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**Content Based
Chemical Engineering**

Steam - Properties Of Saturated And Superheated Steam

BASIS: Flow of Fluids, Crane Technical Paper No. 410

LIMITS: Pressures from 0.25 to 3208.2 psia for saturated steam; 15 to 1150 psia, up to 1500°F for superheated steam.

NOTE: Always begin a new case by retrieving the original file. Direct entry of data in cells that originally contain table lookups could cause functions to be lost, or incorrect calculations. I format cells requiring entry colored **RED**; calculated values are black.

- 1.) Enter the guage steam pressure at [D5].
- 2.) Enter the superheated steam temperature at [D16]. To obtain the saturated condition properties only, enter a `blank' (spacebar) at [D16]; that will clear the superheated properties from the display.
- 3.) For the saturated properties, linear interpolation is used for pressures not in the saturation table.
- 4.) For superheated properties, double linear interpolation is used for pressures and/or temperatures not in the superheat tables.

Print out using direct EXCEL commands.

<<<<<<< Psafety © January 2001, by Don Coffman >>>>>>>

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Consistent with GOOD ENGINEERING PRACTICE, the burden rests with the USER of these spreadsheets to review ALL calculations, and assumptions. The USER IS FULLY RESPONSIBLE for the results or decisions based on calculations.

This Spreadsheet Requires MACROS to be ENABLED to ASSURE proper operation. See the Workbook Help Sheet for Additional Instructions on Use.

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Properties of Saturated Steam and Water

$P_g =$	635	psig	guage pressure
$P_a =$	649.7	psia	absolute pressure
$T_{sat} =$	494.8	°F	saturation temperature
$H_f =$	481.8	BTU/lb	enthalpy saturated liquid
$H_{fg} =$	721.0	BTU/lb	latent heat of vaporization
$H_g =$	1202.9	BTU/lb	enthalpy saturated gas
$V_l =$	0.020319	cu ft/lb	specific volume saturated liquid
$V_g =$	0.709	cu ft/lb	specific volume saturated gas
$\mu =$	0.0184	cp	viscosity, centipoise
$T_s =$	560.0	°F	superheated steam temperature
$T_{sh} =$	65.2	°F	degrees of superheat
$H_s =$	1254.5	BTU/lb	enthalpy superheated steam
$V_s =$	0.805	cu ft/lb	specific volume superheated steam
$\mu =$	0.0199	cps	viscosity, centipoise

Properties of Saturated Steam and Water

Pg =	4378.17	kPa	guage pressure
Pa =	4479.50	kPa..abs	absolute pressure
Tsat =	257.1	°C	saturation temperature
Hf =	2017.4	kJ/kg	enthalpy saturated liquid
Hfg =	3018.7	kJ/kg	latent heat of vaporization
Hg =	5036.1	kJ/kg	enthalpy saturated gas
VI =	0.00126846	m ³ /kg	specific volume saturated liquid
Vg =	0.044	m ³ /kg	specific volume saturated gas
μ =	1.84237E-05	Pa.s	viscosity, Pascal Seconds
Ts =	293.3	°C	superheated steam temperature
Tsh =	36.2	°C	degrees of superheat
Hs =	5252.3	kJ/kg	enthalpy superheated steam
Vs =	0.050	m ³ /kg	specific volume superheated steam
μ =	1.98724E-05	Pa.s	viscosity, Pascal Seconds

