



Engineering ToolBox - Resources, Tools and Basic Information for Engineering and Design of Technical Applications!

Methanol - Thermophysical Properties vs. Temperature

Thermophysical properties of methanol.

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Methanol (methyl alcohol, carbinol, wood alcohol, wood naptha or wood spirits) is a chemical compound with chemical formula CH_3OH . Thermophysical properties for temperatures ranging -50-150 °C are indicated in the table below.

Temperature (°C) (deg F)	Latent Heat (kJ/kg) (Btu/lb)	Liquid Density (kg/m³) (lb/ft³)	Vapor Density (kg/m³)	Liquid Thermal Conductivity (W/m°C)	Liquid Viscosity (cP)	Vapor Viscosity (10² cP)	Vapor Pressure (bar)	Vapor Specific Heat (kJ/kg°C)	Liquid Surface Tension (10² N/m)
-50	1194	844	0.01	0.210	1.700	0.72	0.01	1.20	3.26
-30	1187	834	0.01	0.208	1.300	0.78	0.02	1.27	2.95
-10	1182	819	0.04	0.206	0.945	0.85	0.04	1.34	2.63
10	1175	801	0.12	0.204	0.701	0.91	0.10	1.40	2.36
30	1155	782	0.31	0.203	0.521	0.98	0.25	1.47	2.18
50	1125	764	0.77	0.202	0.399	1.04	0.55	1.54	2.01
70	1085	746	1.47	0.201	0.314	1.11	1.31	1.61	1.85
90	1035	724	3.01	0.199	0.259	1.19	2.69	1.79	1.66
110	980	704	5.64	0.197	0.211	1.26	4.98	1.92	1.46
130	920	685	9.81	0.195	0.166	1.31	7.86	1.92	1.25
150	850	653	15.9	0.193	0.138	1.38	8.94	1.92	1.04

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Related Topics

- [Material Properties](#) - Material properties of gases, fluids and solids - densities, specific heats, viscosities and more.

Related Documents

- [Ethanol - Density and Specific Weight vs. Temperature and Pressure](#) - Online calculator, figures and tables showing density and specific weight of ethanol at temperatures ranging from -25 to 325 °C (-10 to 620 °F) at atmospheric and higher pressure - Imperial and SI Units.
- [Ethanol - Specific Heat vs. Temperature and Pressure](#) - Online calculators, figures and tables showing specific heat, Cp and Cv, of gaseous and liquid ethanol at temperatures ranging from -25 to 325 °C (-10 to 620 °F) at atmospheric and higher pressure - Imperial and SI Units.
- [Freeze Protection of Water based Heat Transfer Fluids](#) - Comparing antifreezes used in water based heat transfer fluids or brines.
- [Fuels - Higher and Lower Calorific Values](#) - Higher and lower calorific values (heating values) for fuels like coke, oil, wood, hydrogen and others.
- [Liquids - Densities](#) - Densities of common liquids like acetone, beer, oil, water and more.
- [Liquids - Latent Heat of Evaporation](#) - Latent heat of vaporization for fluids like alcohol, ether, nitrogen, water and more.
- [Liquids - Specific Gravities](#) - Specific gravities of liquids like alcohol, oils, benzene, water and many more.
- [Liquids - Volumetric Expansion Coefficients](#) - Volumetric - or cubical - expansion coefficients for common liquids.
- [Methanol - Dynamic and Kinematic Viscosity vs. Temperature and Pressure](#) - Online calculator, figures and tables showing dynamic and kinematic viscosity of liquid methanol, CH_3OH , at varying temperature - Imperial and SI Units.

Commande Client / Customer Order : 4498-52-PO.012
Commande BARRIQUAND / BARRIQUAND order : 213387 A

CLIENT : PROJECT MANAGEMENT
Customer **SMITHKLINE BEECHAM**

ECHANGEUR PLATULAIRE®
PLATULAR® HEAT EXCHANGER

Type : DIXS
Type :

Surface : 10,8 m²
Area :

N° de l'Echangeur : 25668E
Exchanger n° :

Repère Client : HE 3201
Item :

BARRIQUAND ECHANGEURS
ROANNE - FRANCE

Enquiry n° :

dated

Equipment N° :

HE 3201

Offer :

dated

30/08/99

Responsible Engineer :

EQUIPMENT

- 1 Description : RV-3201 OVERHEAD CONDENSER
 2 Type : DIXS
 3 Flow Arrangement : 1 x 19 / 1 x 18 x 1250 x 280
 4 Heat Transfer Area : 10.8 m² Design Heat Exchanged : 124 168 W

THERMAL DATA

Stream A

Stream B

Fluid		50%MEOH/WATER			TOLUENE / N2		
Service Pressure		6.00			0.2960		
		Vapor	Liquid	Incond.	Vapor	Liquid	Incond.
Flow Rate	In	kg/h	30000		893		6
	Out	kg/h	30000		1.12	892	6
Temperature	In	°C	-10.0		72.0	71.8	
	Out	°C	-5.9			10.0	
Density		kg/m ³	892.0		0.950	864.0	
Specific Heat		kJ/ kg.°C	3.650		1.310	1.743	1.007
Thermal conductivity		W/ m°C	0.335		0.015	0.137	0.026
Viscosity		mPas.s	1.900		0.008	0.564	0.021
Cond. T. °C/ Latent H.		kJ/ kg			71.7	388.0	
Molar Mass		g/mol			92.14		29
Pressure Drop		bar	0.10			0.0010	
Design Heat Exchanged :		124 168 W	H.T. Coef. :			269 W/ m ² °C	
Heat Transfer Area :		10.8 m ²	LMTD cor. :			42.5 °C	
Fouling :		17 10 ⁻⁴ m ² °C / W	Oversizing :			86 %	

GEOMETRICAL PARTICULARS

Type of H. T. Channels A / Spacing		Spot welds Arrangement 30 x 30 / 8.00 mm	
Type of H. T. Channels B / Spacing		Clear Free Flow / 6.00 mm	
Number of Passes		1	1
Number of Channels per Pass		19	18
Channels height/width		240 mm / 1250 mm	280 mm / 1250 mm
Flanges		Entrée DN : 80	150
ANSI 150# RF		Sortie DN : 80	50 50
Plate-pack		C22 Plates wall thicknes: 1,6 mm	
Header Tank		AISI 316 L	C22
Acces Cover/Internal Sheeting		- / -	- / -
Gasket		without Gasket	without Gasket
Pressure Plate / Support Assembly / Tightening Bolts and Nuts : AISI 304 L / AISI 304 L / AISI 304 L			
Design T ; P / Test Pressure		-25 / 160 °C ; -1 à 6 / 7.8 bar(e) -25 / 160 °C ; -1 à 6 / 7.8 bar(e)	
Design Code . ASME		Quality : U-STAMP	

NOTES

- 36 UNIT IS IDENTICAL TO HE-1234
 37
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Monoinco rev 0	rev.					
	date	16.08.99				
Etabli par	visa	X. K...				
Vérifié par JTL	visa	J. G...				

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