NIST Chemistry WebBook, SRD 69

Quartz (SiO2)

- **Formula:** O_2Si
- **Molecular weight:** 60.0843
- **IUPAC Standard InChI:**
  - InChI=1S/O2Si/c1-3-2
  - Download the identifier in a file.

- **IUPAC Standard InChIKey:** VYPSYNLAJGMNEJ-UHFFFAOYSA-N
- **CAS Registry Number:** 14808-60-7
- **Chemical structure:**

This structure is also available as a 2d Mol file or as a computed 3d SD file
The 3d structure may be viewed using Java or Javascript.

- **Species with the same structure:**
  - Silica, vitreous
  - Dioxosilane
- **Other names:** alpha-quartz; Silicon oxide
- **Information on this page:**
  - Solid Phase Heat Capacity (Shomate Equation)
  - References
  - Notes
- **Other data available:**
  - Condensed phase thermochemistry data
  - IR Spectrum
- **Options:**
  - Switch to calorie-based units

Solid Phase Heat Capacity (Shomate Equation)

Go To: Top, References, Notes

$C_p^\circ = A + B*t + C*t^2 + D*t^3 + E/t^2$

$H^\circ - H^\circ_{298.15} = A*t + B*t^2/2 + C*t^3/3 + D*t^4/4 - E/t + F - H$

$S° = A*\ln(t) + B*t + C*t^2/2 + D*t^3/3 - E/(2*t^2) + G$

C_p = heat capacity (J/mol*K)

H° = standard enthalpy (kJ/mol)

S° = standard entropy (J/mol*K)

t = temperature (K) / 1000.

View plot Requires a JavaScript / HTML 5 canvas capable browser.

Temperature (K)	298. - 847.	847. - 1996.
A	-6.076591	58.75340
B	251.6755	10.27925
C	-324.7964	-0.131384
D	168.5604	0.025210
E	0.002548	0.025601
F	-917.6893	-929.3292
G	-27.96962	105.8092
H	-910.8568	-910.8568
Reference	Chase, 1998	Chase, 1998
Comment	quartz phase; Data last reviewed in June, 1967	quartz phase; Data last reviewed in June, 1967

Temperature (K)	**C_p (J/mol*K)**	**S° (J/mol*K)**	**-(G° - H°$_{298.15}$)/T (J/mol*K)**	**H° - H°$_{298.15}$ (kJ/mol)**
298.	44.57	41.44	41.47	-0.01
300.	44.77	41.74	41.47	0.08
400.	53.43	55.87	43.34	5.01
500.	59.64	68.50	47.13	10.68
600.	64.42	79.81	51.65	16.89
700.	68.77	90.06	56.42	23.55
800.	73.70	99.56	61.22	30.67

Temperature (K)	**C_p (J/mol*K)**	**S° (J/mol*K)**	**-(G° - H°$_{298.15}$)/T (J/mol*K)**	**H° - H°$_{298.15}$ (kJ/mol)**
847.	67.42	104.7	63.47	34.93

900.	67.95	108.8	66.02	38.51
1000.	68.95	116.0	70.66	45.36
1100.	69.96	122.6	75.09	52.30
1200.	70.96	128.8	79.31	59.35
1300.	71.96	134.5	83.34	66.50
1400.	72.97	139.9	87.18	73.74
1500.	73.97	144.9	90.87	81.09
1600.	74.98	149.7	94.40	88.54
1700.	75.98	154.3	97.79	96.08
1800.	76.99	158.7	101.0	103.7
1900.	77.99	162.9	104.2	111.5

References

Go To: Top, Solid Phase Heat Capacity (Shomate Equation), Notes

Chase, 1998
Chase, M.W., Jr., *NIST-JANAF Themochemical Tables, Fourth Edition*, **J. Phys. Chem. Ref. Data, Monograph 9**, 1998, 1-1951. [all data]

Notes

Go To: Top, Solid Phase Heat Capacity (Shomate Equation), References

- Data from NIST Standard Reference Database 69: *NIST Chemistry WebBook*
- The National Institute of Standards and Technology (NIST) uses its best efforts to deliver a high quality copy of the Database and to verify that the data contained therein have been selected on the basis of sound scientific judgment. However, NIST makes no warranties to that effect, and NIST shall not be liable for any damage that may result from errors or omissions in the Database.
- Customer support for NIST Standard Reference Data products.