![KCE ThermoFluidProperties logo]

ThermoFluidProperties

Property Library for Hexamethyldisiloxane (MM) $C_6H_{18}OSi_2$

LibMM

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Property Functions

Calculation Programs

"MM" means Hexamethyldisiloxane ($C_6H_{18}OSi_2$)

Functional Dependence	Function Name	Call from Fortran program	Property or Function	Unit of the result
$c_p = f(p,t,x)$	cp_ptx_MM	CPPTXMM(P,T,X)	Specific isobaric heat capacity	kJ/(kg K)
$c_v = f(p,t,x)$	cv_ptx_MM	CVPTXMM(P,T,X)	Specific isochoric heat capacity	kJ/(kg K)
$\left(\dfrac{\partial p}{\partial T}\right)_v = f(p,t,x)$	dpdtv_ptx_MM	DPDTVMM(P,T,X)	Derivative of pressure with respect to temperature (at constant spec. volume)	kPa/K
$\left(\dfrac{\partial p}{\partial v}\right)_T = f(p,t,x)$	dpdvt_ptx_MM	DPDVTMM(P,T,X)	Derivative of pressure with respect to specific volume (at constant temperature)	kPa/(m³/kg)
$\eta = f(p,t,x)$	eta_ptx_MM	ETAPTXMM(P,T,X)	Dynamic viscosity	Pa·s
$h = f(p,t,x)$	h_ptx_MM	HPTXMM(P,T,X)	Specific enthalpy	kJ/kg
$\kappa = f(p,t,x)$	kappa_ptx_MM	KAPPAPTXMM(P,T,X)	Isentropic exponent	-
$\lambda = f(p,t,x)$	lamda_ptx_MM	LAMPTXMM(P,T,X)	Thermal conductivity	W/(m·K)
$\nu = f(p,t,x)$	nu_ptx_MM	NUPTXMM(P,T,X)	Kinematic viscosity	m²/s
$p_s = f(t)$	ps_t_MM	PSTMM(T)	Vapor pressure from temperature	bar
$\rho = f(p,t,x)$	rho_ptx_MM	RHOPTXMM(P,T,X)	Density	kg/m³
$s = f(p,t,x)$	s_ptx_MM	SPTXMM(P,T,X)	Specific entropy	kJ/(kg K)
$t = f(p,h)$	t_ph_MM	TPHMM(P,H)	Backward function: Temperature from pressure and enthalpy	°C
$t = f(p,s)$	t_ps_MM	TPSMM(P,S)	Backward function: Temperature from pressure and entropy	°C
$t_s = f(p)$	ts_p_MM	TSPMM(P)	Saturation temperature from pressure	°C
$u = f(p,t,x)$	u_ptx_MM	UPTXMM(P,T,X)	Specific internal energy	kJ/kg
$v = f(p,t,x)$	v_ptx_MM	VPTXMM(P,T,X)	Specific volume	m³/kg
$w = f(p,t,x)$	w_ptx_MM	WPTXMM(P,T,X)	Isentropic speed of sound	m/s
$x = f(p,h)$	x_ph_MM	XPHMM(P,H)	Backward function: Vapor fraction from pressure and enthalpy	kg/kg
$x = f(p,s)$	x_ps_MM	XPSMM(P,S)	Backward function: Vapor fraction from pressure and entropy	kg/kg
$Z = f(p,t,x)$	Z_ptx_MM	ZPTXMM(P,T,X)	Compression factor	-

Units: t in °C

          p in bar

          x in (kg of saturated steam)/(kg wet steam)

Range of validity

Temperature range: from $t = -0.15$°C to 399.85 °C
Pressure range: from $p = 0.00001$ bar to 300 bar

Reference state

$h = 0$ kJ/kg and $s = 0$ kJ/(kg K) at $t_B = 100.251$ °C on the boiling curve ($x = 0$; $p_s = p_N = 1.01325$ bar)

Details on the vapor fraction x and on the calculation of wet steam

The wet steam region is calculated automatically by the subprograms. For this purpose the following fixed details on the vapor fraction x are to be considered:

<u>Single-phase region</u>

If the state point to be calculated is located in the single-phase region (liquid or superheated steam) x = −1 must be entered as a pro-forma value.

<u>Wet-steam region</u>

If the state point to be calculated is located in the wet steam region, a value for x between 0 and 1 (x = 0 for saturated liquid, x = 1 for saturated steam) must be entered. In this case, the backward functions result in the appropriate value between 0 and 1 for x. When calculating wet steam either the given value for t <u>and</u> p = -1000 or the given value for p <u>and</u> t = -1000 and in both cases the value for x between 0 and 1 must be entered.

If p <u>and</u> t <u>and</u> x are entered as given values, the program considers p and t to be appropriate to represent the vapor pressure curve. If this is not the case the calculation for the property of the chosen function results in −1000.

Wet steam region: Temperature range from $t = -0.15$°C to $t_c = 245.6$ °C

          Pressure range from $p_s (-0.15$°C$) = 0.01316986$ bar to $p_c = 19.41004475$ bar

Note.

If the calculation results in −1000, the values entered represent a state point beyond the range of validity of MM. For further information on each function and its range of validity see Chapter 3. The same information may also be accessed via the online help pages.