

**Table 1**

Field data and chemical constituents of the water samples

Item	Unit	S1	S2*	S2	S3	S4*	S4	S5	S6
Temperature	°C	66.6	64	63.5	57.6	54.9	58.2	50.9	62.1
Discharge	L/S	1	N	0.3	0.2	N	0.8	0.08	0.02
pH		5.9	7.02	6.2	6.6	7.49	6.3	6	6.1
Eh	mV	-6	-70	12	24	-33	102	44	-6
CO <sub>2</sub>	mg/L	42.68	39.6	32.71	53.97	22	71.72	77.44	31.24
F	mg/L	3.95	5.08	4.47	4.58	5.03	4.04	4.01	3.88
Cl	mg/L	53.2	67.7	54.7	54.7	67.5	57.7	53.9	52.2
SO <sub>4</sub>	mg/L	0.51	0.8	0.3	0.42	0.7	0.38	0.55	0.53
HCO <sub>3</sub>	mg/L	785	788.4	790	790	782.3	793	799	785
CO <sub>3</sub>	mg/L	0	0	0	0	0	0	0	0
Na	mg/L	169	178	171	170	182	173	170	167
K	mg/L	23.8	23.8	23.9	23.8	24	24	23.9	23.4
Mg	mg/L	8.73	25.6	9.06	9.04	25.3	8.53	9.02	8.8
Ca	mg/L	112	92.6	114	113	88.8	114	112	112
TDS	mg/L	764	387	772	771	371	778	773	760
SiO <sub>2</sub>	mg/L	63.8	73.3	67.5	68.2	73.9	63.2	65.4	65.4
pCO <sub>2</sub>	atm	0.60	0.12	0.44	0.24	0.04	0.38	0.46	0.47
δ <sup>18</sup> O	‰	-9.8	-9.4	-9.5	-9.3	-9.8	-8.9	-9.1	-8.9
δ <sup>2</sup> H	‰	-67.5	-74.4	-65.3	-66.5	-76.5	-63.9	-64.3	-67.1

The symbol “\*” represents the water sample which was collected in 2013.

**Table 2**

Estimated reservoir temperature using silica and cationic geothermometers and circulation depth of the Heinitang hot springs.

Simple ID	Quartz (°C)	Chalcedony (°C)	Na-K (°C)	K-Mg (°C)	Circulation depth (m)
S1	113	84	232	63	1507
S2*	120	92	226	57	1671
S2	116	87	231	63	1573
S3	116	88	232	63	1584
S4*	120	92	225	57	1682
S4	113	84	230	63	1495
S5	114	85	232	63	1534
S6	114	85	232	63	1534

The calculation results are retained as integers. The symbol “\*” represents the water sample collected in 2013.

**Table 3**

The ratio of Ca and HCO<sub>3</sub>, Mg and Ca, and the water type of the Heinitang hot spring

Simple ID	$\gamma\text{Ca}/\gamma\text{HCO}_3$ (meq/meq)	$\gamma\text{Mg}/\gamma\text{Ca}$ (meq/meq)	Hydrochemical Type
S1	0.44	0.13	HCO <sub>3</sub> -Ca•Na
S2*	0.35	0.46	HCO <sub>3</sub> -Ca•Na
S2	0.44	0.13	HCO <sub>3</sub> -Ca•Na
S3	0.44	0.13	HCO <sub>3</sub> -Ca•Na
S4*	0.35	0.47	HCO <sub>3</sub> -Ca•Na
S4	0.44	0.12	HCO <sub>3</sub> -Ca•Na
S5	0.43	0.13	HCO <sub>3</sub> -Ca•Na
S6	0.44	0.13	HCO <sub>3</sub> -Ca•Na

The symbol “\*” represents the water samples which were collected in 2013.

**Table 4**

SI values with respect to minerals in the water samples.

Simple ID	Anhydrite CaSO <sub>4</sub>	Aragonite CaCO <sub>3</sub>	Calcite CaCO <sub>3</sub>	Dolomite CaMg(CO <sub>3</sub> ) <sub>2</sub>	Gypsum CaSO <sub>4</sub> •2H <sub>2</sub> O	Halite NaCl
S1	-3.67	-0.32	-0.21	-1.03	-3.79	-6.68
S2*	-3.66	0.68	0.8	1.55	-3.72	-7.48
S2	-3.94	-0.05	0.06	-0.46	-4.02	-6.66
S3	-3.86	0.27	0.39	0.21	-3.89	-6.66
S4*	-3.84	0.99	1.11	2.22	-3.82	-6.59
S4	-3.89	-0.02	0.1	-0.4	-3.93	-6.63
S5	-3.82	-0.41	-0.29	-1.14	-3.79	-6.66
S6	-3.71	-0.18	-0.06	-0.71	-3.78	-6.69

The symbol “\*” represents the water samples collected in 2013.

**Table 5**

Concentrations of the free calcium and ion pairs of calcium in the Heinitang hot spring.

Simple ID	Ca (mmol/L)	CaHCO <sub>3</sub> <sup>+</sup> (mmol/L)	CaCO <sub>3</sub> <sup>0</sup> (10 <sup>-2</sup> mmol/L)	CaSO <sub>4</sub> <sup>0</sup> (10 <sup>-4</sup> mmol/L)	CaOH <sup>+</sup> (10 <sup>-6</sup> mmol/L)	CaHSO <sub>4</sub> <sup>+</sup> (10 <sup>-8</sup> mmol/L)
S1	2.48	0.31	0.50	7.95	0.22	1.63
S2*	2.00	0.25	5.00	11.3	2.36	0.14
S2	2.52	0.32	0.90	4.69	0.44	0.45
S3	2.50	0.31	1.80	6.43	1.11	0.22
S4*	1.89	0.22	9.70	9.03	6.56	0.03
S4	2.53	0.31	0.90	5.88	0.56	0.4
S5	2.49	0.3	0.40	8.25	0.28	0.97
S6	2.48	0.3	0.70	8.2	0.35	0.96

The symbol “\*” represents the water sample collected in 2013.

