

1,1':3',1''-Terphenyl, 5'-phenyl-

Other names:	1,1'-Biphenyl, 3,5-diphenyl- 1,3,5-triphenylbenzene 5'-Phenyl-1,1':3',1''-terphenyl 5'-Phenyl-m-terphenyl NSC 17358 Symmetrical triphenylbenzene Triphenylbenzene benzene, 1,3,5-triphenyl- m-Terphenyl, 5'-phenyl- s-Triphenylbenzene
Inchi:	InChI=1S/C24H18/c1-4-10-19(11-5-1)22-16-23(20-12-6-2-7-13-20)18-24(17-22)21-14-8-
InchiKey:	SXWIAEOZZQADEY-UHFFFAOYSA-N
Formula:	C24H18
SMILES:	c1ccc(-c2cc(-c3ccccc3)cc(-c3ccccc3)c2)cc1
Mol. weight [g/mol]:	306.40
CAS:	612-71-5

Physical Properties

Property code	Value	Unit	Source
chs	-12241.30 ± 5.30	kJ/mol	NIST Webbook
gf	581.58	kJ/mol	Joback Method
hf	371.80 ± 3.80	kJ/mol	NIST Webbook
hfs	222.00 ± 3.40	kJ/mol	NIST Webbook
hfs	224.60 ± 5.40	kJ/mol	NIST Webbook
hfus	149.50	kJ/mol	New Knudsen effusion apparatus with simultaneous gravimetric and quartz crystal microbalance mass loss detection
hfus	31.10	kJ/mol	Vapor Pressures and Vaporization Enthalpies of the n-Alkanes from C31 to C38 at T = 298.15 K by Correlation Gas Chromatography
hfus	147.70	kJ/mol	New Knudsen effusion apparatus with simultaneous gravimetric and quartz crystal microbalance mass loss detection

hfus	147.90	kJ/mol	New Knudsen effusion apparatus with simultaneous gravimetric and quartz crystal microbalance mass loss detection
hfus	148.40	kJ/mol	New Knudsen effusion apparatus with simultaneous gravimetric and quartz crystal microbalance mass loss detection
hvap	133.40 ± 2.00	kJ/mol	NIST Webbook
hvap	140.00	kJ/mol	NIST Webbook
log10ws	-9.28		Crippen Method
logp	6.688		Crippen Method
mcvol	253.980	ml/mol	McGowan Method
pc	2014.51	kPa	Joback Method
rinpol	2891.00		NIST Webbook
rinpol	469.48		NIST Webbook
ss	367.40	J/molxK	NIST Webbook
ss	375.50	J/molxK	NIST Webbook
tb	733.20	K	NIST Webbook
tc	1146.33	K	Joback Method
tf	446.00 ± 3.00	K	NIST Webbook
tf	448.00 ± 0.30	K	NIST Webbook
tf	450.10 ± 4.00	K	NIST Webbook
tf	444.00 ± 1.50	K	NIST Webbook
tt	446.00 ± 1.00	K	NIST Webbook
vc	0.948	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	803.00	J/molxK	1099.48	Joback Method
cpg	732.93	J/molxK	865.20	Joback Method
cpg	749.87	J/molxK	912.06	Joback Method
cpg	765.15	J/molxK	958.91	Joback Method
cpg	778.96	J/molxK	1005.77	Joback Method
cpg	791.51	J/molxK	1052.62	Joback Method
cpg	813.64	J/molxK	1146.33	Joback Method
cps	361.00	J/molxK	298.15	NIST Webbook
cps	358.32	J/molxK	298.10	NIST Webbook

cps	357.96	J/mol×K	298.15	Reassembling and testing of a high-precision heat capacity drop calorimeter. Heat capacity of some polyphenyls at T = 298.15 K
dvisc	0.0001500	Paxs	678.08	Joback Method
dvisc	0.0001086	Paxs	740.45	Joback Method
dvisc	0.0000827	Paxs	802.83	Joback Method
dvisc	0.0000654	Paxs	865.20	Joback Method
dvisc	0.0002213	Paxs	615.71	Joback Method
dvisc	0.0003563	Paxs	553.33	Joback Method
dvisc	0.0006475	Paxs	490.96	Joback Method
hfust	33.40	kJ/mol	446.00	NIST Webbook
hfust	33.40	kJ/mol	446.00	NIST Webbook
hfust	33.40	kJ/mol	446.00	NIST Webbook
hfust	32.60	kJ/mol	445.20	NIST Webbook
hsubt	142.00	kJ/mol	427.00	NIST Webbook
hsubt	164.40 ± 4.20	kJ/mol	363.00	NIST Webbook
hsubt	145.60 ± 0.90	kJ/mol	376.00	NIST Webbook
hsubt	141.20 ± 0.70	kJ/mol	418.00	NIST Webbook
hsubt	142.20	kJ/mol	392.00	NIST Webbook
hvapt	77.50	kJ/mol	617.50	NIST Webbook
hvapt	118.00	kJ/mol	477.00	NIST Webbook
psub	9.84e-04	kPa	427.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	5.42e-04	kPa	421.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	5.63e-04	kPa	421.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	5.68e-04	kPa	421.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	6.72e-04	kPa	423.29	The design, construction, and testing of a new Knudsen effusion apparatus

psub	6.68e-04	kPa	423.29	The design, construction, and testing of a new Knudsen effusion apparatus
psub	6.49e-04	kPa	423.29	The design, construction, and testing of a new Knudsen effusion apparatus
psub	7.96e-04	kPa	425.26	The design, construction, and testing of a new Knudsen effusion apparatus
psub	7.84e-04	kPa	425.26	The design, construction, and testing of a new Knudsen effusion apparatus
psub	9.66e-04	kPa	427.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	4.70e-04	kPa	419.24	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.00e-03	kPa	427.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.17e-03	kPa	429.29	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.20e-03	kPa	429.29	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.20e-03	kPa	429.29	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.54e-04	kPa	408.16	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance

psub	2.53e-04	kPa	413.16	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	4.16e-04	kPa	418.15	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	6.72e-04	kPa	423.16	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	1.08e-03	kPa	428.16	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	1.49e-04	kPa	408.05	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance

psub	2.47e-04	kPa	413.05	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	4.03e-04	kPa	418.05	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	4.54e-04	kPa	419.24	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.03e-03	kPa	428.04	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	1.44e-04	kPa	408.04	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	2.38e-04	kPa	413.04	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance

psub	3.88e-04	kPa	418.03	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	6.22e-04	kPa	423.03	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	9.83e-04	kPa	428.03	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	6.34e-04	kPa	423.03	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	3.71e-04	kPa	417.22	The design, construction, and testing of a new Knudsen effusion apparatus
psub	3.70e-04	kPa	417.22	The design, construction, and testing of a new Knudsen effusion apparatus
psub	3.61e-04	kPa	416.86	The design, construction, and testing of a new Knudsen effusion apparatus

psub	3.16e-04	kPa	415.35	The design, construction, and testing of a new Knudsen effusion apparatus
psub	3.16e-04	kPa	415.35	The design, construction, and testing of a new Knudsen effusion apparatus
psub	3.17e-04	kPa	415.35	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.51e-04	kPa	413.23	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.51e-04	kPa	413.23	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.56e-04	kPa	413.23	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.06e-04	kPa	411.30	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.10e-04	kPa	411.30	The design, construction, and testing of a new Knudsen effusion apparatus
psub	2.15e-04	kPa	411.30	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.64e-04	kPa	409.30	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.66e-04	kPa	409.30	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.73e-04	kPa	409.30	The design, construction, and testing of a new Knudsen effusion apparatus

psub	1.39e-04	kPa	407.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.40e-04	kPa	407.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	1.41e-04	kPa	407.36	The design, construction, and testing of a new Knudsen effusion apparatus
psub	6.48e-04	kPa	423.04	Development of the Knudsen effusion methodology for vapour pressure measurements of low volatile liquids and solids based on a quartz crystal microbalance
psub	3.48e-04	kPa	416.86	The design, construction, and testing of a new Knudsen effusion apparatus
pvap	8.89e-05	kPa	390.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	0.12	kPa	500.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	0.19	kPa	510.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons

pvap	0.03	kPa	470.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	0.02	kPa	460.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	8.31e-03	kPa	450.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	4.39e-03	kPa	440.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	2.22e-03	kPa	430.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	1.07e-03	kPa	420.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	4.94e-04	kPa	410.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons

pvap	2.16e-04	kPa	400.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	0.08	kPa	490.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	3.44e-05	kPa	380.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	1.24e-05	kPa	370.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	4.16e-06	kPa	360.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	1.28e-06	kPa	350.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	3.62e-07	kPa	340.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons

pvap	9.25e-08	kPa	330.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	2.12e-08	kPa	320.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	4.30e-09	kPa	310.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	7.65e-10	kPa	300.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	5.47e-10	kPa	298.15	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
pvap	0.05	kPa	480.00	Hypothetical Thermodynamic Properties. Subcooled Vaporization Enthalpies and Vapor Pressures of Polyaromatic Hydrocarbons
sfust	75.10	J/mol×K	446.00	NIST Webbook

Sources

Joback Method:	https://en.wikipedia.org/wiki/Joback_method
Crippen Method:	https://www.chemeo.com/doc/models/crippen_log10ws
NIST Webbook:	http://webbook.nist.gov/cgi/cbook.cgi?ID=C612715&Units=SI
Crippen Method:	http://pubs.acs.org/doi/abs/10.1021/ci990307l
Development of the Knudsen effusion methodology for vapour pressure measurements and for volatile liquids	https://www.doi.org/10.1016/j.jct.2018.07.004
High-precision heat capacity drop and enthalpy of a quartz crystal microbalance	https://www.doi.org/10.1016/j.jct.2011.06.010
McGowan Method	http://link.springer.com/article/10.1007/BF02311772
Heat capacity of some polyphenyls at T = 298.15 K:	https://www.doi.org/10.1016/j.jct.2005.08.013
The design, construction, and testing of a new Knudsen effusion apparatus:	https://www.doi.org/10.1021/je800300x
Hypothetical Thermodynamic Properties. Subcooled Vaporization	https://www.doi.org/10.1016/j.jct.2010.12.022
New Knudsen Effusion Apparatus with Simultaneous Measurements of Vaporization Enthalpies and Quartz Crystal Microbalance Masses	https://www.doi.org/10.1021/je030236t
Enthalpies of the n-Alkanes from C31 to C38 at T = 298.15 K by Correlation Gas Chromatography:	

Legend

chs:	Standard solid enthalpy of combustion
cpg:	Ideal gas heat capacity
cps:	Solid phase heat capacity
dvisc:	Dynamic viscosity
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfs:	Solid phase enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hfust:	Enthalpy of fusion at a given temperature
hsubt:	Enthalpy of sublimation at a given temperature
hvap:	Enthalpy of vaporization at standard conditions
hvapt:	Enthalpy of vaporization at a given temperature
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
psub:	Sublimation pressure
pvap:	Vapor pressure
rinpol:	Non-polar retention indices
sfust:	Entropy of fusion at a given temperature
ss:	Solid phase molar entropy at standard conditions
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature
tf:	Normal melting (fusion) point
tt:	Triple Point Temperature
vc:	Critical Volume

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