

# Humulene

**Other names:**

(.+-)-.alpha.-humulene  
(E)-«alpha»-Caryophyllene  
(E,E,E)-2,6,6,9-tetramethyl-1,4,8-cycloundecatriene  
.alpha.-caryophyllene  
.alpha.-humulene  
1,4,8-cycloundecatriene, 2,6,6,9-tetramethyl-, (E,E,E)-  
2,6,6,9-Tetramethyl-1,4,8-cycloundecatriene-, (1E,4E,8E)-  
Cycloundeca-1,4,8-triene,2,6,6,9-tetramethyl-, (E,E,E)-  
«alpha»-Caryophyllene  
«alpha»-Humulen  
«alpha»-Humulene  
«alpha»-Humulene («alpha»-caryophyllene)  
«alpha»-Humulenen  
«alpha»-Humullene

**Inchi:**

InChI=1S/C15H24/c1-13-7-5-8-14(2)10-12-15(3,4)11-6-9-13/h6-7,10-11H,5,8-9,12H2,1-4

**InchiKey:**

FAMPSKZZVDUYOS-HRGUGZIWSA-N

**Formula:**

C15H24

**SMILES:**

CC1=CCCC(C)=CCC(C)(C)C=CC1

**Mol. weight [g/mol]:**

204.35

**CAS:**

6753-98-6

## Physical Properties

Property code	Value	Unit	Source
gf	104.50	kJ/mol	Joback Method
hf	-163.77	kJ/mol	Joback Method
hfus	12.53	kJ/mol	Joback Method
hvap	51.32	kJ/mol	Joback Method
ie	9.54	eV	NIST Webbook
log10ws	-5.32		Crippen Method
logp	5.035		Crippen Method
mcvol	198.450	ml/mol	McGowan Method
pc	2056.76	kPa	Joback Method
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ripol	1634.00		NIST Webbook
ripol	1632.00		NIST Webbook
ripol	1670.00		NIST Webbook
ripol	1661.00		NIST Webbook
ripol	1676.00		NIST Webbook
ripol	1646.00		NIST Webbook
ripol	1624.00		NIST Webbook
ripol	1648.00		NIST Webbook
ripol	1662.00		NIST Webbook
ripol	1657.00		NIST Webbook
tb	591.18	K	Joback Method
tc	827.88	K	Joback Method
tf	299.81	K	Joback Method
vc	0.725	m <sup>3</sup> /kmol	Joback Method

# Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	500.93	J/molxK	591.18	Joback Method
cpg	524.87	J/molxK	630.63	Joback Method
cpg	547.39	J/molxK	670.08	Joback Method
cpg	568.60	J/molxK	709.53	Joback Method
cpg	588.61	J/molxK	748.98	Joback Method
cpg	607.51	J/molxK	788.43	Joback Method
cpg	625.41	J/molxK	827.88	Joback Method
hvapt	67.50	kJ/mol	298.15	Thermochemical properties of sesquiterpenes in natural products by correlation gas chromatography: Application to bergamotene oil

# Pressure Dependent Properties

Property code	Value	Unit	Pressure [kPa]	Source
tbrp	396.20	K	1.30	NIST Webbook

# Sources

Crippen Method:

<http://pubs.acs.org/doi/abs/10.1021/ci9903071>

Crippen Method:

[https://www.chemeo.com/doc/models/crippen\\_log10ws](https://www.chemeo.com/doc/models/crippen_log10ws)

High-pressure phase equilibrium data for systems with carbon dioxide,  $\alpha$ -pinene and  $\alpha$ -terpinene. Thermochemical properties of sesquiterpenes in natural products by correlation gas chromatography: Application to bergamotene oil. Systems Composed of Essential Oils and Hydroalcoholic Solvents at 298.2 K and Atmospheric Pressure: McGowan Method:

<https://www.doi.org/10.1016/j.jct.2008.07.006>

<https://www.doi.org/10.1016/j.jct.2018.06.017>

<https://www.doi.org/10.1021/acs.jced.8b00939>

[https://en.wikipedia.org/wiki/Joback\\_method](https://en.wikipedia.org/wiki/Joback_method)

<http://link.springer.com/article/10.1007/BF02311772>

NIST Webbook:

<http://webbook.nist.gov/cgi/cbook.cgi?ID=C6753986&Units=SI>

# Legend

<b>cpg:</b>	Ideal gas heat capacity
<b>gf:</b>	Standard Gibbs free energy of formation
<b>hf:</b>	Enthalpy of formation at standard conditions
<b>hfus:</b>	Enthalpy of fusion at standard conditions
<b>hvap:</b>	Enthalpy of vaporization at standard conditions
<b>hvapt:</b>	Enthalpy of vaporization at a given temperature
<b>ie:</b>	Ionization energy
<b>log10ws:</b>	Log10 of Water solubility in mol/l
<b>logp:</b>	Octanol/Water partition coefficient
<b>mcvol:</b>	McGowan's characteristic volume
<b>pc:</b>	Critical Pressure
<b>rinpola:</b>	Non-polar retention indices
<b>ripola:</b>	Polar retention indices
<b>tb:</b>	Normal Boiling Point Temperature
<b>tbrp:</b>	Boiling point at reduced pressure
<b>tc:</b>	Critical Temperature
<b>tf:</b>	Normal melting (fusion) point
<b>vc:</b>	Critical Volume

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