SOLVAY FLUOR

SOLKANE® - INFORMATION SERVICE

Solkane® 407C Thermodynamics

SOLVAY FLUOR

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 2146

[3] Order by Fax : +49 (0) 511 857 2146

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]	-43.8
Dew point[1]	[°C]	-36.7
Temperature glide	[K]	7.1
Freezing point[1]	[°C]	-101.0
Critical temperature	[°C]	86.4
Critical pressure	[bar]	46.3
Saturated liquid density[2]	[kg/m³]	1138.0
Saturated vapour density[2]	[kg/m³]	43.8
Vapour pressure[2]	[bar]	10.19
Enthalpy of vaporization[2]	[kJ/kg]	182.59
Liquid thermal conductivity[2]	[W/mK]	$84.66x10^{-3}$
Surface tension of liquid[2]	[N/m]	$6.512x10^{-3}$
Specific heat capacity of liquid[2]	[kJ/(kgK)]	1.533
Specific heat capacity of vapour[1]	[kJ/(kgK)]	1.107
Liquid viscosity[2]	[Pa s]	$0.1516x10^{-3}$
Saturated vapour viscocity[2]	[Pa s]	$12.2282x10^{-6}$
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 0.59 < T_R < 0.97 and in an overheated state of 0.05MPa < p < 2.5MPa and T_{max} = 500K.

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	[-]	-6.67037434	-8.98621316
A_2	[-]	-1.10792561	9.439788553
A_3	[-]	3.951222403	-21.8140917
A_4	[-]	-2.54270994	29.30787201
A_5	[-]	-2.42738451	-19.2595293
A_6	[-]	0.009471962	-0.01552538
B_1	[-]	1.5	1.5
B_2	[-]	2	2
B_3	[-]	2.5	2.5
B_4	[-]	3	3
T_c	[K]	359.20	
p_c	[bar]	46.34	

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	[-]	1.453545534	C_4	[-]	1.430748774
C_2	[-]	2.148643936	ρ_c	[kg/m³]	510
C_3	[-]	-2.1691382			

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

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

The coefficients are:

D_1	[kJ/(kg K)]	5.16830E-01	D_4	[kJ/(kg K³)]	-3.16270E-09
D_2	[kJ/(kg K²)]	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

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

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

E_1	[-]	-1.53162E-03	F_2	[-]	-1.15939E-09
E_2	[-]	1.61365E-06	F_4	[-]	2.05714E-15
E_3	[-]	-1.10524E-09	G_1	[-]	-3.58498E-02
E_4	[-]	-2.89196E-13	G_2	[-]	6.96084E-05
F_1	[-]	1.83562E-06	G_4	[-]	-2.25522E-11
B	[m³/kg]	1.46934E-04	K	[-]	5.475
R	[bar m³/(kgK)]	9.64505E-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.

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

and

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

taking p_1 = 1.013 bar where :

H_0	[kJ/kg]	324.447
S_0	[kJ/(kgK)]	-1.250

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	[-]	354.5759899	J_6	[-]	-16830.2093
J_2	[-]	-1012.66478	K_1	[kJ/(kgK^2)]	0.0051002991
J_3	[-]	3349.74003	K_2	[kJ/(kgK^3)]	3.8473716e-06
J_4	[-]	-12046.2997	K_3	[kJ/(kgK^4)]	4.9930206e-08
J_5	[-]	22699.89877	K_4	[kJ/(kgK^5)]	-2.2299175e-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

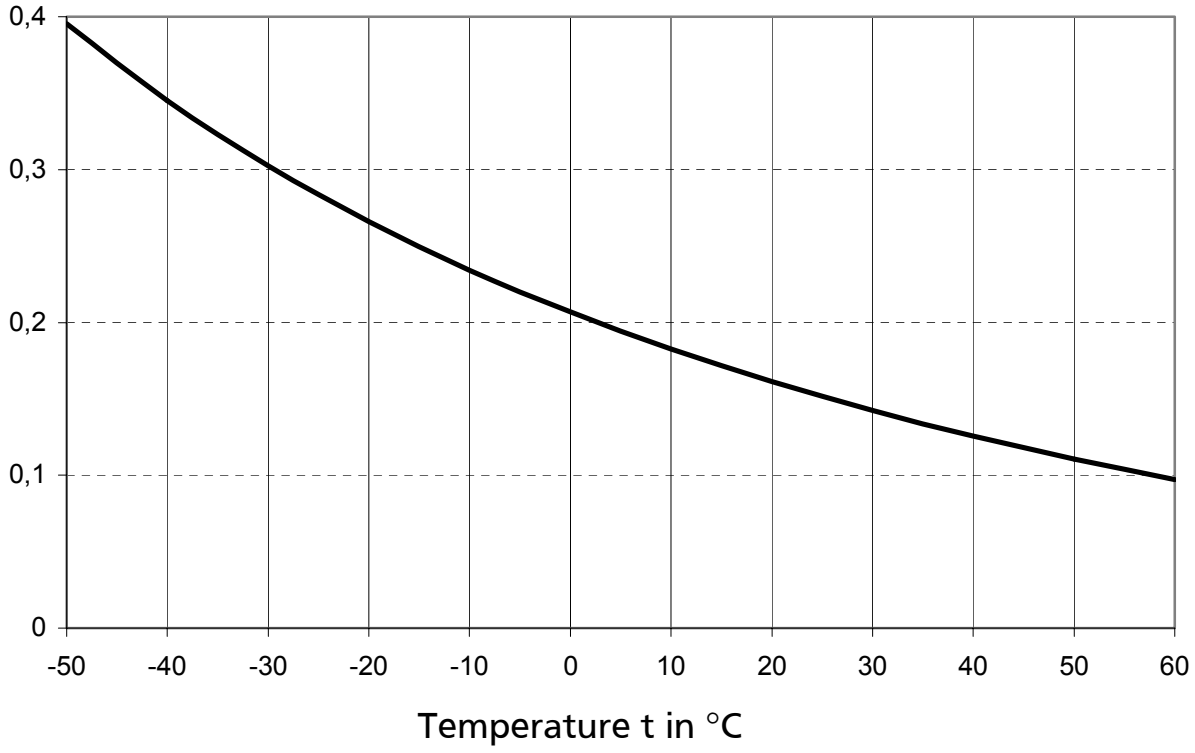

Figure 1: Dynamic saturated liquid viscosity

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

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

$$\Omega(T^*) = \exp[0.45667 - 0.53955(\ln T^*) + 0.187265(\ln T^*)^2 - 0.03629(\ln T^*)^3 + 0.00241(\ln T^*)^4] \tag{12 a-c}$$

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

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

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]

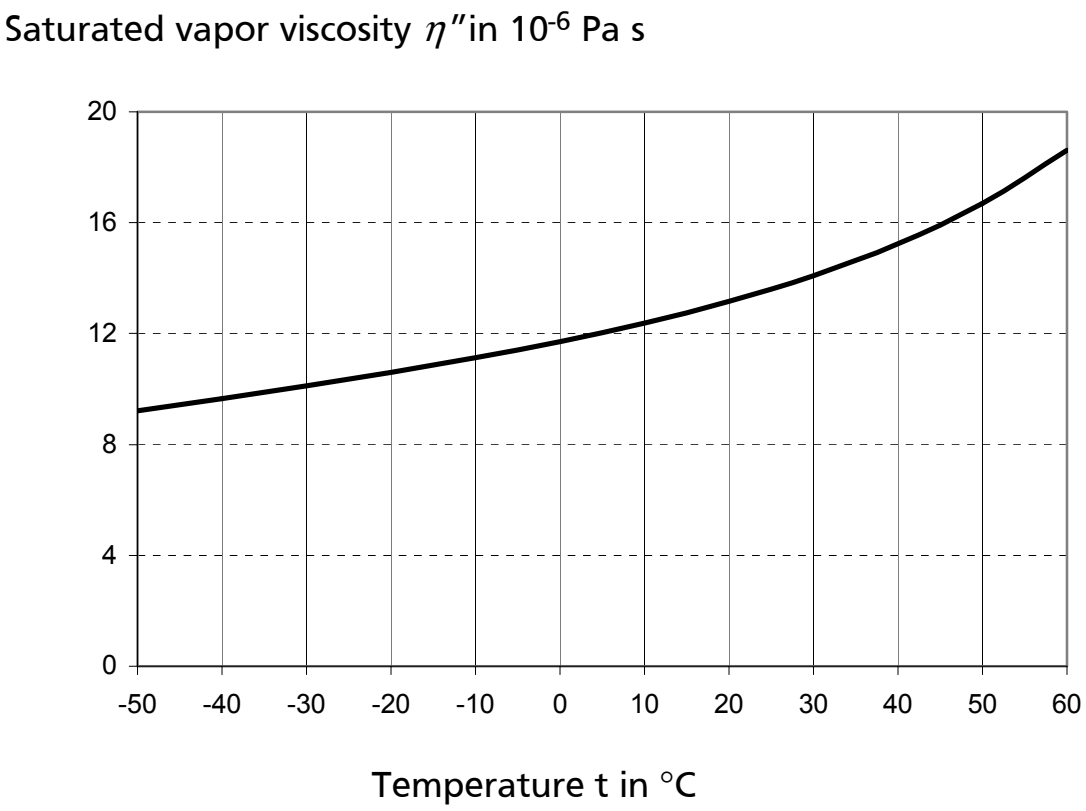

Figure 2: **Dynamic viscosity of saturated vapour**

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)]

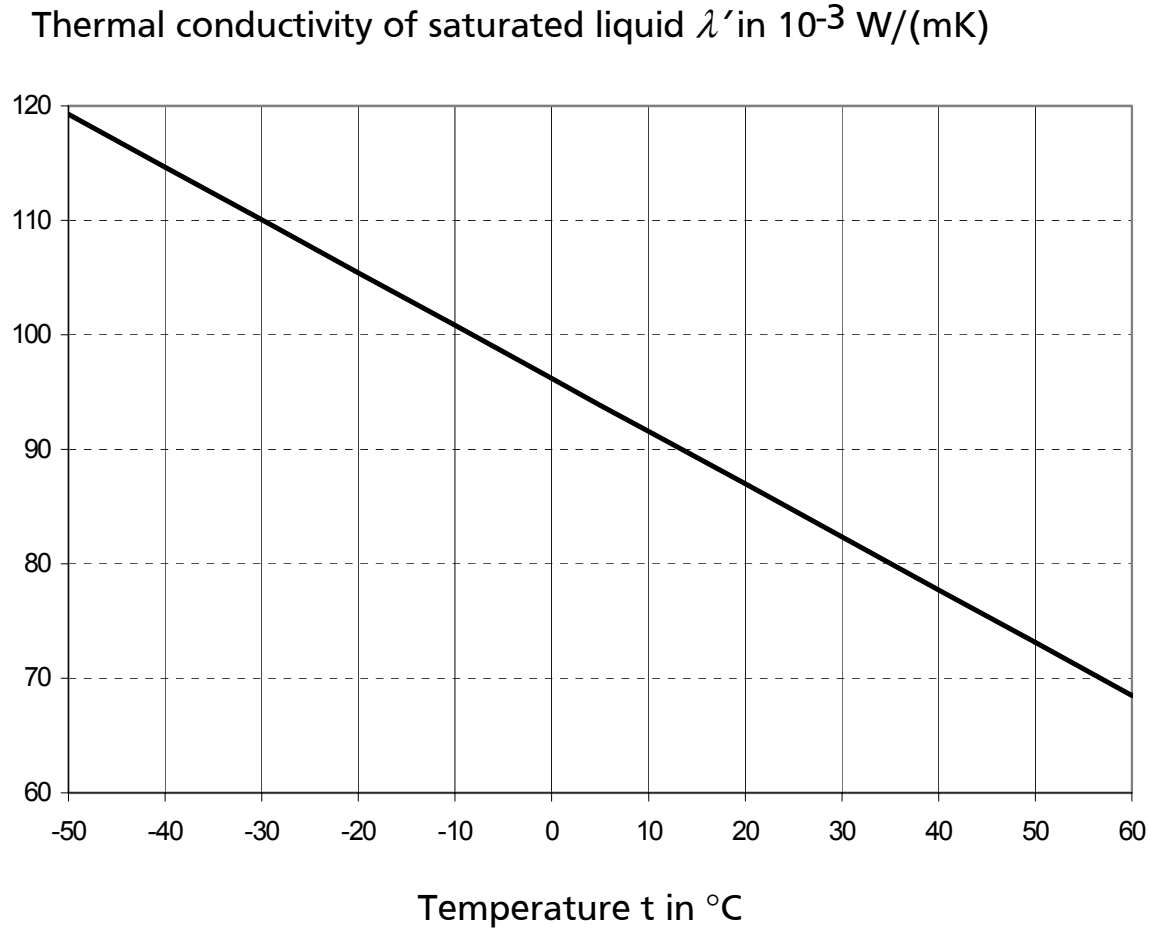

Figure 3: Thermal conductivity of saturated liquid

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)]				

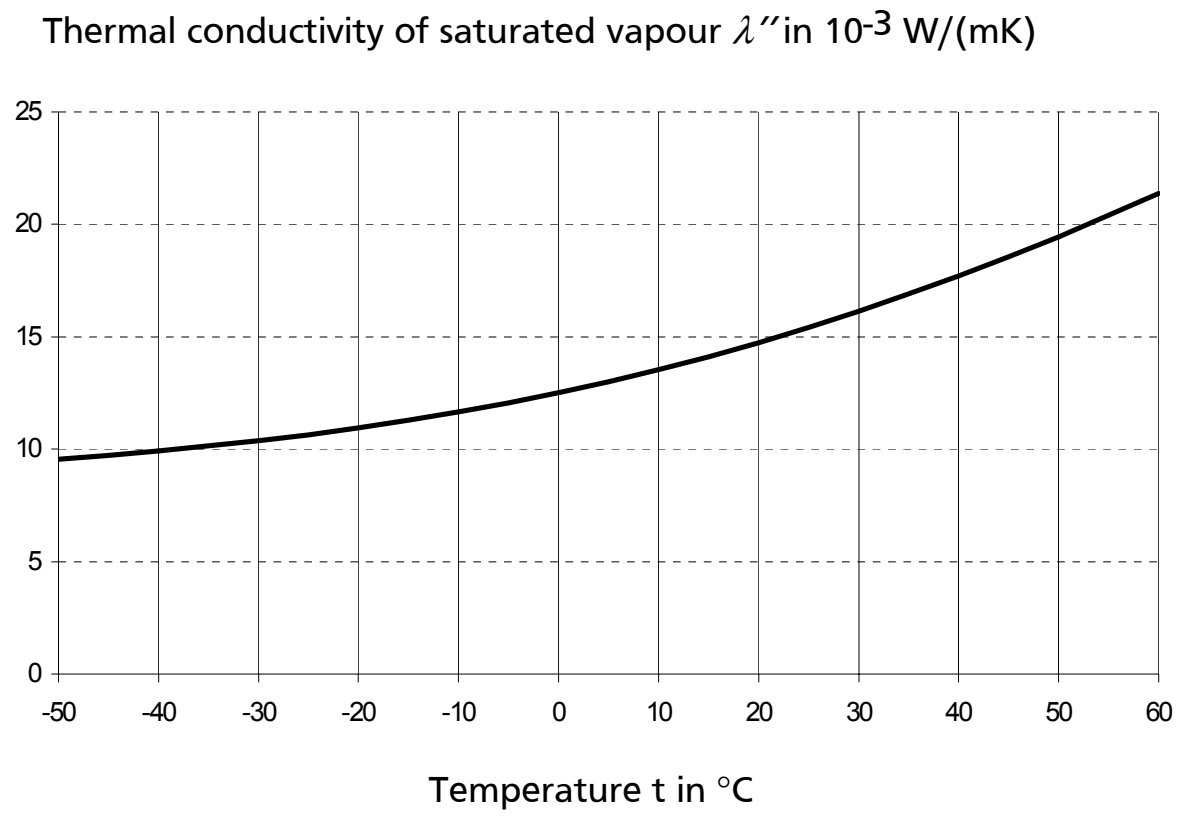

Figure 4: Thermal conductivity of saturated vapour

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)]

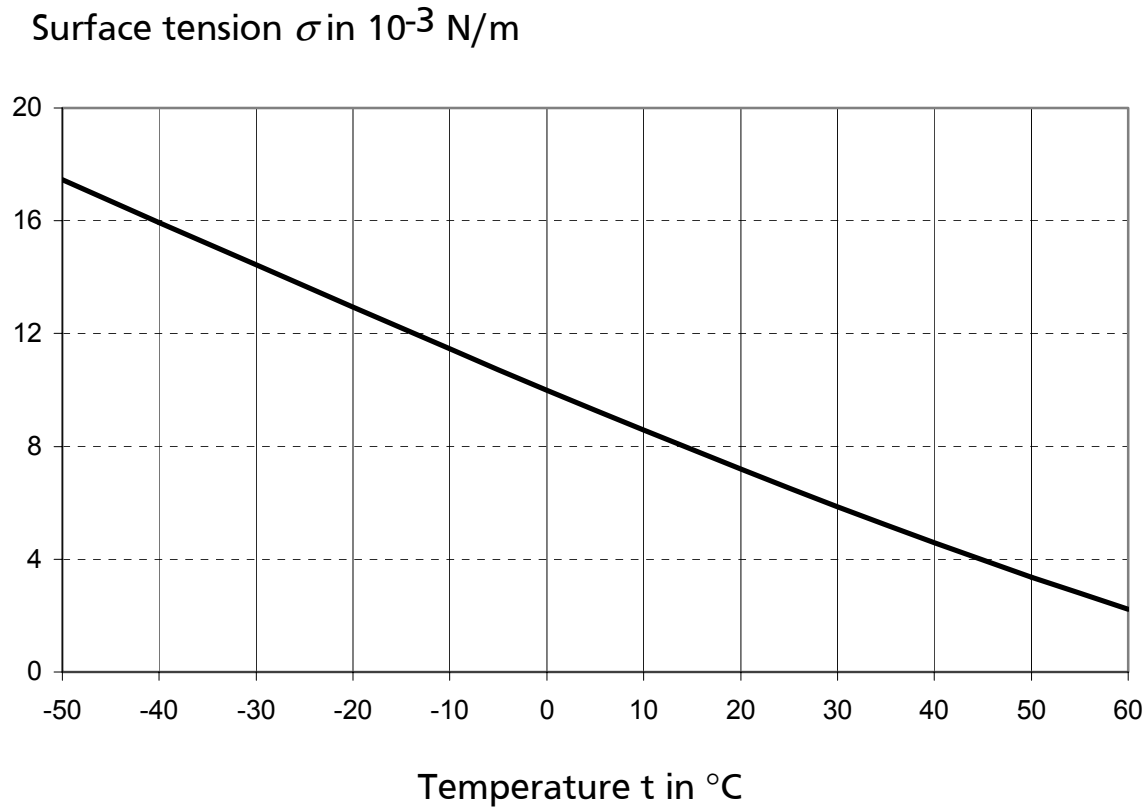

Figure 5: **Surface tension**

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 =	309.36797 [kJ/(kg K)]	P_3 =	-977.084713 [kJ/(kg K)]
P_1 =	-1284.36142 [kJ/(kg K)]	P_4 =	80.36186841 [kJ/(kg K)]
P_2 =	1873.363029 [kJ/(kg K)]		

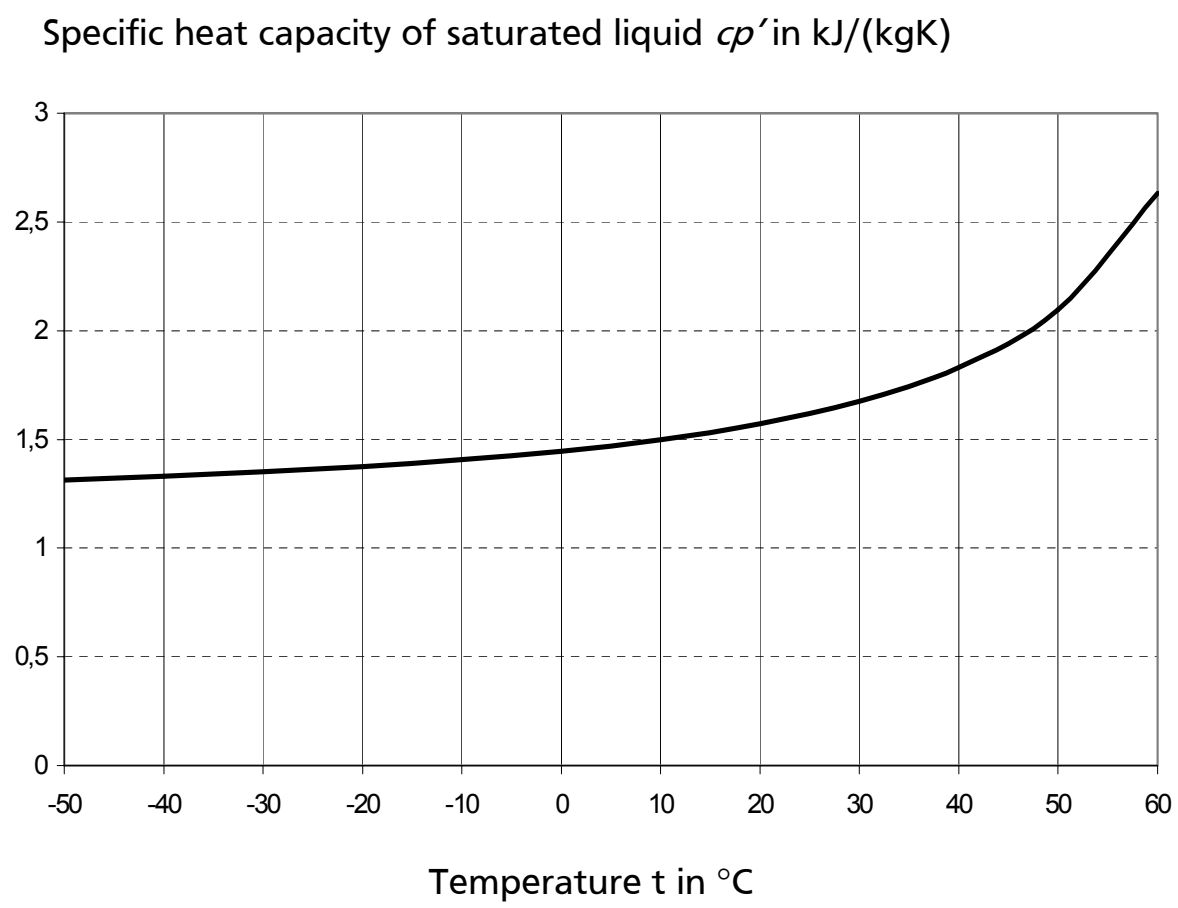

Figure 6: Specific heat capacity of saturated liquid

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.

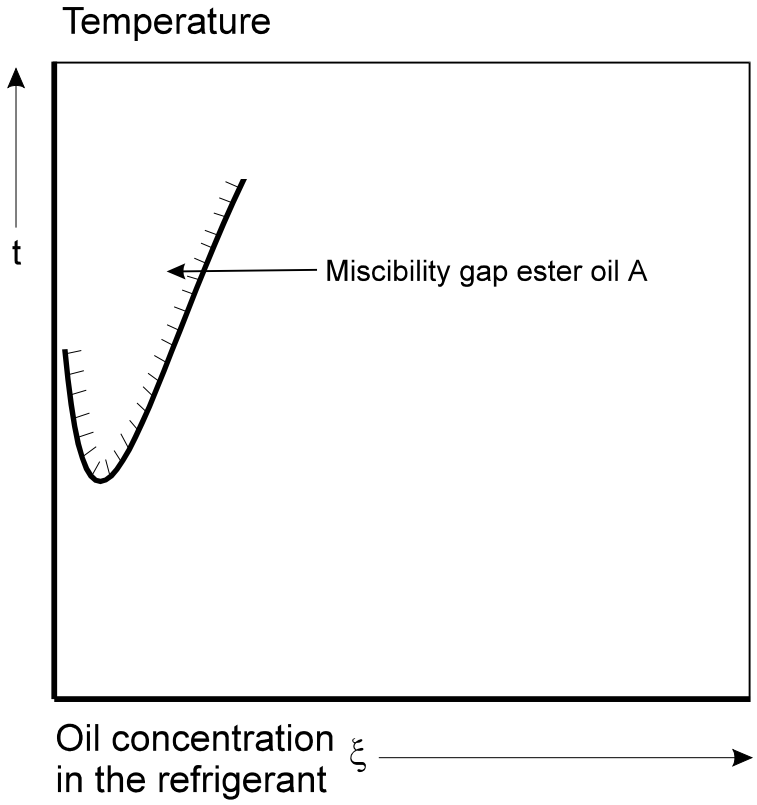

Figure 7: Miscibility behaviour of Solkane®407C and ester oil A

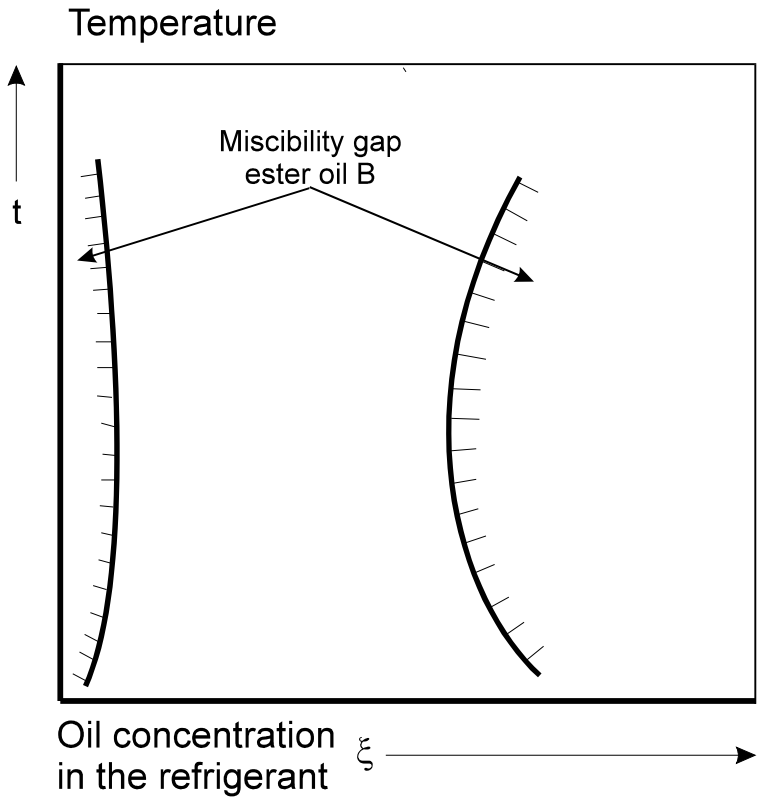

Figure 8: **Miscibility behaviour of Solkane®407C and ester oil B**

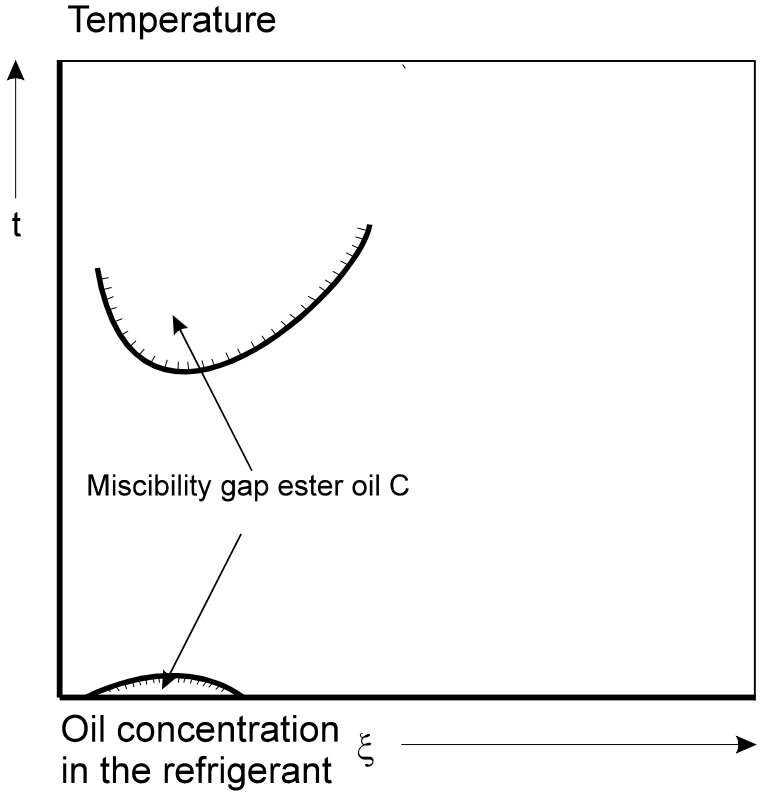

Figure 9: **Miscibility behaviour of Solkane®407C and ester oil C**

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	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]
-50	0.75	0.51	0.714	414.98	1.401	2.41	133.00	381.29	248.29	0.7305	1.8633
-49	0.79	0.53	0.715	393.79	1.398	2.54	134.28	381.89	247.61	0.7363	1.8607
-48	0.83	0.56	0.717	373.89	1.395	2.67	135.55	382.49	246.93	0.7420	1.8582
-47	0.87	0.60	0.718	355.19	1.392	2.82	136.83	383.08	246.25	0.7477	1.8557
-46	0.91	0.63	0.720	337.61	1.389	2.96	138.11	383.67	245.57	0.7534	1.8533
-45	0.96	0.66	0.722	321.06	1.386	3.11	139.39	384.27	244.88	0.7591	1.8509
-44	1.00	0.70	0.723	305.48	1.383	3.27	140.67	384.86	244.19	0.7647	1.8485
-43	1.05	0.74	0.725	290.80	1.380	3.44	141.96	385.45	243.49	0.7704	1.8462
-42	1.10	0.78	0.726	276.97	1.377	3.61	143.24	386.03	242.79	0.7760	1.8439
-41	1.16	0.82	0.728	263.92	1.374	3.79	144.53	386.62	242.09	0.7816	1.8416
-40	1.21	0.86	0.730	251.60	1.370	3.97	145.82	387.20	241.38	0.7872	1.8394
-39	1.27	0.91	0.731	239.97	1.367	4.17	147.12	387.78	240.67	0.7928	1.8373
-38	1.33	0.95	0.733	228.99	1.364	4.37	148.41	388.37	239.95	0.7984	1.8351
-37	1.39	1.00	0.735	218.60	1.361	4.57	149.71	388.94	239.23	0.8039	1.8330
-36	1.45	1.05	0.736	208.78	1.358	4.79	151.01	389.52	238.51	0.8094	1.8309
-35	1.52	1.10	0.738	199.49	1.355	5.01	152.32	390.10	237.78	0.8150	1.8289
-34	1.58	1.16	0.740	190.69	1.352	5.24	153.63	390.67	237.04	0.8205	1.8269
-33	1.66	1.21	0.742	182.36	1.349	5.48	154.94	391.24	236.30	0.8260	1.8249
-32	1.73	1.27	0.743	174.47	1.345	5.73	156.25	391.81	235.56	0.8314	1.8230
-31	1.80	1.33	0.745	166.98	1.342	5.99	157.57	392.38	234.81	0.8369	1.8211
-30	1.88	1.39	0.747	159.88	1.339	6.25	158.89	392.94	234.05	0.8424	1.8192
-29	1.96	1.46	0.749	153.14	1.336	6.53	160.22	393.51	233.29	0.8478	1.8174
-28	2.04	1.52	0.750	146.74	1.333	6.81	161.55	394.07	232.52	0.8532	1.8155
-27	2.13	1.59	0.752	140.66	1.329	7.11	162.88	394.63	231.75	0.8586	1.8138
-26	2.22	1.67	0.754	134.89	1.326	7.41	164.21	395.18	230.97	0.8640	1.8120
-25	2.31	1.74	0.756	129.40	1.323	7.73	165.55	395.74	230.18	0.8694	1.8102
-24	2.40	1.82	0.758	124.18	1.320	8.05	166.89	396.29	229.39	0.8748	1.8085
-23	2.50	1.90	0.760	119.21	1.316	8.39	168.24	396.84	228.60	0.8801	1.8069
-22	2.60	1.98	0.762	114.47	1.313	8.74	169.59	397.38	227.80	0.8855	1.8052
-21	2.70	2.06	0.764	109.97	1.310	9.09	170.94	397.93	226.99	0.8908	1.8036
-20	2.81	2.15	0.766	105.67	1.306	9.46	172.29	398.47	226.18	0.8961	1.8019
-19	2.92	2.24	0.767	101.58	1.303	9.84	173.65	399.01	225.36	0.9014	1.8004
-18	3.03	2.34	0.769	97.68	1.300	10.24	175.01	399.54	224.53	0.9067	1.7988
-17	3.14	2.43	0.771	93.96	1.296	10.64	176.38	400.08	223.70	0.9120	1.7972
-16	3.26	2.53	0.773	90.40	1.293	11.06	177.75	400.61	222.86	0.9172	1.7957
-15	3.39	2.64	0.775	87.01	1.289	11.49	179.12	401.14	222.02	0.9225	1.7942
-14	3.51	2.74	0.778	83.77	1.286	11.94	180.50	401.66	221.17	0.9277	1.7927
-13	3.64	2.85	0.780	80.68	1.283	12.40	181.88	402.18	220.31	0.9329	1.7913
-12	3.77	2.97	0.782	77.72	1.279	12.87	183.26	402.70	219.45	0.9382	1.7898
-11	3.91	3.08	0.784	74.89	1.276	13.35	184.64	403.22	218.58	0.9434	1.7884

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	4.05	3.20	0.786	72.18	1.272	13.85	186.03	403.73	217.70	0.9486	1.7870
-9	4.20	3.33	0.788	69.59	1.269	14.37	187.42	404.24	216.82	0.9538	1.7856
-8	4.34	3.45	0.790	67.12	1.265	14.90	188.82	404.75	215.93	0.9589	1.7843
-7	4.50	3.58	0.793	64.74	1.262	15.45	190.22	405.25	215.04	0.9641	1.7829
-6	4.65	3.72	0.795	62.47	1.258	16.01	191.62	405.75	214.14	0.9692	1.7816
-5	4.81	3.86	0.797	60.29	1.255	16.59	193.02	406.25	213.23	0.9744	1.7802
-4	4.98	4.00	0.799	58.20	1.251	17.18	194.43	406.75	212.31	0.9795	1.7789
-3	5.15	4.15	0.802	56.20	1.248	17.79	195.84	407.24	211.39	0.9847	1.7777
-2	5.32	4.30	0.804	54.28	1.244	18.42	197.26	407.72	210.47	0.9898	1.7764
-1	5.50	4.45	0.806	52.44	1.240	19.07	198.67	408.21	209.53	0.9949	1.7751
0	5.68	4.61	0.809	50.67	1.237	19.74	200.00	408.69	208.69	1.0000	1.7739
1	5.87	4.77	0.811	48.97	1.233	20.42	201.52	409.16	207.65	1.0051	1.7726
2	6.06	4.94	0.813	47.34	1.229	21.12	202.94	409.63	206.69	1.0102	1.7714
3	6.25	5.11	0.816	45.78	1.226	21.85	204.37	410.10	205.73	1.0153	1.7702
4	6.45	5.29	0.818	44.27	1.222	22.59	205.80	410.57	204.76	1.0203	1.7690
5	6.66	5.47	0.821	42.82	1.218	23.35	207.24	411.03	203.79	1.0254	1.7678
6	6.87	5.66	0.824	41.43	1.214	24.14	208.67	411.48	202.81	1.0305	1.7667
7	7.08	5.85	0.826	40.09	1.210	24.94	210.12	411.93	201.82	1.0355	1.7655
8	7.30	6.04	0.829	38.80	1.207	25.77	211.56	412.38	200.82	1.0406	1.7644
9	7.53	6.24	0.831	37.56	1.203	26.62	213.01	412.82	199.82	1.0456	1.7632
10	7.76	6.45	0.834	36.37	1.199	27.49	214.46	413.26	198.81	1.0507	1.7621
11	7.99	6.66	0.837	35.22	1.195	28.39	215.91	413.70	197.79	1.0557	1.7610
12	8.23	6.88	0.840	34.11	1.191	29.31	217.37	414.13	196.76	1.0607	1.7598
13	8.48	7.10	0.842	33.05	1.187	30.26	218.83	414.55	195.72	1.0658	1.7587
14	8.73	7.32	0.845	32.02	1.183	31.23	220.29	414.97	194.68	1.0708	1.7576
15	8.99	7.55	0.848	31.03	1.179	32.23	221.76	415.39	193.63	1.0758	1.7565
16	9.25	7.79	0.851	30.07	1.175	33.25	223.23	415.80	192.57	1.0808	1.7554
17	9.52	8.03	0.854	29.15	1.171	34.31	224.70	416.20	191.50	1.0859	1.7543
18	9.79	8.28	0.857	28.26	1.167	35.39	226.18	416.60	190.42	1.0909	1.7533
19	10.07	8.54	0.860	27.40	1.163	36.50	227.66	416.99	189.33	1.0959	1.7522
20	10.36	8.80	0.863	26.57	1.159	37.63	229.15	417.38	188.23	1.1009	1.7511
21	10.65	9.06	0.866	25.77	1.155	38.80	230.64	417.76	187.13	1.1059	1.7500
22	10.95	9.34	0.869	25.00	1.150	40.00	232.13	418.14	186.01	1.1109	1.7490
23	11.25	9.62	0.873	24.25	1.146	41.24	233.63	418.51	184.88	1.1159	1.7479
24	11.56	9.90	0.876	23.53	1.142	42.50	235.13	418.88	183.74	1.1210	1.7468
25	11.88	10.19	0.879	22.83	1.138	43.80	236.64	419.23	182.59	1.1260	1.7458
26	12.20	10.49	0.882	22.16	1.133	45.14	238.15	419.59	181.43	1.1310	1.7447
27	12.53	10.79	0.886	21.50	1.129	46.51	239.67	419.93	180.26	1.1360	1.7436
28	12.87	11.10	0.889	20.87	1.124	47.91	241.19	420.27	179.07	1.1410	1.7426
29	13.21	11.42	0.893	20.26	1.120	49.36	242.72	420.60	177.88	1.1460	1.7415

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	13.56	11.75	0.897	19.67	1.115	50.84	244.26	420.92	176.67	1.1511	1.7404
31	13.92	12.08	0.900	19.10	1.111	52.37	245.80	421.24	175.44	1.1561	1.7394
32	14.28	12.42	0.904	18.54	1.106	53.93	247.34	421.55	174.20	1.1611	1.7383
33	14.65	12.76	0.908	18.00	1.102	55.54	248.90	421.85	172.95	1.1662	1.7372
34	15.03	13.12	0.912	17.48	1.097	57.19	250.46	422.14	171.68	1.1712	1.7361
35	15.41	13.48	0.916	16.98	1.092	58.89	252.02	422.42	170.40	1.1763	1.7350
36	15.80	13.84	0.920	16.49	1.087	60.64	253.60	422.70	169.10	1.1813	1.7339
37	16.20	14.22	0.924	16.02	1.083	62.43	255.18	422.96	167.79	1.1864	1.7328
38	16.61	14.60	0.928	15.56	1.078	64.28	256.77	423.22	166.45	1.1915	1.7317
39	17.02	14.99	0.932	15.11	1.073	66.17	258.37	423.47	165.10	1.1965	1.7305
40	17.45	15.39	0.937	14.68	1.068	68.12	259.98	423.71	163.73	1.2016	1.7294
41	17.88	15.80	0.941	14.26	1.063	70.13	261.59	423.93	162.34	1.2067	1.7283
42	18.31	16.21	0.946	13.85	1.058	72.19	263.22	424.15	160.93	1.2118	1.7271
43	18.76	16.64	0.950	13.46	1.052	74.31	264.86	424.36	159.50	1.2169	1.7259
44	19.21	17.07	0.955	13.07	1.047	76.49	266.50	424.55	158.04	1.2221	1.7247
45	19.67	17.51	0.960	12.70	1.042	78.74	268.16	424.73	156.57	1.2272	1.7235
46	20.14	17.96	0.965	12.34	1.036	81.06	269.83	424.90	155.07	1.2323	1.7223
47	20.62	18.42	0.970	11.98	1.031	83.44	271.52	425.06	153.54	1.2375	1.7210
48	21.11	18.88	0.975	11.64	1.025	85.90	273.21	425.20	151.99	1.2427	1.7197
49	21.60	19.36	0.981	11.31	1.020	88.43	274.92	425.33	150.41	1.2478	1.7184
50	22.10	19.85	0.986	10.98	1.014	91.04	276.64	425.45	148.81	1.2530	1.7171
51	22.62	20.34	0.992	10.67	1.008	93.74	278.38	425.55	147.17	1.2582	1.7158
52	23.14	20.85	0.998	10.36	1.002	96.52	280.13	425.63	145.50	1.2635	1.7144
53	23.67	21.36	1.004	10.06	0.997	99.39	281.90	425.70	143.80	1.2687	1.7130
54	24.21	21.88	1.010	9.77	0.990	102.35	283.68	425.75	142.07	1.2740	1.7116
55	24.75	22.42	1.016	9.49	0.984	105.41	285.48	425.78	140.30	1.2792	1.7101
56	25.31	22.96	1.023	9.21	0.978	108.58	287.30	425.80	138.50	1.2845	1.7086
57	25.88	23.52	1.029	8.94	0.972	111.86	289.13	425.79	136.66	1.2898	1.7070
58	26.45	24.08	1.036	8.68	0.965	115.25	290.99	425.76	134.77	1.2951	1.7055
59	27.04	24.66	1.043	8.42	0.958	118.76	292.86	425.71	132.85	1.3005	1.7038
60	27.63	25.24	1.051	8.17	0.952	122.41	294.76	425.64	130.88	1.3058	1.7021
61	28.23	25.84	1.059	7.92	0.945	126.19	296.67	425.54	128.86	1.3112	1.7004
62	28.85	26.45	1.067	7.69	0.937	130.11	298.61	425.41	126.80	1.3166	1.6986
63	29.47	27.07	1.075	7.45	0.930	134.19	300.58	425.26	124.69	1.3220	1.6967
64	30.10	27.70	1.084	7.22	0.923	138.44	302.56	425.08	122.52	1.3275	1.6948
65	30.75	28.35	1.093	7.00	0.915	142.86	304.57	424.86	120.29	1.3330	1.6928
66	31.40	29.01	1.102	6.78	0.907	147.48	306.61	424.61	118.00	1.3384	1.6908
67	32.07	29.68	1.112	6.57	0.899	152.30	308.67	424.32	115.65	1.3440	1.6886
68	32.74	30.36	1.123	6.36	0.891	157.34	310.76	424.00	113.23	1.3495	1.6863
69	33.43	31.06	1.134	6.15	0.882	162.62	312.88	423.63	110.74	1.3551	1.6840

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	34.12	31.77	1.145	5.95	0.873	168.17	315.03	423.21	108.17	1.3606	1.6815
71	34.83	32.49	1.158	5.75	0.864	174.01	317.21	422.74	105.52	1.3663	1.6789
72	35.55	33.23	1.171	5.55	0.854	180.17	319.43	422.21	102.78	1.3719	1.6762
73	36.27	33.98	1.184	5.36	0.844	186.68	321.67	421.62	99.95	1.3776	1.6733
74	37.01	34.75	1.199	5.17	0.834	193.59	323.95	420.96	97.00	1.3833	1.6702
75	37.76	35.54	1.215	4.98	0.823	200.95	326.27	420.22	93.95	1.3890	1.6669
76	38.52	36.34	1.233	4.79	0.811	208.82	328.62	419.38	90.76	1.3948	1.6634
77	39.29	37.16	1.252	4.60	0.799	217.29	331.01	418.45	87.44	1.4005	1.6596
78	40.08	37.99	1.272	4.42	0.786	226.45	333.44	417.39	83.95	1.4064	1.6555
79	40.87	38.85	1.296	4.23	0.772	236.43	335.91	416.19	80.28	1.4122	1.6511
80	41.68	39.73	1.322	4.04	0.757	247.43	338.42	414.81	76.39	1.4181	1.6461
81	42.50	40.63	1.352	3.85	0.740	259.70	340.98	413.21	72.24	1.4240	1.6406
82	43.32	41.55	1.388	3.65	0.721	273.63	343.57	411.33	67.75	1.4300	1.6343

8 Vapour Table, Superheated Range Solkane®407C

0.51bar -50.00°C

T	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-50	414.98	381.29	1.8633
-45	425.23	384.92	1.8794
-40	435.42	388.59	1.8953
-35	445.55	392.28	1.9110
-30	455.63	396.01	1.9264
-25	465.67	399.77	1.9418
-20	475.66	403.57	1.9569
-15	485.62	407.40	1.9719
-10	495.55	411.26	1.9867
-5	505.44	415.16	2.0014
0	515.31	419.10	2.0159
5	525.15	423.08	2.0304
10	534.97	427.09	2.0447
15	544.77	431.14	2.0588
20	554.56	435.23	2.0729
25	564.32	439.35	2.0869
30	574.07	443.52	2.1007
35	583.81	447.72	2.1145

0.70bar -44.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-44	305.48	384.86	1.8485
-40	311.51	387.83	1.8614
-35	319.00	391.58	1.8773
-30	326.44	395.35	1.8929
-25	333.83	399.16	1.9084
-20	341.18	402.99	1.9237
-15	348.48	406.86	1.9388
-10	355.76	410.75	1.9538
-5	363.00	414.69	1.9686
0	370.22	418.65	1.9833
5	377.41	422.65	1.9978
10	384.57	426.69	2.0122
15	391.72	430.76	2.0264
20	398.85	434.87	2.0405
25	405.96	439.01	2.0546
30	413.05	443.19	2.0685
35	420.14	447.41	2.0823
40	427.20	451.67	2.0960

0.95bar -38.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-38	228.99	388.37	1.8351
-35	232.39	390.66	1.8448
-30	238.02	394.49	1.8607
-25	243.60	398.35	1.8764
-20	249.14	402.24	1.8919
-15	254.64	406.15	1.9073
-10	260.10	410.09	1.9224
-5	265.54	414.06	1.9373
0	270.94	418.06	1.9521
5	276.32	422.10	1.9668
10	281.67	426.17	1.9812
15	287.00	430.27	1.9956
20	292.32	434.40	2.0098
25	297.61	438.57	2.0239
30	302.89	442.77	2.0379
35	308.16	447.01	2.0518
40	313.41	451.29	2.0655
45	318.65	455.60	2.0792

1.27bar -32.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-32	174.47	391.81	1.8230
-30	176.21	393.38	1.8295
-25	180.54	397.31	1.8455
-20	184.82	401.27	1.8613
-15	189.06	405.24	1.8768
-10	193.26	409.24	1.8922
-5	197.43	413.26	1.9073
0	201.57	417.31	1.9223
5	205.68	421.39	1.9371
10	209.77	425.50	1.9517
15	213.83	429.63	1.9662
20	217.88	433.80	1.9805
25	221.91	438.00	1.9947
30	225.93	442.24	2.0088
35	229.93	446.50	2.0228
40	233.91	450.80	2.0366
45	237.88	455.14	2.0503
50	241.85	459.51	2.0640

0.57 bar -48.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-48	373.89	382.49	1.8582
-45	379.44	384.68	1.8679
-40	388.63	388.36	1.8838
-35	397.77	392.07	1.8996
-30	406.85	395.81	1.9151
-25	415.88	399.58	1.9305
-20	424.88	403.39	1.9457
-15	433.84	407.23	1.9607
-10	442.76	411.11	1.9756
-5	451.65	415.02	1.9903
0	460.52	418.97	2.0049
5	469.36	422.95	2.0193
10	478.18	426.97	2.0336
15	486.98	431.03	2.0478
20	495.76	435.12	2.0619
25	504.52	439.25	2.0759
30	513.27	443.42	2.0898
35	522.00	447.63	2.1035

0.78 bar -42.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-42	276.97	386.03	1.8439
-40	279.71	387.53	1.8503
-35	286.52	391.30	1.8663
-30	293.28	395.09	1.8821
-25	299.99	398.91	1.8976
-20	306.65	402.76	1.9130
-15	313.29	406.64	1.9282
-10	319.88	410.55	1.9432
-5	326.44	414.50	1.9580
0	332.98	418.47	1.9727
5	339.49	422.48	1.9873
10	345.97	426.53	2.0017
15	352.44	430.61	2.0160
20	358.89	434.72	2.0301
25	365.32	438.88	2.0442
30	371.73	443.06	2.0581
35	378.13	447.29	2.0719
40	384.52	451.55	2.0856

1.05 bar -36.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-36	208.78	389.52	1.8309
-35	209.82	390.29	1.8342
-30	214.98	394.15	1.8502
-25	220.10	398.03	1.8660
-20	225.17	401.94	1.8816
-15	230.19	405.87	1.8970
-10	235.19	409.83	1.9122
-5	240.15	413.82	1.9272
0	245.08	417.83	1.9420
5	249.98	421.88	1.9567
10	254.87	425.96	1.9713
15	259.73	430.07	1.9856
20	264.57	434.22	1.9999
25	269.39	438.40	2.0140
30	274.20	442.61	2.0281
35	278.99	446.86	2.0419
40	283.77	451.14	2.0557
45	288.54	455.46	2.0694

1.39 bar -30.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-30	159.88	392.94	1.8192
-25	163.88	396.91	1.8354
-20	167.83	400.89	1.8512
-15	171.73	404.89	1.8669
-10	175.60	408.91	1.8823
-5	179.44	412.95	1.8975
0	183.25	417.02	1.9126
5	187.03	421.11	1.9274
10	190.78	425.24	1.9421
15	194.51	429.39	1.9566
20	198.23	433.57	1.9710
25	201.92	437.78	1.9853
30	205.60	442.03	1.9994
35	209.27	446.30	2.0134
40	212.92	450.61	2.0273
45	216.56	454.96	2.0410
50	220.19	459.34	2.0547
55	223.80	463.75	2.0682

0.63 bar -46.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-46	337.61	383.67	1.8533
-45	339.28	384.41	1.8565
-40	347.60	388.11	1.8725
-35	355.86	391.84	1.8883
-30	364.06	395.59	1.9040
-25	372.22	399.38	1.9194
-20	380.34	403.20	1.9346
-15	388.42	407.05	1.9497
-10	396.46	410.94	1.9646
-5	404.48	414.86	1.9794
0	412.46	418.82	1.9940
5	420.43	422.81	2.0085
10	428.37	426.83	2.0228
15	436.29	430.90	2.0370
20	444.19	435.00	2.0511
25	452.07	439.14	2.0651
30	459.94	443.31	2.0790
35	467.79	447.52	2.0928

0.86 bar -40.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-40	251.60	387.20	1.8394
-35	257.81	390.99	1.8555
-30	263.97	394.80	1.8713
-25	270.09	398.64	1.8870
-20	276.15	402.51	1.9024
-15	282.18	406.40	1.9176
-10	288.18	410.33	1.9327
-5	294.14	414.29	1.9476
0	300.08	418.28	1.9623
5	305.99	422.30	1.9769
10	311.87	426.35	1.9914
15	317.74	430.44	2.0057
20	323.58	434.57	2.0199
25	329.41	438.73	2.0340
30	335.22	442.92	2.0479
35	341.02	447.16	2.0618
40	346.81	451.42	2.0755
45	352.58	455.73	2.0891

1.16 bar -34.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-34	190.69	390.67	1.8269
-30	194.49	393.78	1.8398
-25	199.18	397.69	1.8557
-20	203.83	401.62	1.8714
-15	208.45	405.57	1.8869
-10	213.02	409.55	1.9021
-5	217.56	413.55	1.9172
0	222.07	417.58	1.9321
5	226.56	421.65	1.9468
10	231.02	425.74	1.9614
15	235.46	429.86	1.9758
20	239.89	434.02	1.9901
25	244.29	438.21	2.0043
30	248.68	442.43	2.0184
35	253.05	446.69	2.0323
40	257.41	450.98	2.0461
45	261.76	455.30	2.0598
50	266.10	459.66	2.0734

1.52 bar -28.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-28	146.74	394.07	1.8155
-25	148.96	396.47	1.8253
-20	152.61	400.48	1.8413
-15	156.22	404.50	1.8570
-10	159.80	408.55	1.8725
-5	163.34	412.61	1.8879
0	166.85	416.70	1.9030
5	170.33	420.82	1.9179
10	173.79	424.96	1.9326
15	177.22	429.12	1.9472
20	180.63	433.32	1.9617
25	184.03	437.55	1.9760
30	187.41	441.80	1.9901
35	190.78	446.09	2.0041
40	194.13	450.41	2.0181
45	197.47	454.76	2.0318
50	200.80	459.15	2.0455
55	204.12	463.57	2.0591

Vapour Table, Superheated Range Solkane®407C

1.67 bar -26.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-26	134.89	395.18	1.8120
-25	135.57	395.99	1.8152
-20	138.96	400.03	1.8314
-15	142.31	404.09	1.8472
-10	145.62	408.16	1.8629
-5	148.89	412.25	1.8783
0	152.14	416.36	1.8935
5	155.35	420.50	1.9085
10	158.54	424.65	1.9233
15	161.71	428.84	1.9379
20	164.86	433.05	1.9524
25	167.99	437.29	1.9668
30	171.10	441.56	1.9810
35	174.20	445.86	1.9950
40	177.28	450.19	2.0090
45	180.35	454.56	2.0228
50	183.41	458.95	2.0365
55	186.46	463.38	2.0501

2.15 bar -20.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-20	105.67	398.47	1.8019
-15	108.38	402.63	1.8182
-10	111.05	406.80	1.8342
-5	113.68	410.98	1.8499
0	116.28	415.17	1.8654
5	118.85	419.37	1.8807
10	121.39	423.60	1.8957
15	123.91	427.84	1.9106
20	126.40	432.11	1.9253
25	128.88	436.40	1.9398
30	131.34	440.72	1.9542
35	133.79	445.06	1.9684
40	136.22	449.44	1.9824
45	138.64	453.84	1.9964
50	141.04	458.27	2.0102
55	143.44	462.73	2.0239
60	145.82	467.22	2.0375
65	148.20	471.75	2.0510

2.74 bar -14.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-14	83.77	401.66	1.7927
-10	85.53	405.10	1.8059
-5	87.69	409.39	1.8220
0	89.82	413.68	1.8379
5	91.92	417.98	1.8535
10	93.98	422.29	1.8689
15	96.03	426.61	1.8840
20	98.05	430.95	1.8989
25	100.05	435.31	1.9137
30	102.03	439.68	1.9282
35	104.00	444.08	1.9426
40	105.95	448.51	1.9568
45	107.89	452.95	1.9709
50	109.81	457.43	1.9849
55	111.73	461.93	1.9987
60	113.63	466.46	2.0124
65	115.53	471.02	2.0260
70	117.42	475.61	2.0395

3.45 bar -8.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-8	67.12	404.75	1.7843
-5	68.20	407.41	1.7942
0	69.99	411.84	1.8106
5	71.74	416.26	1.8266
10	73.45	420.68	1.8424
15	75.14	425.10	1.8579
20	76.81	429.53	1.8731
25	78.46	433.97	1.8881
30	80.08	438.42	1.9029
35	81.69	442.88	1.9175
40	83.29	447.37	1.9320
45	84.87	451.88	1.9462
50	86.44	456.40	1.9604
55	88.00	460.95	1.9743
60	89.54	465.53	1.9882
65	91.08	470.13	2.0019
70	92.61	474.76	2.0155
75	94.13	479.42	2.0289

1.82 bar- 24.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-24	124.18	396.29	1.8085
-20	126.70	399.55	1.8215
-15	129.81	403.64	1.8375
-10	132.88	407.74	1.8533
-5	135.91	411.86	1.8688
0	138.92	415.99	1.8840
5	141.89	420.15	1.8991
10	144.84	424.33	1.9140
15	147.77	428.53	1.9287
20	150.68	432.76	1.9433
25	153.57	437.02	1.9577
30	156.44	441.30	1.9719
35	159.30	445.61	1.9860
40	162.14	449.96	2.0000
45	164.97	454.33	2.0139
50	167.79	458.74	2.0276
55	170.60	463.18	2.0413
60	173.40	467.65	2.0548

2.34 bar- 18.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-18	97.68	399.54	1.7988
-15	99.20	402.07	1.8086
-10	101.69	406.27	1.8248
-5	104.15	410.49	1.8406
0	106.57	414.71	1.8562
5	108.97	418.94	1.8716
10	111.33	423.19	1.8867
15	113.68	427.46	1.9017
20	116.00	431.75	1.9164
25	118.30	436.06	1.9310
30	120.59	440.40	1.9454
35	122.86	444.76	1.9597
40	125.11	449.15	1.9738
45	127.35	453.56	1.9878
50	129.58	458.01	2.0017
55	131.80	462.48	2.0154
60	134.01	466.98	2.0290
65	136.21	471.52	2.0425

2.97 bar- 12.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-12	77.72	402.70	1.7898
-10	78.54	404.44	1.7965
-5	80.58	408.78	1.8128
0	82.58	413.11	1.8288
5	84.55	417.45	1.8445
10	86.49	421.79	1.8600
15	88.40	426.14	1.8752
20	90.29	430.51	1.8903
25	92.16	434.89	1.9051
30	94.02	439.29	1.9197
35	95.85	443.71	1.9342
40	97.67	448.15	1.9485
45	99.48	452.62	1.9626
50	101.28	457.11	1.9766
55	103.06	461.62	1.9905
60	104.83	466.17	2.0042
65	106.60	470.74	2.0179
70	108.35	475.34	2.0314

3.72 bar -6.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-6	62.47	405.75	1.7816
-5	62.81	406.65	1.7849
0	64.50	411.14	1.8015
5	66.16	415.60	1.8177
10	67.78	420.06	1.8336
15	69.38	424.52	1.8492
20	70.95	428.99	1.8646
25	72.50	433.46	1.8797
30	74.02	437.94	1.8946
35	75.54	442.43	1.9093
40	77.03	446.94	1.9238
45	78.52	451.47	1.9381
50	79.99	456.02	1.9523
55	81.44	460.58	1.9664
60	82.89	465.18	1.9802
65	84.33	469.80	1.9940
70	85.76	474.44	2.0076
75	87.18	479.11	2.0211

1.98 bar- 22.00vC

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-22	114.47	397.38	1.8052
-20	115.65	399.03	1.8117
-15	118.55	403.15	1.8279
-10	121.40	407.29	1.8437
-5	124.23	411.43	1.8593
0	127.02	415.60	1.8747
5	129.78	419.78	1.8899
10	132.51	423.98	1.9048
15	135.22	428.20	1.9196
20	137.91	432.45	1.9342
25	140.59	436.72	1.9487
30	143.24	441.02	1.9630
35	145.88	445.35	1.9771
40	148.51	449.71	1.9912
45	151.12	454.09	2.0051
50	153.72	458.51	2.0189
55	156.32	462.96	2.0325
60	158.90	467.45	2.0461

2.53 bar- 16.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-16	90.40	400.61	1.7957
-15	90.88	401.46	1.7990
-10	93.22	405.71	1.8153
-5	95.52	409.96	1.8313
0	97.79	414.21	1.8470
5	100.03	418.48	1.8625
10	102.23	422.76	1.8778
15	104.42	427.05	1.8928
20	106.58	431.37	1.9076
25	108.73	435.70	1.9223
30	110.85	440.05	1.9368
35	112.96	444.43	1.9511
40	115.06	448.84	1.9653
45	117.14	453.27	1.9793
50	119.21	457.73	1.9932
55	121.27	462.21	2.0070
60	123.32	466.73	2.0207
65	125.36	471.28	2.0342

3.20 bar- 10.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
-10	72.18	403.73	1.7870
-5	74.11	408.12	1.8035
0	75.99	412.50	1.8197
5	77.85	416.88	1.8356
10	79.67	421.25	1.8512
15	81.47	425.64	1.8665
20	83.24	430.04	1.8817
25	84.99	434.44	1.8966
30	86.73	438.87	1.9113
35	88.44	443.31	1.9258
40	90.15	447.77	1.9402
45	91.84	452.26	1.9544
50	93.51	456.77	1.9685
55	95.18	461.30	1.9824
60	96.83	465.86	1.9962
65	98.48	470.44	2.0098
70	100.11	475.06	2.0234
75	101.74	479.70	2.0368

4.00 bar- 4.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-4	58.20	406.75	1.7789
0	59.49	410.38	1.7923
5	61.06	414.90	1.8087
10	62.59	419.41	1.8248
15	64.10	423.91	1.8406
20	65.58	428.41	1.8560
25	67.05	432.91	1.8713
30	68.49	437.42	1.8863
35	69.91	441.95	1.9011
40	71.32	446.48	1.9157
45	72.71	451.03	1.9301
50	74.09	455.60	1.9444
55	75.46	460.19	1.9584
60	76.82	464.80	1.9724
65	78.16	469.44	1.9862
70	79.50	474.10	1.9999
75	80.83	478.78	2.0134
80	82.16	483.50	2.0269

Vapour Table, Superheated Range Solkane®407C

4.30 bar -2.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
-2	54.28	407.72	1.7764
0	54.89	409.56	1.7831
5	56.38	414.14	1.7998
10	57.84	418.70	1.8160
15	59.27	423.25	1.8319
20	60.68	427.79	1.8475
25	62.06	432.33	1.8629
30	63.42	436.88	1.8780
35	64.76	441.43	1.8929
40	66.09	445.99	1.9076
45	67.40	450.57	1.9221
50	68.70	455.16	1.9364
55	69.98	459.78	1.9506
60	71.26	464.41	1.9646
65	72.52	469.06	1.9785
70	73.78	473.74	1.9922
75	75.03	478.44	2.0058
80	76.27	483.17	2.0193

5.29 bar 4.0°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
4	44.27	410.57	1.7690
5	44.53	411.52	1.7725
10	45.80	416.27	1.7894
15	47.04	420.98	1.8059
20	48.24	425.67	1.8220
25	49.42	430.35	1.8378
30	50.58	435.01	1.8533
35	51.72	439.67	1.8686
40	52.85	444.33	1.8836
45	53.95	449.00	1.8984
50	55.05	453.68	1.9130
55	56.13	458.36	1.9274
60	57.19	463.07	1.9416
65	58.25	467.78	1.9556
70	59.30	472.52	1.9695
75	60.34	477.27	1.9833
80	61.38	482.05	1.9969
85	62.40	486.85	2.0104

6.45 bar 10.0°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
10	36.37	413.26	1.7621
15	37.47	418.20	1.7794
20	38.53	423.08	1.7962
25	39.56	427.93	1.8126
30	40.57	432.75	1.8286
35	41.56	437.55	1.8443
40	42.53	442.34	1.8597
45	43.48	447.12	1.8749
50	44.41	451.90	1.8898
55	45.34	456.68	1.9044
60	46.24	461.46	1.9189
65	47.14	466.26	1.9332
70	48.03	471.07	1.9473
75	48.91	475.89	1.9613
80	49.78	480.73	1.9751
85	50.65	485.59	1.9887
90	51.50	490.47	2.0023
95	52.36	495.37	2.0157

7.79 bar 16.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
16	30.07	415.80	1.7554
20	30.84	419.91	1.7696
25	31.76	424.99	1.7867
30	32.66	430.01	1.8034
35	33.53	434.99	1.8197
40	34.38	439.94	1.8357
45	35.22	444.86	1.8513
50	36.03	449.77	1.8666
55	36.83	454.67	1.8816
60	37.62	459.56	1.8964
65	38.39	464.45	1.9110
70	39.16	469.35	1.9254
75	39.91	474.25	1.9395
80	40.66	479.17	1.9536
85	41.40	484.10	1.9674
90	42.13	489.04	1.9811
95	42.85	494.00	1.9947
100	43.57	498.98	2.0081

4.61 bar 0.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
0	50.67	408.69	1.7739
5	52.10	413.33	1.7907
10	53.48	417.94	1.8072
15	54.84	422.54	1.8233
20	56.18	427.13	1.8391
25	57.48	431.71	1.8546
30	58.77	436.29	1.8698
35	60.04	440.88	1.8848
40	61.29	445.47	1.8996
45	62.53	450.08	1.9142
50	63.75	454.70	1.9286
55	64.96	459.33	1.9428
60	66.16	463.99	1.9569
65	67.35	468.66	1.9708
70	68.54	473.36	1.9846
75	69.71	478.07	1.9982
80	70.87	482.82	2.0118
85	72.03	487.58	2.0252

5.66 bar 6.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
6	41.43	411.48	1.7667
10	42.40	415.34	1.7804
15	43.59	420.12	1.7971
20	44.74	424.87	1.8135
25	45.87	429.59	1.8294
30	46.97	434.31	1.8451
35	48.06	439.01	1.8605
40	49.12	443.71	1.8756
45	50.17	448.41	1.8905
50	51.21	453.12	1.9052
55	52.23	457.84	1.9197
60	53.24	462.56	1.9340
65	54.24	467.30	1.9481
70	55.23	472.06	1.9621
75	56.22	476.84	1.9759
80	57.19	481.64	1.9896
85	58.16	486.45	2.0031
90	59.12	491.30	2.0166

6.88 bar 12.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
12	34.11	414.13	1.7598
15	34.75	417.13	1.7703
20	35.77	422.10	1.7874
25	36.76	427.02	1.8040
30	37.73	431.90	1.8203
35	38.68	436.75	1.8362
40	39.60	441.59	1.8517
45	40.51	446.41	1.8670
50	41.40	451.23	1.8820
55	42.28	456.05	1.8968
60	43.14	460.87	1.9114
65	44.00	465.69	1.9258
70	44.84	470.53	1.9400
75	45.67	475.38	1.9540
80	46.50	480.24	1.9679
85	47.32	485.12	1.9816
90	48.13	490.02	1.9952
95	48.94	494.93	2.0086

8.28 bar 18.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
18	28.26	416.60	1.7533
20	28.63	418.69	1.7604
25	29.53	423.86	1.7779
30	30.40	428.97	1.7949
35	31.24	434.02	1.8114
40	32.06	439.03	1.8276
45	32.85	444.01	1.8433
50	33.64	448.97	1.8588
55	34.40	453.91	1.8740
60	35.15	458.85	1.8889
65	35.89	463.78	1.9036
70	36.62	468.71	1.9181
75	37.34	473.65	1.9323
80	38.05	478.59	1.9464
85	38.76	483.54	1.9604
90	39.45	488.51	1.9741
95	40.14	493.49	1.9878
100	40.82	498.49	2.0013

4.94 bar 2.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
2	47.34	409.63	1.7714
5	48.16	412.46	1.7816
10	49.48	417.13	1.7983
15	50.78	421.79	1.8146
20	52.04	426.42	1.8305
25	53.29	431.05	1.8462
30	54.51	435.67	1.8616
35	55.71	440.30	1.8767
40	56.89	444.92	1.8916
45	58.06	449.56	1.9063
50	59.22	454.20	1.9208
55	60.36	458.86	1.9351
60	61.49	463.54	1.9492
65	62.61	468.23	1.9632
70	63.72	472.95	1.9770
75	64.83	477.69	1.9907
80	65.92	482.45	2.0043
85	67.01	487.23	2.0178

6.04 bar 8.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
8	38.80	412.38	1.7644
10	39.27	414.34	1.7713
15	40.41	419.19	1.7883
20	41.51	424.00	1.8048
25	42.59	428.79	1.8210
30	43.65	433.55	1.8369
35	44.68	438.30	1.8524
40	45.69	443.04	1.8677
45	46.69	447.78	1.8827
50	47.68	452.53	1.8975
55	48.64	457.27	1.9121
60	49.60	462.03	1.9264
65	50.55	466.80	1.9406
70	51.49	471.58	1.9547
75	52.42	476.38	1.9686
80	53.34	481.20	1.9823
85	54.25	486.03	1.9959
90	55.16	490.89	2.0094

7.32 bar 14.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
14	32.02	414.97	1.7576
15	32.22	415.99	1.7612
20	33.21	421.04	1.7785
25	34.17	426.04	1.7954
30	35.10	430.98	1.8119
35	36.01	435.90	1.8280
40	36.89	440.79	1.8437
45	37.76	445.66	1.8591
50	38.61	450.52	1.8743
55	39.45	455.38	1.8892
60	40.27	460.23	1.9039
65	41.09	465.09	1.9184
70	41.89	469.96	1.9327
75	42.68	474.83	1.9468
80	43.47	479.72	1.9607
85	44.24	484.62	1.9745
90	45.01	489.54	1.9881
95	45.78	494.48	2.0016

8.80 bar 20.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
20	26.57	417.38	1.7511
25	27.45	422.66	1.7690
30	28.29	427.86	1.7862
35	29.10	432.99	1.8030
40	29.89	438.07	1.8194
45	30.66	443.11	1.8354
50	31.41	448.12	1.8510
55	32.15	453.12	1.8663
60	32.87	458.09	1.8814
65	33.58	463.07	1.8962
70	34.27	468.03	1.9108
75	34.96	473.00	1.9252
80	35.64	477.98	1.9393
85	36.31	482.96	1.9534
90	36.97	487.95	1.9672
95	37.63	492.96	1.9809
100	38.27	497.98	1.9944
105	38.92	503.02	2.0078

Vapour Table, Superheated Range Solkane®407C

9.34 bar 22.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
22	25.00	418.14	1.7490
25	25.51	421.37	1.7598
30	26.33	426.66	1.7775
35	27.12	431.88	1.7945
40	27.88	437.04	1.8111
45	28.62	442.15	1.8273
50	29.34	447.22	1.8431
55	30.05	452.27	1.8586
60	30.74	457.30	1.8739
65	31.42	462.31	1.8888
70	32.09	467.32	1.9035
75	32.75	472.32	1.9180
80	33.39	477.33	1.9323
85	34.03	482.34	1.9463
90	34.67	487.36	1.9603
95	35.29	492.39	1.9740
100	35.91	497.44	1.9876
105	36.52	502.50	2.0011

11.11 bar 28.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
28	20.87	420.27	1.7426
30	21.18	422.53	1.7500
35	21.91	428.08	1.7682
40	22.62	433.52	1.7857
45	23.29	438.88	1.8027
50	23.95	444.17	1.8192
55	24.59	449.40	1.8353
60	25.21	454.60	1.8510
65	25.81	459.77	1.8664
70	26.40	464.92	1.8815
75	26.98	470.05	1.8964
80	27.55	475.17	1.9110
85	28.12	480.29	1.9253
90	28.67	485.40	1.9395
95	29.21	490.52	1.9535
100	29.75	495.64	1.9674
105	30.29	500.78	1.9810
110	30.81	505.92	1.9945

13.11 bar 34.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
34	17.48	422.14	1.7361
35	17.62	423.33	1.7400
40	18.29	429.18	1.7588
45	18.93	434.88	1.7769
50	19.54	440.47	1.7943
55	20.13	445.96	1.8112
60	20.69	451.39	1.8276
65	21.24	456.75	1.8436
70	21.78	462.07	1.8592
75	22.30	467.36	1.8745
80	22.81	472.63	1.8895
85	23.31	477.87	1.9042
90	23.80	483.11	1.9188
95	24.29	488.33	1.9330
100	24.76	493.55	1.9471
105	25.23	498.78	1.9611
110	25.70	504.01	1.9748
115	26.15	509.25	1.9884

15.39 bar 40.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
40	14.68	423.71	1.7294
45	15.30	429.92	1.7491
50	15.89	435.93	1.7678
55	16.44	441.78	1.7858
60	16.97	447.51	1.8031
65	17.48	453.14	1.8199
70	17.98	458.69	1.8362
75	18.45	464.18	1.8521
80	18.92	469.63	1.8676
85	19.37	475.04	1.8828
90	19.82	480.42	1.8977
95	20.25	485.78	1.9124
100	20.68	491.12	1.9268
105	21.09	496.46	1.9410
110	21.51	501.79	1.9550
115	21.91	507.12	1.9689
120	22.32	512.45	1.9825
125	22.71	517.79	1.9960

9.90 bar 24.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
24	23.53	418.88	1.7468
25	23.69	419.97	1.7505
30	24.49	425.38	1.7685
35	25.26	430.70	1.7859
40	26.00	435.94	1.8028
45	26.72	441.13	1.8192
50	27.42	446.27	1.8352
55	28.10	451.37	1.8509
60	28.77	456.45	1.8663
65	29.42	461.51	1.8814
70	30.06	466.56	1.8962
75	30.69	471.61	1.9108
80	31.31	476.65	1.9252
85	31.92	481.69	1.9393
90	32.52	486.74	1.9533
95	33.12	491.80	1.9672
100	33.71	496.87	1.9809
105	34.29	501.95	1.9944

11.75 bar 30.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
30	19.67	420.92	1.7404
35	20.39	426.61	1.7591
40	21.08	432.18	1.7770
45	21.74	437.63	1.7943
50	22.38	443.01	1.8110
55	23.00	448.33	1.8274
60	23.60	453.59	1.8433
65	24.18	458.82	1.8589
70	24.76	464.02	1.8741
75	25.32	469.20	1.8891
80	25.86	474.37	1.9038
85	26.40	479.52	1.9183
90	26.93	484.68	1.9326
95	27.46	489.83	1.9467
100	27.98	494.98	1.9606
105	28.49	500.15	1.9744
110	28.99	505.32	1.9880
115	29.49	510.50	2.0014

13.84 bar 36.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
36	16.49	422.70	1.7339
40	17.02	427.51	1.7494
45	17.65	433.35	1.7679
50	18.25	439.06	1.7857
55	18.82	444.66	1.8029
60	19.38	450.17	1.8196
65	19.91	455.62	1.8358
70	20.43	461.01	1.8516
75	20.93	466.36	1.8671
80	21.43	471.68	1.8823
85	21.91	476.98	1.8972
90	22.39	482.26	1.9118
95	22.85	487.52	1.9262
100	23.31	492.78	1.9404
105	23.76	498.04	1.9544
110	24.21	503.30	1.9682
115	24.65	508.57	1.9819
120	25.08	513.85	1.9954

16.21 bar 42.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
42	13.85	424.15	1.7271
45	14.22	427.98	1.7392
50	14.81	434.18	1.7585
55	15.35	440.18	1.7769
60	15.88	446.03	1.7947
65	16.38	451.77	1.8117
70	16.86	457.42	1.8283
75	17.33	462.99	1.8445
80	17.78	468.51	1.8602
85	18.22	473.98	1.8756
90	18.65	479.42	1.8907
95	19.07	484.83	1.9054
100	19.48	490.22	1.9200
105	19.88	495.60	1.9343
110	20.28	500.97	1.9484
115	20.67	506.34	1.9623
120	21.06	511.70	1.9761
125	21.44	517.07	1.9896

10.49 bar 26.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
26	22.16	419.59	1.7447
30	22.78	424.01	1.7594
35	23.53	429.43	1.7771
40	24.25	434.77	1.7943
45	24.95	440.04	1.8110
50	25.62	445.25	1.8273
55	26.28	450.42	1.8431
60	26.92	455.55	1.8587
65	27.55	460.67	1.8739
70	28.17	465.76	1.8889
75	28.77	470.85	1.9036
80	29.36	475.93	1.9181
85	29.95	481.01	1.9323
90	30.53	486.09	1.9464
95	31.10	491.18	1.9604
100	31.66	496.27	1.9741
105	32.22	501.38	1.9877
110	32.77	506.50	2.0012

12.42 bar 32.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
32	18.54	421.55	1.7383
35	18.97	425.04	1.7497
40	19.65	430.73	1.7680
45	20.29	436.31	1.7857
50	20.92	441.78	1.8027
55	21.52	447.18	1.8193
60	22.10	452.52	1.8355
65	22.67	457.82	1.8512
70	23.22	463.08	1.8667
75	23.76	468.31	1.8818
80	24.29	473.52	1.8967
85	24.81	478.72	1.9113
90	25.32	483.91	1.9257
95	25.82	489.10	1.9399
100	26.31	494.29	1.9539
105	26.80	499.48	1.9677
110	27.29	504.68	1.9814
115	27.77	509.89	1.9949

14.60 bar 38.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
38	15.56	423.22	1.7317
40	15.82	425.69	1.7396
45	16.44	431.70	1.7586
50	17.03	437.55	1.7769
55	17.60	443.27	1.7944
60	18.14	448.88	1.8114
65	18.66	454.42	1.8279
70	19.16	459.89	1.8440
75	19.66	465.30	1.8596
80	20.13	470.68	1.8750
85	20.60	476.03	1.8900
90	21.06	481.36	1.9048
95	21.51	486.67	1.9193
100	21.95	491.97	1.9336
105	22.38	497.27	1.9477
110	22.81	502.56	1.9616
115	23.24	507.86	1.9754
120	23.65	513.16	1.9889

17.07 bar 44.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
44	13.07	424.55	1.7247
45	13.20	425.87	1.7289
50	13.78	432.28	1.7489
55	14.33	438.46	1.7678
60	14.84	444.46	1.7860
65	15.34	450.32	1.8034
70	15.81	456.07	1.8203
75	16.26	461.73	1.8367
80	16.70	467.33	1.8527
85	17.13	472.87	1.8682
90	17.55	478.37	1.8835
95	17.96	483.84	1.8984
100	18.36	489.28	1.9131
105	18.75	494.70	1.9276
110	19.13	500.11	1.9418
115	19.51	505.52	1.9558
120	19.88	510.92	1.9696
125	20.25	516.32	1.9833

Vapour Table, Superheated Range Solkane®407C

17.96 bar 46.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
46	12.34	424.90	1.7223
50	12.80	430.21	1.7388
55	13.35	436.60	1.7584
60	13.87	442.76	1.7771
65	14.35	448.76	1.7949
70	14.82	454.62	1.8121
75	15.26	460.39	1.8288
80	15.69	466.07	1.8450
85	16.11	471.69	1.8608
90	16.52	477.26	1.8763
95	16.91	482.78	1.8914
100	17.30	488.28	1.9062
105	17.68	493.75	1.9208
110	18.05	499.21	1.9351
115	18.42	504.65	1.9492
120	18.78	510.09	1.9631
125	19.13	515.53	1.9769
130	19.48	520.96	1.9905

20.85 bar 52.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
52	10.36	425.63	1.7144
55	10.70	429.94	1.7276
60	11.22	436.80	1.7484
65	11.70	443.35	1.7679
70	12.15	449.67	1.7864
75	12.58	455.81	1.8042
80	12.99	461.81	1.8213
85	13.38	467.71	1.8379
90	13.76	473.52	1.8540
95	14.13	479.27	1.8697
100	14.49	484.96	1.8851
105	14.83	490.60	1.9001
110	15.17	496.21	1.9148
115	15.51	501.80	1.9293
120	15.83	507.37	1.9436
125	16.15	512.92	1.9576
130	16.47	518.46	1.9714
135	16.78	524.00	1.9851

24.08 bar 58.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
58	8.68	425.76	1.7055
60	8.90	428.93	1.7150
65	9.41	436.42	1.7373
70	9.87	443.46	1.7580
75	10.30	450.17	1.7774
80	10.70	456.64	1.7958
85	11.08	462.92	1.8135
90	11.44	469.07	1.8306
95	11.78	475.10	1.8470
100	12.12	481.04	1.8631
105	12.44	486.90	1.8787
110	12.76	492.71	1.8940
115	13.07	498.48	1.9089
120	13.36	504.20	1.9236
125	13.66	509.90	1.9380
130	13.95	515.58	1.9521
135	14.23	521.24	1.9661
140	14.51	526.89	1.9798

27.71 bar 64.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
64	7.22	425.08	1.6948
65	7.34	426.88	1.7002
70	7.85	435.29	1.7248
75	8.30	442.97	1.7471
80	8.71	450.17	1.7676
85	9.09	457.04	1.7869
90	9.45	463.66	1.8053
95	9.78	470.09	1.8229
100	10.11	476.37	1.8398
105	10.41	482.53	1.8562
110	10.71	488.60	1.8722
115	11.00	494.59	1.8877
120	11.28	500.52	1.9029
125	11.55	506.40	1.9177
130	11.81	512.24	1.9323
135	12.07	518.06	1.9467
140	12.33	523.84	1.9607
145	12.58	529.61	1.9746

18.89 bar 48.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
48	11.64	425.20	1.7197
50	11.88	427.95	1.7283
55	12.43	434.58	1.7486
60	12.94	440.93	1.7678
65	13.42	447.09	1.7862
70	13.88	453.08	1.8038
75	14.32	458.96	1.8208
80	14.74	464.74	1.8373
85	15.15	470.44	1.8533
90	15.55	476.08	1.8689
95	15.93	481.68	1.8842
100	16.31	487.23	1.8992
105	16.67	492.76	1.9139
110	17.03	498.26	1.9284
115	17.39	503.75	1.9426
120	17.74	509.23	1.9567
125	18.08	514.70	1.9705
130	18.42	520.17	1.9841

21.88 bar 54.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
54	9.77	425.75	1.7116
55	9.88	427.25	1.7161
60	10.42	434.44	1.7379
65	10.90	441.24	1.7582
70	11.36	447.76	1.7773
75	11.78	454.06	1.7955
80	12.19	460.20	1.8130
85	12.57	466.22	1.8300
90	12.94	472.13	1.8463
95	13.30	477.96	1.8623
100	13.65	483.72	1.8778
105	13.99	489.43	1.8930
110	14.32	495.11	1.9080
115	14.65	500.75	1.9226
120	14.96	506.36	1.9370
125	15.27	511.96	1.9511
130	15.58	517.55	1.9650
135	15.88	523.13	1.9788

25.24 bar 60.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
60	8.17	425.64	1.7021
65	8.70	433.63	1.7259
70	9.17	441.01	1.7476
75	9.60	447.98	1.7678
80	10.01	454.65	1.7868
85	10.38	461.10	1.8050
90	10.74	467.38	1.8224
95	11.08	473.53	1.8392
100	11.41	479.57	1.8555
105	11.73	485.53	1.8713
110	12.04	491.42	1.8868
115	12.34	497.25	1.9019
120	12.63	503.04	1.9168
125	12.92	508.79	1.9313
130	13.20	514.52	1.9456
135	13.47	520.23	1.9597
140	13.74	525.92	1.9735
145	14.01	531.61	1.9872

29.01 bar 66.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
66	6.78	424.61	1.6908
70	7.22	431.88	1.7120
75	7.69	440.06	1.7357
80	8.11	447.62	1.7573
85	8.49	454.76	1.7774
90	8.85	461.59	1.7963
95	9.18	468.19	1.8144
100	9.50	474.61	1.8317
105	9.80	480.89	1.8484
110	10.10	487.07	1.8646
115	10.38	493.15	1.8804
120	10.65	499.16	1.8958
125	10.92	505.11	1.9108
130	11.18	511.02	1.9256
135	11.43	516.89	1.9400
140	11.68	522.73	1.9543
145	11.92	528.54	1.9683
150	12.16	534.34	1.9820

19.85 bar 50.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	kJ/kgK
50	10.98	425.45	1.7171
55	11.54	432.37	1.7384
60	12.06	438.95	1.7583
65	12.54	445.29	1.7772
70	12.99	451.44	1.7952
75	13.43	457.44	1.8126
80	13.84	463.32	1.8294
85	14.24	469.12	1.8457
90	14.63	474.84	1.8615
95	15.00	480.50	1.8770
100	15.37	486.12	1.8922
105	15.73	491.71	1.9070
110	16.08	497.26	1.9216
115	16.42	502.80	1.9360
120	16.76	508.32	1.9501
125	17.09	513.83	1.9641
130	17.41	519.34	1.9778
135	17.74	524.84	1.9914

22.96 bar 56.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
56	9.21	425.80	1.7086
60	9.64	431.84	1.7268
65	10.14	438.95	1.7480
70	10.60	445.70	1.7678
75	11.02	452.19	1.7866
80	11.42	458.48	1.8046
85	11.80	464.62	1.8218
90	12.17	470.64	1.8385
95	12.52	476.57	1.8547
100	12.86	482.42	1.8705
105	13.20	488.20	1.8859
110	13.52	493.94	1.9010
115	13.83	499.64	1.9158
120	14.14	505.31	1.9303
125	14.44	510.96	1.9446
130	14.74	516.59	1.9586
135	15.03	522.21	1.9725
140	15.32	527.82	1.9861

26.45 bar 62.00°C

t	v	h	s
°C	dm³/kg	kJ/kg	KJ/kgK
62	7.69	425.41	1.6986
65	8.01	430.48	1.7137
70	8.50	438.30	1.7366
75	8.94	445.59	1.7577
80	9.35	452.50	1.7774
85	9.72	459.15	1.7961
90	10.08	465.59	1.8140
95	10.42	471.87	1.8311
100	10.74	478.02	1.8477
105	11.05	484.08	1.8639
110	11.36	490.05	1.8796
115	11.65	495.96	1.8949
120	11.94	501.81	1.9099
125	12.21	507.63	1.9246
130	12.49	513.41	1.9390
135	12.75	519.17	1.9532
140	13.02	524.91	1.9672
145	13.27	530.63	1.9809

30.36 bar 68.00°C

t	v	h	S
°C	dm³/kg	kJ/kg	kJ/kgK
68	6.36	424.00	1.6863
70	6.59	427.93	1.6978
75	7.09	436.81	1.7235
80	7.52	444.82	1.7464
85	7.91	452.28	1.7673
90	8.27	459.35	1.7870
95	8.61	466.15	1.8055
100	8.92	472.73	1.8233
105	9.22	479.15	1.8404
110	9.51	485.44	1.8569
115	9.79	491.62	1.8729
120	10.06	497.72	1.8886
125	10.32	503.75	1.9038
130	10.57	509.72	1.9187
135	10.82	515.66	1.9333
140	11.06	521.55	1.9477
145	11.30	527.42	1.9618
150	11.53	533.27	1.9757

Vapour Table, Superheated Range Solkane®407C

31.77 bar 70.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* kJ/kgK
70	5.95	423.21	1.6815
75	6.50	433.10	1.7101
80	6.95	441.69	1.7346
85	7.35	449.55	1.7567
90	7.72	456.92	1.7772
95	8.05	463.95	1.7964
100	8.37	470.72	1.8147
105	8.67	477.29	1.8321
110	8.96	483.71	1.8490
115	9.23	490.00	1.8653
120	9.49	496.20	1.8812
125	9.75	502.31	1.8966
130	10.00	508.36	1.9118
135	10.24	514.36	1.9265
140	10.48	520.32	1.9410
145	10.71	526.24	1.9553
150	10.93	532.14	1.9693
155	11.16	538.02	1.9831

36.34 bar 76.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* kJ/kgK
76	4.79	419.38	1.6634
80	5.28	429.30	1.6916
85	5.77	439.34	1.7199
90	6.17	448.11	1.7442
95	6.52	456.14	1.7662
100	6.85	463.67	1.7865
105	7.15	470.85	1.8056
110	7.43	477.77	1.8238
115	7.70	484.49	1.8412
120	7.95	491.04	1.8580
125	8.20	497.47	1.8742
130	8.43	503.79	1.8900
135	8.66	510.03	1.9054
140	8.88	516.21	1.9204
145	9.10	522.33	1.9351
150	9.31	528.40	1.9496
155	9.51	534.44	1.9638
160	9.72	540.45	1.9777

33.23 bar 72.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* kJ/kgK
72	5.55	422.21	1.6762
75	5.90	428.75	1.6950
80	6.39	438.17	1.7219
85	6.81	446.54	1.7454
90	7.18	454.27	1.7669
95	7.53	461.57	1.7868
100	7.84	468.55	1.8057
105	8.14	475.30	1.8236
110	8.42	481.86	1.8409
115	8.70	488.28	1.8575
120	8.96	494.58	1.8737
125	9.21	500.79	1.8893
130	9.45	506.92	1.9047
135	9.69	513.00	1.9196
140	9.92	519.02	1.9343
145	10.14	525.01	1.9487
150	10.37	530.96	1.9628
155	10.58	536.89	1.9768

37.99 bar 78.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* KJ/kgK
78	4.42	417.39	1.6555
80	4.70	423.27	1.6722
85	5.25	434.88	1.7049
90	5.68	444.46	1.7314
95	6.05	453.00	1.7548
100	6.38	460.90	1.7761
105	6.68	468.35	1.7960
110	6.96	475.49	1.8147
115	7.23	482.39	1.8326
120	7.48	489.09	1.8498
125	7.72	495.65	1.8663
130	7.96	502.08	1.8824
135	8.18	508.42	1.8980
140	8.40	514.68	1.9133
145	8.61	520.87	1.9282
150	8.81	527.02	1.9428
155	9.02	533.12	1.9571
160	9.21	539.18	1.9712

34.75 bar 74.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* kJ/kgK
74	5.17	420.96	1.6702
75	5.30	423.44	1.6773
80	5.84	434.11	1.7078
85	6.28	443.17	1.7332
90	6.67	451.35	1.7559
95	7.02	458.98	1.7768
100	7.34	466.21	1.7963
105	7.64	473.16	1.8148
110	7.92	479.89	1.8325
115	8.19	486.45	1.8495
120	8.44	492.87	1.8659
125	8.69	499.18	1.8819
130	8.93	505.40	1.8974
135	9.16	511.56	1.9126
140	9.39	517.65	1.9274
145	9.61	523.70	1.9420
150	9.82	529.71	1.9563
155	10.03	535.69	1.9703

39.73 bar 80.00°C

t °C	*v* dm³/kg	*h* kJ/kg	*s* kJ/kgK
80	4.04	414.81	1.6461
85	4.72	429.50	1.6874
90	5.19	440.26	1.7173
95	5.58	449.48	1.7425
100	5.92	457.83	1.7651
105	6.23	465.63	1.7858
110	6.51	473.02	1.8052
115	6.78	480.12	1.8236
120	7.03	487.00	1.8412
125	7.27	493.70	1.8582
130	7.50	500.25	1.8745
135	7.72	506.70	1.8904
140	7.93	513.05	1.9059
145	8.14	519.33	1.9210
150	8.34	525.55	1.9358
155	8.54	531.72	1.9503
160	8.73	537.85	1.9645
165	8.92	543.94	1.9785

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