

Supplementary data for Balco and others, yadda yadda.

Table S1: Ne measurements.

Sample name	Aliquot	Aliquot weight (g)	Heating temperature (deg C)	Heating time (hr)	Total ²⁰ Ne released ¹ (10 ⁸ atoms)	Total ²¹ Ne released ² (10 ⁸ atoms)	²¹ Ne / ²⁰ Ne ³ (10 ⁻³)	²² Ne / ²⁰ Ne ³ (10 ⁻³)	Cosmogenic ²¹ Ne ⁴ This heating step (10 ⁶ atoms g ⁻¹)	Cosmogenic ²¹ Ne as % of ²¹ Ne released in this heating step	Percent of total cosmogenic ²¹ Ne released in this step	Total cosmogenic ²¹ Ne (10 ⁶ atoms g ⁻¹)
04-DW-033-BR	c	0.0576	1100	0.3	2.2228 +/- 0.0252	14.273 +/- 0.499	6.317 +/- 0.117	105.5 +/- 1.3	130.08 +/- 4.76	52	100.0	130.1 +/- 4.8
			1100	0.33	0.0849 +/- 0.0345	-0.143 +/- 0.096	-1.667 +/- 1.303	28.4 +/- 22.6	-			
	d	0.0499	1100	0.3	1.5811 +/- 0.0193	11.487 +/- 0.556	7.148 +/- 0.275	106.5 +/- 1.6	133.31 +/- 8.91	58	100.0	133.3 +/- 8.9
			1100	0.33	0.0192 +/- 0.0097	0.04 +/- 0.087	2.082 +/- 4.581	107.7 +/- 85	-			
04-DW-035-BR	a	0.0733	1100	0.3	2.4417 +/- 0.0476	16.708 +/- 0.686	6.74 +/- 0.118	106.8 +/- 1.3	126.39 +/- 4.64	55	100.0	126.4 +/- 4.6
			1100	0.33	0.0556 +/- 0.0088	0.263 +/- 0.111	4.665 +/- 2.096	84.6 +/- 29.5	-			
	b	0.0448	700	0.3	1.5746 +/- 0.0379	10.023 +/- 0.482	6.344 +/- 0.18	108.9 +/- 2.1	119.29 +/- 6.98	53	94.0	127.0 +/- 7.3
			1100	0.3	0.1026 +/- 0.0062	0.647 +/- 0.096	6.293 +/- 0.968	86 +/- 13.8	7.68 +/- 2.19	53	6.0	
04-DW-037-BR	a	0.0597	1100	0.3	3.8367 +/- 0.0748	20.152 +/- 0.848	5.173 +/- 0.102	102.8 +/- 0.9	142.8 +/- 7.13	42	100.0	142.8 +/- 7.1
			1100	0.3	0.0434 +/- 0.0052	0.034 +/- 0.077	0.783 +/- 1.762	49.1 +/- 32.6	-			
	b	0.0535	1100	0.3	1.6681 +/- 0.0348	12.295 +/- 0.589	7.268 +/- 0.215	106.9 +/- 1.5	134.96 +/- 7.29	59	100.0	135.0 +/- 7.3
			1100	0.33	-0.0314 +/- 0.0136	0.089 +/- 0.082	-2.788 +/- 2.853	2.9 +/- 41	-			
04-DW-040-BR	a	0.0679	1100	0.3	2.9319 +/- 0.057	20.307 +/- 0.839	6.82 +/- 0.116	105.6 +/- 1	167.27 +/- 5.97	56	97.9	170.8 +/- 6.1
			1100	0.33	0.0128 +/- 0.0091	0.279 +/- 0.092	21.469 +/- 16.779	164.1 +/- 153.7	3.56 +/- 1.41	87	2.1	
04-DW-043-BR	c	0.0615	1100	0.3	1.2044 +/- 0.0163	8.249 +/- 0.315	6.721 +/- 0.179	103.9 +/- 1.9	73.9 +/- 3.66	55	100.0	73.9 +/- 3.7
			1100	0.3	0.0719 +/- 0.0101	0.278 +/- 0.093	3.808 +/- 1.375	85.5 +/- 23.1	-			
	d	0.0649	1100	0.3	0.726 +/- 0.0115	6.869 +/- 0.281	9.31 +/- 0.282	105.6 +/- 2.6	71.32 +/- 3.36	67	100.0	71.3 +/- 3.4
			1100	0.33	0.0158 +/- 0.0094	-0.016 +/- 0.089	-0.991 +/- 5.587	55.3 +/- 89.5	-			
	e	0.0614	700	0.3	0.6564 +/- 0.0172	6.094 +/- 0.322	9.269 +/- 0.346	110 +/- 2.9	67.68 +/- 4.11	68	100.0	67.7 +/- 4.1
			1100	0.3	0.095 +/- 0.0076	0.303 +/- 0.082	3.192 +/- 0.886	92 +/- 16	-			
04-DW-047-BR	c	0.0585	1100	0.3	1.0356 +/- 0.0218	9.16 +/- 0.341	8.659 +/- 0.253	104.9 +/- 2.5	101.32 +/- 4.97	65	100.0	101.3 +/- 5.0
			1100	0.33	0.008 +/- 0.0108	0.092 +/- 0.084	11.315 +/- 18.479	331.1 +/- 479.4	-			
	d	0.0484	1100	0.3	0.6919 +/- 0.0125	7.173 +/- 0.318	10.162 +/- 0.371	104.1 +/- 2.5	103.38 +/- 5.65	70	100.0	103.4 +/- 5.7
			1100	0.33	0.0158 +/- 0.0103	0.088 +/- 0.087	5.433 +/- 6.41	104 +/- 106.6	-			
05-EG-118-BR	d	0.1506	400	0.3	0.8632 +/- 0.0179	17.707 +/- 0.74	20.654 +/- 0.712	119.8 +/- 3.1	101.82 +/- 4.61	87	75.0	135.8 +/- 5.2
			700	0.3	1.0929 +/- 0.0233	7.764 +/- 0.364	7.157 +/- 0.288	111.6 +/- 2.7	30.58 +/- 2.2	59	22.5	
			1100	0.3	0.1947 +/- 0.0122	1.083 +/- 0.111	5.603 +/- 0.65	108.6 +/- 9.1	3.38 +/- 0.78	47	2.5	
	e	0.1451	400	0.3	0.7413 +/- 0.0211	15.502 +/- 0.497	20.777 +/- 0.651	128.7 +/- 4.9	92.07 +/- 3.47	86	69.5	132.5 +/- 4.1
			700	0.3	1.1861 +/- 0.0226	9.172 +/- 0.339	7.708 +/- 0.223	108.5 +/- 2.7	38.97 +/- 1.98	62	29.4	
			1100	0.3	0.2227 +/- 0.0178	0.87 +/- 0.137	3.898 +/- 0.676	98 +/- 12.3	1.46 +/- 1.01	24	1.1	
05-EG-119-BR	a	0.0574	700	0.3	0.7712 +/- 0.0156	6.874 +/- 0.335	8.878 +/- 0.334	111.5 +/- 2.6	79.77 +/- 4.78	67	93.0	85.8 +/- 5.1
			1100	0.3	0.1008 +/- 0.0116	0.645 +/- 0.102	6.378 +/- 1.227	114.9 +/- 19.9	6.05 +/- 1.88	54	7.0	
	h	0.0495	700	0.3	0.5778 +/- 0.0134	5.462 +/- 0.275	9.421 +/- 0.392	118 +/- 3.7	75.71 +/- 4.92	69	100.0	75.7 +/- 4.9
			1100	0.3	0.0943 +/- 0.0171	0.086 +/- 0.122	0.911 +/- 1.298	113.5 +/- 25.4	-			
	l	0.1408	400	0.3	0.6224 +/- 0.0194	10.025 +/- 0.397	16.005 +/- 0.658	125.2 +/- 4.9	58.36 +/- 2.86	82	76.3	76.5 +/- 3.2
			750	0.3	1.1222 +/- 0.0266	5.887 +/- 0.219	5.23 +/- 0.169	104 +/- 3.5	18.17 +/- 1.42	43	23.7	
			1100	0.3	0.1661 +/- 0.0158	0.426 +/- 0.123	2.557 +/- 0.772	107.2 +/- 15.7	-			
05-EG-120-BR	d	0.1357	400	0.3	0.68 +/- 0.0244	8.249 +/- 0.317	12.057 +/- 0.527	113.2 +/- 4.9	46.15 +/- 2.4	76	73.8	62.5 +/- 3.1
			750	0.3	1.4793 +/- 0.0256	6.476 +/- 0.281	4.365 +/- 0.157	100.9 +/- 2	15.39 +/- 1.74	32	24.6	
			1100	0.3	0.1398 +/- 0.0173	0.544 +/- 0.133	3.879 +/- 1.055	104.8 +/- 19.2	0.96 +/- 1.05	24	1.5	

05-EG-122-BR	f	0.1327	400	0.3	0.3677 +/- 0.0208	22.021 +/- 0.636	59.516 +/- 3.357	167.9 +/- 11.3	158.38 +/- 4.84	95	73.1	216.7 +/- 5.5
			750	0.3	0.9865 +/- 0.0212	10.383 +/- 0.351	10.496 +/- 0.28	107.6 +/- 3	56.26 +/- 2.41	72	26.0	
			1100	0.3	0.1811 +/- 0.0135	0.806 +/- 0.137	4.439 +/- 0.817	108.2 +/- 13.1	2.04 +/- 1.08	34	0.9	
05-EG-123-BR	a	0.0528	1000	0.3	2.4131 +/- 0.0479	10.869 +/- 0.519	4.457 +/- 0.173	100.2 +/- 2	68.71 +/- 8.03	33	100.0	68.7 +/- 8.0
			1100	0.3	0.562 +/- 0.0139	1.618 +/- 0.12	2.85 +/- 0.2	98.6 +/- 3.7	-	-	-	
05-EG-123-BR	b	0.0531	1000	0.3	1.9778 +/- 0.0264	10.12 +/- 0.404	5.064 +/- 0.124	103 +/- 1.5	78.74 +/- 4.74	41	100.0	78.7 +/- 4.7
			1100	0.3	0.0218 +/- 0.0126	0.152 +/- 0.089	6.935 +/- 5.689	225.3 +/- 145.8	-	-	-	
05-EG-123-BR	c	0.0610	700	0.3	1.9856 +/- 0.0309	10.02 +/- 0.437	5.027 +/- 0.139	102.9 +/- 1.5	67.58 +/- 4.67	41	94.4	71.6 +/- 5.1
			1100	0.3	0.4565 +/- 0.0127	1.601 +/- 0.132	3.496 +/- 0.277	103.6 +/- 4.4	4.04 +/- 2.08	15	5.6	
05-EG-124-BR	c	0.0486	700	0.3	2.0333 +/- 0.0247	11.228 +/- 0.457	5.476 +/- 0.125	101.6 +/- 1.2	105.69 +/- 5.4	46	94.4	112.0 +/- 6.0
			1100	0.3	0.3606 +/- 0.0139	1.383 +/- 0.125	3.802 +/- 0.348	108.4 +/- 5.8	6.28 +/- 2.61	22	5.6	
05-EG-124-BR	d	0.0656	700	0.3	2.2857 +/- 0.0267	14.597 +/- 0.573	6.333 +/- 0.126	100.6 +/- 1.2	118.03 +/- 4.61	53	95.3	123.9 +/- 5.0
			1100	0.3	0.5934 +/- 0.0169	2.154 +/- 0.139	3.6 +/- 0.219	103.2 +/- 4.5	5.82 +/- 2	18	4.7	
05-EG-126-BR	c	0.0678	700	0.3	0.757 +/- 0.0156	6.28 +/- 0.312	8.225 +/- 0.33	108.8 +/- 3.2	58.98 +/- 3.89	64	97.1	60.7 +/- 4.2
			1100	0.3	0.2577 +/- 0.0125	0.888 +/- 0.108	3.416 +/- 0.429	111.9 +/- 8.8	1.74 +/- 1.64	13	2.9	
05-EG-126-BR	e	0.0682	700	0.3	0.6588 +/- 0.0146	5.758 +/- 0.275	8.71 +/- 0.33	111.4 +/- 3.6	55.73 +/- 3.43	66	94.9	58.7 +/- 3.7
			1100	0.3	0.0708 +/- 0.0095	0.411 +/- 0.092	5.796 +/- 1.502	145.1 +/- 27.1	2.97 +/- 1.42	49	5.1	
05-EG-127-BR	a	0.0445	1000	0.3	0.4924 +/- 0.0126	6.248 +/- 0.308	12.575 +/- 0.543	114.3 +/- 4.5	106.89 +/- 6.63	76	98.9	108.1 +/- 7.0
			1100	0.3	0.0301 +/- 0.0087	0.142 +/- 0.096	4.67 +/- 3.426	189.2 +/- 73.1	1.2 +/- 2.24	38	1.1	
05-EG-127-BR	b	0.0613	1000	0.3	0.5589 +/- 0.0145	7.801 +/- 0.346	13.834 +/- 0.521	113.3 +/- 4.1	99.53 +/- 5.42	78	97.3	102.3 +/- 5.7
			1100	0.3	0.0304 +/- 0.0145	0.26 +/- 0.088	8.445 +/- 4.926	191.7 +/- 103.4	2.79 +/- 1.61	66	2.7	
05-EG-121-ERR	a	0.0516	700	0.3	1.605 +/- 0.0315	25.333 +/- 0.918	15.754 +/- 0.298	119.7 +/- 2	399.76 +/- 12.17	81	98.4	406.3 +/- 12.4
			1100	0.3	0.3008 +/- 0.0123	1.227 +/- 0.109	4.067 +/- 0.37	109.7 +/- 6.8	6.49 +/- 2.18	27	1.6	
05-EG-121-ERR	b	0.0428	700	0.3	1.4152 +/- 0.0235	20.229 +/- 0.782	14.254 +/- 0.303	117.4 +/- 1.9	375.3 +/- 11.84	79	99.3	377.8 +/- 12.1
			1100	0.3	0.1392 +/- 0.0105	0.517 +/- 0.091	3.705 +/- 0.694	121.3 +/- 12.9	2.48 +/- 2.25	21	0.7	
05-EG-125-ERR	a	0.0640	700	0.3	1.0643 +/- 0.0214	23.86 +/- 0.859	22.376 +/- 0.426	124.7 +/- 2.8	324.03 +/- 9.65	87	97.6	332.0 +/- 9.8
			1100	0.3	0.1794 +/- 0.0133	1.036 +/- 0.111	5.755 +/- 0.721	132.6 +/- 12.8	7.92 +/- 1.85	49	2.4	
05-EG-125-ERR	b	0.0578	700	0.3	1.0632 +/- 0.0217	21.567 +/- 0.821	20.229 +/- 0.473	121.9 +/- 2.5	318.95 +/- 10.91	95	96.8	329.6 +/- 11.1
			1100	0.3	0.095 +/- 0.0101	0.896 +/- 0.105	9.4 +/- 1.454	122 +/- 21.3	10.68 +/- 1.9	76	3.2	
RDY-090-QZH	a	0.1438	400	0.3	0.6949 +/- 0.0129	55.453 +/- 1.504	79.005 +/- 1.467	196.4 +/- 4.1	368.79 +/- 9.88	96	85.0	433.8 +/- 10.3
			700	0.3	0.4469 +/- 0.0098	10.051 +/- 0.426	22.315 +/- 0.793	124.6 +/- 4	60.36 +/- 2.8	86	13.9	
			1100	0.3	0.1046 +/- 0.0064	0.979 +/- 0.11	9.279 +/- 1.152	78.8 +/- 12.8	4.67 +/- 0.78	69	1.1	
RDY-091-QZH	a	0.1435	400	0.3	0.3522 +/- 0.0114	51.929 +/- 1.426	146.191 +/- 4.763	260.2 +/- 9.6	356 +/- 9.98	98	89.3	398.8 +/- 10.1
			700	0.3	0.2465 +/- 0.0073	6.849 +/- 0.256	27.542 +/- 0.992	126 +/- 6.8	42.81 +/- 1.8	90	10.7	
			1100	0.3	0.0076 +/- 0.0154	-0.036 +/- 0.097	-4.659 +/- 15.744	300.3 +/- 629.8	-	-	-	
RDY-092-QZH	a	0.1489	400	0.3	0.3248 +/- 0.0154	38.256 +/- 1.205	116.885 +/- 5.866	235.9 +/- 12.1	251.35 +/- 8.13	98	94.7	265.3 +/- 8.2
			700	0.3	0.0437 +/- 0.0115	2.202 +/- 0.157	49.981 +/- 13.563	193.8 +/- 60.8	13.97 +/- 1.08	94	5.3	
			1100	0.3	0.0136 +/- 0.0105	0.067 +/- 0.093	4.886 +/- 7.767	175.3 +/- 165.1	-	-	-	
RDY-093-QZH	a	0.1374	400	0.3	0.2753 +/- 0.0144	47.933 +/- 1.407	172.834 +/- 9.248	322.4 +/- 17.8	344.18 +/- 10.28	99	84.2	408.9 +/- 10.6
			700	0.3	0.1556 +/- 0.0139	9.319 +/- 0.327	59.432 +/- 5.489	202.1 +/- 20.3	64.71 +/- 2.41	95	15.8	
			1100	0.3	-0.0244 +/- 0.0101	0.123 +/- 0.09	-4.993 +/- 4.196	-163.3 +/- 83.2	-	-	-	
RDY-094-QZH	a	0.1256	400	0.3	0.1776 +/- 0.0133	34.568 +/- 1.037	193.216 +/- 14.658	349.1 +/- 27.7	271.96 +/- 8.29	99	89.3	304.5 +/- 8.5
			700	0.3	0.0705 +/- 0.013	4.275 +/- 0.221	60.199 +/- 11.427	171 +/- 36.5	32.49 +/- 1.79	95	10.7	
			1100	0.3	0.0135 +/- 0.0123	-0.06 +/- 0.097	-4.425 +/- 8.191	95.4 +/- 128.7	-	-	-	

RDY-095-QZH	a	0.1284	400	0.3	0.303 +/- 0.0153	39.979 +/- 1.14	131.03 +/- 6.708	257.8 +/- 14.3	305.42 +/- 8.92	98	92.1	331.6 +/- 9.0
			700	0.3	0.1208 +/- 0.0142	3.707 +/- 0.188	30.456 +/- 3.811	129.8 +/- 19.3	26.17 +/- 1.5	91	7.9	
			1100	0.3	0.0476 +/- 0.0146	-0.151 +/- 0.097	-3.168 +/- 2.241	50.7 +/- 30	-			
RDY-096-QZH	a	0.1478	400	0.3	0.3508 +/- 0.013	37.483 +/- 1.016	106.658 +/- 3.918	229.6 +/- 9.9	247.55 +/- 6.91	98	93.9	263.7 +/- 7.0
			700	0.3	0.0454 +/- 0.0109	2.507 +/- 0.147	55.176 +/- 13.545	270.7 +/- 72.6	16.11 +/- 1.02	95	6.1	
			1100	0.3	0.0087 +/- 0.0121	0.089 +/- 0.084	10.336 +/- 17.414	-27.6 +/- 171.7	-			

Notes:

¹ Computed by comparison to ²⁰Ne signal in air pipettes. 1-sigma uncertainty includes measurement uncertainty of ²⁰Ne signal in this analysis and the reproducibility of the air pipette signal (0.8%)

² Computed by comparison to ²¹Ne signal in air pipettes. 1-sigma uncertainty includes measurement uncertainty of ²¹Ne signal in this analysis and the reproducibility of the air pipette signal (2%)

³ Isotope ratio measured internally during each analysis: does not involve normalization to the Ne isotope signals in the air pipettes.

⁴ Analyses where cosmogenic ²¹Ne was not distinguishable from zero at 1 sigma are not shown. Cosmogenic ²¹Ne concentrations were calculated by normalization to either the ²⁰Ne or ²¹Ne signal in the air pipettes, depending on which method yielded better precision.