SOLVAY FLUOR

SOLKANE® - INFORMATION SERVICE

Solkane® 407C Thermodynamics

SOLVAY FLUOR GMBH

Technical Service - Refrigerants -

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Units and Symbols

Symbol	Unit	Meaning/Definition
A, B	[-]	Parameters of the Wagner equation
C	[-]	Parameter of the equation for density of boiling liquid
D	[kJ/(kg K)]	Parameter of the equation for specific heat capacity in an ideal gas state
E, F, G	[-]	Parameter of the Martin-Hou equation
H_0	[kJ/kg]	Constant for the specific enthalpy equation
I	[-]	Parameter of the equation for dynamic viscosity of vapour
J	[-]	Parameter for the boiling liquid enthalpy equation
K	[kJ/(kg)]	Parameter for the boiling liquid entropy equation
L	[Pa s /K]	Parameter of the equation for dynamic viscosity of liquid
M	[W/(m K)]	parameter of the equation for thermal conductivity of the saturated liquid
N	[W/(m K)]	Parameter of the equation for thermal conductivity of the saturated vapour
O	[N/(m K)]	Parameter of the equation for surface tension
P	[kJ/(kg K)]	parameter of the equation for specific heat capacity of the saturated liquid
R	[bar m^3/(kg K)]	Gas constant
S_0	[kJ/(kg K)]	Constant for the specific entropy equation
b	[m^3/kg)]	Parameter of the Martin-Hou equation
c	[kJ/(kg K)]	Specific heat capacity
e	[kJ/kg]	Specific exergy
h	[kJ/kg]	Specific enthalpy
k	[-]	Parameter of the Martin-Hou equation
p	[bar]	Pressure
r	[kJ/kg]	Enthalpy of vaporization
s	[kJ/(kg K)]	Specific entropy
t	[°C]	Temperature
T	[K]	Temperature
v	[m^3/kg]	Specific volume
η	[Pa s]	Dynamic viscosity
λ	[W/(m K)]	Thermal conductivity
ρ	[kg/m^3]	Density
σ	[N/m]	Surface tension

Indices

´	liquid
´´	vapour
c	critical value
R	reduced value
i	run index
u	ambient conditions
p	isobar
v	isochor
0	ideal gas

1 Introduction

The refrigerant Solkane®407C has been developed for the replacement of R22, in particular for air conditioning applications. As a matter of fact, even if the ozone depletion potential of the hydrochlorofluorocarbon (HCFC) R22 is drastically reduced to a fraction of the ODPs of chlorofluorocarbons (0.055 with the reference 1.0 for R11), its use will be gradually reduced and these products will finally be banned[1]. Indeed, by 2030 (2025 for the European Community, with a freeze of production level of 1997 in 2000) the production of HCFCs will be phased out in developed countries[1]. The uses, including refrigerants, is also regulated in EC; all types of new applications will be prohibited with HCFCs from 2004 and refilling of existing systems with virgin product forbidden from 2010.

Solkane®407C is a non-azeotropic (zeotrope) blend with a severe temperature glide of 7 K. It consists of 23 % R32 (CH_2F_2), 25 % R125 (CF_3CHF_2) and 52 % R134a (CF_3CH_2F) by weight. Due to its consistent temperature glide it cannot be considered and handled like a pure fluid. In particular, transfers must always be realized in liquid phase in order to avoid component fractionation. A specific document about handling R407C will be soon available[2]. The hydrofluorocarbons (HFC) R32, R125, and R134a contain only carbon, fluorine and hydrogen. They do not contribute to the depletion of the stratospheric ozone layer. The global warming potential is significantly reduced compared to the CFCs.

Solkane®407C can be used in new equipment and also in some retrofitted R22 ones if absolutely necessary due to regulations.

Solkane®407C is non-flammable. Its toxicity is low and comparable to that of R22. The environmental behaviour and the safety data's of Solkane®407C are also described in the material safety data sheet[3].

[1] In the sense of Montreal Protocol (1995 Vienna meeting)

[2] Order by Fax : +49 (0) 511 857 2178

[3] Order by Fax : +49 (0) 511 857 2178

2 Thermophysical Values

2.1 Physical Data

Chemical name	[-]	Difluoromethane/ Pentafluoroethane/ 1,1,1,2-Tetrafluoroethane
Chemical formula	[-]	CH_2F_2/CHF_2-CF_3/CF_3CH_2 F
CAS No.	[-]	158675-78-6
Molecular weight	[kg/kmol]	86.2
Boiling point[1]	[°C]	-43.6
Dew point[1]	[°C]	-36.6
Temperature glide	[K]	7.0
Freezing point[1]	[°C]	-101.0
Critical temperature	[°C]	86.0
Critical pressure	[bar]	46.3
Saturated liquid density[2]	[kg/m^3]	1136
Saturated vapour density[2]	[kg/m^3]	43.8
Vapour pressure[2]	[bar]	10.19
Enthalpy of vaporization[2]	[kJ/kg]	182.59
Liquid thermal conductivity[2]	[W/mK]	84.66×10^{-3}
Surface tension of liquid[2]	[N/m]	6.512×10^{-3}
Specific heat capacity of liquid[2]	[kJ/(kgK)]	1.541
Specific heat capacity of vapour[1]	[kJ/(kgK)]	1.117
Liquid viscosity[2]	[Pa s]	0.1516×10^{-3}
Saturated vapour viscocity[2]	[Pa s]	12.2282×10^{-6}
Flammability limit in air[1]	[Vol.-%]	none[3]

[1] at 1.013 bar

[2] at 25°C

[3] according to DIN 51649 and UL 2128

2.2 Basis of Thermodynamic Calculation

The thermodynamic calculation equations have been adapted to ISO/DIS 17584, as at 12/2003. They fulfil this standard with the exception of the thermal capacities in a saturated state of 0.58 < T_R < 0.95 and in an overheated state of 0.05MPa < p < 2.5 MPa and T_{max} = 420 K.

The Wagner equation

$$\ln p_R = \left(A_1(1-T_R) + A_2(1-T_R)^{B_1} + A_3(1-T_R)^{B_2} + A_4(1-T_R)^{B_3} + A_5(1-T_R)^{B_4} + A_6\right)/T_R \qquad (1)$$

where $T_R = \frac{T}{T_c}$ and $p_R = \frac{p}{p_c}$

was chosen to describe the bubble and dew pressures. The constants and values for the critical pressure p_C and the critical pressure T_C are as follows:

		Bubble Pressure	Dew Pressure
A_1	[-]	-6.6102789	-9.1030381
A_2	[-]	-1.4132342	10.275949
A_3	[-]	4.7954371	-24.268356
A_4	[-]	-3.8776663	32.465544
A_5	[-]	-1.7421263	-20.814719
A_6	[-]	0.010919942	-0.01227508
B_1	[-]	1.5	1.5
B_2	[-]	2	2
B_3	[-]	2.5	2.5
B_4	[-]	3	3
T_c	[K]	359.18	
p_c	[bar]	46.298	

The density of the boiling liquid is described by the equation

$$\rho'_R = 1 + C_1(1-T_R)^{1/3} + C_2(1-T_R)^{2/3} + C_3(1-T_R) + C_4(1-T_R)^{4/3} \qquad (2)$$

where $\rho'_R = \frac{\rho'}{\rho_c}$.

The constants and the value for the critical density are:

C_1	[-]	1.782668	C_4	[-]	1.705800
C_2	[-]	1.954322	ρ_c	[kg/m³]	484.23
C_3	[-]	-2.345901			

The specific heat capacity under ideal gas conditions is represented by the equation

$$c_p{}^0 = D_1 + D_2T + D_3T^2 + D_4T^3 + D_5/T \tag{3}$$

The coefficients are:

D_1	[kJ/(kg K)]	5.16830E-01	D_4	[kJ/(kg K^3)]	-3.16270E-09
D_2	[kJ/(kg K^2)]	5.86760E-04	D_5	[kJ/kg]	-1.47650E+01
D_3	[kJ/kg]	2.94150E-06			

The equation of state according to Martin-Hou is

$$p = \frac{RT}{z} + \frac{E_1 + F_1T + G_1e^{-kT_R}}{z^2} + \frac{E_2 + F_2T + G_2e^{-kT_R}}{z^3} + \frac{E_3}{z^4} + \frac{E_4 + F_4T + G_4e^{-kT_R}}{z^5} \tag{4}$$

and is a good representation of the pvT relationship for Solkane®407C. The coefficients of the equation are:

E_1	[-]	-1.5897806E-03	F_2	[-]	3.9670588E-09
E_2	[-]	-1.8520725E-06	F_4	[-]	7.2924704E-14
E_3	[-]	-2.9562144E-10	G_1	[-]	-3.3507158E-02
E_4	[-]	-2.9268699E-11	G_2	[-]	-7.2858033E-05
F_1	[-]	3.3092058E-06	G_4	[-]	2.0583603E-09
B	[m^3/kg]	-1.185968298E-03	K	[-]	5.475
R	[bar m^3/(kgK)]	9.64516E-04			

with $z = v - b$. The equation for specific heat capacity under ideal gas conditions (3) and the thermal equation of state (4) form the basis of the specific enthalpy and entropy calculation.

$$h = H_0 + (pv - RT) + D_1T + D_2\frac{T^2}{2} + D_3\frac{T^3}{3} + D_4\ln T + \frac{E_1}{z} + \frac{E_2}{2z^2} + \frac{E_3}{3z^3} + \frac{E_4}{4z^4} + e^{-k\cdot T_R}\cdot(1 + k\cdot T_R)\cdot\left(\frac{G_1}{z} + \frac{G_2}{2z^2} + \frac{G_4}{4z^4}\right) \tag{5}$$

and

$$s = S_0 + R\ln\left(\frac{zp_1}{RT}\right) + D_1\cdot\ln T + D_2T + D_3\frac{T^2}{2} - \frac{D_4}{T} - \left(\frac{F_1}{z} + \frac{F_2}{2z^2} + \frac{F_4}{4z^4}\right) + \frac{k}{T_c}e^{-k\cdot T_R}\left(\frac{G_1}{z} + \frac{G_2}{2z^2} + \frac{G_4}{4z^4}\right) \tag{6}$$

taking p_1 = 1.013 bar where :

H_0	[kJ/kg]	325.02
S_0	[kJ/(kgK)]	-1.2483

For the boiling liquid, enthalpy and entropy are calculated with the following equations :

$$h' = J_1 + J_2(1-T_R) + J_3(1-T_R)^2 + J_4(1-T_R)^3 + J_5(1-T_R)^4 + J_6(1-T_R)^5 \quad (7)$$

$$s' = 1 + K_1 t + K_2 t^2 + K_3 t^3 + K_4 t^4 \quad (8)$$

The temperature t for the calculation of the entropy is in °C and the parameters for both integrated formulas are :

J_1	[-]	355.67085	J_6	[-]	-18355.997
J_2	[-]	-1032.8205	K_1	[kJ/(kgK^2)]	5.1009876E-03
J_3	[-]	3538.1857	K_2	[kJ/(kgK^3)]	4.9422376E-06
J_4	[-]	-12920.916	K_3	[kJ/(kgK^4)]	6.4067004E-08
J_5	[-]	24563.034	K_4	[kJ/(kgK^5)]	-4.7058345E-10

If neither the kinetic nor the potential energies are taken into account, the specific exergy may be found by the following equation:

$$e = h - h_u - T_u(s - s_u) \quad (9)$$

where the subscript u indicates ambient conditions.
The saturation pressure of the substance at T_u = 290 K serves as the reference pressure.
The integration constants h_u and s_u are found by letting

$h'_{(t = 0°C)}$= 200.0 kJ/kg
$s'_{(t = 0°C)}$= 1.000 kJ/(kgK)

to be

h_u	=	224.22 kJ/kg
s_u	=	1.0851 kJ/(kg K)

so the exergy is e = 0, according to existing agreements.

2.3 Transport Properties

2.3.1 Dynamic Viscosity of Saturated Liquid

The viscosity of the saturated liquid of Solkane®407C was measured within the temperature range of -50 to 60 °C. The following regression equation is valid for the liquid phase:

$$\ln\left(\frac{\eta'}{10^{-3}}\right) = L_0 + L_1 t + L_2 t^2 + L_3 t^3 \qquad (10)$$

with t in °C and η' in 10^{-3} Pa s. The coefficients are:

L_0	=	-1.5764	[Pa s]	L_2 =	4.5029e-6 [Pa s/K^2]
L_1	=	-0.012445	[Pa s/K]	L_3 =	-1.1792e-7 [Pa s/K^3]

Saturated liquid viscosity η' in 10^{-3} Pa s

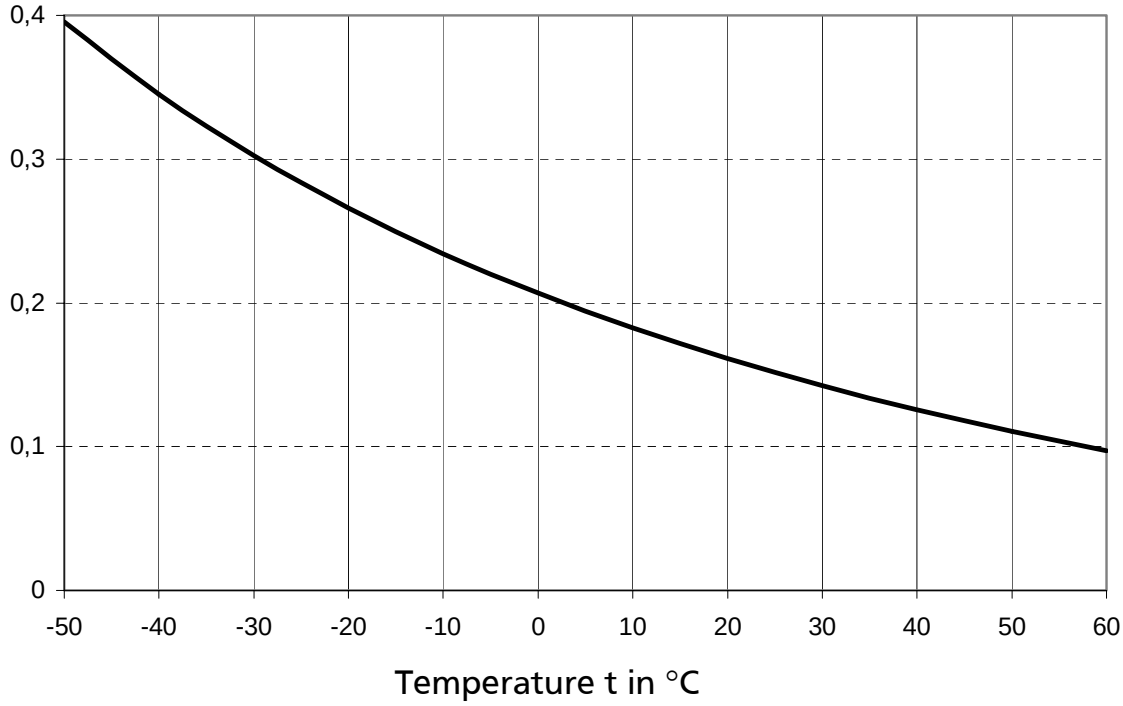

Figure 1: Dynamic saturated liquid viscosity

2.3.2 Dynamic Viscosity of Saturated and Superheated Vapour

The viscosity of the saturated and superheated vapour of Solkane®407C was measured in a temperature range of -50 to 50°C. The data can be represented by the following equations

$$\eta = \eta_0 + \Delta\eta \tag{11}$$

with

$$\eta_0 = 2.6696 \times 10^{-2} \times \frac{(MT)^{\frac{1}{2}}}{\sigma^2 \Omega_\eta T^*}, \qquad T^* = \frac{kT}{\varepsilon} \text{ and}$$

$$\Omega(T^*) = \exp[0.45667 - 0.53955(\ln T^*) + 0.187265(\ln T^*)^2 - 0.03629(\ln T^*)^3 + 0.00241(\ln T^*)^4]$$

(12 a-c)

$$\Delta\eta = T_R^{2.2}\left[\ln(1.65 + \rho_{R0}^{0.8})\right]^{+1.6}\left[e^{\left(1-\frac{0.78}{T_c}\right)^{+}\rho_{r0}} - 1\right](F \cdot z_c \cdot \zeta)^{-1}$$

$$z_c = \frac{p_c v_c}{RT_c} \quad \text{and} \quad \rho_{R0} = \frac{\rho - \rho_0}{\rho_c} \text{ and } F = 1 \text{ for R407C as a light polar agent.} \tag{12 d-f}$$

In equation (12 d-f) the constants are as follows .

R the gas constant	= 8314	[J kg^{-1} K^{-1}]
ρ_c the critical density	= 510.00	[kg/m^3]
ρ_0 the density at 1.013bar and temperature as defined by T		[kg/m^3]
T_c the critical temperature	= 359.55	[K]

The constants of equation (12 a-f) where determined to be

ζ =	39175.02	[1/(Pa s)]
σ =	0.4538	[nm]
ε/k =	339.72	[K]

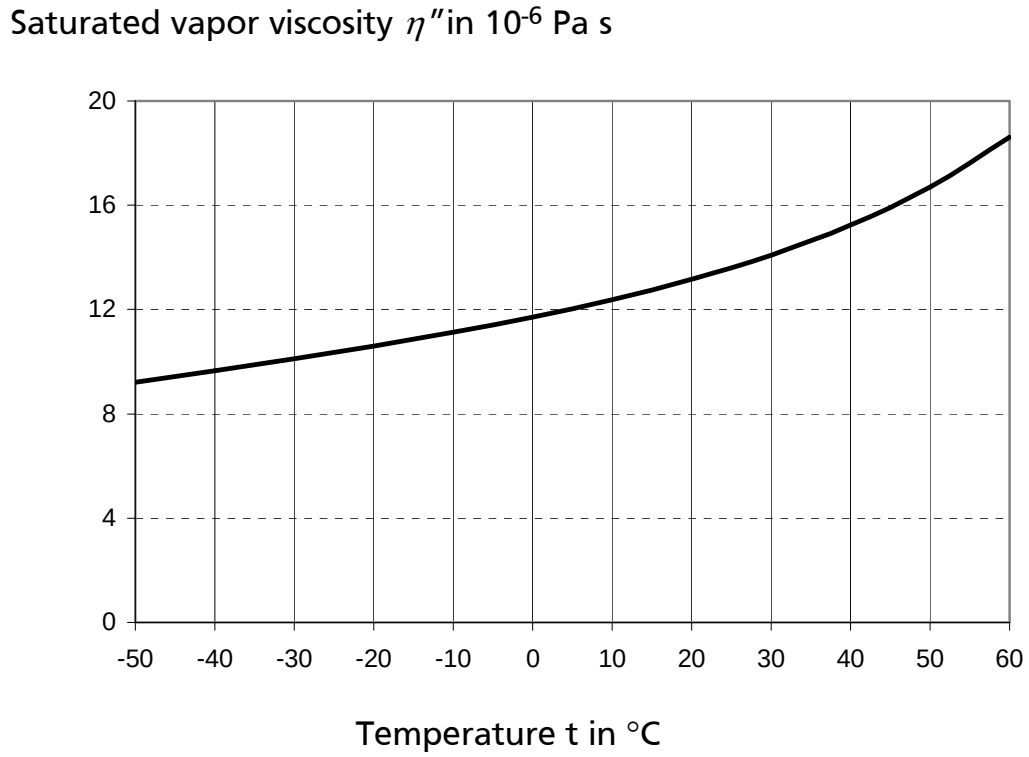

Figure 2: **Dynamic viscosity of saturated vapour**

2.3.3 Thermal Conductivity of Saturated Liquid

The thermal conductivity of saturated liquid can be expressed with the regression equation

$$\lambda' = M_0 + M_1 t \qquad (13)$$

where t is in °C and λ' in 10^{-3}W/(mK). The coefficients of the equation are:

M_0 = 96.197 [10^{-3}W/(mK)] M_1 = -0.4615 [10^{-3}W/(mK^2)]

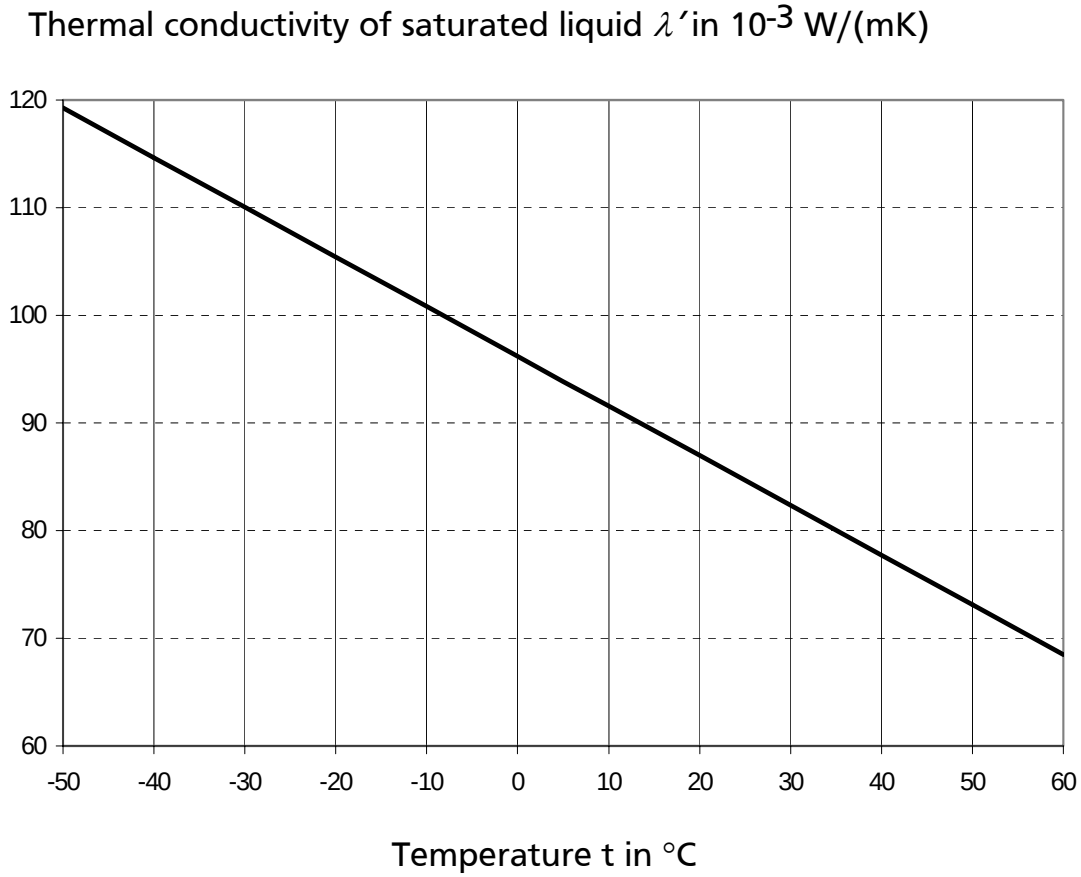

Figure 3: Thermal conductivity of saturated liquid

2.3.4 Thermal Conductivity of Saturated Vapour

The thermal conductivity of saturated vapour can be expressed using the regression equation

$$\lambda'' = N_0 + N_1 t + N_2 t^2 + N_3 t^3 + N_4 t^4 \qquad (14)$$

where t is in °C and λ'' in 10^{-3} W/(m K). The coefficients of the equation are as follows:

N_0	=	12.515	[10^{-3}W/(mK)]	N_3	=	1.9885e-6	[10^{-3}W/(m K^4)]
N_1	=	0.09413	[10^{-3}W/(mK^2]	N_4	=	-1.5319e-8	[10^{-3}W/(m K^5)]
N_2	=	8.2873e-4	[10^{-3}W/(mK^3)]				

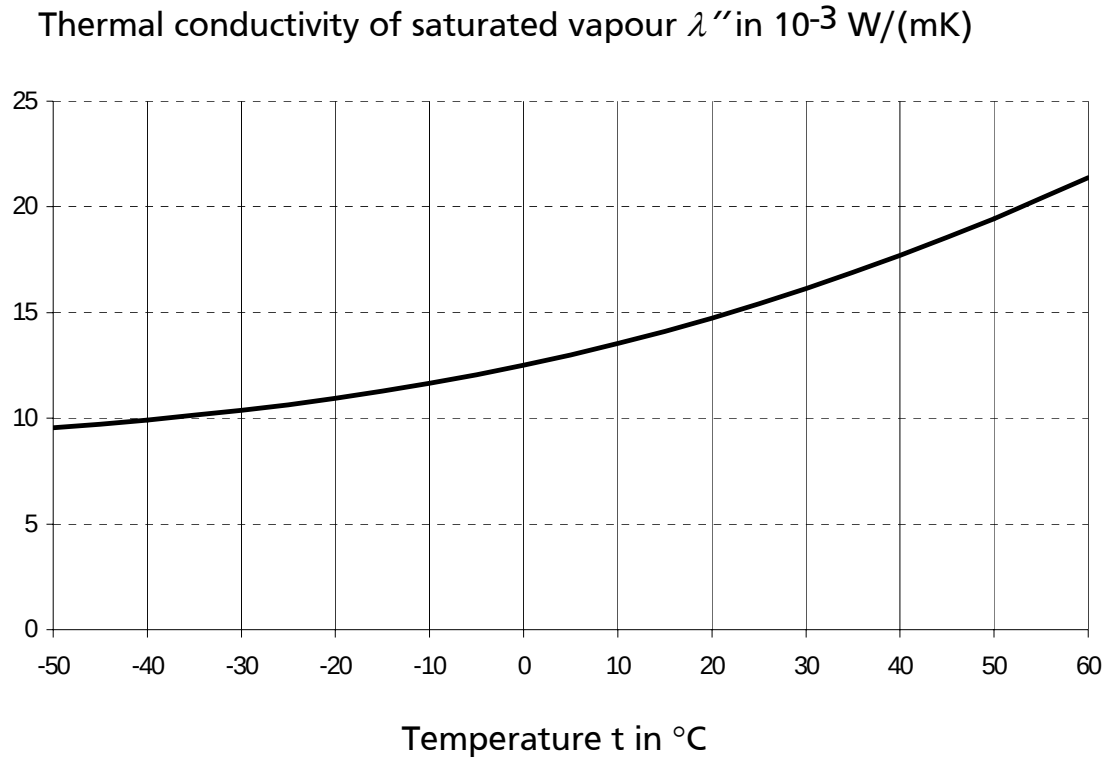

Figure 4: Thermal conductivity of saturated vapour

2.3.5 Surface Tension

The surface tension of the liquid can be expressed using the regression equation

$$\sigma = O_0 + O_1 t + O_2 t^2 + O_3 t^3 \qquad (15)$$

where t is in °C and σ in 10^{-3}N/m. The coefficients of the equation are:

O_0	= 9.9969	[10^{-3}N/m]	O_2	= 1.6445e-4	[10^{-3}N/(mK^2)]
O_1	= -0.1444	[10^{-3}N/(mK)]	O_3	= 1.4304e-6	[10^{-3}N/(mK^3)]

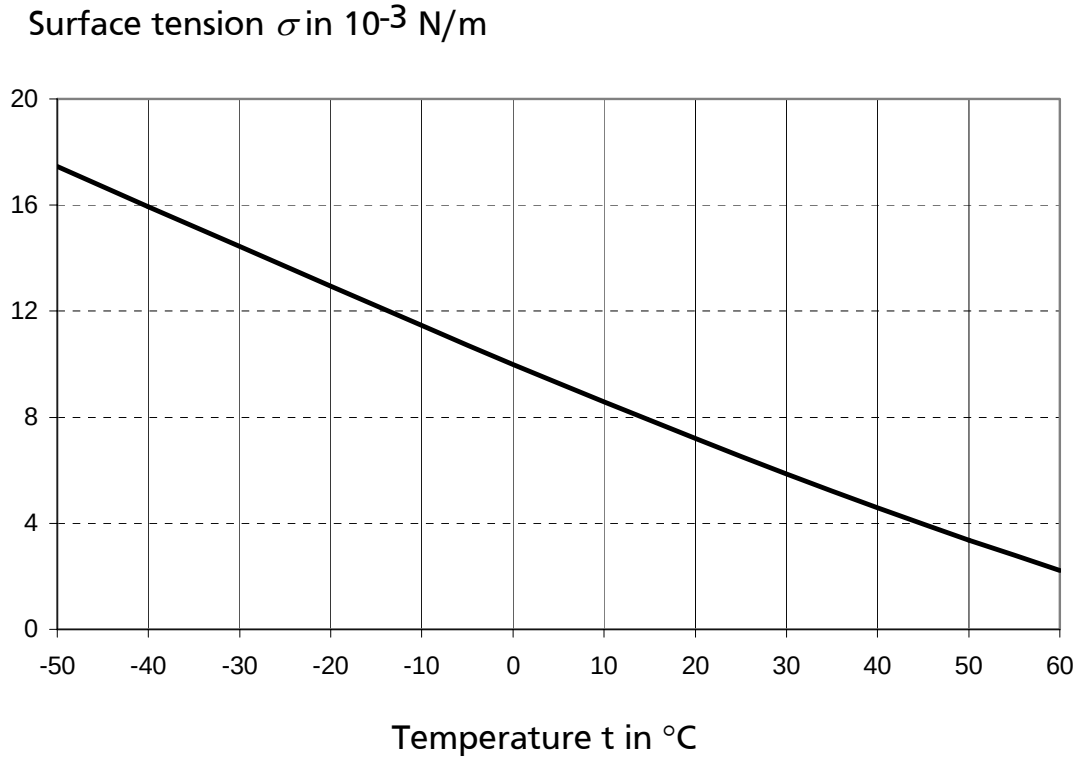

Figure 5: Surface tension

2.3.6 Specific Heat Capacity of Saturated Liquid

The specific heat capacity of saturated liquid can be expressed using the equation

$$c'_p = P_0 + P_1(1-T_R)^{1/9} + P_2(1-T_R)^{2/9} + P_3(1-T_R)^{3/9} + P_4(1-T_R)^{6/9} \quad (16)$$

where $T_R = \frac{T}{T_c}$, c'_p is in kJ/(kg K) and *T* is in K. The coefficients of the equation are as follows:

P_0 =	402.03068	[kJ/(kg K)]	P_3 =	-1325.0972	[kJ/(kg K)]
P_1 =	-1696.452	[kJ/(kg K)]	P_4 =	112.67974	[kJ/(kg K)]
P_2 =	2508.8739	[kJ/(kg K)]			

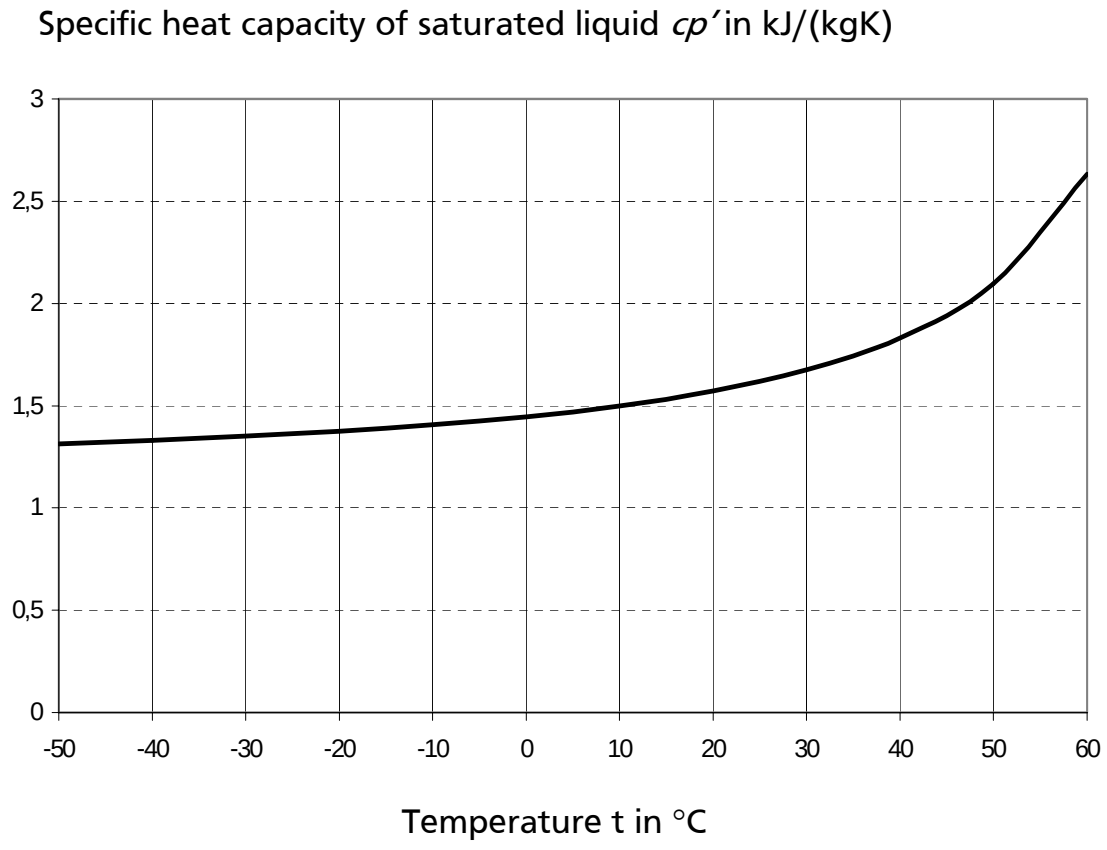

Figure 6: Specific heat capacity of saturated liquid

3 Compatibility of Materials

3.1 Elastomeres

The compatibility of the elastomeres that are normally used in refrigeration systems with Solkane®407C is generally good. Cold extraction tests that where carried out on CR (chlorbutadiene rubber or Neoprene®), NBR (acrylonitrilebutadienerubber) and HNBR (hydrated acrylnitrilbutadiene rubber) showed only slight swelling and yielded negligible amounts of extract. Fluorinated rubbers (FKM and FPM) are not recommended because of their considerable swelling and blistering when used with Solkane®407C or with other HFC refrigerants. Ethylenepropylenediene rubber is only to be recommended where the presence of mineral oil in the refrigeration cycle can be excluded.
The effect of the lubricant that is used must not be ignored. Recommendations made by the lubricant and compressor manufacturers must be followed.

3.2 Thermoplastics

Experience with CFC and HCFC has shown that only a limited number of plastics are resistant to fluorinated refrigerants. Polytetrafluoroethylene, polyacetale and polyamide might be taken into account for the use with Solkane®407C. It is again vital to take the effect of the lubricant into account.

3.3 Metals

Solkane®407C is generally used in conjunction with lubricants (Ester oils, PAG-oils) in refrigeration technology. In combination both materials are compatible with the metals and alloys usually found in machines and apparatus. Only zinc, magnesium, lead and aluminium alloys with more than 2% magnesium by mass should be avoided. The water content of refrigeration oil depending on oil type should especially be taken into account. Values of not more than 50 ppm are to be aimed at.

4 Refrigerant Oils

Like all fluorinated hydrocarbons, Solkane®407C is immiscible with mineral oils. Ester oils (POE) are normally used as lubricants. The solubility of these oils in Solkane®407C is a function of temperature and composition. The following diagrams show the solubility properties of various lubricants with Solkane®407C. Highly viscous lubricants tend to give large miscibility gaps.

The precise miscibility gaps of the individual oils can be obtained from the lubricant manufacturers.

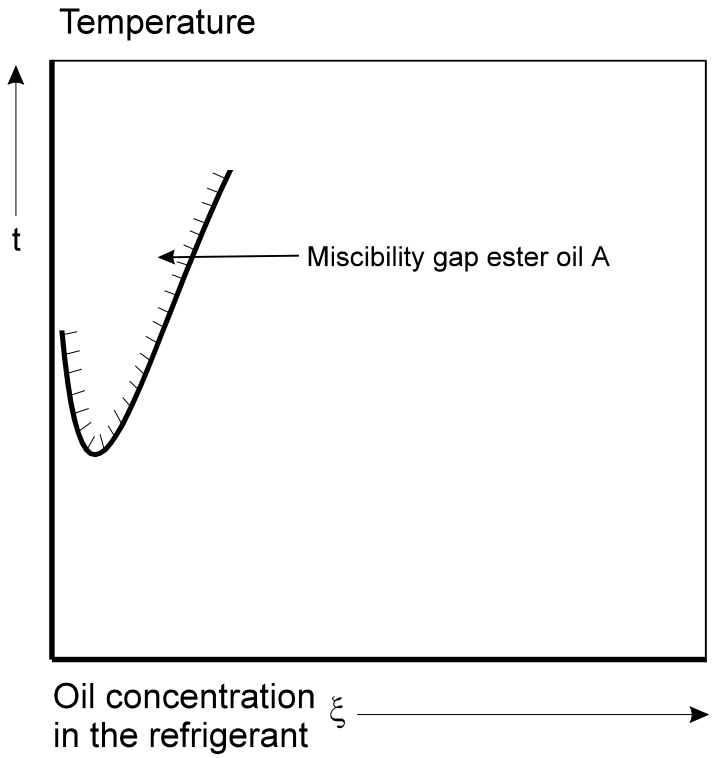

Figure 7: Miscibility behaviour of Solkane®407C and ester oil A

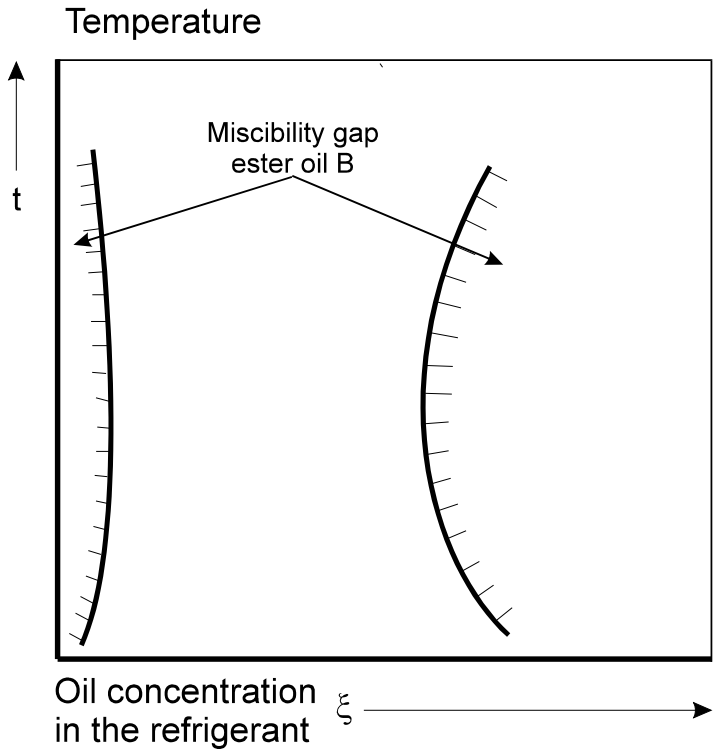

Figure 8: **Miscibility behaviour of Solkane®407C and ester oil B**

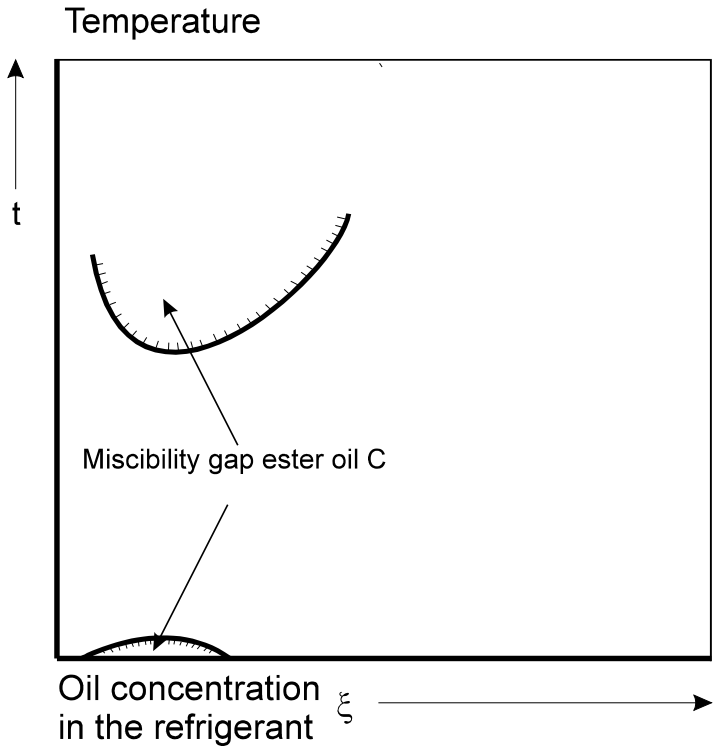

Figure 9: **Miscibility behaviour of Solkane®407C and ester oil C**

5 Flammability

SOLKANE®407C is non flammable according to the standard UL 2182, even if the explosion limits of R32 are 12.7 - 33.4 % by volume in air. However, R125 and R134a have no explosion limits. When blended 23/25/52 percent by weight the outcoming mixture has no explosion limits.

6 Toxicity

The toxicity of R32, R125 and R134a was extensively tested within the scope of the PAFT programme (Programme for Alternative Fluorocarbon Toxicity Testing). PAFT recommended an occupational exposure limit of 1000 ppm for all these products. The toxicity of Solkane®407C can therefore be regarded as low and comparable to the toxicity of R22.

7 Vapour Table, Wet Vapour Range Solkane®407C

t [°C]	p´ [bar]	p´´ [bar]	v´ [dm³/kg]	v´´ [dm³/kg]	ρ' [kg/dm³]	ρ´´ [kg/m³]	h´ [kJ/kg]	h´´ [kJ/kg]	r [kJ/kg]	s´ [kJ/kg K]	s´´ [kJ/kg K]
-50	0.738	0.502	0.714	418.06	1.400	2.392	132.44	381.96	249.52	0.728	1.866
-49	0.777	0.531	0.716	396.66	1.397	2.521	133.73	382.56	248.83	0.733	1.863
-48	0.817	0.561	0.717	376.57	1.394	2.656	135.02	383.16	248.14	0.739	1.861
-47	0.859	0.593	0.719	357.69	1.391	2.796	136.31	383.76	247.44	0.745	1.858
-46	0.903	0.626	0.720	339.93	1.388	2.942	137.61	384.35	246.75	0.751	1.856
-45	0.948	0.660	0.722	323.23	1.385	3.094	138.90	384.95	246.05	0.757	1.854
-44	0.995	0.696	0.724	307.50	1.382	3.252	140.20	385.54	245.34	0.762	1.851
-43	1.044	0.734	0.725	292.69	1.379	3.417	141.50	386.14	244.64	0.768	1.849
-42	1.095	0.773	0.727	278.72	1.376	3.588	142.80	386.73	243.93	0.774	1.847
-41	1.147	0.814	0.728	265.56	1.373	3.766	144.10	387.32	243.22	0.779	1.844
-40	1.202	0.857	0.730	253.14	1.370	3.950	145.40	387.90	242.50	0.785	1.842
-39	1.259	0.901	0.732	241.41	1.367	4.142	146.71	388.49	241.78	0.791	1.840
-38	1.318	0.947	0.733	230.33	1.363	4.342	148.02	389.07	241.06	0.796	1.838
-37	1.379	0.995	0.735	219.86	1.360	4.548	149.33	389.66	240.33	0.802	1.836
-36	1.442	1.045	0.737	209.96	1.357	4.763	150.65	390.24	239.59	0.808	1.834
-35	1.508	1.097	0.739	200.60	1.354	4.985	151.96	390.82	238.85	0.813	1.832
-34	1.575	1.150	0.740	191.73	1.351	5.216	153.28	391.39	238.11	0.819	1.830
-33	1.645	1.206	0.742	183.33	1.348	5.455	154.61	391.97	237.36	0.825	1.828
-32	1.718	1.264	0.744	175.38	1.345	5.702	155.93	392.54	236.61	0.830	1.826
-31	1.793	1.324	0.745	167.84	1.341	5.958	157.26	393.11	235.85	0.836	1.824
-30	1.871	1.387	0.747	160.68	1.338	6.223	158.60	393.68	235.09	0.841	1.822
-29	1.951	1.452	0.749	153.90	1.335	6.498	159.93	394.25	234.32	0.847	1.820
-28	2.034	1.519	0.751	147.45	1.332	6.782	161.27	394.81	233.54	0.852	1.818
-27	2.119	1.588	0.753	141.33	1.329	7.076	162.61	395.38	232.76	0.858	1.816
-26	2.207	1.660	0.755	135.52	1.325	7.379	163.96	395.94	231.98	0.863	1.815
-25	2.299	1.735	0.756	129.99	1.322	7.693	165.31	396.49	231.19	0.869	1.813
-24	2.393	1.812	0.758	124.73	1.319	8.017	166.66	397.05	230.39	0.874	1.811
-23	2.490	1.891	0.760	119.73	1.315	8.352	168.02	397.60	229.59	0.879	1.809
-22	2.590	1.974	0.762	114.97	1.312	8.698	169.38	398.15	228.78	0.885	1.808
-21	2.693	2.059	0.764	110.43	1.309	9.055	170.74	398.70	227.96	0.890	1.806
-20	2.799	2.147	0.766	106.11	1.306	9.424	172.11	399.25	227.14	0.896	1.805
-19	2.908	2.238	0.768	101.99	1.302	9.805	173.47	399.79	226.31	0.901	1.803
-18	3.021	2.332	0.770	98.07	1.299	10.197	174.85	400.33	225.48	0.906	1.801
-17	3.137	2.429	0.772	94.32	1.296	10.602	176.22	400.87	224.64	0.912	1.800
-16	3.256	2.529	0.774	90.75	1.292	11.019	177.60	401.40	223.80	0.917	1.798
-15	3.379	2.632	0.776	87.34	1.289	11.450	178.99	401.93	222.95	0.922	1.797
-14	3.505	2.738	0.778	84.08	1.285	11.894	180.37	402.46	222.09	0.927	1.795
-13	3.635	2.848	0.780	80.97	1.282	12.351	181.76	402.98	221.22	0.933	1.794
-12	3.768	2.961	0.782	77.99	1.279	12.822	183.15	403.51	220.35	0.938	1.792
-11	3.906	3.078	0.784	75.15	1.275	13.307	184.55	404.03	219.48	0.943	1.791

Vapour Table, Wet Vapour Range Solkane®407C

t	p´	p´´	v´	v´´	ρ'	ρ´´	h´	h´´	r	s´	s´´
[°C]	[bar]	[bar]	[dm³/kg]	[dm³/kg]	[kg/dm³]	[kg/m³]	[kJ/kg]	[kJ/kg]	[kJ/kg]	[kJ/kg K]	[kJ/kg K]
-10	4.047	3.198	0.786	72.43	1.272	13.807	185.95	404.54	218.60	0.948	1.790
-9	4.191	3.322	0.789	69.82	1.268	14.322	187.35	405.05	217.71	0.954	1.788
-8	4.340	3.449	0.791	67.33	1.265	14.852	188.75	405.56	216.81	0.959	1.787
-7	4.493	3.580	0.793	64.95	1.261	15.397	190.16	406.07	215.91	0.964	1.785
-6	4.650	3.715	0.795	62.66	1.258	15.958	191.57	406.57	215.00	0.969	1.784
-5	4.811	3.853	0.797	60.47	1.254	16.536	192.99	407.07	214.09	0.974	1.783
-4	4.976	3.996	0.800	58.38	1.251	17.131	194.40	407.57	213.17	0.980	1.782
-3	5.145	4.143	0.802	56.36	1.247	17.742	195.82	408.06	212.24	0.985	1.780
-2	5.319	4.293	0.804	54.43	1.243	18.371	197.25	408.55	211.30	0.990	1.779
-1	5.497	4.448	0.807	52.58	1.240	19.018	198.67	409.03	210.36	0.995	1.778
0	5.679	4.607	0.809	50.81	1.236	19.683	200.00	409.51	209.51	1.000	1.776
1	5.866	4.771	0.811	49.10	1.232	20.366	201.53	409.99	208.46	1.005	1.775
2	6.058	4.938	0.814	47.46	1.229	21.069	202.97	410.46	207.50	1.010	1.774
3	6.254	5.111	0.816	45.89	1.225	21.792	204.40	410.93	206.53	1.015	1.773
4	6.455	5.288	0.819	44.38	1.221	22.534	205.84	411.40	205.55	1.020	1.772
5	6.661	5.469	0.821	42.92	1.218	23.298	207.29	411.86	204.57	1.025	1.770
6	6.872	5.655	0.824	41.53	1.214	24.082	208.73	412.31	203.58	1.030	1.769
7	7.087	5.846	0.826	40.18	1.210	24.887	210.18	412.76	202.58	1.035	1.768
8	7.308	6.042	0.829	38.89	1.206	25.715	211.63	413.21	201.58	1.041	1.767
9	7.534	6.243	0.832	37.64	1.202	26.566	213.09	413.65	200.57	1.046	1.766
10	7.765	6.449	0.834	36.44	1.199	27.439	214.55	414.09	199.54	1.051	1.764
11	8.001	6.660	0.837	35.29	1.195	28.337	216.01	414.52	198.52	1.056	1.763
12	8.243	6.876	0.840	34.18	1.191	29.258	217.47	414.95	197.48	1.061	1.762
13	8.490	7.097	0.843	33.11	1.187	30.205	218.94	415.37	196.44	1.066	1.761
14	8.742	7.324	0.845	32.07	1.183	31.177	220.41	415.79	195.38	1.071	1.760
15	9.000	7.557	0.848	31.08	1.179	32.175	221.88	416.20	194.32	1.076	1.759
16	9.264	7.794	0.851	30.12	1.175	33.200	223.36	416.61	193.25	1.081	1.758
17	9.533	8.038	0.854	29.19	1.171	34.253	224.84	417.01	192.17	1.086	1.757
18	9.808	8.287	0.857	28.30	1.167	35.334	226.32	417.41	191.09	1.091	1.756
19	10.09	8.542	0.860	27.44	1.163	36.444	227.81	417.80	189.99	1.096	1.754
20	10.38	8.803	0.863	26.61	1.159	37.584	229.30	418.18	188.88	1.101	1.753
21	10.67	9.070	0.866	25.80	1.154	38.754	230.80	418.56	187.76	1.106	1.752
22	10.97	9.343	0.869	25.03	1.150	39.956	232.30	418.93	186.63	1.111	1.751
23	11.27	9.623	0.873	24.28	1.146	41.190	233.80	419.30	185.50	1.116	1.750
24	11.59	9.908	0.876	23.55	1.142	42.457	235.31	419.65	184.35	1.121	1.749
25	11.90	10.20	0.879	22.85	1.137	43.758	236.82	420.01	183.19	1.126	1.748
26	12.23	10.50	0.883	22.18	1.133	45.094	238.34	420.35	182.01	1.131	1.747
27	12.56	10.80	0.886	21.52	1.129	46.466	239.86	420.69	180.83	1.136	1.746
28	12.90	11.12	0.889	20.89	1.124	47.875	241.39	421.02	179.63	1.141	1.745
29	13.24	11.43	0.893	20.27	1.120	49.323	242.92	421.34	178.42	1.146	1.743

Vapour Table, Wet Vapour Range Solkane®407C

t	p´	p´´	v´	v´´	ρ'	ρ´´	h´	h´´	r	s´	s´´
[°C]	[bar]	[bar]	[dm³/kg]	[dm³/kg]	[kg/dm³]	[kg/m³]	[kJ/kg]	[kJ/kg]	[kJ/kg]	[kJ/kg K]	[kJ/kg K]
30	13.59	11.76	0.897	19.68	1.115	50.809	244.46	421.66	177.20	1.151	1.742
31	13.95	12.09	0.900	19.11	1.111	52.336	246.00	421.97	175.96	1.156	1.741
32	14.31	12.43	0.904	18.55	1.106	53.905	247.55	422.26	174.71	1.161	1.740
33	14.68	12.78	0.908	18.01	1.102	55.517	249.11	422.56	173.45	1.166	1.739
34	15.06	13.13	0.912	17.49	1.097	57.173	250.67	422.84	172.16	1.171	1.738
35	15.45	13.49	0.916	16.99	1.092	58.874	252.24	423.11	170.87	1.176	1.737
36	15.84	13.86	0.920	16.50	1.087	60.623	253.82	423.38	169.55	1.181	1.736
37	16.24	14.24	0.924	16.02	1.083	62.421	255.41	423.63	168.22	1.186	1.734
38	16.65	14.62	0.928	15.56	1.078	64.269	257.00	423.87	166.87	1.191	1.733
39	17.07	15.01	0.932	15.11	1.073	66.170	258.60	424.11	165.50	1.196	1.732
40	17.49	15.41	0.937	14.68	1.068	68.124	260.22	424.33	164.12	1.201	1.731
41	17.92	15.82	0.941	14.26	1.063	70.135	261.84	424.55	162.71	1.207	1.730
42	18.36	16.24	0.946	13.85	1.058	72.203	263.47	424.75	161.28	1.212	1.729
43	18.81	16.66	0.950	13.45	1.052	74.331	265.11	424.94	159.83	1.217	1.727
44	19.26	17.09	0.955	13.07	1.047	76.522	266.76	425.12	158.36	1.222	1.726
45	19.72	17.54	0.960	12.69	1.042	78.778	268.42	425.29	156.86	1.227	1.725
46	20.19	17.99	0.965	12.33	1.037	81.101	270.10	425.44	155.34	1.233	1.723
47	20.67	18.45	0.970	11.98	1.031	83.493	271.79	425.58	153.79	1.238	1.722
48	21.16	18.91	0.975	11.63	1.026	85.959	273.49	425.71	152.22	1.243	1.721
49	21.65	19.39	0.981	11.30	1.020	88.501	275.20	425.82	150.62	1.248	1.720
50	22.16	19.88	0.986	10.97	1.014	91.123	276.93	425.92	148.99	1.254	1.718
51	22.67	20.37	0.992	10.66	1.008	93.827	278.67	426.00	147.33	1.259	1.717
52	23.19	20.88	0.998	10.35	1.002	96.618	280.43	426.06	145.64	1.264	1.715
53	23.72	21.39	1.004	10.05	0.996	99.500	282.20	426.11	143.91	1.270	1.714
54	24.26	21.92	1.010	9.76	0.990	102.477	283.99	426.14	142.15	1.275	1.712
55	24.81	22.45	1.016	9.47	0.984	105.554	285.80	426.15	140.35	1.281	1.711
56	25.37	23.00	1.023	9.20	0.978	108.736	287.63	426.15	138.52	1.286	1.709
57	25.94	23.56	1.029	8.93	0.971	112.029	289.47	426.12	136.65	1.292	1.708
58	26.51	24.12	1.036	8.66	0.965	115.438	291.34	426.07	134.73	1.297	1.706
59	27.10	24.70	1.044	8.41	0.958	118.971	293.22	425.99	132.77	1.303	1.704
60	27.69	25.29	1.051	8.15	0.951	122.635	295.13	425.90	130.77	1.308	1.702
61	28.30	25.89	1.059	7.91	0.944	126.438	297.06	425.77	128.72	1.314	1.701
62	28.91	26.50	1.067	7.67	0.937	130.388	299.01	425.62	126.61	1.319	1.699
63	29.54	27.12	1.076	7.44	0.930	134.496	300.98	425.44	124.46	1.325	1.697
64	30.17	27.75	1.084	7.21	0.922	138.772	302.98	425.23	122.25	1.331	1.695
65	30.82	28.40	1.094	6.98	0.914	143.229	305.01	424.99	119.98	1.337	1.693
66	31.47	29.06	1.103	6.76	0.906	147.880	307.06	424.71	117.65	1.342	1.691
67	32.13	29.73	1.113	6.55	0.898	152.740	309.15	424.40	115.25	1.348	1.688
68	32.81	30.41	1.124	6.34	0.890	157.827	311.26	424.04	112.78	1.354	1.686
69	33.49	31.11	1.135	6.13	0.881	163.161	313.40	423.64	110.24	1.360	1.684

Vapour Table, Wet Vapour Range Solkane®407C

t	p´	p´´	v´	v´´	ρ'	ρ´´	h´	h´´	r	s´	s´´
[°C]	[bar]	[bar]	[dm³/kg]	[dm³/kg]	[kg/dm³]	[kg/m³]	[kJ/kg]	[kJ/kg]	[kJ/kg]	[kJ/kg K]	[kJ/kg K]
70	34.19	31.82	1.147	5.93	0.872	168.765	315.57	423.19	107.62	1.366	1.681
71	34.90	32.55	1.159	5.73	0.862	174.666	317.77	422.69	104.91	1.372	1.678
72	35.61	33.29	1.173	5.53	0.853	180.894	320.01	422.13	102.12	1.378	1.676
73	36.34	34.04	1.187	5.33	0.842	187.487	322.28	421.50	99.22	1.384	1.673
74	37.08	34.81	1.202	5.14	0.832	194.488	324.59	420.81	96.21	1.390	1.669
75	37.83	35.60	1.219	4.95	0.820	201.951	326.94	420.03	93.09	1.397	1.666
76	38.59	36.41	1.237	4.76	0.809	209.940	329.32	419.16	89.84	1.403	1.662
77	39.36	37.23	1.257	4.58	0.796	218.536	331.75	418.19	86.44	1.409	1.658
78	40.14	38.07	1.278	4.39	0.782	227.843	334.21	417.09	82.88	1.416	1.654
79	40.93	38.93	1.303	4.20	0.768	237.994	336.72	415.85	79.14	1.422	1.650
80	41.74	39.81	1.330	4.01	0.752	249.166	339.27	414.44	75.17	1.429	1.645
81	42.55	40.71	1.362	3.82	0.734	261.605	341.87	412.82	70.96	1.435	1.639
82	43.38	41.64	1.400	3.63	0.714	275.663	344.51	410.94	66.43	1.442	1.633

8 Vapour Table, Superheated Range Solkane®407C

0.50bar -50.00°C

T	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-50	418.06	381.96	1.8660
-45	428.35	385.58	1.8820
-40	438.58	389.24	1.8979
-35	448.75	392.92	1.9135
-30	458.88	396.65	1.9290
-25	468.96	400.40	1.9443
-20	479.00	404.19	1.9594
-15	489.01	408.02	1.9744
-10	498.99	411.88	1.9892
-5	508.93	415.78	2.0039
0	518.86	419.71	2.0184
5	528.75	423.68	2.0328
10	538.63	427.69	2.0471
15	548.48	431.74	2.0613
20	558.32	435.82	2.0753
25	568.14	439.95	2.0893
30	577.95	444.11	2.1031
35	587.75	448.31	2.1168

0.70bar -44.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-44	307.50	385.54	1.8511
-40	313.54	388.51	1.8640
-35	321.05	392.25	1.8798
-30	328.50	396.01	1.8955
-25	335.91	399.81	1.9109
-20	343.28	403.63	1.9262
-15	350.62	407.49	1.9413
-10	357.92	411.38	1.9562
-5	365.19	415.31	1.9710
0	372.43	419.27	1.9856
5	379.65	423.27	2.0001
10	386.85	427.30	2.0145
15	394.03	431.37	2.0288
20	401.19	435.47	2.0429
25	408.34	439.61	2.0569
30	415.47	443.79	2.0708
35	422.58	448.01	2.0846
40	429.69	452.26	2.0983

0.95bar -38.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-38	230.33	389.07	1.8378
-35	233.74	391.36	1.8474
-30	239.37	395.18	1.8633
-25	244.96	399.03	1.8790
-20	250.51	402.90	1.8944
-15	256.02	406.81	1.9097
-10	261.49	410.74	1.9248
-5	266.94	414.71	1.9397
0	272.35	418.70	1.9545
5	277.75	422.73	1.9691
10	283.12	426.79	1.9835
15	288.47	430.89	1.9979
20	293.80	435.01	2.0121
25	299.11	439.18	2.0262
30	304.42	443.38	2.0401
35	309.70	447.61	2.0540
40	314.98	451.89	2.0678
45	320.24	456.20	2.0814

1.26bar -32.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-32	175.38	392.54	1.8256
-30	177.12	394.11	1.8321
-25	181.44	398.02	1.8480
-20	185.72	401.96	1.8638
-15	189.96	405.93	1.8793
-10	194.17	409.91	1.8946
-5	198.34	413.93	1.9097
0	202.49	417.97	1.9246
5	206.61	422.04	1.9394
10	210.70	426.14	1.9540
15	214.78	430.27	1.9684
20	218.84	434.43	1.9827
25	222.88	438.63	1.9969
30	226.90	442.85	2.0110
35	230.91	447.11	2.0249
40	234.91	451.41	2.0388
45	238.89	455.74	2.0525
50	242.87	460.11	2.0661

0.56 bar -48.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-48	376.57	383.16	1.8609
-45	382.13	385.35	1.8705
-40	391.35	389.02	1.8864
-35	400.51	392.72	1.9021
-30	409.63	396.45	1.9177
-25	418.70	400.22	1.9330
-20	427.74	404.02	1.9482
-15	436.73	407.86	1.9632
-10	445.70	411.73	1.9780
-5	454.63	415.63	1.9927
0	463.54	419.58	2.0073
5	472.43	423.56	2.0217
10	481.29	427.57	2.0360
15	490.14	431.63	2.0502
20	498.97	435.72	2.0643
25	507.77	439.85	2.0783
30	516.57	444.01	2.0921
35	525.35	448.22	2.1059

0.77 bar -42.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-42	278.72	386.73	1.8465
-40	281.47	388.22	1.8530
-35	288.29	391.98	1.8689
-30	295.06	395.76	1.8846
-25	301.79	399.57	1.9001
-20	308.47	403.41	1.9155
-15	315.12	407.28	1.9306
-10	321.74	411.19	1.9456
-5	328.32	415.13	1.9604
0	334.88	419.10	1.9751
5	341.41	423.10	1.9896
10	347.93	427.14	2.0040
15	354.42	431.22	2.0183
20	360.89	435.33	2.0324
25	367.35	439.48	2.0465
30	373.80	443.67	2.0604
35	380.23	447.89	2.0742
40	386.64	452.15	2.0879

1.04 bar -36.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-36	209.96	390.24	1.8336
-35	211.00	391.00	1.8368
-30	216.16	394.85	1.8528
-25	221.28	398.72	1.8685
-20	226.35	402.62	1.8841
-15	231.39	406.54	1.8994
-10	236.39	410.49	1.9146
-5	241.36	414.47	1.9296
0	246.30	418.48	1.9444
5	251.22	422.52	1.9590
10	256.11	426.59	1.9735
15	260.99	430.70	1.9879
20	265.85	434.84	2.0022
25	270.68	439.01	2.0163
30	275.51	443.22	2.0303
35	280.32	447.46	2.0442
40	285.12	451.74	2.0579
45	289.90	456.06	2.0716

1.39 bar -30.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-30	160.68	393.68	1.8218
-25	164.68	397.63	1.8379
-20	168.62	401.60	1.8537
-15	172.53	405.58	1.8693
-10	176.40	409.59	1.8847
-5	180.24	413.62	1.8999
0	184.05	417.68	1.9149
5	187.83	421.77	1.9297
10	191.59	425.88	1.9444
15	195.33	430.03	1.9589
20	199.05	434.20	1.9732
25	202.76	438.41	1.9875
30	206.44	442.65	2.0016
35	210.12	446.92	2.0155
40	213.78	451.23	2.0294
45	217.43	455.56	2.0432
50	221.07	459.94	2.0568
55	224.70	464.35	2.0703

0.63 bar -46.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-46	339.93	384.35	1.8559
-45	341.60	385.09	1.8591
-40	349.94	388.78	1.8751
-35	358.22	392.49	1.8909
-30	366.45	396.24	1.9065
-25	374.64	400.02	1.9219
-20	382.79	403.84	1.9371
-15	390.90	407.68	1.9521
-10	398.98	411.56	1.9670
-5	407.03	415.48	1.9818
0	415.05	419.43	1.9964
5	423.05	423.42	2.0108
10	431.03	427.44	2.0252
15	438.99	431.50	2.0394
20	446.93	435.60	2.0535
25	454.85	439.73	2.0675
30	462.76	443.91	2.0814
35	470.66	448.12	2.0951

0.86 bar -40.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-40	253.14	387.90	1.8421
-35	259.36	391.68	1.8581
-30	265.52	395.48	1.8739
-25	271.65	399.31	1.8895
-20	277.73	403.17	1.9049
-15	283.77	407.06	1.9201
-10	289.78	410.97	1.9351
-5	295.76	414.92	1.9500
0	301.71	418.91	1.9647
5	307.64	422.92	1.9793
10	313.55	426.97	1.9937
15	319.44	431.06	2.0080
20	325.31	435.18	2.0222
25	331.16	439.34	2.0362
30	336.99	443.53	2.0502
35	342.82	447.76	2.0640
40	348.63	452.02	2.0777
45	354.43	456.32	2.0914

1.16 bar -34.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-34	191.73	391.39	1.8295
-30	195.52	394.49	1.8424
-25	200.22	398.39	1.8582
-20	204.87	402.30	1.8739
-15	209.48	406.25	1.8893
-10	214.06	410.21	1.9045
-5	218.61	414.21	1.9196
0	223.13	418.23	1.9344
5	227.63	422.29	1.9491
10	232.10	426.37	1.9637
15	236.55	430.49	1.9781
20	240.99	434.64	1.9924
25	245.40	438.82	2.0065
30	249.81	443.04	2.0206
35	254.19	447.29	2.0345
40	258.57	451.58	2.0483
45	262.93	455.90	2.0620
50	267.28	460.26	2.0756

1.52 bar -28.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-28	147.45	394.81	1.8182
-25	149.66	397.20	1.8279
-20	153.31	401.20	1.8438
-15	156.92	405.21	1.8595
-10	160.50	409.24	1.8750
-5	164.04	413.30	1.8902
0	167.55	417.37	1.9053
5	171.03	421.48	1.9202
10	174.49	425.61	1.9349
15	177.93	429.77	1.9495
20	181.35	433.96	1.9639
25	184.75	438.18	1.9781
30	188.14	442.43	1.9923
35	191.51	446.71	2.0063
40	194.87	451.03	2.0202
45	198.22	455.37	2.0340
50	201.56	459.76	2.0476
55	204.89	464.17	2.0612

Vapour Table. Superheated Range Solkane®407C

1.66 bar -26.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-26	135.52	395.94	1.8146
-25	136.20	396.74	1.8179
-20	139.58	400.77	1.8339
-15	142.93	404.81	1.8497
-10	146.23	408.86	1.8653
-5	149.51	412.94	1.8806
0	152.75	417.04	1.8958
5	155.97	421.16	1.9107
10	159.16	425.31	1.9255
15	162.33	429.49	1.9401
20	165.48	433.69	1.9546
25	168.61	437.93	1.9689
30	171.73	442.19	1.9831
35	174.83	446.48	1.9972
40	177.92	450.81	2.0111
45	181.00	455.17	2.0249
50	184.07	459.56	2.0386
55	187.13	463.99	2.0522

2.15 bar -20.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-20	106.11	399.25	1.8046
-15	108.81	403.39	1.8208
-10	111.47	407.54	1.8367
-5	114.10	411.70	1.8524
0	116.69	415.88	1.8678
5	119.26	420.07	1.8830
10	121.80	424.28	1.8980
15	124.32	428.52	1.9128
20	126.81	432.77	1.9275
25	129.29	437.06	1.9420
30	131.76	441.36	1.9563
35	134.20	445.70	1.9705
40	136.64	450.07	1.9845
45	139.06	454.46	1.9985
50	141.47	458.89	2.0123
55	143.87	463.34	2.0259
60	146.26	467.83	2.0395
65	148.64	472.35	2.0530

2.74 bar -14.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-14	84.08	402.46	1.7953
-10	85.83	405.88	1.8084
-5	87.99	410.15	1.8245
0	90.11	414.42	1.8403
5	92.20	418.71	1.8558
10	94.26	423.00	1.8711
15	96.31	427.31	1.8862
20	98.32	431.63	1.9011
25	100.32	435.98	1.9158
30	102.31	440.34	1.9303
35	104.27	444.73	1.9447
40	106.23	449.15	1.9589
45	108.16	453.59	1.9730
50	110.09	458.05	1.9869
55	112.01	462.55	2.0007
60	113.92	467.07	2.0144
65	115.82	471.63	2.0279
70	117.71	476.21	2.0414

3.45 bar -8.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-8	67.33	405.56	1.7868
-5	68.42	408.21	1.7968
0	70.19	412.62	1.8130
5	71.94	417.02	1.8290
10	73.65	421.42	1.8447
15	75.34	425.82	1.8601
20	77.00	430.23	1.8753
25	78.65	434.66	1.8902
30	80.27	439.10	1.9050
35	81.88	443.55	1.9196
40	83.48	448.03	1.9340
45	85.06	452.52	1.9482
50	86.62	457.04	1.9623
55	88.18	461.58	1.9763
60	89.73	466.15	1.9901
65	91.27	470.75	2.0038
70	92.80	475.37	2.0174
75	94.32	480.02	2.0308

1.81 bar - 24.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-24	124.73	397.05	1.8112
-20	127.25	400.30	1.8241
-15	130.35	404.37	1.8400
-10	133.42	408.46	1.8557
-5	136.45	412.56	1.8711
0	139.45	416.68	1.8864
5	142.43	420.83	1.9014
10	145.38	424.99	1.9163
15	148.31	429.19	1.9309
20	151.22	433.41	1.9455
25	154.11	437.66	1.9598
30	156.99	441.93	1.9741
35	159.85	446.24	1.9882
40	162.70	450.58	2.0021
45	165.53	454.95	2.0160
50	168.36	459.35	2.0297
55	171.17	463.79	2.0433
60	173.98	468.26	2.0568

2.33 bar- 18.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-18	98.07	400.33	1.8014
-15	99.58	402.84	1.8112
-10	102.07	407.03	1.8272
-5	104.52	411.22	1.8430
0	106.94	415.43	1.8586
5	109.33	419.65	1.8739
10	111.70	423.88	1.8890
15	114.04	428.14	1.9039
20	116.36	432.42	1.9186
25	118.66	436.72	1.9332
30	120.95	441.05	1.9475
35	123.22	445.40	1.9618
40	125.48	449.78	1.9759
45	127.72	454.19	1.9899
50	129.95	458.63	2.0037
55	132.18	463.10	2.0174
60	134.39	467.59	2.0310
65	136.59	472.13	2.0445

2.96 bar- 12.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-12	77.99	403.51	1.7924
-10	78.81	405.23	1.7990
-5	80.84	409.55	1.8153
0	82.84	413.86	1.8312
5	84.80	418.18	1.8469
10	86.74	422.51	1.8623
15	88.65	426.85	1.8775
20	90.54	431.20	1.8924
25	92.41	435.57	1.9072
30	94.26	439.96	1.9218
35	96.09	444.37	1.9363
40	97.91	448.80	1.9505
45	99.72	453.26	1.9646
50	101.52	457.74	1.9786
55	103.31	462.25	1.9925
60	105.08	466.79	2.0062
65	106.85	471.35	2.0198
70	108.61	475.95	2.0333

3.71 bar -6.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-6	62.66	406.57	1.7841
-5	63.00	407.47	1.7875
0	64.69	411.92	1.8039
5	66.34	416.37	1.8201
10	67.95	420.81	1.8359
15	69.55	425.25	1.8515
20	71.11	429.70	1.8668
25	72.66	434.16	1.8818
30	74.19	438.62	1.8967
35	75.70	443.10	1.9113
40	77.20	447.60	1.9258
45	78.68	452.12	1.9401
50	80.15	456.66	1.9543
55	81.61	461.22	1.9683
60	83.05	465.80	1.9822
65	84.49	470.42	1.9959
70	85.92	475.05	2.0095
75	87.35	479.72	2.0230

1.97 bar- 22.00vC

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-22	114.97	398.15	1.8078
-20	116.14	399.79	1.8143
-15	119.03	403.90	1.8304
-10	121.88	408.01	1.8462
-5	124.70	412.15	1.8617
0	127.49	416.29	1.8770
5	130.25	420.46	1.8922
10	132.98	424.65	1.9071
15	135.69	428.86	1.9218
20	138.39	433.10	1.9364
25	141.06	437.37	1.9508
30	143.72	441.66	1.9651
35	146.36	445.98	1.9793
40	148.99	450.33	1.9933
45	151.61	454.71	2.0072
50	154.22	459.13	2.0209
55	156.82	463.57	2.0346
60	159.40	468.05	2.0481

2.53 bar- 16.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-16	90.75	401.40	1.7983
-15	91.22	402.24	1.8016
-10	93.55	406.47	1.8178
-5	95.85	410.70	1.8338
0	98.11	414.94	1.8494
5	100.35	419.19	1.8648
10	102.55	423.46	1.8800
15	104.74	427.74	1.8950
20	106.90	432.04	1.9098
25	109.04	436.36	1.9244
30	111.17	440.71	1.9389
35	113.28	445.08	1.9532
40	115.38	449.47	1.9673
45	117.46	453.90	1.9814
50	119.54	458.35	1.9952
55	121.60	462.83	2.0090
60	123.65	467.34	2.0227
65	125.69	471.88	2.0362

3.20 bar- 10.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-10	72.43	404.54	1.7896
-5	74.34	408.91	1.8060
0	76.22	413.26	1.8221
5	78.07	417.62	1.8379
10	79.89	421.98	1.8535
15	81.68	426.35	1.8688
20	83.45	430.73	1.8838
25	85.21	435.13	1.8987
30	86.94	439.54	1.9134
35	88.66	443.97	1.9279
40	90.36	448.42	1.9422
45	92.05	452.90	1.9564
50	93.72	457.40	1.9704
55	95.39	461.93	1.9843
60	97.05	466.48	1.9981
65	98.69	471.06	2.0118
70	100.33	475.67	2.0253
75	101.96	480.31	2.0387

4.00 bar- 4.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-4	58.38	407.57	1.7815
0	59.65	411.18	1.7948
5	61.22	415.68	1.8111
10	62.75	420.16	1.8271
15	64.25	424.65	1.8428
20	65.73	429.13	1.8582
25	67.19	433.62	1.8734
30	68.63	438.12	1.8884
35	70.05	442.62	1.9031
40	71.46	447.15	1.9177
45	72.85	451.69	1.9321
50	74.23	456.25	1.9463
55	75.60	460.83	1.9604
60	76.96	465.43	1.9743
65	78.31	470.06	1.9881
70	79.65	474.72	2.0018
75	80.98	479.39	2.0153
80	82.30	484.10	2.0287

Vapour Table, Superheated Range Solkane®407C

4.29 bar -2.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-2	54.43	408.55	1.7789
0	55.04	410.38	1.7857
5	56.53	414.93	1.8022
10	57.98	419.47	1.8183
15	59.41	424.00	1.8342
20	60.81	428.52	1.8498
25	62.19	433.04	1.8651
30	63.55	437.58	1.8801
35	64.89	442.11	1.8950
40	66.21	446.67	1.9096
45	67.52	451.23	1.9241
50	68.82	455.82	1.9384
55	70.11	460.42	1.9525
60	71.38	465.04	1.9665
65	72.65	469.69	1.9804
70	73.90	474.36	1.9941
75	75.15	479.05	2.0076
80	76.40	483.77	2.0211

5.29 bar 4.0°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
4	44.38	411.40	1.7715
5	44.63	412.35	1.7749
10	45.90	417.07	1.7918
15	47.13	421.76	1.8082
20	48.34	426.42	1.8242
25	49.52	431.08	1.8400
30	50.67	435.73	1.8555
35	51.81	440.37	1.8707
40	52.93	445.02	1.8856
45	54.04	449.68	1.9004
50	55.13	454.34	1.9149
55	56.21	459.02	1.9293
60	57.28	463.71	1.9435
65	58.34	468.42	1.9575
70	59.38	473.14	1.9714
75	60.42	477.89	1.9851
80	61.46	482.66	1.9987
85	62.48	487.46	2.0122

6.45 bar 10.0°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
10	36.44	414.09	1.7645
15	37.54	419.00	1.7817
20	38.60	423.86	1.7984
25	39.63	428.69	1.8147
30	40.64	433.49	1.8307
35	41.62	438.27	1.8463
40	42.59	443.04	1.8617
45	43.54	447.81	1.8768
50	44.47	452.57	1.8917
55	45.39	457.34	1.9063
60	46.30	462.11	1.9207
65	47.20	466.90	1.9350
70	48.09	471.70	1.9491
75	48.97	476.51	1.9630
80	49.84	481.35	1.9768
85	50.70	486.20	1.9904
90	51.56	491.07	2.0040
95	52.41	495.96	2.0173

7.79 bar 16.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
16	30.12	416.61	1.7577
20	30.88	420.70	1.7718
25	31.81	425.76	1.7889
30	32.71	430.76	1.8055
35	33.58	435.72	1.8218
40	34.43	440.65	1.8376
45	35.26	445.56	1.8532
50	36.07	450.45	1.8684
55	36.87	455.34	1.8834
60	37.66	460.22	1.8982
65	38.43	465.10	1.9128
70	39.19	469.99	1.9271
75	39.95	474.88	1.9413
80	40.69	479.79	1.9553
85	41.43	484.71	1.9691
90	42.16	489.64	1.9828
95	42.89	494.60	1.9963
100	43.61	499.57	2.0097

4.61 bar 0.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
0	50.81	409.51	1.7764
5	52.23	414.13	1.7932
10	53.61	418.72	1.8095
15	54.96	423.30	1.8256
20	56.29	427.87	1.8413
25	57.60	432.43	1.8567
30	58.88	437.00	1.8719
35	60.15	441.57	1.8869
40	61.40	446.15	1.9016
45	62.64	450.75	1.9162
50	63.86	455.35	1.9305
55	65.07	459.98	1.9447
60	66.27	464.62	1.9588
65	67.46	469.29	1.9727
70	68.64	473.98	1.9864
75	69.82	478.69	2.0001
80	70.98	483.42	2.0136
85	72.14	488.19	2.0270

5.66 bar 6.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
6	41.53	412.31	1.7691
5	41.28	0.00	0.0000
10	42.49	416.15	1.7828
15	43.68	420.90	1.7994
20	44.83	425.63	1.8157
25	45.95	430.33	1.8316
30	47.05	435.03	1.8472
35	48.14	439.72	1.8626
40	49.20	444.40	1.8776
45	50.25	449.09	1.8925
50	51.28	453.79	1.9071
55	52.31	458.49	1.9216
60	53.32	463.21	1.9359
65	54.32	467.94	1.9500
70	55.31	472.69	1.9639
75	56.29	477.46	1.9777
80	57.26	482.25	1.9914
85	58.23	487.06	2.0049

6.88 bar 12.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
12	34.18	414.95	1.7622
15	34.81	417.94	1.7727
20	35.83	422.88	1.7897
25	36.82	427.78	1.8062
30	37.79	432.64	1.8224
35	38.73	437.47	1.8382
40	39.65	442.29	1.8537
45	40.56	447.10	1.8689
50	41.45	451.91	1.8839
55	42.33	456.71	1.8987
60	43.19	461.52	1.9132
65	44.05	466.33	1.9276
70	44.89	471.16	1.9417
75	45.72	476.00	1.9557
80	46.55	480.85	1.9696
85	47.37	485.73	1.9833
90	48.18	490.62	1.9969
95	48.99	495.53	2.0103

8.29 bar 18.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
18	28.30	417.41	1.7555
20	28.67	419.49	1.7627
25	29.57	424.64	1.7801
30	30.43	429.72	1.7970
35	31.28	434.75	1.8134
40	32.09	439.75	1.8295
45	32.89	444.71	1.8452
50	33.67	449.65	1.8607
55	34.44	454.58	1.8758
60	35.19	459.51	1.8907
65	35.93	464.43	1.9053
70	36.66	469.35	1.9198
75	37.38	474.27	1.9340
80	38.09	479.21	1.9481
85	38.79	484.15	1.9620
90	39.49	489.11	1.9758
95	40.17	494.09	1.9894
100	40.86	499.08	2.0029

4.94 bar 2.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
2	47.46	410.46	1.7739
5	48.27	413.27	1.7841
10	49.59	417.92	1.8007
15	50.88	422.55	1.8169
20	52.15	427.17	1.8328
25	53.39	431.78	1.8484
30	54.61	436.38	1.8637
35	55.81	440.99	1.8787
40	56.99	445.60	1.8936
45	58.16	450.23	1.9082
50	59.31	454.86	1.9227
55	60.45	459.51	1.9370
60	61.58	464.18	1.9511
65	62.71	468.86	1.9651
70	63.82	473.57	1.9789
75	64.92	478.30	1.9926
80	66.02	483.05	2.0061
85	67.11	487.83	2.0195

6.04 bar 8.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
8	38.89	413.21	1.7668
10	39.35	415.16	1.7737
15	40.49	419.98	1.7906
20	41.59	424.77	1.8071
25	42.66	429.54	1.8232
30	43.72	434.28	1.8390
35	44.75	439.02	1.8545
40	45.76	443.74	1.8697
45	46.76	448.47	1.8846
50	47.74	453.20	1.8994
55	48.71	457.93	1.9139
60	49.67	462.68	1.9283
65	50.61	467.44	1.9425
70	51.55	472.21	1.9565
75	52.48	477.00	1.9703
80	53.40	481.81	1.9841
85	54.31	486.64	1.9976
90	55.22	491.49	2.0111

7.32 bar 14.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
14	32.07	415.79	1.7600
15	32.28	416.81	1.7635
20	33.27	421.83	1.7808
25	34.22	426.80	1.7976
30	35.15	431.73	1.8140
35	36.06	436.62	1.8300
40	36.94	441.50	1.8457
45	37.81	446.35	1.8611
50	38.66	451.20	1.8762
55	39.49	456.04	1.8911
60	40.32	460.89	1.9057
65	41.13	465.73	1.9202
70	41.93	470.59	1.9344
75	42.72	475.46	1.9485
80	43.51	480.34	1.9624
85	44.29	485.23	1.9762
90	45.06	490.14	1.9898
95	45.82	495.08	2.0033

8.80 bar 20.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
20	26.61	418.18	1.7533
25	27.48	423.44	1.7711
30	28.32	428.61	1.7883
35	29.14	433.72	1.8050
40	29.93	438.78	1.8213
45	30.69	443.81	1.8373
50	31.44	448.81	1.8529
55	32.18	453.79	1.8681
60	32.90	458.75	1.8832
65	33.61	463.71	1.8979
70	34.30	468.67	1.9125
75	34.99	473.63	1.9268
80	35.67	478.60	1.9410
85	36.34	483.57	1.9550
90	37.00	488.56	1.9688
95	37.66	493.55	1.9825
100	38.31	498.57	1.9960
105	38.95	503.60	2.0094

Vapour Table. Superheated Range Solkane®407C

9.34 bar 22.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
22	25.03	418.93	1.7511
25	25.54	422.14	1.7620
30	26.36	427.42	1.7795
35	27.14	432.62	1.7965
40	27.91	437.76	1.8131
45	28.65	442.85	1.8292
50	29.37	447.91	1.8450
55	30.08	452.94	1.8604
60	30.77	457.96	1.8756
65	31.45	462.96	1.8905
70	32.12	467.96	1.9052
75	32.77	472.95	1.9196
80	33.42	477.95	1.9339
85	34.06	482.95	1.9480
90	34.69	487.97	1.9619
95	35.32	492.99	1.9756
100	35.94	498.03	1.9892
105	36.55	503.08	2.0027

11.11 bar 28.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
28	20.89	421.02	1.7446
30	21.19	423.27	1.7520
35	21.93	428.81	1.7701
40	22.63	434.23	1.7876
45	23.31	439.58	1.8045
50	23.97	444.85	1.8210
55	24.61	450.08	1.8370
60	25.23	455.26	1.8527
65	25.83	460.42	1.8681
70	26.42	465.56	1.8832
75	27.00	470.68	1.8980
80	27.57	475.79	1.9126
85	28.14	480.90	1.9269
90	28.69	486.00	1.9411
95	29.24	491.12	1.9551
100	29.77	496.23	1.9689
105	30.31	501.36	1.9825
110	30.84	506.50	1.9960

13.11 bar 34.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
34	17.49	422.84	1.7379
35	17.63	424.03	1.7418
40	18.30	429.87	1.7606
45	18.94	435.56	1.7786
50	19.55	441.14	1.7960
55	20.14	446.62	1.8128
60	20.71	452.04	1.8292
65	21.26	457.39	1.8452
70	21.79	462.71	1.8608
75	22.32	467.99	1.8760
80	22.83	473.24	1.8910
85	23.33	478.48	1.9058
90	23.82	483.70	1.9202
95	24.30	488.92	1.9345
100	24.78	494.14	1.9486
105	25.25	499.36	1.9625
110	25.71	504.58	1.9762
115	26.17	509.82	1.9898

15.39 bar 40.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
40	14.68	424.33	1.7309
45	15.31	430.56	1.7507
50	15.89	436.56	1.7694
55	16.45	442.41	1.7873
60	16.98	448.13	1.8047
65	17.50	453.76	1.8214
70	17.99	459.31	1.8377
75	18.47	464.79	1.8536
80	18.93	470.23	1.8691
85	19.39	475.63	1.8843
90	19.83	481.01	1.8992
95	20.26	486.36	1.9138
100	20.69	491.70	1.9282
105	21.11	497.03	1.9424
110	21.52	502.36	1.9564
115	21.93	507.68	1.9702
120	22.33	513.01	1.9839
125	22.73	518.35	1.9973

9.90 bar 24.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
24	23.55	419.65	1.7490
25	23.72	420.75	1.7526
30	24.52	426.14	1.7706
35	25.29	431.44	1.7879
40	26.03	436.66	1.8047
45	26.75	441.83	1.8211
50	27.44	446.95	1.8371
55	28.13	452.05	1.8527
60	28.79	457.11	1.8680
65	29.44	462.16	1.8831
70	30.08	467.20	1.8979
75	30.71	472.24	1.9124
80	31.33	477.27	1.9268
85	31.94	482.30	1.9409
90	32.55	487.35	1.9549
95	33.14	492.40	1.9687
100	33.73	497.46	1.9824
105	34.32	502.54	1.9959

11.75 bar 30.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
30	19.68	421.66	1.7424
35	20.41	427.34	1.7610
40	21.10	432.88	1.7788
45	21.76	438.33	1.7961
50	22.40	443.70	1.8128
55	23.02	449.00	1.8291
60	23.62	454.25	1.8450
65	24.20	459.47	1.8605
70	24.77	464.66	1.8758
75	25.33	469.83	1.8907
80	25.88	474.98	1.9054
85	26.42	480.13	1.9199
90	26.95	485.28	1.9342
95	27.48	490.42	1.9482
100	27.99	495.57	1.9621
105	28.51	500.73	1.9758
110	29.01	505.90	1.9894
115	29.51	511.07	2.0028

13.84 bar 36.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
36	16.50	423.38	1.7356
40	17.03	428.18	1.7511
45	17.66	434.02	1.7696
50	18.26	439.72	1.7874
55	18.84	445.31	1.8045
60	19.39	450.82	1.8212
65	19.92	456.26	1.8374
70	20.44	461.64	1.8532
75	20.95	466.98	1.8686
80	21.44	472.29	1.8838
85	21.93	477.58	1.8986
90	22.40	482.85	1.9133
95	22.87	488.11	1.9276
100	23.33	493.37	1.9418
105	23.78	498.62	1.9558
110	24.22	503.88	1.9696
115	24.66	509.14	1.9833
120	25.10	514.41	1.9968

16.21 bar 42.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
42	13.85	424.75	1.7285
45	14.22	428.59	1.7407
50	14.81	434.79	1.7600
55	15.36	440.80	1.7784
60	15.89	446.65	1.7961
65	16.39	452.38	1.8132
70	16.87	458.03	1.8298
75	17.34	463.60	1.8459
80	17.79	469.11	1.8616
85	18.23	474.57	1.8770
90	18.66	480.01	1.8920
95	19.08	485.41	1.9068
100	19.50	490.80	1.9214
105	19.90	496.17	1.9357
110	20.30	501.54	1.9498
115	20.69	506.90	1.9637
120	21.08	512.26	1.9774
125	21.46	517.63	1.9910

10.49 bar 26.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
26	22.18	420.35	1.7468
30	22.80	424.76	1.7614
35	23.55	430.17	1.7791
40	24.27	435.49	1.7962
45	24.97	440.74	1.8129
50	25.65	445.94	1.8291
55	26.30	451.09	1.8449
60	26.95	456.22	1.8604
65	27.57	461.32	1.8756
70	28.19	466.40	1.8905
75	28.79	471.48	1.9052
80	29.39	476.55	1.9197
85	29.97	481.62	1.9339
90	30.55	486.69	1.9480
95	31.12	491.77	1.9619
100	31.68	496.86	1.9756
105	32.24	501.97	1.9892
110	32.79	507.08	2.0027

12.42 bar 32.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
32	18.55	422.26	1.7401
35	18.98	425.75	1.7515
40	19.66	431.44	1.7698
45	20.31	437.00	1.7874
50	20.93	442.46	1.8045
55	21.53	447.85	1.8210
60	22.12	453.18	1.8371
65	22.68	458.46	1.8529
70	23.23	463.71	1.8683
75	23.77	468.93	1.8834
80	24.30	474.14	1.8982
85	24.82	479.33	1.9128
90	25.33	484.51	1.9272
95	25.84	489.69	1.9414
100	26.33	494.87	1.9554
105	26.82	500.06	1.9692
110	27.31	505.26	1.9828
115	27.78	510.46	1.9963

14.60 bar 38.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
38	15.56	423.87	1.7333
40	15.82	426.34	1.7412
45	16.45	432.36	1.7603
50	17.04	438.20	1.7785
55	17.61	443.91	1.7960
60	18.15	449.52	1.8130
65	18.67	455.05	1.8295
70	19.18	460.51	1.8455
75	19.67	465.92	1.8611
80	20.15	471.29	1.8765
85	20.62	476.63	1.8915
90	21.07	481.95	1.9062
95	21.52	487.26	1.9207
100	21.97	492.56	1.9350
105	22.40	497.85	1.9491
110	22.83	503.14	1.9630
115	23.25	508.43	1.9767
120	23.67	513.73	1.9903

17.07 bar 44.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
44	13.07	425.12	1.7260
45	13.19	426.44	1.7302
50	13.78	432.87	1.7503
55	14.33	439.06	1.7693
60	14.85	445.06	1.7874
65	15.34	450.92	1.8049
70	15.82	456.66	1.8217
75	16.28	462.33	1.8381
80	16.72	467.92	1.8541
85	17.15	473.45	1.8696
90	17.56	478.95	1.8849
95	17.97	484.41	1.8998
100	18.37	489.85	1.9145
105	18.76	495.27	1.9289
110	19.15	500.68	1.9431
115	19.53	506.08	1.9571
120	19.90	511.47	1.9709
125	20.27	516.87	1.9846

Vapour Table. Superheated Range Solkane®407C

17.99 bar 46.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
46	12.33	425.44	1.7235
50	12.80	430.77	1.7401
55	13.35	437.17	1.7597
60	13.87	443.34	1.7784
65	14.36	449.34	1.7963
70	14.83	455.21	1.8135
75	15.27	460.97	1.8302
80	15.71	466.65	1.8464
85	16.12	472.27	1.8622
90	16.53	477.83	1.8776
95	16.93	483.36	1.8927
100	17.32	488.85	1.9075
105	17.69	494.32	1.9221
110	18.07	499.77	1.9364
115	18.43	505.21	1.9505
120	18.79	510.65	1.9644
125	19.15	516.08	1.9782
130	19.50	521.51	1.9917

20.88 bar 52.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
52	10.35	426.06	1.7153
55	10.69	430.41	1.7286
60	11.22	437.30	1.7494
65	11.70	443.87	1.7690
70	12.16	450.20	1.7876
75	12.59	456.35	1.8054
80	13.00	462.36	1.8225
85	13.40	468.26	1.8391
90	13.78	474.08	1.8552
95	14.14	479.82	1.8710
100	14.50	485.51	1.8863
105	14.85	491.15	1.9013
110	15.19	496.76	1.9161
115	15.52	502.34	1.9305
120	15.85	507.91	1.9448
125	16.17	513.46	1.9588
130	16.49	519.00	1.9726
135	16.80	524.54	1.9863

24.14 bar 58.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
58	8.66	426.07	1.7059
60	8.89	429.28	1.7156
65	9.40	436.83	1.7381
70	9.87	443.91	1.7589
75	10.30	450.65	1.7784
80	10.70	457.13	1.7969
85	11.09	463.43	1.8146
90	11.45	469.59	1.8317
95	11.80	475.62	1.8482
100	12.13	481.56	1.8642
105	12.46	487.43	1.8798
110	12.77	493.24	1.8951
115	13.08	499.01	1.9100
120	13.38	504.73	1.9247
125	13.68	510.43	1.9391
130	13.96	516.11	1.9533
135	14.25	521.77	1.9672
140	14.53	527.42	1.9810

27.75 bar 64.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
64	7.21	425.23	1.6949
65	7.32	427.07	1.7003
70	7.85	435.58	1.7253
75	8.30	443.33	1.7477
80	8.72	450.58	1.7684
85	9.10	457.48	1.7878
90	9.46	464.12	1.8062
95	9.80	470.57	1.8238
100	10.12	476.86	1.8408
105	10.43	483.03	1.8572
110	10.73	489.11	1.8732
115	11.01	495.10	1.8888
120	11.29	501.03	1.9039
125	11.57	506.92	1.9188
130	11.83	512.76	1.9334
135	12.09	518.57	1.9477
140	12.35	524.36	1.9618
145	12.60	530.13	1.9757

18.89 bar 48.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
48	11.63	425.71	1.7209
50	11.87	428.47	1.7294
55	12.43	435.12	1.7499
60	12.94	441.49	1.7691
65	13.43	447.66	1.7875
70	13.89	453.66	1.8051
75	14.33	459.53	1.8221
80	14.75	465.31	1.8386
85	15.16	471.01	1.8546
90	15.56	476.65	1.8703
95	15.94	482.24	1.8855
100	16.32	487.79	1.9005
105	16.69	493.32	1.9152
110	17.05	498.82	1.9297
115	17.40	504.30	1.9439
120	17.75	509.78	1.9579
125	18.10	515.25	1.9717
130	18.43	520.71	1.9854

21.88 bar 54.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
54	9.76	426.14	1.7123
55	9.87	427.66	1.7169
60	10.41	434.90	1.7389
65	10.90	441.74	1.7592
70	11.36	448.27	1.7784
75	11.79	454.59	1.7967
80	12.20	460.74	1.8142
85	12.58	466.76	1.8311
90	12.96	472.67	1.8475
95	13.32	478.50	1.8635
100	13.67	484.27	1.8790
105	14.01	489.98	1.8943
110	14.34	495.65	1.9092
115	14.66	501.29	1.9238
120	14.98	506.90	1.9381
125	15.29	512.50	1.9523
130	15.60	518.08	1.9662
135	15.90	523.66	1.9800

25.24 bar 60.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
60	8.15	425.90	1.7025
65	8.69	433.98	1.7266
70	9.17	441.42	1.7484
75	9.61	448.42	1.7687
80	10.01	455.12	1.7878
85	10.39	461.59	1.8060
90	10.75	467.89	1.8234
95	11.10	474.04	1.8403
100	11.43	480.09	1.8566
105	11.75	486.05	1.8724
110	12.05	491.94	1.8879
115	12.35	497.78	1.9031
120	12.65	503.57	1.9179
125	12.93	509.32	1.9324
130	13.21	515.05	1.9467
135	13.49	520.76	1.9608
140	13.76	526.45	1.9746
145	14.03	532.13	1.9883

29.01 bar 66.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
66	6.76	424.71	1.6906
70	7.21	432.10	1.7123
75	7.68	440.37	1.7362
80	8.11	447.99	1.7580
85	8.50	455.17	1.7781
90	8.85	462.03	1.7972
95	9.19	468.65	1.8153
100	9.51	475.09	1.8326
105	9.82	481.38	1.8494
110	10.11	487.56	1.8656
115	10.39	493.65	1.8814
120	10.67	499.66	1.8968
125	10.93	505.62	1.9119
130	11.19	511.53	1.9266
135	11.45	517.40	1.9411
140	11.70	523.24	1.9553
145	11.94	529.06	1.9693
150	12.18	534.86	1.9831

19.88 bar 50.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
50	10.97	425.92	1.7181
55	11.54	432.88	1.7395
60	12.06	439.49	1.7595
65	12.54	445.84	1.7784
70	13.00	451.99	1.7965
75	13.44	458.00	1.8139
80	13.85	463.89	1.8307
85	14.25	469.68	1.8469
90	14.64	475.40	1.8628
95	15.02	481.06	1.8783
100	15.38	486.68	1.8935
105	15.74	492.26	1.9083
110	16.09	497.82	1.9229
115	16.44	503.35	1.9372
120	16.77	508.87	1.9514
125	17.10	514.37	1.9653
130	17.43	519.88	1.9790
135	17.75	525.38	1.9926

23.00 bar 56.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
56	9.20	426.15	1.7092
60	9.64	432.25	1.7276
65	10.14	439.40	1.7490
70	10.60	446.18	1.7689
75	11.03	452.69	1.7877
80	11.43	459.00	1.8057
85	11.82	465.15	1.8230
90	12.18	471.18	1.8397
95	12.54	477.10	1.8559
100	12.88	482.95	1.8717
105	13.21	488.74	1.8871
110	13.53	494.48	1.9022
115	13.85	500.18	1.9169
120	14.16	505.85	1.9315
125	14.46	511.49	1.9457
130	14.76	517.12	1.9598
135	15.05	522.74	1.9736
140	15.34	528.35	1.9873

26.50 bar 62.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
62	7.67	425.62	1.6988
65	8.00	430.76	1.7141
70	8.50	438.66	1.7373
75	8.94	446.00	1.7585
80	9.35	452.95	1.7783
85	9.73	459.62	1.7971
90	10.09	466.07	1.8150
95	10.43	472.36	1.8322
100	10.76	478.53	1.8488
105	11.07	484.59	1.8649
110	11.37	490.56	1.8806
115	11.67	496.47	1.8960
120	11.95	502.33	1.9110
125	12.23	508.15	1.9257
130	12.50	513.93	1.9401
135	12.77	519.69	1.9543
140	13.03	525.43	1.9683
145	13.29	531.15	1.9820

30.41 bar 68.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
68	6.34	424.04	1.6860
70	6.57	428.05	1.6978
75	7.08	437.05	1.7238
80	7.52	445.14	1.7469
85	7.91	452.65	1.7680
90	8.28	459.76	1.7877
95	8.61	466.59	1.8064
100	8.93	473.19	1.8242
105	9.24	479.62	1.8413
110	9.53	485.92	1.8579
115	9.80	492.11	1.8739
120	10.07	498.22	1.8896
125	10.34	504.25	1.9048
130	10.59	510.23	1.9197
135	10.84	516.16	1.9344
140	11.08	522.06	1.9487
145	11.32	527.93	1.9628
150	11.55	533.78	1.9767

Vapour Table. Superheated Range Solkane®407C

31.82 bar 70.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
70	5.93	423.19	1.6810
75	6.49	433.26	1.7102
80	6.95	441.96	1.7350
85	7.35	449.88	1.7573
90	7.72	457.30	1.7778
95	8.06	464.36	1.7971
100	8.38	471.15	1.8155
105	8.68	477.74	1.8330
110	8.97	484.17	1.8499
115	9.24	490.48	1.8663
120	9.51	496.68	1.8821
125	9.77	502.80	1.8976
130	10.01	508.86	1.9127
135	10.26	514.86	1.9275
140	10.49	520.82	1.9420
145	10.72	526.75	1.9563
150	10.95	532.65	1.9703
155	11.17	538.53	1.9841

3641 bar 76.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
76	4.76	419.16	1.6624
80	5.27	429.28	1.6912
85	5.76	439.47	1.7199
90	6.17	448.34	1.7444
95	6.53	456.44	1.7666
100	6.85	464.02	1.7870
105	7.16	471.24	1.8063
110	7.44	478.18	1.8245
115	7.71	484.92	1.8420
120	7.96	491.49	1.8588
125	8.21	497.93	1.8751
130	8.45	504.26	1.8909
135	8.67	510.51	1.9063
140	8.90	516.69	1.9213
145	9.11	522.81	1.9361
150	9.32	528.89	1.9505
155	9.53	534.93	1.9647
160	9.73	540.95	1.9787

33.29 bar 72.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
72	5.53	422.13	1.6755
75	5.89	428.80	1.6948
80	6.39	438.36	1.7220
85	6.81	446.82	1.7458
90	7.19	454.61	1.7674
95	7.53	461.95	1.7875
100	7.85	468.96	1.8064
105	8.15	475.73	1.8244
110	8.44	482.31	1.8417
115	8.71	488.74	1.8584
120	8.97	495.06	1.8746
125	9.22	501.27	1.8903
130	9.47	507.41	1.9056
135	9.70	513.49	1.9206
140	9.94	519.52	1.9353
145	10.16	525.51	1.9497
150	10.38	531.46	1.9638
155	10.60	537.39	1.9778

38.07 bar 78.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
78	4.39	417.09	1.6543
80	4.68	423.10	1.6713
85	5.23	434.92	1.7046
90	5.67	444.62	1.7315
95	6.05	453.24	1.7551
100	6.38	461.20	1.7765
105	6.69	468.70	1.7965
110	6.97	475.87	1.8153
115	7.24	482.79	1.8333
120	7.49	489.52	1.8505
125	7.73	496.09	1.8671
130	7.97	502.53	1.8832
135	8.19	508.88	1.8989
140	8.41	515.15	1.9141
145	8.62	521.35	1.9290
150	8.83	527.50	1.9437
155	9.03	533.60	1.9580
160	9.23	539.67	1.9721

34.81 bar 74.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
74	5.14	420.81	1.6693
75	5.28	423.35	1.6766
80	5.83	434.21	1.7076
85	6.28	443.39	1.7334
90	6.67	451.64	1.7563
95	7.02	459.32	1.7773
100	7.34	466.59	1.7970
105	7.64	473.57	1.8155
110	7.93	480.32	1.8333
115	8.20	486.89	1.8503
120	8.46	493.33	1.8668
125	8.70	499.65	1.8828
130	8.94	505.88	1.8983
135	9.18	512.04	1.9135
140	9.40	518.14	1.9284
145	9.62	524.20	1.9429
150	9.84	530.21	1.9572
155	10.05	536.19	1.9713

39.81 bar 80.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
80	4.01	414.44	1.6447
85	4.70	429.41	1.6868
90	5.18	440.33	1.7171
95	5.57	449.66	1.7426
100	5.92	458.09	1.7653
105	6.23	465.93	1.7862
110	6.52	473.37	1.8057
115	6.78	480.50	1.8242
120	7.04	487.40	1.8419
125	7.28	494.12	1.8589
130	7.51	500.69	1.8753
135	7.73	507.15	1.8912
140	7.94	513.51	1.9067
145	8.15	519.80	1.9218
150	8.35	526.02	1.9366
155	8.55	532.20	1.9511
160	8.74	538.33	1.9654
165	8.93	544.43	1.9794

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