

# 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)
$C_4H_8Br_2$	1,4-Dibromobutane				53.09
$C_4H_8Cl_2$	1,2-Dichlorobutane	124.1	33.90	E	39.58
$C_4H_8Cl_2$	1,4-Dichlorobutane				46.36
$C_4H_8O$	2-Butanone	79.59	31.30		34.79
$C_4H_8O$	Tetrahydrofuran	65	29.81		31.99
$C_4H_8O_2$	1,3-Dioxane	106.1	34.37	E	39.09
$C_4H_8O_2$	1,4-Dioxane	101.5	34.16	E	38.60
$C_4H_8O_2$	Ethyl acetate	77.11	31.94		35.60
$C_4H_8O_2$	Methyl propanoate	79.8	32.24		35.85

*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 H<sub>2</sub>O and D<sub>2</sub>O  
Thermal Conductivity of Saturated H<sub>2</sub>O and D<sub>2</sub>O  
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 <sup>3</sup> )	C <sub>p</sub> (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<sub>p</sub>), 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.

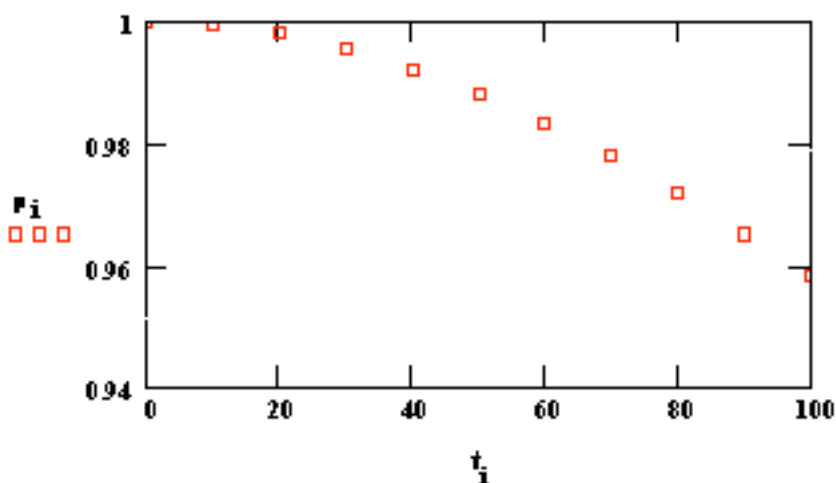
[Table of Contents](#)[Back to Product List](#)

# Selected Tables from the CRC Handbook of Chemistry and Physics

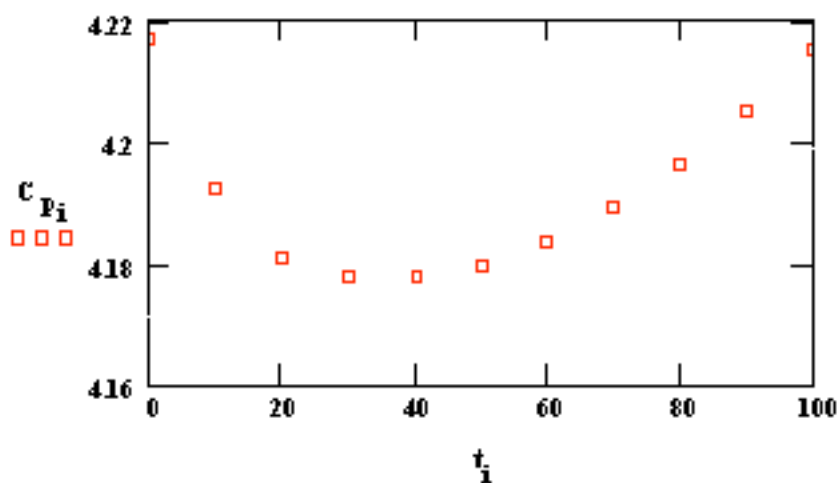
SAMPLE PAGE (page 2 of 3)

## Mathcad Plots of Selected Data

Density (g/cm<sup>3</sup>) of Water versus Temperature (°C)



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



[Table of Contents](#)

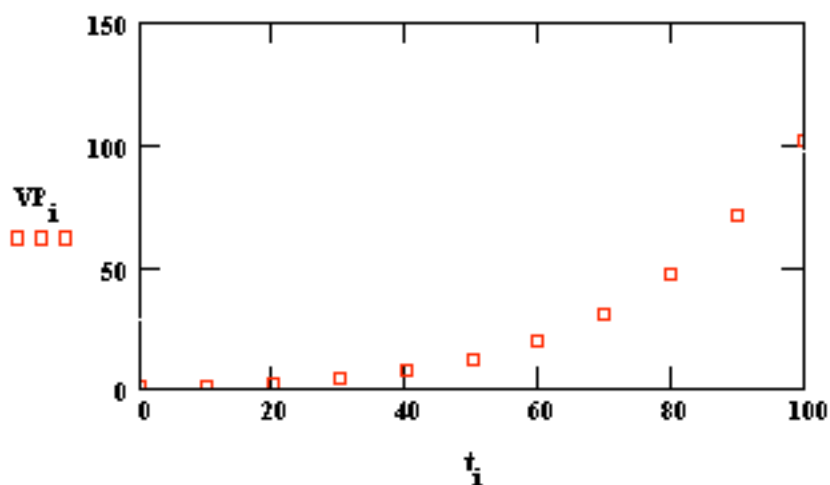
[Back to Product List](#)

# *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](#)