

Selected Tables from the CRC Handbook of Chemistry and Physics

Platform: Windows

Requires Mathcad 3.1 or higher, 7 MB hard disk space

Available for ground shipment



This electronic version of the prestigious *CRC Handbook of Chemistry and Physics* includes over 80 tables from the 73rd Edition (1992) making it the most useful collection of online reference tables available. And because it's a Mathcad powered Electronic Book, every number and formula is "live" and interactive. This means you can double-click on any formula, data or plot and drag-and-drop it directly into your document. Then change variables and Mathcad will recalculate equations and redraw graphs instantly. Numbers in tables even paste with correct units. In the table "Ionization Potentials of Gas-Phase Molecules," for example, the numbers will paste with the units kilojoules per mole. Use the added flexibility of Mathcad's unit facility to freely convert from one unit system to another.

[Table of Contents](#)[Product Sample](#)[Back to Product List](#)

Mathcad - [CRC CHEM. & PHYSICS: Enthalpy of Vaporization]

File Edit Text Math Graphics Symbolic Window Help

3.6.2 Enthalpy of Vaporization of Organic Compounds

Molecular Formula	Name	T_b (°C)	$\Delta_{vap}H$ (T_b) (kJ/mol)	$\Delta_{vap}H$ (25°C) (kJ/mol)
C ₄ H ₈ Br ₂	1,4-Dibromobutane			53.09
C ₄ H ₈ Cl ₂	1,2-Dichlorobutane	124.1	33.90 E	39.58
C ₄ H ₈ Cl ₂	1,4-Dichlorobutane			46.36
C ₄ H ₈ O	2-Butanone	79.59	31.30	34.79
C ₄ H ₈ O	Tetrahydrofuran	65	29.81	31.99
C ₄ H ₈ O ₂	1,3-Dioxane	106.1	34.37 E	39.09
C ₄ H ₈ O ₂	1,4-Dioxane	101.5	34.16 E	38.60
C ₄ H ₈ O ₂	Ethyl acetate	77.11	31.94	35.60
C ₄ H ₈ O ₂	Methyl propanoate	79.8	32.24	35.85

Page 1 auto

The CRC Materials Science Access online reference tables, similar to this thermodynamic properties table for organic compounds, for technical data that can be incorporated into your document with drag-and-drop ease.

Sample topics include: Basic Constants, Units and Conversion Factors, Properties of the Elements, Thermodynamics, Biochemistry, Analytical Chemistry, Properties of Solids, Health and Safety Information, Mathematical Tables, and more.

Selected Tables from the CRC Handbook of Chemistry and Physics

TABLE OF CONTENTS (page 1 of 3)

Since its first edition in 1913, the *CRC Handbook of Chemistry and Physics* has been one of the world's most widely used sources of data in the physical sciences. The Handbook has grown to almost 2500 pages and now covers a wide range of topics in chemistry, physics, and related disciplines. Its objective is to provide broad coverage of all types of data commonly encountered by physical scientists, with as much depth as can be accommodated in a one-volume format. References to other data sources are given in most tables. This electronic version contains selected tables from the 73rd Edition of the *CRC Handbook of Chemistry and Physics*, which was published in June 1992. The tables that are included emphasize the most basic data needed by physical scientists and engineers.



Table of Contents from the CRC Handbook of Chemistry and Physics

Section 1: BASIC CONSTANTS, UNITS, AND CONVERSION FACTORS

- Fundamental Physical Constants
- Standard Atomic Weights (1989)
- International System of Units (SI)
- Conversion Factors
- Conversion Between Temperature Scales
- Scientific Abbreviations and Symbols
- Acceleration Due to Gravity

Section 2: PROPERTIES OF THE ELEMENTS

- Melting, Boiling, and Critical Temperatures of the Elements
- Heat Capacity of the Elements at 25°C
- Thermal Conductivity of the Elements

Section 3: THERMODYNAMICS

- CODATA Key Values for Thermodynamics
- Standard Thermodynamic Properties of Chemical Substances
- Enthalpy of Fusion of Inorganic Substances
- Enthalpy of Fusion of Some Organic Compounds
- Enthalpy of Vaporization of Inorganic Substances
- Enthalpy of Vaporization of Organic Compounds

[Product Sample](#)

[Back to Product List](#)

Selected Tables from the CRC Handbook of Chemistry and Physics

TABLE OF CONTENTS (page 2 of 3)



Activity Coefficients of Acids, Bases, and Salts
Thermodynamic Properties of Air
Properties of Water in the Range 0 - 100°C
Enthalpy of Vaporization of Water
Fixed Point Properties of H₂O and D₂O
Thermal Conductivity of Saturated H₂O and D₂O
Density of Standard Mean Ocean Water
Vapor Pressure of Ice
Vapor Pressure of Water from 0 to 373°C
Vapor Pressure of Fluids at Temperatures Below 300K
Critical Constants, Boiling Points, and
Melting Points of Selected Compounds
Viscosity of Gases
Viscosity of Liquids
Thermal Conductivity of Gases
Thermal Conductivity of Certain Liquids
Properties of Cryogenic Fluids

Section 4: BIOCHEMISTRY

Properties of Common Amino Acids
Properties of Purine and Pyrimidine Bases
The Genetic Code
Properties of Selected Fatty Acids

Section 5: ANALYTICAL CHEMISTRY

Standard Solutions of Acids, Bases, and Salts
Standard Solutions of Oxidation and Reduction Reagents
Acid-Base Indicators
Electrochemical Series
Dissociation Constants of Organic Bases in Aqueous Solution
Dissociation Constants of Inorganic Bases in Aqueous Solution at 298 K
Dissociation Constants of Organic Acids in Aqueous Solution
Dissociation Constants of Inorganic Acids in Aqueous Solution
Ionization Constant of Normal and Heavy Water
Solubility Product Constants

[Product Sample](#)

[Back to Product List](#)

Selected Tables from the CRC Handbook of Chemistry and Physics

TABLE OF CONTENTS (page 3 of 3)



Section 6: ATOMIC AND MOLECULAR DATA

- Electron Configuration of Neutral Atoms in the Ground State
- Ionization Potentials of Atoms and Atomic Ions
- Ionization Potentials of Gas-Phase Molecules
- Photon Attenuation Coefficients
- Dipole Moments of Molecules in the Gas Phase
- Permittivity (Dielectric Constant) of Pure Liquids
- Force Constants for Bond Stretching
- Fundamental Vibrational Frequencies of Small Molecules
- Black Body Radiation
- Index of Refraction of Water
- Index of Refraction of Air

Section 7: PROPERTIES OF SOLIDS

- Ionic Radii in Crystals
- Electrical Resistivity of Pure Metals
- Thermal and Physical Properties of Pure Metals

Section 8: HEALTH AND SAFETY INFORMATION

- Properties of Large Production and Priority Organic Pollutants
- Properties of Common Solvents
- Threshold Limit Values for Airborne Contaminants

Appendix A: MATHEMATICAL TABLES

INDEX

[Product Sample](#)

[Back to Product List](#)

Selected Tables from the CRC Handbook of Chemistry and Physics



SAMPLE PAGE (page 1 of 3)

Properties of Water in the Range 0 - 100°C

t(*C)	Density (g/cm ³)	C _p (J/g-K)	Vap. Pres (kPa)	Visc. (uPa-s)	Ther. Cond. (mW/K-m)	Diel. Const.	Surf. Ten. (mN/m)
0	0.9984	4.217	0.6113	1793	561.0	87.90	75.64
10	0.99970	4.192	1.2281	1307	580.0	83.96	74.23
20	0.99821	4.181	2.3388	1002	598.4	80.20	72.75
30	0.99565	4.178	4.2455	797.7	615.4	76.70	71.20
40	0.99222	4.178	7.3814	653.2	630.5	73.17	69.60
50	0.98803	4.180	12.344	547.0	643.5	69.88	67.94
60	0.98320	4.184	19.932	466.5	654.3	66.73	66.24
70	0.97778	4.189	31.176	404.0	663.1	63.73	64.47
80	0.97182	4.196	47.373	354.4	670.0	60.86	62.67
90	0.96535	4.205	70.117	314.5	675.3	58.12	60.82
100	0.95840	4.215	101.325	281.8	679.1	55.51	58.91

This table summarizes the best available values of the density, specific heat capacity at constant pressure (C_p), vapor pressure, viscosity, thermal conductivity, dielectric constant, and surface tension for liquid water in the range 0 - 100°C. All values (except vapor pressure) refer to a pressure of 100 kPa (1 bar).

References

1. L. Harr, J. S. Gallagher, and G. S. Kell, *NBS/NRC Steam Tables*, Hemisphere Publishing Corp., 1984.
2. K. N. Marsh, Ed. *Recommended Reference Materials for the Realization of Physicochemical Properties*, Blackwell Scientific Publications, Oxford, 1987.
3. J. V. Sengers and J. T. R. Watson, Improved international formulations for the viscosity and thermal conductivity of water substance, *J. Phys. Chem. Ref. Data*, 15, 1291, 1986.
4. D. G. Archer and P. Wang, The dielectric constant of water and Debye-Huckel limiting law slopes, *J. Phys. Chem. Ref. Data*, 19, 1990.
5. N. B. Vargaftik, et al., International tables of the surface tension of water, *J. Phys. Chem. Ref. Data*, 12, 817, 1983.

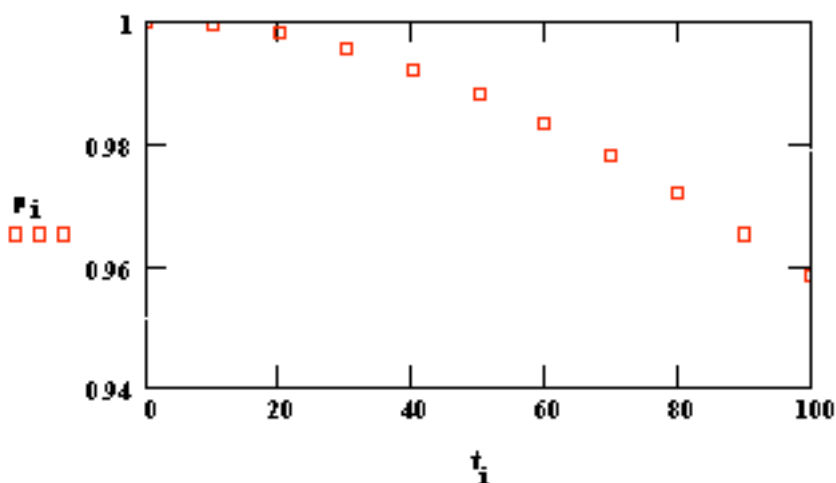
[Table of Contents](#)[Back to Product List](#)

Selected Tables from the CRC Handbook of Chemistry and Physics

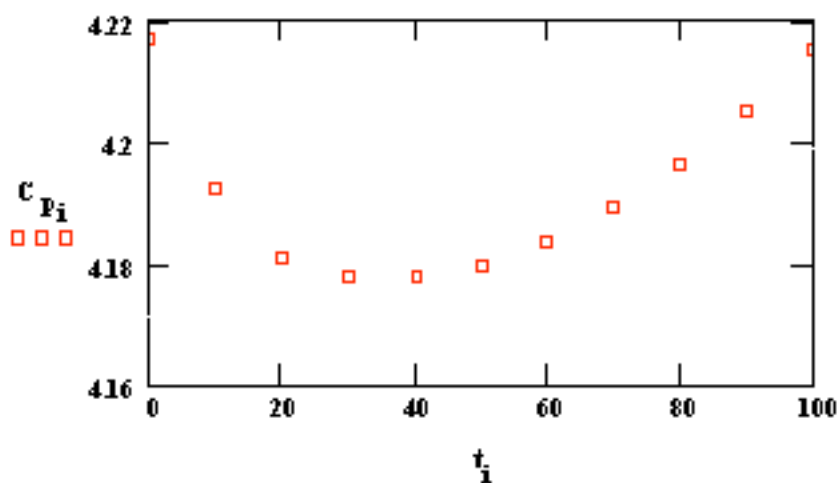
SAMPLE PAGE (page 2 of 3)

Mathcad Plots of Selected Data

Density (g/cm³) of Water versus Temperature (°C)



Heat Capacity (J/g·K) of Water versus Temperature (°C)



[Table of Contents](#)

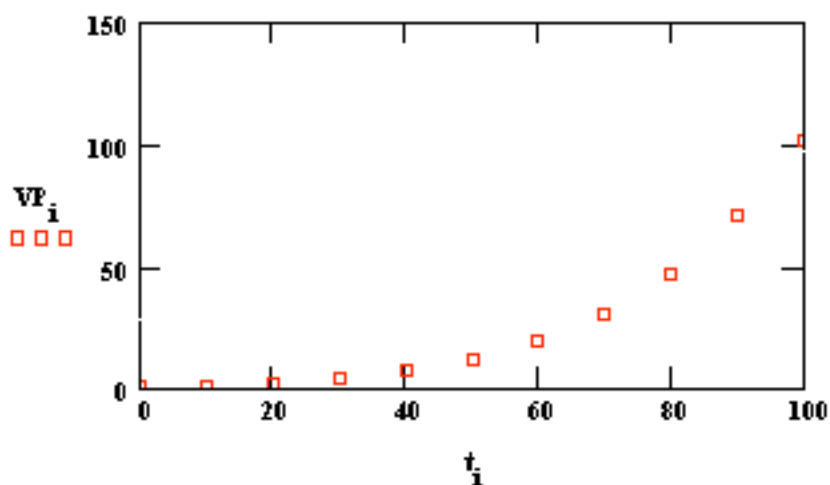
[Back to Product List](#)

Selected Tables from the CRC Handbook of Chemistry and Physics

SAMPLE PAGE (page 3 of 3)



Vapor Pressure (kPa) of Water versus Temperature ($^{\circ}\text{C}$)



[Table of Contents](#)

[Back to Product List](#)