

SteamTab *Quad*[®] Quick Reference

Scientific IAPWS-95	Industrial IAPWS-97	Calculates at Specified	Calling Sequence Example
Saturated vapor, liquid or two-phase functions			
STPSAT	ASTPSAT	pressure (<i>P</i>)	STPSAT(pressure, quality, code, <i>units</i>)
STTSAT	ASTTSAT	temperature (<i>T</i>)	STTSAT(temperature, quality, code, <i>units</i>)
Superheated or subcooled functions			
STTP	ASTTP	temperature and pressure (<i>T-P</i>)	STTP(temperature, pressure, code, <i>units</i>)
STTV	ASTTV	temperature and volume (<i>T-V</i>)	STTV(temperature, volume, code, <i>units</i>)
STTH	ASTTH	temperature and enthalpy (<i>T-H</i>)	STTH(temperature, enthalpy, code, <i>units</i>)
STTS	ASTTS	temperature and entropy (<i>T-S</i>)	STTS(temperature, entropy, code, <i>units</i>)
STTU	ASTTU	temperature and internal energy (<i>T-U</i>)	STTU(temperature, internal, code, <i>units</i>)
STPV	ASTPV	pressure and volume (<i>P-V</i>)	STPV(pressure, volume, code, <i>units</i>)
STPH	ASTPH	pressure and enthalpy (<i>P-H</i>)	STPH(pressure, enthalpy, code, <i>units</i>)
STPS	ASTPS	pressure and entropy (<i>P-S</i>)	STPS(pressure, entropy, code, <i>units</i>)
STPU	ASTPU	pressure and internal energy (<i>P-U</i>)	STPU(pressure, internal, code, <i>units</i>)
Constant properties functions			
STWM	ASTMW	Molecular weight, 18.015 kg/kmol	STMW(<i>units</i>)
STTC	ASTTC	Critical temperature, 373.946°C	STTC(<i>units</i>)
STPC	ASTPC	Critical pressure, 220.64 bar	STPC(<i>units</i>)
STVC	ASTVC	Critical specific volume, 0.003106 m ³ /kg	STVC(<i>units</i>)
STRC	ASTRC	Critical specific density, 322 kg/m ³	STRC(<i>units</i>)
STZC	ASTZC	Critical compressibility factor, 0.229441	STZC(<i>units</i>)
STTPT	ASTTPT	Triple point temperature, 0.01°C	STTPT(<i>units</i>)
STTPP	ASTTPP	Triple point pressure, 0.00611657 bar	STTPP(<i>units</i>)

Note: Append the letter O to the function names for the older Scientific (NBS/NRC-84) and the Industrial (IFC-67) Formulations. For example, use OSTxx for the NBS/NRC-84 formulation and OASTxx for the IFC-67 formulation.

Quality	
0	Saturated Liquid
1	Saturated Vapor
0 < Q < 1	Two-phase
-1*	Indeterminate*
-2*	Superheated vapor*
-3*	Subcooled liquid*
Units	
0 or none	Metric/SI
1	English

*Cannot be specified as a function argument. Only returned as a calculated value.

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Code	Steam Property	Metric/SI Units	English Units
0	T Temperature, T	°C	°F
1	P Pressure, P	bar	psia
2	V Volume, V	m ³ /kg	ft ³ /lb
3	D Density, ρ	kg/m ³	lb/ft ³
4	Z Compressibility factor, Z	dimensionless	dimensionless
5	A Helmholtz free energy, A	kJ/kg	Btu/lb
6	S Entropy, S	kJ/(kg·°C)	Btu/(lb·°F)
7	U Internal energy, U	kJ/kg	Btu/lb
8	H Enthalpy, H	kJ/kg	Btu/lb
9	G Gibbs free energy, G	kJ/kg	Btu/lb
10	CV Heat capacity at constant volume, C_v	kJ/(kg·°C)	Btu/(lb·°F)
11	CP Heat capacity at constant pressure, C_p	kJ/(kg·°C)	Btu/(lb·°F)
12	W Speed of sound, v	m/s	ft/s
13	ALPHA Coefficient of thermal expansion, $\alpha = \rho(\partial V/\partial T)_P$	1/°C	1/°F
14	KAPPA Isothermal compressibility, $\kappa = -\rho(\partial V/\partial P)_T$	1/bar	1/psia
15	DPDT dpdt, $(\partial P/\partial T)_V$	bar/°C	psia/°F
16	DVDT dvdt, $(\partial V/\partial T)_P$	m ³ /(kg·°C)	ft ³ /(lb·°F)
17	DVDP dvdp, $(\partial V/\partial P)_T$	m ³ /(kg·bar)	ft ³ /(lb·psi)
18	MU Viscosity (dynamic), μ	μPa·s	lb/(ft·hr)
19	KT Thermal conductivity, K	W/(m·°C)	Btu/(hr·ft·°F)
20	ST Surface tension, σ	N/m	N/m
21	PR Prandtl number, N_{Pr}	dimensionless	dimensionless
22	DC Static dielectric constant	dimensionless	dimensionless
23	IJT Isothermal Joule-Thomson coefficient	kJ/(kg·bar)	Btu/(lb·psia)
24	JT Joule-Thomson coefficient	°C/bar	°F/psia
25	Q Quality (vapor mass fraction)	dimensionless	dimensionless
26	GAMMA Isentropic exponent, $\gamma = -V/P(\partial P/\partial V)_S$	dimensionless	dimensionless
27	HV Latent heat of vaporization	kJ/kg	Btu/lb