 43 | 60 | 1.78 | 0.538 | 5.860 | 0.760 | 0.0978 | 0.0110 | 0.0677 | 10.225 | 1.150 | 0.4840 | 0.0630 | 0.3320 | 284.7 | 57.3 | 2 |
| 44 | 60 | 9.80 | 0.056 | 0.649 | 0.097 | 0.0496 | 0.0039 | 0.2750 | 20.161 | 1.585 | 0.0970 | 0.0140 | -0.0061 | 295.1 | 23.5 | 2 |
| 45 | 60 | 3.28 | 0.666 | 11.070 | 0.910 | 0.1400 | 0.0110 | -0.0976 | 7.143 | 0.561 | 0.5870 | 0.0450 | 0.1238 | 294.6 | 54.1 | 2 |
| 46 | 60 | 0.91 | -1.144 | 3.050 | 0.780 | 0.0313 | 0.0072 | 0.4448 | 31.949 | 7.349 | -0.8700 | 0.9500 | 0.5625 | 418.7 | 243.9 | 2 |
| 47 | 60 | 2.44 | 0.050 | 0.590 | 0.200 | 0.0519 | 0.0060 | -0.0206 | 19.268 | 2.227 | 0.0930 | 0.0410 | 0.0149 | 310.2 | 38.9 | 2 |
| 48 | 60 | 1.25 | 0.407 | 3.800 | 0.630 | 0.0778 | 0.0096 | 0.1404 | 12.853 | 1.586 | 0.3790 | 0.0670 | 0.0184 | 290.7 | 53.7 | 2 |
| 49 | 60 | 34.38 | 0.342 | 2.390 | 0.170 | 0.0536 | 0.0040 | 0.0784 | 18.657 | 1.392 | 0.3240 | 0.0190 | 0.4318 | 223.5 | 18.4 | 2 |
| 50 | 60 | 5.81 | 0.043 | 0.550 | 0.120 | 0.0480 | 0.0042 | -0.0175 | 20.833 | 1.823 | 0.0870 | 0.0190 | 0.3184 | 289.4 | 25.9 | 2 |
| 51 | 60 | 5.85 | 0.914 | 17.800 | 1.200 | 0.1677 | 0.0130 | 0.4960 | 5.963 | 0.462 | 0.7730 | 0.0430 | 0.3497 | 92.8 | 59.2 | 2 |
| 52 | 60 | 4.87 | -0.122 | 0.162 | 0.080 | 0.0043 | 0.0011 | -0.0182 | 232.558 | 59.492 | -0.0500 | 0.4800 | 0.2276 | 31.0 | 18.5 | 2 |
| 53 | 60 | 1.60 | 0.119 | 0.720 | 0.260 | 0.0498 | 0.0066 | -0.0639 | 20.080 | 2.661 | 0.1470 | 0.0580 | -0.1498 | 276.9 | 42.6 | 2 |
| 54 | 60 | 3.28 | 0.080 | 0.760 | 0.170 | 0.0543 | 0.0055 | 0.1262 | 18.416 | 1.865 | 0.1170 | 0.0270 | -0.0637 | 314.2 | 33.3 | 2 |
| 55 | 60 | 3.42 | -0.653 | 0.410 | 0.130 | 0.0062 | 0.0017 | -0.0602 | 161.290 | 44.225 | -0.4700 | 0.7100 | 0.5769 | 65.7 | 39.8 | 2 |
| 56 | 60 | 10.29 | 0.078 | 0.065 | 0.029 | 0.0050 | 0.0007 | 0.0812 | 201.613 | 27.640 | 0.1080 | 0.0560 | -0.3364 | 29.4 | 4.6 | 2 |
| 57 | 60 | 29.30 | 0.108 | 0.065 | 0.018 | 0.0044 | 0.0005 | -0.0600 | 227.273 | 26.860 | 0.1320 | 0.0450 | 0.0240 | 25.2 | 3.4 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 58 | 60 | 1.86 | 0.069 | 0.750 | 0.230 | 0.0583 | 0.0074 | -0.0754 | 17.153 | 2.177 | 0.1090 | 0.0380 | -0.1614 | 340.7 | 45.8 | 2 |
| 59 | 60 | 11.58 | 0.162 | 1.480 | 0.170 | 0.0586 | 0.0048 | 0.2422 | 17.065 | 1.398 | 0.1830 | 0.0200 | 0.2408 | 308.9 | 26.5 | 2 |
| 60 | 60 | 2.54 | 0.067 | 1.900 | 2.200 | 0.0050 | 0.0016 | -0.0161 | 200.000 | 64.000 | 0.1000 | 2.8000 | 0.0973 | 30.0 | 114.1 | 2 |
| 61 | 60 | 27.58 | 0.253 | 2.010 | 0.250 | 0.0552 | 0.0041 | 0.0420 | 18.116 | 1.346 | 0.2540 | 0.0270 | 0.1237 | 260.6 | 22.4 | 2 |
| 62 | 60 | 34.10 | 0.052 | 0.043 | 0.014 | 0.0040 | 0.0005 | 0.1334 | 251.256 | 28.408 | 0.0880 | 0.0310 | -0.2475 | 24.3 | 2.9 | 2 |
| 63 | 60 | 12.82 | 0.343 | 0.470 | 0.200 | 0.0091 | 0.0023 | 0.8097 | 109.890 | 27.774 | 0.3180 | 0.0810 | 0.5039 | 38.4 | 11.4 | 2 |
| 64 | 60 | 11.92 | 0.371 | 3.470 | 0.310 | 0.0736 | 0.0065 | 0.1785 | 13.587 | 1.200 | 0.3500 | 0.0260 | 0.2155 | 291.7 | 29.5 | 2 |
| 65 | 60 | 3.24 | 0.307 | 2.900 | 0.400 | 0.0675 | 0.0065 | 0.2010 | 14.815 | 1.427 | 0.2990 | 0.0450 | 0.4386 | 294.6 | 36.5 | 2 |
| 66 | 60 | 1.00 | -0.964 | 1.950 | 0.710 | 0.0172 | 0.0051 | 0.1565 | 58.140 | 17.239 | -0.7200 | 0.8700 | 0.1417 | 214.2 | 133.2 | 2 |
| 67 | 60 | 5.82 | 0.203 | 1.770 | 0.230 | 0.0573 | 0.0054 | 0.3940 | 17.452 | 1.645 | 0.2150 | 0.0270 | 0.2194 | 287.9 | 29.3 | 2 |
| 68 | 60 | 1.48 | 0.219 | 2.130 | 0.700 | 0.0710 | 0.0084 | 0.0284 | 14.085 | 1.666 | 0.2300 | 0.1000 | 0.0558 | 347.8 | 67.8 | 2 |
| 69 | 60 | 1.18 | -1.062 | 1.150 | 0.560 | 0.0200 | 0.0150 | 0.0308 | 50.000 | 37.500 | -0.8000 | 1.8000 | 0.1688 | 260.6 | 340.1 | 2 |
| 70 | 60 | 3.89 | 0.059 | 0.790 | 0.280 | 0.0516 | 0.0056 | 0.1385 | 19.380 | 2.103 | 0.1000 | 0.0290 | -0.0402 | 305.6 | 34.7 | 2 |
| 71 | 60 | 5.91 | 0.015 | 0.460 | 0.130 | 0.0519 | 0.0046 | 0.0370 | 19.268 | 1.708 | 0.0650 | 0.0190 | -0.0614 | 321.4 | 29.0 | 2 |
| 72 | 60 | 8.39 | 0.030 | 0.530 | 0.120 | 0.0506 | 0.0045 | -0.0231 | 19.763 | 1.758 | 0.0770 | 0.0160 | 0.0315 | 308.7 | 27.8 | 2 |
| 73 | 60 | 4.02 | -1.447 | 0.700 | 0.320 | 0.0044 | 0.0011 | 0.5899 | 227.273 | 56.818 | -1.1000 | 1.1000 | 0.3761 | 69.1 | 42.6 | 2 |
| 74 | 60 | 17.55 | 0.707 | 12.240 | 1.000 | 0.1433 | 0.0120 | 0.8400 | 6.978 | 0.584 | 0.6180 | 0.0290 | -0.0956 | 265.5 | 39.6 | 2 |
| 75 | 60 | 2.00 | 0.106 | 0.560 | 0.250 | 0.0455 | 0.0061 | 0.0775 | 21.978 | 2.947 | 0.1360 | 0.0680 | 0.1338 | 257.1 | 41.7 | 2 |
| 76 | 60 | 7.89 | 0.562 | 8.320 | 0.800 | 0.1174 | 0.0100 | 0.5640 | 8.518 | 0.726 | 0.5050 | 0.0380 | 0.0139 | 323.1 | 43.9 | 2 |
| 77 | 60 | 1.92 | 0.355 | 0.850 | 0.290 | 0.0269 | 0.0041 | -0.0473 | 37.175 | 5.666 | 0.3300 | 0.1300 | 0.3948 | 111.0 | 32.6 | 2 |
| 78 | 60 | 4.66 | 0.696 | 13.010 | 1.200 | 0.1594 | 0.0150 | 0.1579 | 6.274 | 0.590 | 0.6120 | 0.0420 | 0.2650 | 304.6 | 59.3 | 2 |
| 79 | 60 | 11.79 | 0.236 | 2.000 | 0.220 | 0.0624 | 0.0050 | 0.3254 | 16.026 | 1.284 | 0.2420 | 0.0240 | -0.0018 | 300.2 | 26.4 | 2 |
| 80 | 60 | 1.05 | -0.081 | 1.220 | 0.510 | 0.0650 | 0.0190 | -0.0174 | 15.385 | 4.497 | -0.0100 | 0.3200 | 0.4797 | 437.8 | 200.7 | 2 |
| 81 | 60 | 23.62 | 0.034 | 0.168 | 0.034 | 0.0174 | 0.0017 | 0.2085 | 57.471 | 5.615 | 0.0750 | 0.0160 | 0.2702 | 107.5 | 10.7 | 2 |
| 82 | 60 | 0.96 | 0.098 | 0.940 | 0.450 | 0.0484 | 0.0086 | -0.0470 | 20.661 | 3.671 | 0.1300 | 0.3300 | 0.1922 | 275.6 | 133.0 | 2 |
| 83 | 60 | 71.50 | 0.064 | 0.045 | 0.010 | 0.0037 | 0.0003 | 0.0431 | 267.380 | 24.307 | 0.0970 | 0.0240 | 0.0711 | 22.5 | 2.2 | 2 |
| 84 | 60 | 18.27 | 0.438 | 5.130 | 0.570 | 0.0894 | 0.0076 | 0.1592 | 11.186 | 0.951 | 0.4050 | 0.0350 | -0.1013 | 315.9 | 35.9 | 2 |
| 85 | 60 | 10.12 | 0.251 | 2.070 | 0.890 | 0.0582 | 0.0048 | -0.0362 | 17.182 | 1.417 | 0.2530 | 0.0810 | 0.0210 | 275.1 | 42.9 | 2 |
| 86 | 60 | 9.03 | 0.011 | 0.392 | 0.080 | 0.0450 | 0.0039 | 0.0064 | 22.222 | 1.926 | 0.0610 | 0.0130 | 0.2459 | 280.6 | 24.4 | 2 |
| 87 | 60 | 7.71 | 0.737 | 22.900 | 3.500 | 0.2520 | 0.0340 | 0.5876 | 3.968 | 0.535 | 0.6510 | 0.0410 | -0.4051 | 413.5 | 96.2 | 2 |
| 88 | 60 | 1.07 | -0.451 | 0.260 | 0.260 | 0.0071 | 0.0032 | 0.3933 | 140.845 | 63.479 | -0.3100 | 0.6800 | 0.1925 | 66.1 | 49.0 | 2 |
| 89 | 60 | 55.10 | 0.073 | 0.044 | 0.012 | 0.0035 | 0.0003 | 0.0059 | 284.091 | 26.634 | 0.1040 | 0.0330 | 0.1661 | 21.0 | 2.2 | 2 |
| 90 | 60 | 1.79 | 0.689 | 6.800 | 1.400 | 0.0950 | 0.0160 | 0.0477 | 10.526 | 1.773 | 0.6000 | 0.1400 | 0.4751 | 187.5 | 109.5 | 2 |
| 91 | 60 | 9.72 | 0.063 | 0.710 | 0.120 | 0.0507 | 0.0042 | -0.0613 | 19.724 | 1.634 | 0.1030 | 0.0170 | 0.1336 | 299.2 | 25.3 | 2 |
| 92 | 60 | 0.81 | 0.374 | 1.070 | 0.480 | 0.0582 | 0.0100 | -0.0450 | 17.182 | 2.952 | 0.3500 | 0.1300 | 0.4366 | 230.7 | 71.0 | 2 |
| 93 | 60 | 12.34 | 0.536 | 0.229 | 0.060 | 0.0046 | 0.0006 | -0.0081 | 218.818 | 29.687 | 0.4700 | 0.1300 | 0.2070 | 13.6 | 5.2 | 2 |
| 94 | 60 | 8.85 | 0.134 | 0.920 | 0.130 | 0.0433 | 0.0040 | 0.2835 | 23.095 | 2.133 | 0.1580 | 0.0240 | 0.1106 | 237.4 | 23.1 | 2 |
| 95 | 60 | 8.22 | 0.574 | 0.320 | 0.130 | 0.0061 | 0.0011 | -0.0156 | 163.934 | 29.562 | 0.5000 | 0.1400 | 0.3546 | 16.7 | 7.6 | 2 |
| 96 | 60 | 7.68 | 0.688 | 0.259 | 0.079 | 0.0052 | 0.0011 | 0.2763 | 192.308 | 40.680 | 0.5900 | 0.1500 | 0.5353 | 10.4 | 6.7 | 2 |
| 97 | 60 | 1.61 | -2.548 | 1.480 | 0.550 | 0.0164 | 0.0037 | -0.0257 | 60.976 | 13.757 | -2.0000 | 1.7000 | 0.1413 | 364.5 | 227.7 | 2 |
| 98 | 60 | 3.28 | 0.752 | 9.200 | 2.300 | 0.0850 | 0.0180 | 0.4709 | 11.765 | 2.491 | 0.6470 | 0.0850 | -0.0187 | 134.5 | 64.3 | 2 |
| 99 | 60 | 15.40 | 0.358 | 3.740 | 0.440 | 0.0824 | 0.0087 | 0.0105 | 12.136 | 1.281 | 0.3410 | 0.0290 | -0.1368 | 332.4 | 39.2 | 2 |
| 100 | 60 | 33.66 | 0.007 | 0.348 | 0.042 | 0.0464 | 0.0036 | -0.0485 | 21.552 | 1.672 | 0.0579 | 0.0070 | 0.4097 | 290.3 | 22.3 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 60 | 3.25 | 0.128 | 1.310 | 0.260 | 0.0622 | 0.0067 | 0.2512 | 16.077 | 1.732 | 0.1560 | 0.0320 | -0.1187 | 340.6 | 39.2 | 2 |
| 102 | 60 | 8.75 | 0.249 | 2.070 | 0.250 | 0.0633 | 0.0053 | 0.3330 | 15.798 | 1.323 | 0.2520 | 0.0280 | 0.2854 | 299.5 | 28.3 | 2 |

| **HS01 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 3.40 | 0.968 | 62.200 | 5.500 | 0.5590 | 0.0470 | 0.7064 | 1.789 | 0.150 | 0.8180 | 0.0270 | 0.3528 | 112.8 | 126.4 | 2 |
| 2 | 60 | 0.70 | 0.039 | 0.800 | 0.440 | 0.0652 | 0.0099 | -0.0667 | 15.337 | 2.329 | 0.0860 | 0.0740 | 0.3338 | 391.8 | 68.9 | 2 |
| 3 | 60 | 2.82 | 0.078 | 0.700 | 0.160 | 0.0509 | 0.0045 | 0.0820 | 19.646 | 1.737 | 0.1150 | 0.0270 | 0.1392 | 295.6 | 27.9 | 2 |
| 4 | 60 | 1.76 | 0.977 | 96.100 | 7.800 | 0.8460 | 0.0630 | 0.6124 | 1.182 | 0.088 | 0.8260 | 0.0300 | 0.4151 | 125.3 | 210.0 | 2 |
| 5 | 60 | 2.88 | -0.005 | 0.340 | 0.180 | 0.0545 | 0.0059 | 0.1829 | 18.349 | 1.986 | 0.0490 | 0.0260 | -0.1431 | 343.9 | 38.2 | 2 |
| 6 | 60 | 3.63 | 0.012 | 0.370 | 0.130 | 0.0486 | 0.0045 | 0.0223 | 20.576 | 1.905 | 0.0620 | 0.0220 | 0.1276 | 302.3 | 28.8 | 2 |
| 7 | 60 | 20.21 | -0.006 | 0.318 | 0.047 | 0.0485 | 0.0037 | 0.0316 | 20.619 | 1.573 | 0.0478 | 0.0062 | 0.1337 | 307.0 | 23.2 | 2 |
| 8 | 60 | 10.61 | 0.087 | 0.850 | 0.130 | 0.0550 | 0.0044 | 0.3580 | 18.182 | 1.455 | 0.1230 | 0.0160 | 0.1034 | 315.7 | 25.8 | 2 |
| 9 | 60 | 7.01 | 0.024 | 0.720 | 0.110 | 0.0721 | 0.0058 | 0.1576 | 13.870 | 1.116 | 0.0750 | 0.0110 | 0.2173 | 438.4 | 35.1 | 2 |
| 10 | 60 | 1.11 | 0.140 | 1.450 | 0.590 | 0.0760 | 0.0130 | -0.1218 | 13.158 | 2.251 | 0.1680 | 0.0790 | 0.4824 | 408.2 | 82.2 | 2 |
| 11 | 60 | 38.69 | 0.011 | 0.452 | 0.044 | 0.0529 | 0.0038 | 0.0711 | 18.904 | 1.358 | 0.0619 | 0.0042 | 0.2552 | 328.7 | 23.3 | 2 |
| 12 | 60 | 6.17 | 0.044 | 0.590 | 0.110 | 0.0545 | 0.0048 | 0.0187 | 18.349 | 1.616 | 0.0880 | 0.0160 | 0.4066 | 327.6 | 29.2 | 2 |
| 13 | 60 | 7.35 | -0.008 | 0.360 | 0.080 | 0.0534 | 0.0045 | -0.1440 | 18.727 | 1.578 | 0.0470 | 0.0110 | 0.2372 | 337.9 | 28.4 | 2 |
| 14 | 60 | 1.62 | 0.013 | 0.530 | 0.360 | 0.0610 | 0.0120 | -0.0854 | 16.393 | 3.225 | 0.0650 | 0.0570 | -0.2014 | 376.7 | 77.5 | 2 |
| 15 | 60 | 0.94 | 0.534 | 5.200 | 1.500 | 0.0950 | 0.0200 | 0.3295 | 10.526 | 2.216 | 0.4800 | 0.1400 | 0.5236 | 279.4 | 118.4 | 2 |
| 16 | 60 | 54.90 | -0.002 | 0.377 | 0.043 | 0.0527 | 0.0038 | 0.0775 | 18.975 | 1.368 | 0.0518 | 0.0045 | 0.1291 | 331.6 | 23.6 | 2 |
| 17 | 60 | 3.10 | 0.002 | 0.460 | 0.180 | 0.0536 | 0.0053 | 0.0376 | 18.657 | 1.845 | 0.0550 | 0.0240 | -0.3438 | 335.8 | 34.1 | 2 |
| 18 | 60 | 12.65 | 0.029 | 0.541 | 0.089 | 0.0531 | 0.0043 | 0.0021 | 18.832 | 1.525 | 0.0760 | 0.0110 | 0.1063 | 324.2 | 26.2 | 2 |
| 19 | 60 | 1.50 | 0.020 | 0.510 | 0.370 | 0.0539 | 0.0099 | -0.0169 | 18.553 | 3.408 | 0.0690 | 0.0710 | -0.1142 | 331.9 | 66.8 | 2 |
| 20 | 60 | 5.90 | 0.022 | 0.420 | 0.120 | 0.0483 | 0.0043 | -0.0063 | 20.704 | 1.843 | 0.0700 | 0.0200 | 0.2382 | 297.5 | 27.1 | 2 |
| 21 | 60 | 0.80 | 0.066 | 0.880 | 0.680 | 0.0930 | 0.0120 | -0.0908 | 10.753 | 1.387 | 0.1120 | 0.0720 | 0.4689 | 536.9 | 83.9 | 2 |
| 22 | 60 | 3.13 | 0.223 | 1.760 | 0.320 | 0.0598 | 0.0066 | -0.0721 | 16.722 | 1.846 | 0.2310 | 0.0430 | 0.3595 | 292.9 | 37.6 | 2 |
| 23 | 60 | 6.64 | 0.338 | 3.610 | 0.700 | 0.0744 | 0.0075 | 0.6950 | 13.441 | 1.355 | 0.3240 | 0.0440 | -0.3049 | 310.1 | 39.8 | 2 |
| 24 | 60 | 8.37 | 0.061 | 0.780 | 0.130 | 0.0626 | 0.0051 | 0.0075 | 15.974 | 1.301 | 0.1030 | 0.0220 | 0.0144 | 368.3 | 31.3 | 2 |
| 25 | 60 | 17.11 | 0.000 | 0.342 | 0.057 | 0.0485 | 0.0037 | 0.0767 | 20.619 | 1.573 | 0.0523 | 0.0079 | 0.0989 | 305.4 | 23.1 | 2 |
| 26 | 60 | 0.32 | 0.835 | 61.200 | 9.000 | 0.7100 | 0.2200 | -0.0733 | 1.408 | 0.436 | 0.7500 | 0.1000 | -0.0654 | 714.4 | 555.1 | 2 |
| 27 | 60 | 7.39 | 0.005 | 0.344 | 0.077 | 0.0476 | 0.0040 | 0.0460 | 21.008 | 1.765 | 0.0560 | 0.0120 | 0.2970 | 298.4 | 25.1 | 2 |
| 28 | 60 | 7.48 | 0.014 | 0.410 | 0.094 | 0.0503 | 0.0041 | 0.0400 | 19.881 | 1.620 | 0.0640 | 0.0150 | 0.0114 | 312.0 | 25.7 | 2 |
| 29 | 60 | 5.68 | 0.074 | 0.850 | 0.190 | 0.0579 | 0.0049 | 0.0041 | 17.271 | 1.462 | 0.1130 | 0.0240 | 0.0348 | 336.6 | 30.0 | 2 |
| 30 | 60 | 5.73 | 0.187 | 1.630 | 0.220 | 0.0616 | 0.0052 | 0.2760 | 16.234 | 1.370 | 0.2030 | 0.0260 | 0.2351 | 315.0 | 29.0 | 2 |
| 31 | 60 | 1.27 | 0.188 | 1.280 | 0.450 | 0.0631 | 0.0099 | 0.0046 | 15.848 | 2.486 | 0.2040 | 0.0780 | 0.5293 | 322.1 | 62.5 | 2 |
| 32 | 60 | 11.20 | 0.278 | 2.920 | 0.290 | 0.0767 | 0.0060 | 0.3416 | 13.038 | 1.020 | 0.2770 | 0.0180 | 0.4172 | 347.7 | 28.8 | 2 |
| 33 | 60 | 0.24 | 0.709 | 31.200 | 6.200 | 0.4340 | 0.0940 | 0.0307 | 2.304 | 0.499 | 0.6500 | 0.1200 | 0.7068 | 765.8 | 405.1 | 2 |
| 34 | 60 | 0.53 | 0.910 | 130.000 | 15.000 | 1.1450 | 0.1200 | 0.4482 | 0.873 | 0.092 | 0.8060 | 0.0550 | 0.1864 | 630.2 | 468.4 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 60 | 30.91 | 0.005 | 0.397 | 0.054 | 0.0504 | 0.0038 | -0.0683 | 19.841 | 1.496 | 0.0568 | 0.0064 | 0.1287 | 315.4 | 23.5 | 2 |
| 36 | 60 | 3.21 | -0.020 | 0.300 | 0.220 | 0.0565 | 0.0088 | 0.2418 | 17.699 | 2.757 | 0.0380 | 0.0280 | 0.0624 | 361.0 | 56.6 | 2 |
| 37 | 60 | 0.59 | 0.641 | 13.800 | 2.400 | 0.1910 | 0.0220 | 0.2922 | 5.236 | 0.603 | 0.5740 | 0.0950 | 0.6421 | 427.6 | 145.5 | 2 |
| 38 | 60 | 4.69 | 0.330 | 4.050 | 0.530 | 0.0936 | 0.0086 | 0.4916 | 10.684 | 0.982 | 0.3210 | 0.0310 | 0.0996 | 392.1 | 41.7 | 2 |
| 39 | 60 | 53.60 | 0.002 | 0.140 | 0.020 | 0.0193 | 0.0014 | 0.2230 | 51.840 | 3.762 | 0.0498 | 0.0060 | 0.1468 | 123.0 | 8.9 | 2 |
| 40 | 60 | 4.49 | 0.195 | 2.050 | 0.330 | 0.0681 | 0.0060 | 0.3176 | 14.684 | 1.294 | 0.2100 | 0.0310 | 0.2209 | 344.2 | 33.9 | 2 |
| 41 | 60 | 2.12 | 0.037 | 0.560 | 0.220 | 0.0558 | 0.0062 | -0.0660 | 17.921 | 1.991 | 0.0830 | 0.0330 | 0.5828 | 337.4 | 39.5 | 2 |
| 42 | 60 | 7.77 | -0.012 | 0.313 | 0.078 | 0.0496 | 0.0042 | -0.1155 | 20.161 | 1.707 | 0.0430 | 0.0110 | 0.1173 | 315.7 | 26.7 | 2 |
| 43 | 60 | 0.19 | 0.803 | 126.000 | 22.000 | 1.1700 | 0.1800 | 0.8326 | 0.855 | 0.131 | 0.7680 | 0.0900 | 0.7221 | 1334.3 | 723.7 | 2 |
| 44 | 60 | 8.64 | 0.209 | 2.340 | 0.300 | 0.0755 | 0.0060 | 0.2077 | 13.245 | 1.053 | 0.2230 | 0.0240 | 0.1959 | 373.7 | 32.3 | 2 |
| 45 | 60 | 5.80 | -0.017 | 0.270 | 0.100 | 0.0536 | 0.0046 | 0.0420 | 18.657 | 1.601 | 0.0400 | 0.0150 | 0.1099 | 342.0 | 29.5 | 2 |
| 46 | 60 | 3.17 | 0.341 | 3.250 | 0.580 | 0.0783 | 0.0075 | 0.0117 | 12.771 | 1.223 | 0.3270 | 0.0680 | 0.0359 | 324.4 | 51.1 | 2 |
| 47 | 60 | 0.71 | 0.760 | 13.700 | 2.500 | 0.1630 | 0.0220 | 0.2000 | 6.135 | 0.828 | 0.6600 | 0.1100 | 0.2993 | 247.0 | 143.9 | 2 |
| 48 | 60 | 0.88 | -0.139 | 2.610 | 0.870 | 0.0360 | 0.0062 | 0.1308 | 27.778 | 4.784 | -0.0600 | 0.4600 | 0.5170 | 259.1 | 136.2 | 2 |
| 49 | 60 | 0.52 | 0.221 | 0.600 | 1.600 | 0.0640 | 0.0230 | 0.0454 | 15.625 | 5.615 | 0.2300 | 0.2700 | 0.3725 | 313.8 | 173.4 | 2 |
| 50 | 60 | 3.67 | 0.053 | 0.570 | 0.190 | 0.0494 | 0.0050 | 0.1293 | 20.243 | 2.049 | 0.0950 | 0.0350 | -0.0372 | 294.6 | 32.3 | 2 |
| 51 | 60 | 4.25 | 0.304 | 3.860 | 0.460 | 0.0944 | 0.0081 | 0.1255 | 10.593 | 0.909 | 0.3010 | 0.0300 | 0.4255 | 410.0 | 40.7 | 2 |
| 52 | 60 | 0.75 | 0.611 | 5.300 | 1.200 | 0.0970 | 0.0160 | 0.3812 | 10.309 | 1.701 | 0.5400 | 0.1400 | 0.5615 | 238.8 | 113.1 | 2 |
| 53 | 60 | 10.29 | -0.006 | 0.302 | 0.072 | 0.0491 | 0.0041 | -0.1394 | 20.367 | 1.701 | 0.0480 | 0.0120 | 0.3049 | 310.7 | 26.0 | 2 |
| 54 | 60 | 13.57 | 0.184 | 3.250 | 0.360 | 0.1136 | 0.0086 | 0.3039 | 8.803 | 0.666 | 0.2090 | 0.0160 | -0.0607 | 571.7 | 44.3 | 2 |
| 55 | 60 | 3.50 | 0.147 | 1.850 | 0.330 | 0.0794 | 0.0079 | 0.4008 | 12.594 | 1.253 | 0.1740 | 0.0270 | -0.0345 | 422.6 | 44.3 | 2 |
| 56 | 60 | 37.71 | 0.001 | 0.400 | 0.062 | 0.0528 | 0.0039 | -0.0363 | 18.939 | 1.399 | 0.0542 | 0.0076 | 0.0799 | 331.2 | 24.3 | 2 |
| 57 | 60 | 4.65 | 0.167 | 1.380 | 0.210 | 0.0543 | 0.0050 | -0.0885 | 18.416 | 1.696 | 0.1860 | 0.0280 | 0.4022 | 285.2 | 28.5 | 2 |
| 58 | 60 | 18.67 | 0.069 | 0.792 | 0.096 | 0.0527 | 0.0040 | 0.0349 | 18.975 | 1.440 | 0.1080 | 0.0110 | 0.3855 | 308.8 | 23.5 | 2 |
| 59 | 60 | 7.97 | 0.040 | 0.680 | 0.130 | 0.0574 | 0.0046 | 0.0729 | 17.422 | 1.396 | 0.0860 | 0.0150 | 0.2512 | 345.6 | 28.0 | 2 |
| 60 | 60 | 0.71 | 0.527 | 3.100 | 1.800 | 0.0610 | 0.0190 | 0.4171 | 16.393 | 5.106 | 0.4700 | 0.2700 | 0.6579 | 183.5 | 141.8 | 2 |
| 61 | 60 | 18.91 | 0.003 | 1.435 | 0.140 | 0.1447 | 0.0100 | 0.1451 | 6.911 | 0.478 | 0.0705 | 0.0049 | 0.2298 | 868.7 | 58.2 | 2 |
| 62 | 60 | 0.07 | 0.822 | -15.900 | 7.700 | -0.0790 | 0.0560 | 0.1802 | -12.658 | 8.973 | 0.6900 | 0.4400 | -0.1886 | -91.3 | 296.0 | 2 |
| 63 | 60 | 11.91 | 0.043 | 5.110 | 0.460 | 0.2823 | 0.0210 | 0.2907 | 3.542 | 0.264 | 0.1324 | 0.0067 | 0.1439 | 1542.2 | 111.7 | 2 |
| 64 | 60 | 4.90 | 0.294 | 3.170 | 0.650 | 0.0703 | 0.0075 | 0.5488 | 14.225 | 1.518 | 0.2890 | 0.0460 | -0.0751 | 312.2 | 41.2 | 2 |
| 65 | 60 | 9.19 | 0.337 | 3.850 | 0.430 | 0.0864 | 0.0069 | 0.4817 | 11.574 | 0.924 | 0.3250 | 0.0240 | 0.0833 | 359.3 | 32.4 | 2 |
| 66 | 60 | 9.85 | 0.194 | 1.610 | 0.190 | 0.0576 | 0.0045 | 0.2265 | 17.361 | 1.356 | 0.2080 | 0.0200 | 0.3704 | 292.5 | 24.2 | 2 |
| 67 | 60 | 16.29 | 0.005 | 0.420 | 0.068 | 0.0533 | 0.0040 | -0.1623 | 18.762 | 1.408 | 0.0573 | 0.0082 | 0.2802 | 333.0 | 24.8 | 2 |
| 68 | 60 | 0.96 | 0.507 | 4.530 | 0.950 | 0.0810 | 0.0110 | 0.3881 | 12.346 | 1.677 | 0.4570 | 0.0900 | 0.3022 | 252.7 | 66.2 | 2 |
| 69 | 60 | 24.07 | 0.066 | 1.640 | 0.170 | 0.1039 | 0.0075 | 0.1280 | 9.625 | 0.695 | 0.1137 | 0.0091 | 0.0376 | 597.1 | 42.5 | 2 |
| 70 | 60 | 0.60 | 0.828 | 45.200 | 5.800 | 0.4670 | 0.0480 | 0.6436 | 2.141 | 0.220 | 0.7300 | 0.0670 | 0.2855 | 497.5 | 240.0 | 2 |
| 71 | 60 | 6.57 | 0.017 | 0.430 | 0.100 | 0.0498 | 0.0043 | -0.0288 | 20.080 | 1.734 | 0.0660 | 0.0160 | 0.1446 | 308.2 | 26.9 | 2 |
| 72 | 60 | 8.45 | 0.029 | 0.516 | 0.110 | 0.0523 | 0.0046 | 0.1614 | 19.120 | 1.682 | 0.0760 | 0.0160 | 0.0994 | 319.4 | 28.4 | 2 |
| 73 | 60 | 15.94 | 0.275 | 2.480 | 0.370 | 0.0665 | 0.0055 | 0.7944 | 15.038 | 1.244 | 0.2730 | 0.0260 | -0.3453 | 303.7 | 28.1 | 2 |
| 74 | 60 | 11.95 | 0.351 | 4.680 | 0.640 | 0.0979 | 0.0082 | 0.6419 | 10.215 | 0.856 | 0.3380 | 0.0310 | -0.2125 | 397.2 | 40.0 | 2 |

**HS02 rutile**

| Grain | Spot size (μm) | U (ppm) | $^{206}Pb_c$ | 207/235 | 207/235 2σ | 206/238 | 206/238 2σ | ρ | 238/206 | 238/206 2σ | 207/206 | 207/206 2σ | ρ | $^{207}Pb$ corrected Age (Ma) | $^{207}Pb$ corrected Age 2σ | Pb correction type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 1.33 | 0.399 | 2.010 | 0.710 | 0.0590 | 0.0130 | 0.4106 | 16.949 | 3.735 | 0.3700 | 0.1400 | 0.5150 | 224.5 | 81.1 | 2 |
| 2 | 60 | 8.80 | 0.012 | 0.451 | 0.088 | 0.0551 | 0.0034 | 0.0024 | 18.149 | 1.120 | 0.0630 | 0.0130 | 0.0172 | 341.7 | 21.5 | 2 |
| 3 | 60 | 49.90 | 0.003 | 0.413 | 0.039 | 0.0555 | 0.0027 | 0.0207 | 18.018 | 0.877 | 0.0555 | 0.0060 | 0.1478 | 347.3 | 16.8 | 2 |
| 4 | 60 | 46.00 | 0.205 | 2.140 | 0.180 | 0.0687 | 0.0041 | 0.3655 | 14.556 | 0.869 | 0.2180 | 0.0190 | 0.2252 | 343.0 | 22.5 | 2 |
| 5 | 60 | 0.34 | -0.232 | -2.300 | 0.490 | 0.0760 | 0.0370 | 0.0670 | 13.158 | 6.406 | -0.1300 | 0.1800 | 0.5868 | 576.9 | 291.6 | 2 |
| 6 | 60 | 13.15 | 0.015 | 0.454 | 0.079 | 0.0522 | 0.0033 | 0.1218 | 19.157 | 1.211 | 0.0650 | 0.0120 | 0.2489 | 323.2 | 20.7 | 2 |
| 7 | 60 | 15.24 | 0.029 | 0.581 | 0.069 | 0.0567 | 0.0032 | -0.1103 | 17.637 | 0.995 | 0.0771 | 0.0100 | 0.3576 | 345.3 | 19.7 | 2 |
| 8 | 60 | 16.56 | 0.012 | 0.488 | 0.067 | 0.0558 | 0.0033 | -0.0471 | 17.921 | 1.060 | 0.0634 | 0.0092 | 0.3327 | 345.8 | 20.5 | 2 |
| 9 | 60 | 4.80 | 0.016 | 0.590 | 0.130 | 0.0661 | 0.0045 | -0.0926 | 15.129 | 1.030 | 0.0680 | 0.0160 | 0.4891 | 406.1 | 28.3 | 2 |
| 10 | 60 | 1.03 | 0.711 | 10.200 | 1.800 | 0.1290 | 0.0190 | 0.2203 | 7.752 | 1.142 | 0.6200 | 0.1300 | 0.4370 | 235.8 | 135.6 | 2 |
| 11 | 60 | 4.32 | 0.243 | 3.800 | 0.880 | 0.1080 | 0.0160 | -0.1913 | 9.259 | 1.372 | 0.2550 | 0.0690 | 0.6081 | 506.5 | 92.0 | 2 |
| 12 | 60 | 1.91 | -0.085 | 0.170 | 0.180 | 0.0569 | 0.0065 | -0.0796 | 17.575 | 2.008 | -0.0140 | 0.0780 | 0.2174 | 386.1 | 54.9 | 2 |
| 13 | 60 | 27.63 | 0.126 | 1.273 | 0.110 | 0.0618 | 0.0033 | 0.2009 | 16.181 | 0.864 | 0.1550 | 0.0150 | 0.2344 | 339.0 | 19.2 | 2 |
| 14 | 60 | 3.04 | 0.375 | 4.220 | 0.550 | 0.0871 | 0.0072 | 0.0249 | 11.481 | 0.949 | 0.3550 | 0.0550 | 0.5410 | 341.9 | 46.1 | 2 |
| 15 | 60 | 0.21 | 0.274 | 4.200 | 2.100 | 0.1120 | 0.0220 | 0.1634 | 8.929 | 1.754 | 0.2800 | 0.2400 | 0.3440 | 504.0 | 222.4 | 2 |
| 16 | 60 | 10.63 | 0.025 | 0.633 | 0.100 | 0.0656 | 0.0038 | 0.0987 | 15.244 | 0.883 | 0.0750 | 0.0130 | -0.0722 | 399.6 | 23.6 | 2 |
| 17 | 60 | 10.03 | 0.006 | 0.421 | 0.078 | 0.0549 | 0.0035 | -0.0606 | 18.215 | 1.161 | 0.0580 | 0.0110 | 0.2531 | 342.6 | 22.0 | 2 |
| 18 | 60 | 2.12 | 0.608 | 1.520 | 0.370 | 0.0305 | 0.0047 | 0.2426 | 32.787 | 5.052 | 0.5300 | 0.1500 | 0.8895 | 76.5 | 38.7 | 2 |
| 19 | 60 | 2.43 | 0.058 | 0.660 | 0.190 | 0.0596 | 0.0060 | -0.0643 | 16.779 | 1.689 | 0.1000 | 0.0310 | -0.3246 | 352.3 | 37.6 | 2 |
| 20 | 60 | 1.88 | 0.167 | 1.050 | 0.380 | 0.0598 | 0.0077 | -0.0955 | 16.722 | 2.153 | 0.1870 | 0.0700 | 0.4718 | 313.3 | 51.2 | 2 |
| 21 | 60 | 18.61 | 0.012 | 0.482 | 0.064 | 0.0539 | 0.0028 | 0.1183 | 18.553 | 0.964 | 0.0630 | 0.0088 | 0.1314 | 334.4 | 17.5 | 2 |
| 22 | 60 | 21.13 | 0.180 | 1.700 | 0.200 | 0.0627 | 0.0048 | 0.5264 | 15.949 | 1.221 | 0.1980 | 0.0220 | 0.1651 | 323.0 | 26.6 | 2 |
| 23 | 60 | 5.94 | 0.093 | 1.000 | 0.150 | 0.0583 | 0.0042 | 0.2640 | 17.153 | 1.236 | 0.1280 | 0.0200 | 0.1451 | 332.1 | 25.2 | 2 |
| 24 | 60 | 13.77 | 0.082 | 0.970 | 0.130 | 0.0569 | 0.0033 | 0.1077 | 17.575 | 1.019 | 0.1190 | 0.0170 | 0.2577 | 328.2 | 20.2 | 2 |
| 25 | 60 | 0.15 | -0.016 | 6.000 | 3.900 | 0.0480 | 0.0240 | 0.2071 | 20.833 | 10.417 | 0.0400 | 0.3900 | 0.2634 | 306.8 | 209.0 | 2 |
| 26 | 60 | 6.47 | -0.008 | 0.356 | 0.090 | 0.0531 | 0.0037 | 0.2745 | 18.832 | 1.312 | 0.0470 | 0.0130 | 0.0046 | 336.0 | 23.6 | 2 |
| 27 | 60 | 1.08 | 0.199 | 0.610 | 0.490 | 0.0480 | 0.0082 | 0.0122 | 20.833 | 3.559 | 0.2100 | 0.1200 | -0.2701 | 243.3 | 60.9 | 2 |
| 28 | 60 | 15.34 | 0.002 | 0.400 | 0.054 | 0.0544 | 0.0031 | 0.1314 | 18.382 | 1.048 | 0.0547 | 0.0078 | 0.1619 | 340.9 | 19.4 | 2 |
| 29 | 60 | 9.17 | 0.009 | 0.407 | 0.083 | 0.0530 | 0.0033 | -0.0662 | 18.868 | 1.175 | 0.0600 | 0.0130 | 0.3180 | 330.1 | 20.9 | 2 |
| 30 | 60 | 13.42 | 0.004 | 0.418 | 0.062 | 0.0554 | 0.0032 | -0.1791 | 18.051 | 1.043 | 0.0569 | 0.0093 | 0.3815 | 346.1 | 20.1 | 2 |
| 31 | 60 | 39.60 | 0.974 | 91.000 | 5.600 | 0.7990 | 0.0450 | 0.7582 | 1.252 | 0.070 | 0.8240 | 0.0580 | 0.5554 | 133.7 | 372.6 | 2 |
| 32 | 60 | 10.65 | 0.007 | 0.391 | 0.073 | 0.0506 | 0.0030 | 0.2001 | 19.763 | 1.172 | 0.0580 | 0.0110 | -0.0645 | 316.2 | 18.9 | 2 |
| 33 | 60 | 1.88 | 0.872 | 35.400 | 2.800 | 0.3510 | 0.0230 | 0.5178 | 2.849 | 0.187 | 0.7520 | 0.0660 | 0.0139 | 282.3 | 181.6 | 2 |
| 34 | 60 | 41.36 | 0.013 | 0.449 | 0.045 | 0.0522 | 0.0026 | 0.0519 | 19.157 | 0.954 | 0.0633 | 0.0068 | 0.0155 | 323.9 | 16.1 | 2 |
| 35 | 60 | 73.70 | 0.014 | 0.485 | 0.045 | 0.0540 | 0.0026 | 0.3158 | 18.519 | 0.892 | 0.0643 | 0.0064 | -0.0011 | 334.4 | 16.1 | 2 |
| 36 | 60 | 2.52 | 0.011 | 0.390 | 0.170 | 0.0540 | 0.0051 | 0.1017 | 18.519 | 1.749 | 0.0620 | 0.0270 | 0.3703 | 335.4 | 33.1 | 2 |
| 37 | 60 | 4.41 | 0.021 | 0.420 | 0.130 | 0.0548 | 0.0049 | -0.1446 | 18.248 | 1.632 | 0.0700 | 0.0230 | 0.5095 | 336.9 | 31.2 | 2 |
| 38 | 60 | 0.75 | 0.482 | 0.200 | 1.100 | 0.0250 | 0.0180 | 0.5942 | 40.000 | 28.800 | 0.4300 | 0.3700 | -0.4894 | 83.0 | 95.2 | 2 |
| 39 | 60 | 6.54 | 0.105 | 1.050 | 0.190 | 0.0606 | 0.0045 | 0.1251 | 16.502 | 1.225 | 0.1380 | 0.0260 | 0.5072 | 340.4 | 27.6 | 2 |
| 40 | 60 | 17.36 | 0.011 | 0.435 | 0.058 | 0.0524 | 0.0028 | -0.0710 | 19.084 | 1.020 | 0.0618 | 0.0089 | 0.1403 | 325.7 | 17.5 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 41 | 60 | 0.69 | 0.474 | 7.200 | 2.000 | 0.1360 | 0.0230 | 0.4147 | 7.353 | 1.244 | 0.4400 | 0.1400 | 0.4102 | 445.1 | 161.2 | 2 |
| 42 | 60 | 16.36 | 0.011 | 0.430 | 0.064 | 0.0513 | 0.0032 | -0.0435 | 19.493 | 1.216 | 0.0617 | 0.0099 | 0.3286 | 319.0 | 20.0 | 2 |
| 43 | 60 | 1.84 | 0.045 | 0.690 | 0.320 | 0.0582 | 0.0078 | 0.1600 | 17.182 | 2.303 | 0.0900 | 0.0460 | -0.0552 | 348.6 | 50.3 | 2 |
| 44 | 60 | 118.90 | 0.023 | 0.496 | 0.041 | 0.0505 | 0.0026 | 0.2192 | 19.802 | 1.020 | 0.0711 | 0.0065 | 0.2970 | 310.4 | 15.9 | 2 |
| 45 | 60 | 7.85 | -0.003 | 0.386 | 0.086 | 0.0550 | 0.0038 | 0.0361 | 18.182 | 1.256 | 0.0510 | 0.0120 | 0.1111 | 346.2 | 24.1 | 2 |
| 46 | 60 | 1.20 | 0.719 | 9.700 | 1.200 | 0.1177 | 0.0110 | 0.2729 | 8.496 | 0.794 | 0.6250 | 0.0880 | 0.1488 | 209.6 | 83.8 | 2 |
| 47 | 60 | 6.89 | 0.003 | 0.398 | 0.084 | 0.0566 | 0.0036 | -0.0579 | 17.668 | 1.124 | 0.0560 | 0.0120 | 0.2560 | 353.9 | 22.7 | 2 |
| 48 | 60 | 7.14 | 0.787 | 5.520 | 0.570 | 0.0609 | 0.0058 | 0.2010 | 16.420 | 1.564 | 0.6720 | 0.0880 | 0.6386 | 83.1 | 43.9 | 2 |
| 49 | 60 | 1.44 | 0.022 | 0.530 | 0.280 | 0.0632 | 0.0070 | -0.1076 | 15.823 | 1.753 | 0.0720 | 0.0430 | 0.1084 | 386.7 | 46.9 | 2 |
| 50 | 60 | 0.33 | 0.232 | -0.300 | 1.200 | 0.0700 | 0.0180 | -0.2378 | 14.286 | 3.673 | 0.2400 | 0.2000 | 0.4249 | 337.5 | 137.2 | 2 |
| 51 | 60 | 7.97 | 0.006 | 0.373 | 0.083 | 0.0488 | 0.0032 | 0.0326 | 20.492 | 1.344 | 0.0570 | 0.0130 | 0.1733 | 305.5 | 20.3 | 2 |
| 52 | 60 | 11.49 | 0.530 | 2.220 | 0.270 | 0.0347 | 0.0025 | 0.0086 | 28.818 | 2.076 | 0.4690 | 0.0660 | 0.4507 | 104.3 | 19.8 | 2 |
| 53 | 60 | 13.94 | 0.003 | 0.387 | 0.067 | 0.0522 | 0.0028 | -0.0118 | 19.157 | 1.028 | 0.0555 | 0.0100 | 0.1151 | 327.0 | 17.7 | 2 |
| 54 | 60 | 9.73 | -0.005 | 0.352 | 0.067 | 0.0554 | 0.0034 | -0.0327 | 18.051 | 1.108 | 0.0497 | 0.0098 | 0.1912 | 349.2 | 21.5 | 2 |
| 55 | 60 | 4.59 | 0.010 | 0.410 | 0.120 | 0.0538 | 0.0048 | 0.1572 | 18.587 | 1.658 | 0.0610 | 0.0180 | 0.2958 | 334.6 | 30.3 | 2 |
| 56 | 60 | 2.93 | 0.223 | 1.980 | 0.330 | 0.0671 | 0.0060 | -0.0412 | 14.903 | 1.333 | 0.2320 | 0.0420 | 0.4261 | 327.8 | 36.1 | 2 |
| 57 | 60 | 4.30 | 0.147 | 0.370 | 0.110 | 0.0206 | 0.0024 | 0.0936 | 48.544 | 5.656 | 0.1650 | 0.0680 | 0.5978 | 112.3 | 17.2 | 2 |
| 58 | 60 | 7.31 | -0.006 | 0.344 | 0.092 | 0.0533 | 0.0039 | -0.0354 | 18.762 | 1.373 | 0.0480 | 0.0140 | 0.2641 | 336.9 | 24.9 | 2 |
| 59 | 60 | 11.29 | 0.016 | 0.473 | 0.080 | 0.0515 | 0.0033 | -0.2703 | 19.417 | 1.244 | 0.0660 | 0.0120 | 0.4626 | 318.5 | 20.7 | 2 |
| 60 | 60 | 34.20 | 0.055 | 0.846 | 0.100 | 0.0621 | 0.0037 | -0.1260 | 16.103 | 0.959 | 0.0980 | 0.0130 | 0.4524 | 367.7 | 22.4 | 2 |
| 61 | 60 | 3.94 | 0.332 | 4.400 | 0.650 | 0.0954 | 0.0075 | 0.0515 | 10.482 | 0.824 | 0.3230 | 0.0520 | 0.3548 | 398.1 | 48.6 | 2 |
| 62 | 60 | 2.68 | 0.051 | 0.690 | 0.320 | 0.0507 | 0.0050 | 0.0672 | 19.724 | 1.945 | 0.0930 | 0.0450 | -0.0760 | 303.1 | 34.3 | 2 |
| 63 | 60 | 3.12 | 0.032 | 0.650 | 0.210 | 0.0641 | 0.0065 | 0.0665 | 15.601 | 1.582 | 0.0800 | 0.0300 | 0.4862 | 388.2 | 41.3 | 2 |
| 64 | 60 | 43.51 | -0.002 | 0.493 | 0.047 | 0.0662 | 0.0033 | 0.1605 | 15.106 | 0.753 | 0.0535 | 0.0055 | 0.2424 | 414.0 | 20.4 | 2 |
| 65 | 60 | 1.33 | 0.050 | 1.110 | 0.530 | 0.0810 | 0.0450 | -0.9993 | 12.346 | 6.859 | 0.0970 | 0.0740 | 0.1839 | 478.0 | 263.6 | 2 |
| 66 | 60 | 0.67 | -0.285 | -1.250 | 0.230 | 0.0540 | 0.0260 | 0.1433 | 18.519 | 8.916 | -0.1750 | 0.0900 | -0.8929 | 432.4 | 207.3 | 2 |
| 67 | 60 | 0.96 | 0.109 | 0.480 | 0.470 | 0.0554 | 0.0097 | -0.0355 | 18.051 | 3.160 | 0.1400 | 0.1000 | 0.4067 | 310.7 | 68.5 | 2 |
| 68 | 60 | 7.31 | 0.383 | 1.470 | 0.250 | 0.0313 | 0.0041 | 0.2513 | 31.949 | 4.185 | 0.3530 | 0.0690 | 0.3596 | 123.3 | 23.6 | 2 |
| 69 | 60 | 10.98 | 0.013 | 0.500 | 0.130 | 0.0560 | 0.0035 | 0.0156 | 17.857 | 1.116 | 0.0640 | 0.0160 | -0.0305 | 346.8 | 22.4 | 2 |
| 70 | 60 | 11.94 | 0.193 | 1.550 | 0.180 | 0.0560 | 0.0036 | 0.0380 | 17.857 | 1.148 | 0.2070 | 0.0270 | 0.0617 | 284.9 | 21.5 | 2 |
| 71 | 60 | 6.32 | 0.008 | 0.450 | 0.110 | 0.0540 | 0.0052 | -0.0142 | 18.519 | 1.783 | 0.0600 | 0.0160 | 0.1621 | 336.2 | 32.5 | 2 |
| 72 | 60 | 37.14 | 0.003 | 0.399 | 0.041 | 0.0529 | 0.0028 | -0.0508 | 18.904 | 1.001 | 0.0553 | 0.0063 | 0.3170 | 331.4 | 17.4 | 2 |
| 73 | 60 | 19.18 | 0.000 | 0.399 | 0.053 | 0.0540 | 0.0029 | -0.0359 | 18.519 | 0.995 | 0.0533 | 0.0076 | 0.2181 | 339.0 | 18.2 | 2 |
| 74 | 60 | 2.14 | 0.014 | 0.410 | 0.430 | 0.0625 | 0.0094 | -0.2414 | 16.000 | 2.406 | 0.0660 | 0.0690 | 0.8671 | 385.3 | 65.7 | 2 |
| 75 | 60 | 11.44 | 0.065 | 0.790 | 0.098 | 0.0535 | 0.0033 | 0.0063 | 18.692 | 1.153 | 0.1050 | 0.0150 | 0.4415 | 314.6 | 20.1 | 2 |
| 76 | 60 | 40.76 | 0.008 | 0.599 | 0.059 | 0.0667 | 0.0036 | 0.0407 | 14.993 | 0.809 | 0.0618 | 0.0069 | 0.3959 | 412.9 | 22.1 | 2 |
| 77 | 60 | 33.37 | -0.007 | 0.367 | 0.045 | 0.0552 | 0.0028 | 0.2670 | 18.116 | 0.919 | 0.0480 | 0.0060 | -0.0447 | 348.7 | 17.6 | 2 |
| 78 | 60 | 5.58 | 0.884 | 51.900 | 6.400 | 0.4730 | 0.0540 | 0.8006 | 2.114 | 0.241 | 0.7650 | 0.0600 | 0.1306 | 345.5 | 222.6 | 2 |
| 79 | 60 | 0.72 | 0.791 | 9.000 | 4.500 | 0.1230 | 0.0280 | -0.0313 | 8.130 | 1.851 | 0.6800 | 0.4000 | -0.0541 | 163.3 | 391.5 | 2 |
| 80 | 60 | 7.42 | 0.028 | 0.500 | 0.120 | 0.0498 | 0.0037 | 0.0386 | 20.080 | 1.492 | 0.0750 | 0.0190 | -0.0228 | 304.7 | 23.5 | 2 |
| 81 | 60 | 3.34 | -0.011 | 0.380 | 0.160 | 0.0569 | 0.0053 | 0.2244 | 17.575 | 1.637 | 0.0450 | 0.0220 | -0.1460 | 360.5 | 34.4 | 2 |
| 82 | 60 | 8.01 | -0.009 | 0.349 | 0.091 | 0.0547 | 0.0039 | 0.0673 | 18.282 | 1.303 | 0.0460 | 0.0120 | -0.0552 | 346.4 | 24.8 | 2 |
| 83 | 60 | 0.30 | 0.282 | 3.900 | 3.100 | 0.0740 | 0.0210 | -0.0904 | 13.514 | 3.835 | 0.2800 | 0.4100 | 0.1322 | 333.8 | 250.9 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 84 | 60 | 2.17 | 0.518 | 5.050 | 0.670 | 0.0837 | 0.0098 | -0.1126 | 11.947 | 1.399 | 0.4660 | 0.0700 | 0.6406 | 255.2 | 54.4 | 2 |
| 85 | 60 | 4.62 | 0.000 | 0.430 | 0.130 | 0.0549 | 0.0047 | 0.1667 | 18.215 | 1.559 | 0.0530 | 0.0180 | 0.2122 | 344.7 | 30.0 | 2 |
| 86 | 60 | 0.77 | 0.264 | 3.500 | 1.800 | 0.0980 | 0.0210 | 0.2906 | 10.204 | 2.187 | 0.2700 | 0.1400 | 0.4424 | 448.8 | 139.7 | 2 |
| 87 | 60 | 9.33 | 0.002 | 0.351 | 0.095 | 0.0490 | 0.0042 | -0.0148 | 20.408 | 1.749 | 0.0540 | 0.0150 | 0.3542 | 307.8 | 26.6 | 2 |
| 88 | 60 | 0.17 | 0.750 | -4.870 | 0.900 | 0.0200 | 0.0650 | -0.0221 | 50.000 | 162.500 | 0.6400 | 0.3700 | -0.0147 | 32.1 | 120.3 | 2 |
| 89 | 60 | 1.25 | 0.744 | 5.100 | 1.600 | 0.0710 | 0.0120 | 0.1189 | 14.085 | 2.380 | 0.6400 | 0.2600 | 0.4824 | 115.9 | 148.8 | 2 |
| 90 | 60 | 7.99 | 0.003 | 0.400 | 0.110 | 0.0517 | 0.0038 | -0.0793 | 19.342 | 1.422 | 0.0550 | 0.0150 | 0.3134 | 324.1 | 24.2 | 2 |
| 91 | 60 | 9.73 | 0.033 | 0.630 | 0.130 | 0.0546 | 0.0040 | -0.1618 | 18.315 | 1.342 | 0.0800 | 0.0170 | 0.5397 | 331.5 | 24.9 | 2 |
| 92 | 60 | 7.57 | -0.022 | 0.258 | 0.096 | 0.0504 | 0.0045 | 0.2838 | 19.841 | 1.772 | 0.0350 | 0.0150 | 0.1117 | 323.9 | 29.0 | 2 |
| 93 | 60 | 12.04 | 0.009 | 0.397 | 0.067 | 0.0516 | 0.0036 | -0.0732 | 19.380 | 1.352 | 0.0600 | 0.0110 | 0.3608 | 321.5 | 22.5 | 2 |
| 94 | 60 | 23.27 | 0.001 | 0.397 | 0.049 | 0.0539 | 0.0029 | 0.0600 | 18.553 | 0.998 | 0.0537 | 0.0071 | 0.2111 | 338.2 | 18.1 | 2 |
| 95 | 60 | 33.14 | 0.004 | 0.833 | 0.072 | 0.0954 | 0.0045 | 0.3661 | 10.482 | 0.494 | 0.0630 | 0.0056 | -0.0499 | 585.0 | 27.2 | 2 |
| 96 | 60 | 7.07 | 0.103 | 0.140 | 0.110 | 0.0139 | 0.0018 | -0.1540 | 71.942 | 9.316 | 0.1290 | 0.0980 | 0.6670 | 79.9 | 15.0 | 2 |
| 97 | 60 | 7.83 | 0.009 | 0.442 | 0.098 | 0.0520 | 0.0038 | 0.0996 | 19.231 | 1.405 | 0.0600 | 0.0140 | 0.1738 | 324.0 | 24.0 | 2 |
| 98 | 60 | 1.73 | 0.069 | 1.400 | 1.100 | 0.0680 | 0.0150 | -0.4417 | 14.706 | 3.244 | 0.1100 | 0.1100 | 0.7439 | 395.9 | 102.8 | 2 |
| 99 | 60 | 0.59 | 1.006 | 11.500 | 3.100 | 0.1200 | 0.0300 | 0.2905 | 8.333 | 2.083 | 0.8400 | 0.2600 | 0.6311 | -4.6 | 255.1 | 2 |
| 100 | 60 | 7.04 | 0.028 | 0.580 | 0.150 | 0.0546 | 0.0042 | 0.1587 | 18.315 | 1.409 | 0.0760 | 0.0210 | -0.0689 | 333.2 | 26.7 | 2 |
| 101 | 60 | 11.13 | -0.005 | 0.334 | 0.069 | 0.0499 | 0.0031 | -0.1076 | 20.040 | 1.245 | 0.0490 | 0.0110 | 0.3518 | 315.3 | 19.7 | 2 |
| 102 | 60 | 5.12 | -0.027 | 0.270 | 0.120 | 0.0543 | 0.0042 | -0.0046 | 18.416 | 1.424 | 0.0320 | 0.0160 | -0.0903 | 349.7 | 27.4 | 2 |
| 103 | 60 | 11.62 | 0.031 | 0.553 | 0.085 | 0.0540 | 0.0034 | 0.1532 | 18.519 | 1.166 | 0.0780 | 0.0130 | 0.0703 | 328.8 | 21.1 | 2 |
| 104 | 60 | 10.98 | 0.004 | 0.381 | 0.085 | 0.0504 | 0.0032 | -0.0559 | 19.841 | 1.260 | 0.0560 | 0.0130 | 0.0386 | 315.7 | 20.4 | 2 |
| 105 | 60 | 2.14 | 0.025 | 0.160 | 0.260 | 0.0612 | 0.0095 | -0.3101 | 16.340 | 2.536 | 0.0740 | 0.0720 | 0.8962 | 373.7 | 66.1 | 2 |
| 106 | 60 | 35.70 | 0.101 | 0.888 | 0.110 | 0.0489 | 0.0036 | 0.0462 | 20.450 | 1.506 | 0.1330 | 0.0170 | 0.3117 | 277.3 | 21.1 | 2 |
| 107 | 60 | 1.04 | 0.962 | 27.800 | 3.900 | 0.2680 | 0.0370 | 0.5727 | 3.731 | 0.515 | 0.8100 | 0.1200 | 0.7133 | 64.6 | 260.2 | 2 |
| 108 | 60 | 17.23 | -0.011 | 0.322 | 0.065 | 0.0541 | 0.0037 | -0.1250 | 18.484 | 1.264 | 0.0448 | 0.0090 | 0.0597 | 343.2 | 23.4 | 2 |
| 109 | 60 | 63.20 | -0.004 | 0.100 | 0.014 | 0.0157 | 0.0009 | 0.0837 | 63.816 | 3.502 | 0.0450 | 0.0066 | 0.1944 | 100.6 | 5.6 | 2 |
| 110 | 60 | 4.85 | 0.129 | 0.460 | 0.210 | 0.0173 | 0.0031 | 0.4672 | 57.803 | 10.358 | 0.1500 | 0.1000 | 0.1831 | 96.5 | 22.1 | 2 |
| 111 | 60 | 12.44 | 0.003 | 0.379 | 0.073 | 0.0513 | 0.0032 | -0.0537 | 19.493 | 1.216 | 0.0550 | 0.0110 | 0.2586 | 321.7 | 20.2 | 2 |
| 112 | 60 | 16.41 | 0.024 | 0.680 | 0.160 | 0.0577 | 0.0049 | 0.3952 | 17.331 | 1.472 | 0.0730 | 0.0160 | 0.0680 | 353.1 | 30.3 | 2 |
| 113 | 60 | 2.43 | -0.023 | 0.250 | 0.270 | 0.0485 | 0.0082 | -0.0961 | 20.619 | 3.486 | 0.0340 | 0.0470 | -0.1114 | 312.2 | 54.9 | 2 |
| 114 | 60 | 12.43 | 0.099 | 1.150 | 0.180 | 0.0604 | 0.0038 | 0.0323 | 16.556 | 1.042 | 0.1330 | 0.0210 | 0.2829 | 341.6 | 23.3 | 2 |
| 115 | 60 | 199.40 | 0.001 | 0.384 | 0.027 | 0.0505 | 0.0025 | 0.2998 | 19.802 | 0.980 | 0.0536 | 0.0042 | 0.2383 | 317.3 | 15.5 | 2 |
| 116 | 60 | 9.74 | 0.016 | 0.460 | 0.093 | 0.0533 | 0.0039 | 0.0237 | 18.762 | 1.373 | 0.0660 | 0.0140 | 0.0673 | 329.5 | 24.4 | 2 |
| 117 | 60 | 0.95 | 0.327 | 2.000 | 1.600 | 0.0400 | 0.0120 | -0.0595 | 25.000 | 7.500 | 0.3100 | 0.3200 | 0.3728 | 171.3 | 113.3 | 2 |
| 118 | 60 | 5.93 | 0.021 | 0.610 | 0.140 | 0.0584 | 0.0041 | 0.0998 | 17.123 | 1.202 | 0.0710 | 0.0160 | 0.1285 | 358.2 | 25.7 | 2 |
| 119 | 60 | 2.22 | 0.147 | 1.930 | 0.480 | 0.0836 | 0.0090 | -0.1807 | 11.962 | 1.288 | 0.1750 | 0.0420 | 0.6177 | 444.0 | 53.8 | 2 |
| 120 | 60 | 10.78 | 0.026 | 0.640 | 0.110 | 0.0605 | 0.0034 | 0.0524 | 16.529 | 0.929 | 0.0750 | 0.0140 | 0.1719 | 369.1 | 21.4 | 2 |
| 121 | 60 | 5.38 | 0.928 | 66.700 | 7.600 | 0.6040 | 0.0660 | 0.9611 | 1.656 | 0.181 | 0.7960 | 0.0580 | 0.1195 | 275.5 | 275.9 | 2 |
| 122 | 60 | 30.01 | -0.006 | 0.353 | 0.042 | 0.0514 | 0.0028 | 0.0310 | 19.455 | 1.060 | 0.0484 | 0.0063 | 0.2272 | 324.9 | 17.6 | 2 |

| **105 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235** | **206/238** | **206/238** | **ρ** | **238/206** | **238/206** | **207/206** | **207/206** | **ρ** | **$^{207}Pb$** | **$^{207}Pb$** | **Pb** |

| | size (μm) | | | | 2σ | | 2σ | | | 2σ | | 2σ | | corrected Age (Ma) | corrected Age 2σ | correction type |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60 | 14.33 | 0.121 | 1.380 | 0.250 | 0.0596 | 0.0040 | 0.7507 | 16.779 | 1.126 | 0.1500 | 0.0200 | -0.4297 | 329.3 | 23.6 | 2 |
| 2 | 60 | 19.23 | 0.174 | 1.840 | 0.330 | 0.0652 | 0.0045 | 0.7979 | 15.337 | 1.059 | 0.1930 | 0.0290 | -0.5603 | 338.3 | 27.2 | 2 |
| 3 | 60 | 1.88 | 0.189 | 1.940 | 0.480 | 0.0638 | 0.0069 | 0.4739 | 15.674 | 1.695 | 0.2050 | 0.0530 | -0.0073 | 325.2 | 43.3 | 2 |
| 4 | 60 | 11.43 | 0.026 | 0.355 | 0.066 | 0.0519 | 0.0030 | 0.2377 | 19.268 | 1.114 | 0.0516 | 0.0098 | -0.0372 | 326.7 | 19.0 | 2 |
| 5 | 60 | 5.16 | 0.011 | 0.400 | 0.130 | 0.0535 | 0.0042 | 0.4194 | 18.692 | 1.467 | 0.0620 | 0.0210 | 0.0207 | 332.3 | 27.1 | 2 |
| 6 | 60 | 6.68 | 0.101 | 1.030 | 0.170 | 0.0586 | 0.0040 | 0.5278 | 17.065 | 1.165 | 0.1340 | 0.0220 | 0.1147 | 331.1 | 24.3 | 2 |
| 7 | 60 | 70.70 | 0.002 | 0.406 | 0.031 | 0.0524 | 0.0027 | 0.3292 | 19.084 | 0.983 | 0.0544 | 0.0037 | -0.0136 | 328.7 | 16.7 | 2 |
| 8 | 60 | 1.10 | 1.049 | 25.300 | 3.600 | 0.2190 | 0.0300 | 0.8279 | 4.566 | 0.626 | 0.8700 | 0.1000 | 0.8989 | -70.0 | 182.1 | 2 |
| 9 | 60 | 16.10 | 0.007 | 0.425 | 0.059 | 0.0523 | 0.0029 | 0.1568 | 19.120 | 1.060 | 0.0584 | 0.0082 | 0.0696 | 326.5 | 18.1 | 2 |
| 10 | 60 | 5.87 | 0.035 | 0.580 | 0.170 | 0.0520 | 0.0039 | 0.6874 | 19.231 | 1.442 | 0.0810 | 0.0240 | -0.2443 | 315.6 | 25.2 | 2 |
| 11 | 60 | 4.58 | 0.363 | 3.770 | 0.340 | 0.0804 | 0.0057 | 0.4306 | 12.438 | 0.882 | 0.3450 | 0.0310 | 0.1251 | 321.8 | 29.6 | 2 |
| 12 | 60 | 17.05 | 0.511 | 10.100 | 1.500 | 0.1410 | 0.0150 | 0.9654 | 7.092 | 0.754 | 0.4690 | 0.0360 | -0.6905 | 429.8 | 59.1 | 2 |
| 13 | 60 | 2.76 | 0.377 | 10.300 | 4.800 | 0.1330 | 0.0410 | 0.9897 | 7.519 | 2.318 | 0.3640 | 0.0640 | -0.3558 | 513.3 | 167.1 | 2 |
| 14 | 60 | 0.98 | 0.499 | 8.000 | 1.700 | 0.1220 | 0.0190 | 0.8232 | 8.197 | 1.277 | 0.4570 | 0.0910 | 0.6540 | 382.4 | 102.8 | 2 |
| 15 | 60 | 2.86 | 0.110 | 0.860 | 0.250 | 0.0539 | 0.0055 | 0.6553 | 18.553 | 1.893 | 0.1410 | 0.0380 | 0.5498 | 301.9 | 34.2 | 2 |
| 16 | 60 | 0.82 | 0.246 | 1.200 | 0.620 | 0.0650 | 0.0099 | 0.7380 | 15.385 | 2.343 | 0.2500 | 0.1300 | 0.6976 | 308.5 | 80.0 | 2 |
| 17 | 60 | 2.90 | 0.258 | 8.000 | 3.200 | 0.1370 | 0.0340 | 0.9732 | 7.299 | 1.811 | 0.2720 | 0.0580 | -0.5737 | 623.8 | 161.4 | 2 |
| 18 | 60 | 5.85 | 0.228 | 2.370 | 0.450 | 0.0718 | 0.0069 | 0.8612 | 13.928 | 1.338 | 0.2370 | 0.0370 | -0.2454 | 347.8 | 38.7 | 2 |
| 19 | 60 | 7.89 | 0.148 | 1.380 | 0.170 | 0.0588 | 0.0039 | 0.4718 | 17.007 | 1.128 | 0.1720 | 0.0190 | 0.0426 | 315.0 | 22.3 | 2 |
| 20 | 60 | 2.98 | 0.090 | 0.270 | 0.350 | 0.0207 | 0.0063 | 0.0395 | 48.309 | 14.703 | 0.1200 | 0.1700 | 0.5582 | 120.3 | 46.0 | 2 |
| 21 | 60 | 63.50 | 0.003 | 0.378 | 0.026 | 0.0502 | 0.0025 | 0.2823 | 19.920 | 0.992 | 0.0548 | 0.0038 | 0.0644 | 314.9 | 15.5 | 2 |
| 22 | 60 | 1.78 | 0.313 | 2.670 | 0.680 | 0.0731 | 0.0080 | 0.6212 | 13.680 | 1.497 | 0.3040 | 0.0730 | 0.9981 | 316.1 | 53.4 | 2 |
| 23 | 60 | 2.14 | -0.009 | 0.210 | 0.210 | 0.0549 | 0.0060 | 0.4002 | 18.215 | 1.991 | 0.0460 | 0.0370 | -0.7256 | 347.6 | 40.5 | 2 |
| 24 | 60 | 21.17 | 0.205 | 1.920 | 0.210 | 0.0667 | 0.0041 | 0.8980 | 14.993 | 0.922 | 0.2180 | 0.0210 | -0.5812 | 333.1 | 22.9 | 2 |
| 25 | 60 | 9.07 | 0.044 | 0.660 | 0.140 | 0.0569 | 0.0037 | 0.4347 | 17.575 | 1.143 | 0.0890 | 0.0190 | -0.1180 | 341.3 | 23.4 | 2 |
| 26 | 60 | 6.47 | 0.047 | 0.660 | 0.120 | 0.0551 | 0.0036 | 0.1551 | 18.149 | 1.186 | 0.0910 | 0.0170 | 0.2178 | 329.8 | 22.4 | 2 |
| 27 | 60 | 4.72 | 0.032 | 0.580 | 0.160 | 0.0494 | 0.0042 | 0.4205 | 20.243 | 1.721 | 0.0780 | 0.0240 | -0.1050 | 301.1 | 26.8 | 2 |
| 28 | 60 | 1.11 | 0.255 | 1.590 | 0.470 | 0.0562 | 0.0077 | 0.6271 | 17.794 | 2.438 | 0.2560 | 0.0870 | 0.2243 | 264.4 | 52.2 | 2 |
| 29 | 60 | 7.47 | 0.011 | 0.434 | 0.086 | 0.0539 | 0.0038 | 0.0344 | 18.553 | 1.308 | 0.0620 | 0.0130 | 0.0932 | 334.8 | 23.8 | 2 |
| 30 | 60 | 0.91 | 0.194 | 2.420 | 0.900 | 0.0880 | 0.0130 | 0.8351 | 11.364 | 1.679 | 0.2130 | 0.0720 | 0.4926 | 441.6 | 79.8 | 2 |
| 31 | 60 | 26.91 | 0.007 | 0.418 | 0.044 | 0.0520 | 0.0029 | 0.0619 | 19.231 | 1.072 | 0.0589 | 0.0063 | 0.2544 | 324.4 | 18.0 | 2 |
| 32 | 60 | 15.40 | 0.010 | 0.445 | 0.058 | 0.0526 | 0.0029 | 0.0498 | 19.011 | 1.048 | 0.0610 | 0.0079 | 0.2151 | 327.2 | 18.0 | 2 |
| 33 | 60 | 4.77 | 0.057 | 0.670 | 0.150 | 0.0546 | 0.0046 | 0.5518 | 18.315 | 1.543 | 0.0990 | 0.0230 | 0.0635 | 323.5 | 28.5 | 2 |
| 34 | 60 | 52.80 | 0.009 | 0.398 | 0.026 | 0.0496 | 0.0027 | 0.0600 | 20.161 | 1.097 | 0.0601 | 0.0046 | 0.4017 | 309.2 | 16.7 | 2 |
| 35 | 60 | 18.99 | 0.581 | 18.470 | 0.610 | 0.2477 | 0.0130 | 0.7052 | 4.037 | 0.212 | 0.5370 | 0.0120 | -0.0705 | 636.0 | 40.1 | 2 |
| 36 | 60 | 1.73 | 0.085 | 0.800 | 0.290 | 0.0588 | 0.0059 | 0.2858 | 17.007 | 1.706 | 0.1220 | 0.0530 | 0.8176 | 337.7 | 41.0 | 2 |
| 37 | 60 | 50.60 | 0.072 | 0.840 | 0.120 | 0.0570 | 0.0034 | 0.6219 | 17.544 | 1.046 | 0.1110 | 0.0150 | -0.3618 | 332.3 | 20.6 | 2 |
| 38 | 60 | 25.18 | 0.000 | 0.359 | 0.039 | 0.0501 | 0.0032 | 0.0879 | 19.960 | 1.275 | 0.0523 | 0.0058 | 0.1153 | 315.3 | 20.0 | 2 |
| 39 | 60 | 28.01 | 0.011 | 0.457 | 0.051 | 0.0539 | 0.0029 | 0.2771 | 18.553 | 0.998 | 0.0617 | 0.0067 | -0.0449 | 334.9 | 17.9 | 2 |
| 40 | 60 | 2.52 | 0.638 | 16.700 | 2.600 | 0.1980 | 0.0250 | 0.8891 | 5.051 | 0.638 | 0.5730 | 0.0600 | -0.4430 | 445.7 | 105.4 | 2 |
| 42 | 60 | 0.66 | 0.761 | 12.900 | 4.400 | 0.1570 | 0.0430 | 0.9418 | 6.369 | 1.744 | 0.6600 | 0.2100 | 0.4830 | 237.4 | 265.6 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 43 | 60 | 8.14 | 0.016 | 0.432 | 0.091 | 0.0524 | 0.0038 | 0.5750 | 19.084 | 1.384 | 0.0660 | 0.0150 | -0.1971 | 324.0 | 23.9 | 2 |
| 44 | 60 | 8.05 | 0.041 | 0.567 | 0.091 | 0.0500 | 0.0035 | 0.2154 | 20.000 | 1.400 | 0.0850 | 0.0140 | 0.0238 | 302.0 | 21.5 | 2 |
| 45 | 60 | 7.36 | 0.174 | 1.630 | 0.180 | 0.0616 | 0.0039 | 0.4187 | 16.234 | 1.028 | 0.1930 | 0.0200 | 0.0536 | 319.8 | 22.1 | 2 |
| 46 | 60 | 5.46 | 0.062 | 0.670 | 0.130 | 0.0557 | 0.0043 | 0.0384 | 17.953 | 1.386 | 0.1030 | 0.0230 | 0.2424 | 328.2 | 26.8 | 2 |
| 47 | 60 | 4.17 | 0.054 | 0.660 | 0.150 | 0.0517 | 0.0043 | 0.3017 | 19.342 | 1.609 | 0.0960 | 0.0220 | 0.0587 | 307.8 | 26.7 | 2 |
| 48 | 60 | 3.94 | 0.039 | 0.550 | 0.150 | 0.0522 | 0.0042 | 0.0881 | 19.157 | 1.541 | 0.0840 | 0.0210 | 0.0841 | 315.5 | 26.4 | 2 |
| 49 | 60 | 1.19 | 0.151 | 1.120 | 0.430 | 0.0637 | 0.0081 | 0.2179 | 15.699 | 1.996 | 0.1750 | 0.0780 | 0.4596 | 339.4 | 57.1 | 2 |
| 50 | 60 | 16.64 | 0.049 | 0.731 | 0.085 | 0.0594 | 0.0036 | 0.2381 | 16.835 | 1.020 | 0.0930 | 0.0120 | -0.0363 | 354.3 | 21.8 | 2 |
| 51 | 60 | 16.96 | 0.099 | 1.066 | 0.094 | 0.0618 | 0.0037 | 0.3935 | 16.181 | 0.969 | 0.1330 | 0.0140 | -0.0598 | 349.4 | 21.6 | 2 |
| 52 | 60 | 1.17 | 0.008 | 1.110 | 0.390 | 0.0572 | 0.0076 | 0.4814 | 17.483 | 2.323 | 0.0600 | 0.2900 | 0.6881 | 355.8 | 135.1 | 2 |
| 53 | 60 | 8.44 | 0.021 | 0.550 | 0.100 | 0.0538 | 0.0036 | 0.2645 | 18.587 | 1.244 | 0.0700 | 0.0130 | 0.0319 | 330.9 | 22.4 | 2 |
| 54 | 60 | 0.73 | 0.833 | 6.700 | 1.200 | 0.0980 | 0.0130 | 0.6451 | 10.204 | 1.354 | 0.7100 | 0.2200 | 0.7111 | 104.4 | 173.3 | 2 |
| 55 | 60 | 0.47 | 0.666 | 6.200 | 1.700 | 0.0760 | 0.0210 | 0.9096 | 13.158 | 3.636 | 0.5800 | 0.4100 | 0.4622 | 161.6 | 250.8 | 2 |
| 56 | 60 | 21.87 | 0.051 | 6.950 | 0.420 | 0.3376 | 0.0180 | 0.5217 | 2.962 | 0.158 | 0.1539 | 0.0093 | -0.0511 | 1791.8 | 95.6 | 2 |
| 57 | 60 | 14.60 | 1.074 | 19.100 | 6.000 | 0.1260 | 0.0320 | 0.4607 | 7.937 | 2.016 | 0.8900 | 0.2600 | 0.0192 | -60.4 | 271.1 | 2 |
| 58 | 60 | 1.90 | 0.455 | 12.900 | 2.800 | 0.1850 | 0.0260 | 0.8876 | 5.405 | 0.760 | 0.4330 | 0.0660 | -0.1839 | 618.8 | 123.1 | 2 |
| 59 | 60 | 5.90 | -0.001 | 0.370 | 0.100 | 0.0556 | 0.0045 | 0.3037 | 17.986 | 1.456 | 0.0530 | 0.0140 | -0.1230 | 349.0 | 28.4 | 2 |
| 60 | 60 | 3.33 | 0.372 | 4.810 | 0.680 | 0.0984 | 0.0095 | 0.6589 | 10.163 | 0.981 | 0.3550 | 0.0430 | 0.0012 | 386.3 | 48.8 | 2 |
| 61 | 60 | 1.27 | 0.042 | 1.300 | 0.430 | 0.0737 | 0.0091 | 0.6998 | 13.569 | 1.675 | 0.0900 | 0.1000 | 0.5695 | 439.6 | 76.9 | 2 |
| 62 | 60 | 2.79 | 0.046 | 0.630 | 0.190 | 0.0568 | 0.0050 | 0.6218 | 17.606 | 1.550 | 0.0900 | 0.0280 | -0.2693 | 340.3 | 31.9 | 2 |
| 63 | 60 | 3.16 | 0.174 | 1.440 | 0.270 | 0.0573 | 0.0051 | 0.3854 | 17.452 | 1.553 | 0.1920 | 0.0400 | 0.0904 | 298.1 | 31.6 | 2 |
| 64 | 60 | 0.31 | 0.219 | 3.500 | 1.500 | 0.0730 | 0.0160 | 0.5902 | 13.699 | 3.002 | 0.2300 | 0.1700 | 0.0390 | 357.5 | 122.2 | 2 |
| 65 | 60 | 3.33 | 0.652 | 22.300 | 3.500 | 0.2600 | 0.0350 | 0.9215 | 3.846 | 0.518 | 0.5900 | 0.0470 | -0.1316 | 559.1 | 116.8 | 2 |
| 66 | 60 | 4.60 | 0.370 | 4.620 | 0.550 | 0.0964 | 0.0073 | 0.7218 | 10.373 | 0.786 | 0.3530 | 0.0330 | -0.0212 | 379.9 | 37.3 | 2 |
| 67 | 60 | 6.50 | 0.198 | 2.110 | 0.280 | 0.0744 | 0.0059 | 0.4258 | 13.441 | 1.066 | 0.2140 | 0.0250 | 0.0098 | 373.5 | 32.4 | 2 |
| 68 | 60 | 0.28 | 0.735 | 22.600 | 4.800 | 0.2610 | 0.0440 | 0.7438 | 3.831 | 0.646 | 0.6500 | 0.1300 | 0.1020 | 431.8 | 266.1 | 2 |
| 69 | 60 | 6.02 | 0.010 | 0.370 | 0.110 | 0.0539 | 0.0042 | 0.0942 | 18.553 | 1.446 | 0.0610 | 0.0180 | 0.2642 | 335.2 | 26.8 | 2 |
| 70 | 60 | 6.28 | 0.014 | 0.440 | 0.110 | 0.0536 | 0.0041 | 0.2306 | 18.657 | 1.427 | 0.0640 | 0.0180 | 0.0188 | 332.1 | 26.1 | 2 |
| 71 | 60 | 1.15 | 0.231 | 2.230 | 0.610 | 0.0737 | 0.0097 | 0.3845 | 13.569 | 1.786 | 0.2400 | 0.1000 | 0.3659 | 355.2 | 72.7 | 2 |
| 72 | 60 | 11.07 | 0.395 | 5.330 | 0.630 | 0.1005 | 0.0086 | 0.8781 | 9.950 | 0.851 | 0.3730 | 0.0260 | -0.2175 | 380.5 | 37.7 | 2 |
| 73 | 60 | 0.41 | 0.320 | 0.360 | 0.940 | 0.0720 | 0.0150 | 0.5370 | 13.889 | 2.894 | 0.3100 | 0.2700 | -0.3282 | 307.9 | 162.7 | 2 |
| 74 | 60 | 1.11 | 0.097 | 1.060 | 0.450 | 0.0684 | 0.0089 | 0.2546 | 14.620 | 1.902 | 0.1330 | 0.0630 | 0.6705 | 386.2 | 59.2 | 2 |
| 75 | 60 | 7.58 | 0.131 | 1.320 | 0.200 | 0.0655 | 0.0046 | 0.5707 | 15.267 | 1.072 | 0.1590 | 0.0250 | -0.1884 | 357.0 | 27.6 | 2 |
| 77 | 60 | 0.20 | -0.173 | 7.000 | 2.300 | 0.0960 | 0.0240 | 0.5426 | 10.417 | 2.604 | -0.0800 | 0.3100 | 0.4426 | 688.1 | 272.2 | 2 |
| 78 | 60 | 3.29 | 0.080 | 0.730 | 0.190 | 0.0538 | 0.0051 | 0.4720 | 18.587 | 1.762 | 0.1170 | 0.0310 | 0.0000 | 311.4 | 31.8 | 2 |
| 79 | 60 | 10.34 | 0.048 | 0.693 | 0.093 | 0.0567 | 0.0038 | 0.1799 | 17.637 | 1.182 | 0.0920 | 0.0120 | 0.1790 | 338.8 | 22.9 | 2 |
| 80 | 60 | 1.95 | 0.216 | 1.530 | 0.310 | 0.0571 | 0.0067 | 0.4290 | 17.513 | 2.055 | 0.2250 | 0.0560 | 0.3692 | 282.4 | 41.0 | 2 |
| 81 | 60 | 5.44 | 0.359 | 3.880 | 0.520 | 0.0807 | 0.0057 | 0.4459 | 12.392 | 0.875 | 0.3420 | 0.0370 | 0.0536 | 324.9 | 32.3 | 2 |
| 82 | 60 | 16.32 | 0.138 | 1.230 | 0.100 | 0.0559 | 0.0032 | 0.2447 | 17.889 | 1.024 | 0.1630 | 0.0140 | 0.2575 | 303.5 | 18.2 | 2 |
| 83 | 60 | 1.92 | 0.484 | 9.800 | 2.100 | 0.1450 | 0.0190 | 0.8433 | 6.897 | 0.904 | 0.4490 | 0.0710 | 0.1790 | 464.9 | 97.7 | 2 |
| 84 | 60 | 9.35 | 0.252 | 2.940 | 0.260 | 0.0850 | 0.0055 | 0.5266 | 11.765 | 0.761 | 0.2580 | 0.0230 | -0.0367 | 397.5 | 29.3 | 2 |
| 85 | 60 | 0.98 | 0.605 | 12.700 | 3.000 | 0.1640 | 0.0260 | 0.8004 | 6.098 | 0.967 | 0.5440 | 0.0960 | 0.1220 | 404.2 | 135.1 | 2 |
| 86 | 60 | 12.09 | 0.248 | 2.710 | 0.520 | 0.0726 | 0.0061 | 0.6995 | 13.774 | 1.157 | 0.2530 | 0.0410 | -0.4939 | 342.7 | 36.4 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 87 | 60 | 3.94 | 0.036 | 0.590 | 0.170 | 0.0546 | 0.0043 | 0.1876 | 18.315 | 1.442 | 0.0820 | 0.0240 | 0.0929 | 330.7 | 27.5 | 2 |
| 88 | 60 | 4.22 | 0.171 | 1.860 | 0.400 | 0.0743 | 0.0057 | 0.6757 | 13.459 | 1.033 | 0.1920 | 0.0420 | -0.1163 | 385.5 | 37.5 | 2 |
| 89 | 60 | 9.53 | 0.442 | 13.300 | 4.100 | 0.1760 | 0.0410 | 0.9639 | 5.682 | 1.324 | 0.4210 | 0.0520 | -0.6807 | 604.3 | 152.7 | 2 |
| 90 | 60 | 5.15 | 0.410 | 6.100 | 1.600 | 0.1080 | 0.0170 | 0.9677 | 9.259 | 1.457 | 0.3860 | 0.0520 | -0.4149 | 398.1 | 74.9 | 2 |

| **106 rutile** | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Grain** | **Spot size (μm)** | **U (ppm)** | **$^{206}Pb_c$** | **207/235** | **207/235 2σ** | **206/238** | **206/238 2σ** | **ρ** | **238/206** | **238/206 2σ** | **207/206** | **207/206 2σ** | **ρ** | **$^{207}Pb$ corrected Age (Ma)** | **$^{207}Pb$ corrected Age 2σ** | **Pb correction type** |
| 1 | 60 | 1.91 | 0.192 | 1.950 | 0.350 | 0.0701 | 0.0059 | 0.9131 | 14.265 | 1.201 | 0.2080 | 0.0340 | 0.1921 | 355.3 | 34.6 | 2 |
| 2 | 60 | 3.23 | 0.117 | 1.290 | 0.240 | 0.0628 | 0.0047 | 0.9009 | 15.924 | 1.192 | 0.1480 | 0.0220 | -0.1647 | 347.8 | 27.7 | 2 |
| 3 | 60 | 6.85 | 0.022 | 0.600 | 0.100 | 0.0631 | 0.0038 | 0.5127 | 15.848 | 0.954 | 0.0720 | 0.0120 | -0.0929 | 386.1 | 23.5 | 2 |
| 4 | 60 | 8.47 | 0.050 | 0.690 | 0.110 | 0.0548 | 0.0036 | 0.7082 | 18.248 | 1.199 | 0.0930 | 0.0130 | -0.0997 | 327.2 | 21.9 | 2 |
| 5 | 60 | 15.30 | 0.014 | 0.462 | 0.053 | 0.0526 | 0.0029 | 0.3245 | 19.011 | 1.048 | 0.0640 | 0.0074 | -0.1778 | 326.0 | 17.9 | 2 |
| 6 | 60 | 4.29 | 0.286 | 3.090 | 0.320 | 0.0782 | 0.0053 | 0.6892 | 12.788 | 0.867 | 0.2840 | 0.0260 | 0.0982 | 350.2 | 28.1 | 2 |
| 7 | 60 | 8.72 | 0.254 | 2.890 | 0.220 | 0.0818 | 0.0046 | 0.5677 | 12.225 | 0.687 | 0.2590 | 0.0190 | 0.0906 | 382.0 | 24.2 | 2 |
| 8 | 60 | 0.18 | 0.594 | 8.500 | 2.400 | 0.1200 | 0.0290 | 0.0192 | 8.333 | 2.014 | 0.5300 | 0.3400 | 0.5419 | 306.4 | 323.2 | 2 |
| 9 | 60 | 4.63 | 0.036 | 0.610 | 0.110 | 0.0604 | 0.0040 | 0.5929 | 16.556 | 1.096 | 0.0830 | 0.0160 | -0.1084 | 364.8 | 24.9 | 2 |
| 10 | 60 | 7.37 | 0.021 | 0.522 | 0.083 | 0.0531 | 0.0032 | 0.5270 | 18.832 | 1.135 | 0.0700 | 0.0100 | 0.0356 | 326.6 | 19.8 | 2 |
| 11 | 60 | 4.38 | 0.002 | 0.412 | 0.098 | 0.0568 | 0.0040 | 0.1668 | 17.606 | 1.240 | 0.0550 | 0.0130 | -0.0005 | 355.5 | 25.3 | 2 |
| 12 | 60 | 5.97 | 0.410 | 4.390 | 0.400 | 0.0843 | 0.0061 | 0.6322 | 11.862 | 0.858 | 0.3820 | 0.0280 | 0.0436 | 313.0 | 28.9 | 2 |
| 13 | 60 | 6.47 | 0.012 | 0.426 | 0.086 | 0.0539 | 0.0033 | 0.3121 | 18.553 | 1.136 | 0.0630 | 0.0130 | 0.1476 | 334.4 | 20.8 | 2 |
| 14 | 60 | 0.57 | 0.503 | 7.300 | 1.600 | 0.1190 | 0.0150 | 0.9038 | 8.403 | 1.059 | 0.4600 | 0.1000 | 0.1952 | 370.1 | 101.8 | 2 |
| 15 | 60 | 7.82 | 0.191 | 2.090 | 0.150 | 0.0713 | 0.0043 | 0.4738 | 14.025 | 0.846 | 0.2080 | 0.0140 | 0.1215 | 361.4 | 22.8 | 2 |
| 16 | 60 | 0.19 | 0.043 | 1.900 | 1.800 | 0.0720 | 0.0200 | 0.0069 | 13.889 | 3.858 | 0.0900 | 0.2200 | 0.3871 | 429.7 | 167.3 | 2 |
| 17 | 60 | 3.68 | 0.060 | 1.040 | 0.280 | 0.0685 | 0.0051 | 0.8480 | 14.599 | 1.087 | 0.1030 | 0.0220 | -0.1521 | 402.4 | 31.5 | 2 |
| 18 | 60 | 2.64 | 0.195 | 1.880 | 0.370 | 0.0669 | 0.0057 | 0.8072 | 14.948 | 1.274 | 0.2100 | 0.0350 | 0.0809 | 338.2 | 33.6 | 2 |
| 19 | 60 | 6.28 | 0.010 | 0.560 | 0.100 | 0.0645 | 0.0041 | 0.2353 | 15.504 | 0.986 | 0.0630 | 0.0120 | 0.0904 | 398.9 | 25.6 | 2 |
| 20 | 60 | 1.01 | 0.157 | 2.310 | 0.640 | 0.0849 | 0.0088 | 0.7699 | 11.779 | 1.221 | 0.1830 | 0.0440 | -0.1614 | 445.6 | 53.3 | 2 |
| 21 | 60 | 0.08 | 0.351 | 16.700 | 5.600 | 0.1710 | 0.0470 | NaN | 5.848 | 1.607 | 0.3500 | 0.3900 | 0.5149 | 678.8 | 515.3 | 2 |
| 22 | 60 | 1.27 | 0.565 | 16.200 | 4.900 | 0.2050 | 0.0490 | 0.9391 | 4.878 | 1.166 | 0.5190 | 0.0510 | -0.2284 | 550.6 | 150.0 | 2 |
| 23 | 60 | 0.10 | 0.678 | 22.000 | 12.000 | 0.2700 | 0.1300 | 0.6234 | 3.704 | 1.783 | 0.6100 | 0.4600 | 0.7064 | 538.1 | 954.2 | 2 |
| 24 | 60 | 10.57 | 0.118 | 1.150 | 0.150 | 0.0587 | 0.0034 | 0.7763 | 17.036 | 0.987 | 0.1480 | 0.0190 | -0.1367 | 325.3 | 20.4 | 2 |
| 25 | 60 | 0.68 | 0.155 | 1.590 | 0.540 | 0.0709 | 0.0089 | 0.0504 | 14.104 | 1.771 | 0.1790 | 0.0650 | 0.6011 | 375.2 | 58.1 | 2 |
| 26 | 60 | 0.56 | 0.197 | 1.940 | 0.710 | 0.0698 | 0.0100 | 0.8427 | 14.327 | 2.053 | 0.2120 | 0.0780 | 0.3601 | 351.7 | 64.7 | 2 |
| 27 | 60 | 15.44 | 0.018 | 0.488 | 0.046 | 0.0524 | 0.0027 | -0.1214 | 19.084 | 0.983 | 0.0674 | 0.0065 | 0.3517 | 323.4 | 16.6 | 2 |
| 28 | 60 | 3.58 | 0.063 | 1.000 | 0.170 | 0.0693 | 0.0046 | 0.4750 | 14.430 | 0.958 | 0.1060 | 0.0180 | 0.0204 | 405.4 | 28.0 | 2 |
| 29 | 60 | 0.34 | 0.812 | 14.100 | 2.500 | 0.1900 | 0.0290 | 0.1358 | 5.263 | 0.803 | 0.7000 | 0.1500 | 0.6192 | 226.5 | 226.0 | 2 |
| 30 | 60 | 4.71 | 0.029 | 0.628 | 0.088 | 0.0637 | 0.0044 | 0.6141 | 15.699 | 1.084 | 0.0780 | 0.0120 | -0.1712 | 386.8 | 26.9 | 2 |
| 31 | 60 | 7.60 | 0.244 | 3.960 | 0.970 | 0.0998 | 0.0096 | 0.8863 | 10.020 | 0.964 | 0.2540 | 0.0520 | -0.2296 | 469.1 | 58.9 | 2 |
| 32 | 60 | 0.99 | 0.082 | 1.230 | 0.360 | 0.0770 | 0.0085 | 0.6236 | 12.987 | 1.434 | 0.1220 | 0.0340 | -0.1487 | 440.3 | 51.5 | 2 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 60 | 0.31 | 0.403 | 5.100 | 1.900 | 0.1040 | 0.0200 | 0.9046 | 9.615 | 1.849 | 0.3800 | 0.2300 | 0.5588 | 388.1 | 196.1 | 2 |
| 34 | 60 | 3.27 | 0.035 | 0.590 | 0.170 | 0.0548 | 0.0041 | 0.4482 | 18.248 | 1.365 | 0.0810 | 0.0250 | 0.1055 | 332.3 | 26.6 | 2 |
| 35 | 60 | 7.50 | 0.008 | 0.423 | 0.067 | 0.0561 | 0.0034 | 0.6284 | 17.825 | 1.080 | 0.0599 | 0.0097 | -0.1277 | 349.1 | 21.2 | 2 |
| 36 | 60 | 4.43 | 0.030 | 0.601 | 0.095 | 0.0601 | 0.0041 | 0.2267 | 16.639 | 1.135 | 0.0780 | 0.0130 | 0.0728 | 365.3 | 25.2 | 2 |
| 37 | 60 | 5.35 | 0.026 | 0.530 | 0.160 | 0.0532 | 0.0041 | -0.0248 | 18.797 | 1.449 | 0.0740 | 0.0230 | 0.2350 | 325.6 | 26.4 | 2 |
| 38 | 60 | 1.62 | 0.009 | 0.620 | 0.330 | 0.0640 | 0.0061 | 0.8841 | 15.625 | 1.489 | 0.0620 | 0.0350 | -0.6263 | 396.4 | 40.8 | 2 |
| 39 | 60 | 5.53 | 0.011 | 0.450 | 0.110 | 0.0549 | 0.0036 | 0.3483 | 18.215 | 1.194 | 0.0620 | 0.0150 | -0.1734 | 340.9 | 22.9 | 2 |
| 40 | 60 | 1.12 | 0.048 | 0.530 | 0.320 | 0.0576 | 0.0077 | -0.0380 | 17.361 | 2.321 | 0.0920 | 0.0560 | -0.0078 | 344.1 | 51.6 | 2 |
| 41 | 60 | 2.46 | 0.099 | 1.250 | 0.250 | 0.0753 | 0.0057 | 0.2754 | 13.280 | 1.005 | 0.1350 | 0.0270 | 0.1336 | 423.4 | 35.0 | 2 |
| 42 | 60 | 4.30 | -0.001 | 0.400 | 0.100 | 0.0564 | 0.0039 | 0.2786 | 17.730 | 1.226 | 0.0530 | 0.0140 | -0.1078 | 353.9 | 24.8 | 2 |
| 43 | 60 | 0.92 | 0.014 | 0.630 | 0.330 | 0.0722 | 0.0082 | -0.0703 | 13.850 | 1.573 | 0.0670 | 0.0420 | -0.0190 | 443.4 | 54.3 | 2 |
| 44 | 60 | 0.11 | -0.054 | 10.900 | 4.800 | 0.1710 | 0.0420 | 0.7823 | 5.848 | 1.436 | 0.0300 | 0.4100 | 0.4324 | 1067.9 | 539.9 | 2 |
| 45 | 60 | 3.66 | 0.019 | 0.430 | 0.130 | 0.0536 | 0.0038 | 0.3351 | 18.657 | 1.323 | 0.0680 | 0.0210 | 0.0339 | 330.5 | 24.6 | 2 |
| 46 | 60 | 2.93 | 0.088 | 1.250 | 0.300 | 0.0719 | 0.0054 | 0.8907 | 13.908 | 1.045 | 0.1260 | 0.0250 | -0.2957 | 409.5 | 33.1 | 2 |
| 47 | 60 | 3.75 | 0.138 | 1.630 | 0.270 | 0.0727 | 0.0055 | 0.9660 | 13.755 | 1.041 | 0.1660 | 0.0220 | -0.2701 | 391.8 | 31.5 | 2 |
| 48 | 60 | 0.04 | 0.122 | 78.000 | 20.000 | 0.6300 | 0.2100 | NaN | 1.587 | 0.529 | 0.3100 | 0.5900 | 0.8180 | 2838.9 | 2779.5 | 2 |
| 49 | 60 | 1.06 | 0.117 | 0.980 | 0.390 | 0.0584 | 0.0085 | -0.0644 | 17.123 | 2.492 | 0.1470 | 0.0810 | 0.2148 | 324.1 | 59.0 | 2 |
| 50 | 60 | 10.69 | 0.016 | 0.582 | 0.072 | 0.0646 | 0.0037 | 0.4427 | 15.480 | 0.887 | 0.0676 | 0.0081 | -0.1499 | 397.3 | 22.7 | 2 |
| 51 | 60 | 0.19 | -0.095 | 2.600 | 1.700 | 0.0740 | 0.0210 | -0.0616 | 13.514 | 3.835 | -0.0200 | 0.2000 | 0.2951 | 502.3 | 177.7 | 2 |
| 52 | 60 | 3.19 | 0.021 | 0.710 | 0.220 | 0.0650 | 0.0050 | 0.9211 | 15.385 | 1.183 | 0.0720 | 0.0180 | -0.2243 | 397.5 | 31.3 | 2 |
| 53 | 60 | 29.24 | 0.019 | 0.476 | 0.033 | 0.0529 | 0.0027 | 0.2846 | 18.904 | 0.965 | 0.0679 | 0.0052 | 0.1194 | 326.3 | 16.5 | 2 |
| 54 | 60 | 0.59 | 0.830 | 11.900 | 1.800 | 0.1340 | 0.0170 | 0.8195 | 7.463 | 0.947 | 0.7100 | 0.1200 | 0.7049 | 144.9 | 129.3 | 2 |
| 55 | 60 | 7.71 | 0.053 | 0.860 | 0.120 | 0.0658 | 0.0037 | 0.5539 | 15.198 | 0.855 | 0.0970 | 0.0130 | -0.0240 | 389.8 | 22.5 | 2 |
| 56 | 60 | 0.19 | 0.419 | 0.600 | 1.600 | 0.0900 | 0.0230 | 0.3271 | 11.111 | 2.840 | 0.3900 | 0.2200 | -0.0828 | 328.6 | 173.2 | 2 |
| 57 | 60 | 0.38 | 0.157 | 2.300 | 1.000 | 0.0680 | 0.0120 | 0.8012 | 14.706 | 2.595 | 0.1800 | 0.1400 | 0.4764 | 359.5 | 95.8 | 2 |
| 58 | 60 | 4.38 | 0.432 | 6.300 | 1.300 | 0.1070 | 0.0140 | 0.8463 | 9.346 | 1.223 | 0.4030 | 0.0510 | -0.3859 | 380.2 | 64.2 | 2 |
| 59 | 60 | 2.38 | 0.047 | 1.080 | 0.330 | 0.0749 | 0.0069 | 0.9037 | 13.351 | 1.230 | 0.0940 | 0.0250 | -0.1865 | 444.4 | 42.5 | 2 |
| 60 | 60 | 3.06 | 0.427 | 6.370 | 0.670 | 0.1149 | 0.0082 | 0.2555 | 8.703 | 0.621 | 0.4000 | 0.0420 | 0.4155 | 411.2 | 46.6 | 2 |
| 61 | 60 | 4.24 | 0.115 | 1.420 | 0.240 | 0.0707 | 0.0045 | 0.8387 | 14.144 | 0.900 | 0.1470 | 0.0210 | -0.2304 | 391.4 | 26.9 | 2 |
| 62 | 60 | 0.08 | 0.006 | 15.000 | 8.900 | 0.1810 | 0.0530 | 0.8146 | 5.525 | 1.618 | 0.0800 | 0.3400 | 0.4975 | 1066.5 | 515.8 | 2 |
| 63 | 60 | 0.58 | 0.181 | 2.000 | 0.550 | 0.0720 | 0.0110 | 0.6061 | 13.889 | 2.122 | 0.2000 | 0.1100 | 0.5211 | 369.3 | 82.0 | 2 |
| 64 | 60 | 6.01 | 0.034 | 0.568 | 0.099 | 0.0528 | 0.0036 | 0.3399 | 18.939 | 1.291 | 0.0800 | 0.0130 | -0.0939 | 320.7 | 22.2 | 2 |
| 65 | 60 | 1258.00 | 0.002 | 0.389 | 0.009 | 0.0512 | 0.0025 | NaN | 19.520 | 0.953 | 0.0548 | 0.0009 | -0.0159 | 321.3 | 15.4 | 2 |
| 66 | 60 | 9.76 | 0.286 | 3.070 | 0.190 | 0.0801 | 0.0044 | 0.2358 | 12.484 | 0.686 | 0.2840 | 0.0190 | 0.2503 | 358.6 | 22.6 | 2 |
| 67 | 60 | 11.57 | 0.030 | 0.564 | 0.069 | 0.0535 | 0.0031 | 0.3984 | 18.692 | 1.083 | 0.0772 | 0.0094 | 0.0933 | 326.1 | 19.0 | 2 |
| 68 | 60 | 10.72 | 0.016 | 0.535 | 0.065 | 0.0599 | 0.0034 | -0.1333 | 16.694 | 0.948 | 0.0665 | 0.0086 | 0.3276 | 369.3 | 21.0 | 2 |
| 69 | 60 | 2.64 | 0.097 | 0.930 | 0.180 | 0.0583 | 0.0051 | 0.6648 | 17.153 | 1.500 | 0.1310 | 0.0250 | 0.3028 | 330.8 | 30.6 | 2 |
| 70 | 60 | 7.82 | 0.013 | 0.600 | 0.100 | 0.0652 | 0.0039 | 0.7382 | 15.337 | 0.917 | 0.0651 | 0.0096 | -0.3761 | 402.1 | 24.1 | 2 |
| 71 | 60 | 8.14 | 0.018 | 0.492 | 0.084 | 0.0545 | 0.0035 | 0.3056 | 18.349 | 1.178 | 0.0680 | 0.0120 | -0.0114 | 335.9 | 21.8 | 2 |
| 72 | 60 | 1.28 | 0.226 | 1.880 | 0.530 | 0.0687 | 0.0079 | 0.8905 | 14.556 | 1.674 | 0.2350 | 0.0540 | 0.7679 | 334.0 | 47.3 | 2 |
| 73 | 60 | 1.34 | 0.365 | 3.760 | 0.560 | 0.0867 | 0.0082 | 0.6123 | 11.534 | 1.091 | 0.3470 | 0.0550 | 0.2914 | 345.7 | 48.7 | 2 |
| 74 | 60 | 7.66 | 0.194 | 1.790 | 0.180 | 0.0627 | 0.0038 | 0.6205 | 15.949 | 0.967 | 0.2090 | 0.0200 | 0.0346 | 317.7 | 21.3 | 2 |
| 75 | 60 | 5.77 | 0.035 | 0.603 | 0.084 | 0.0549 | 0.0037 | 0.4165 | 18.215 | 1.228 | 0.0810 | 0.0110 | -0.0731 | 332.9 | 22.6 | 2 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 76 | 60 | 11.19 | 0.065 | 0.870 | 0.140 | 0.0599 | 0.0036 | 0.6297 | 16.694 | 1.003 | 0.1060 | 0.0150 | -0.3476 | 351.2 | 21.9 | 2 |
| 77 | 60 | 5.00 | 0.029 | 0.620 | 0.180 | 0.0566 | 0.0042 | 0.8083 | 17.668 | 1.311 | 0.0770 | 0.0180 | -0.3587 | 344.8 | 26.3 | 2 |
| 78 | 60 | 7.62 | 0.011 | 0.469 | 0.096 | 0.0544 | 0.0034 | 0.6048 | 18.382 | 1.149 | 0.0620 | 0.0110 | -0.1207 | 337.8 | 21.3 | 2 |
| 79 | 60 | 10.53 | 0.018 | 0.534 | 0.084 | 0.0552 | 0.0033 | 0.5330 | 18.116 | 1.083 | 0.0680 | 0.0110 | -0.1767 | 340.2 | 20.5 | 2 |
| 80 | 60 | 8.10 | 0.010 | 0.455 | 0.069 | 0.0535 | 0.0031 | 0.5216 | 18.692 | 1.083 | 0.0615 | 0.0089 | -0.1389 | 332.6 | 19.3 | 2 |
| 81 | 60 | 13.13 | 0.153 | 1.670 | 0.110 | 0.0665 | 0.0036 | 0.3326 | 15.038 | 0.814 | 0.1770 | 0.0110 | 0.1355 | 353.2 | 19.6 | 2 |
| 82 | 60 | 0.14 | -0.132 | 2.500 | 1.700 | 0.0730 | 0.0230 | -0.1242 | 13.699 | 4.316 | -0.0500 | 0.2100 | 0.3784 | 511.9 | 194.5 | 2 |
| 83 | 60 | 3.37 | 0.576 | 7.380 | 0.540 | 0.0991 | 0.0063 | 0.5275 | 10.091 | 0.641 | 0.5130 | 0.0360 | 0.3246 | 265.6 | 32.6 | 2 |
| 84 | 60 | 1.02 | 0.065 | 0.770 | 0.320 | 0.0614 | 0.0075 | 0.1006 | 16.287 | 1.989 | 0.1060 | 0.0570 | -0.2615 | 359.9 | 50.8 | 2 |
| 85 | 60 | 5.66 | 0.044 | 0.880 | 0.250 | 0.0600 | 0.0042 | 0.9267 | 16.667 | 1.167 | 0.0890 | 0.0160 | -0.3586 | 359.6 | 25.8 | 2 |
| 86 | 60 | 6.48 | 0.063 | 0.930 | 0.120 | 0.0646 | 0.0042 | 0.4350 | 15.480 | 1.006 | 0.1050 | 0.0140 | 0.0691 | 378.9 | 25.2 | 2 |
| 87 | 60 | 4.48 | 0.182 | 2.010 | 0.310 | 0.0690 | 0.0048 | 0.8409 | 14.493 | 1.008 | 0.2000 | 0.0240 | -0.2165 | 354.1 | 27.3 | 2 |
| 88 | 60 | 7.83 | 0.082 | 0.970 | 0.120 | 0.0568 | 0.0035 | 0.3219 | 17.606 | 1.085 | 0.1190 | 0.0140 | -0.0542 | 327.6 | 20.8 | 2 |
| 89 | 60 | 3.05 | 0.066 | 0.720 | 0.160 | 0.0539 | 0.0043 | -0.0147 | 18.553 | 1.480 | 0.1060 | 0.0260 | 0.2809 | 316.5 | 27.1 | 2 |
| 90 | 60 | 6.83 | -0.001 | 0.408 | 0.088 | 0.0529 | 0.0033 | 0.4677 | 18.904 | 1.179 | 0.0520 | 0.0100 | -0.2261 | 332.7 | 20.8 | 2 |
| 91 | 60 | 0.63 | 0.599 | 5.600 | 1.000 | 0.0912 | 0.0110 | -0.0085 | 10.965 | 1.323 | 0.5300 | 0.1300 | 0.7964 | 231.6 | 96.8 | 2 |
| 92 | 60 | 8.56 | 0.046 | 0.670 | 0.084 | 0.0527 | 0.0030 | 0.4134 | 18.975 | 1.080 | 0.0900 | 0.0110 | -0.0036 | 316.1 | 18.3 | 2 |
| 93 | 60 | 1.74 | 0.059 | 0.930 | 0.280 | 0.0585 | 0.0056 | 0.8582 | 17.094 | 1.636 | 0.1010 | 0.0280 | -0.0395 | 345.4 | 34.9 | 2 |
| 94 | 60 | 6.56 | 0.036 | 0.740 | 0.110 | 0.0687 | 0.0044 | 0.3166 | 14.556 | 0.932 | 0.0840 | 0.0150 | 0.3347 | 413.5 | 27.1 | 2 |
| 95 | 60 | 8.37 | 0.080 | 0.890 | 0.110 | 0.0539 | 0.0033 | 0.7448 | 18.553 | 1.136 | 0.1170 | 0.0140 | -0.3149 | 312.0 | 19.7 | 2 |
| 96 | 60 | 5.21 | 0.014 | 0.466 | 0.082 | 0.0523 | 0.0035 | 0.1001 | 19.120 | 1.280 | 0.0640 | 0.0120 | 0.0699 | 324.2 | 21.9 | 2 |
| 97 | 60 | 9.28 | 0.030 | 0.579 | 0.085 | 0.0548 | 0.0032 | 0.5825 | 18.248 | 1.066 | 0.0770 | 0.0110 | -0.1889 | 334.0 | 19.7 | 2 |
| 98 | 60 | 13.42 | 0.010 | 0.455 | 0.058 | 0.0531 | 0.0030 | 0.6938 | 18.832 | 1.064 | 0.0607 | 0.0079 | -0.2813 | 330.4 | 18.7 | 2 |
| 99 | 60 | 0.20 | 0.747 | 11.800 | 2.700 | 0.1660 | 0.0260 | 0.1725 | 6.024 | 0.944 | 0.6500 | 0.2100 | 0.8428 | 265.7 | 274.2 | 2 |
| 100 | 60 | 1.33 | 0.189 | 1.490 | 0.400 | 0.0653 | 0.0063 | 0.7151 | 15.314 | 1.477 | 0.2050 | 0.0550 | 0.3106 | 332.8 | 41.9 | 2 |
| 101 | 60 | 1.26 | 0.358 | 3.700 | 0.610 | 0.0919 | 0.0092 | 0.9104 | 10.881 | 1.089 | 0.3430 | 0.0520 | 0.2965 | 369.3 | 51.5 | 2 |
| 102 | 60 | 10.53 | 0.017 | 0.580 | 0.075 | 0.0656 | 0.0038 | 0.0931 | 15.244 | 0.883 | 0.0687 | 0.0090 | 0.1072 | 402.7 | 23.3 | 2 |
| 103 | 60 | 6.62 | 0.025 | 0.620 | 0.097 | 0.0645 | 0.0040 | 0.5525 | 15.504 | 0.961 | 0.0750 | 0.0120 | -0.0676 | 393.0 | 24.6 | 2 |
| 104 | 60 | 7.36 | 0.037 | 0.692 | 0.091 | 0.0629 | 0.0039 | 0.3845 | 15.898 | 0.986 | 0.0840 | 0.0120 | 0.0061 | 379.1 | 23.8 | 2 |
| 105 | 60 | 14.52 | 0.021 | 0.633 | 0.070 | 0.0652 | 0.0036 | 0.3483 | 15.337 | 0.847 | 0.0715 | 0.0074 | -0.0887 | 398.9 | 21.9 | 2 |
| 106 | 60 | 10.97 | 0.104 | 1.350 | 0.160 | 0.0721 | 0.0042 | 0.8570 | 13.870 | 0.808 | 0.1390 | 0.0150 | -0.3624 | 403.5 | 24.5 | 2 |
| 107 | 60 | 13.34 | 0.016 | 0.550 | 0.072 | 0.0611 | 0.0036 | 0.3443 | 16.367 | 0.964 | 0.0669 | 0.0086 | -0.0492 | 376.4 | 22.1 | 2 |
| 108 | 60 | 0.70 | 0.810 | 13.800 | 1.900 | 0.1680 | 0.0240 | 0.8997 | 5.952 | 0.850 | 0.6970 | 0.0890 | 0.5729 | 202.8 | 121.4 | 2 |
| 109 | 60 | 19.58 | 0.024 | 0.580 | 0.047 | 0.0591 | 0.0032 | 0.1920 | 16.920 | 0.916 | 0.0734 | 0.0060 | 0.2076 | 361.4 | 19.4 | 2 |
| 110 | 60 | 0.83 | 0.945 | 25.800 | 1.900 | 0.2560 | 0.0220 | 0.6062 | 3.906 | 0.336 | 0.7980 | 0.0620 | 0.4935 | 89.7 | 128.7 | 2 |
| 111 | 60 | 8.81 | 0.162 | 1.670 | 0.280 | 0.0652 | 0.0047 | 0.9013 | 15.337 | 1.106 | 0.1840 | 0.0200 | -0.4302 | 342.8 | 26.3 | 2 |

**Table DR5**. Ages of External Alpine structures. All errors given at 2σ level. ID numbers as used in Fig.3.

| Location | Method | Age (Ma) | ID |
|---|---|---|---|
| Glarus thrust | Muscovite K-Ar [130] | 25.5 ± 3.7* | 1 |
| Aar-Gotthard massif | Allanite Th-Pb [15] | 22.5 ± 1.5 | 2 |
| | Phengite $^{40}Ar/^{39}Ar$ [24] | 18.1 ± 2.0* | 3 |
| | Biotite $^{40}Ar/^{39}Ar$ [24] | 18.9 ± 1.6* | 3 |
| | Biotite $^{40}Ar/^{39}Ar$ [131] | 21.1 ± 0.2 | 4 |
| Mont Blanc massif | Allanite Th-Pb [132] | 28.2 ± 2.6 | 5 |
| | Biotite $^{40}Ar/^{39}Ar$ [133] | 22.4 ± 0.4 | 6 |
| Pelvoux (Ecrins) massif | Palaeomagnetism [134] | 25.4 ± 1.2 | 7 |
| | White mica $^{40}Ar/^{39}Ar$ [135] | 26.2 ± 0.4* | 8 |
| Argentera massif | White mica $^{40}Ar/^{39}Ar$ [30] | 24.7 ± 2.2* | 10 |
| | Zircon fission track [32] | 23.8 ± 1.4* | 11 |

* Central ages

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