Kohlenwasserstoffe

1 Alkane

Unverzweigte Alkane

Methan	CH_4	F.-184°C, Kp.-164°C, LW.0
Ethan	CH_3-CH_3	F.-172°C, Kp.-88,5°C, LW.47
Propan	CH_3-CH_2-CH_3	F.-190°C, Kp.-42,1°C
Butan	CH_3-$(CH_2)_2$-CH_3	F.-135°C, Kp.0,6°C
Pentan	CH_3-$(CH_2)_3$-CH_3	F.-131°C, Kp.36,2°C, D.0,634
Hexan	CH_3-$(CH_2)_4$-CH_3	F.-94,3°C, Kp.68,6°C, D.0,660
Heptan	CH_3-$(CH_2)_5$-CH_3	F.-90°C, Kp.98,4°C, D.0,684
Octan	CH_3-$(CH_2)_6$-CH_3	F.-56,5°C, Kp.126°C, D.0,702
Nonan	CH_3-$(CH_2)_7$-CH_3	F.-53,9°C, Kp.150°C, D.0,718
Decan	CH_3-$(CH_2)_8$-CH_3	F.-30°C, Kp.174°C, D.0,730
Undecan	CH_3-$(CH_2)_9$-CH_3	F.-25,6°C, Kp.196°C, D.0,740
Dodecan	CH_3-$(CH_2)_{10}$-CH_3	F.-12°C, Kp.215°C, D.0,751
Tridecan	CH_3-$(CH_2)_{11}$-CH_3	F.-5,4°C, Kp.234°C, D.0,756
Tetradecan	CH_3-$(CH_2)_{12}$-CH_3	F.5,5°C, Kp.252°C, D.0,764
Pentadecan	CH_3-$(CH_2)_{13}$-CH_3	F.9,9°C, Kp.265°C, D.0,768
Hexadecan	CH_3-$(CH_2)_{14}$-CH_3	F.17,8°C, Kp.287°C, D.0,775
Heptadecan	CH_3-$(CH_2)_{15}$-CH_3	F.22,5°C, Kp.303°C, D.0,776
Octadecan	CH_3-$(CH_2)_{16}$-CH_3	F.28,5°C, Kp.303°C, D.0,775(30°)
Nonadecan	CH_3-$(CH_2)_{17}$-CH_3	F.32°C, Kp.330°C, D.0,772(40°)
Eicosan	CH_3-$(CH_2)_{18}$-CH_3	F.38°C, Kp.345°C,D.0,778(38°)
Heneicosan	CH_3-$(CH_2)_{19}$-CH_3	F.41°C
Docosan	CH_3-$(CH_2)_{20}$-CH_3	F.44°C, Kp.369°C
Tricosan	CH_3-$(CH_2)_{21}$-CH_3	F.49°C
Tetracosan	CH_3-$(CH_2)_{22}$-CH_3	F.51°C, Kp.391°C
Pentacosan	CH_3-$(CH_2)_{23}$-CH_3	F.55°C
Hexacosan	CH_3-$(CH_2)_{24}$-CH_3	F.57°C
Heptacosan	CH_3-$(CH_2)_{25}$-CH_3	F.60°C
Octacosan	CH_3-$(CH_2)_{26}$-CH_3	F.62°C
Nonacosan	CH_3-$(CH_2)_{27}$-CH_3	F.64°C
Triacontan	CH_3-$(CH_2)_{28}$-CH_3	F.66°C
Hentriacontan	CH_3-$(CH_2)_{29}$-CH_3	
Dotriacontan	CH_3-$(CH_2)_{30}$-CH_3	F.69°C, Kp.467°C
Tritriacontan	CH_3-$(CH_2)_{31}$-CH_3	
Tetratriacontan	CH_3-$(CH_2)_{32}$-CH_3	F.73°C
Pentatriacontan	CH_3-$(CH_2)_{33}$-CH_3	
Hexatriacontan	CH_3-$(CH_2)_{34}$-CH_3	F.75°C
...		
Tetracontan	CH_3-$(CH_2)_{38}$-CH_3	F.81,4°C
...		
Pentacontan	CH_3-$(CH_2)_{48}$-CH_3	F.92,1°C
...		
Hexacontan	CH_3-$(CH_2)_{58}$-CH_3	
...		
Heptacontan	CH_3-$(CH_2)_{68}$-CH_3	
...		
Octacontan	CH_3-$(CH_2)_{78}$-CH_3	
...		
Nonacontan	CH_3-$(CH_2)_{88}$-CH_3	
...		

Hectan	$CH_3-(CH_2)_{98}-CH_3$	F.115,3°C
Henhectan	$CH_3-(CH_2)_{99}-CH_3$	
Dohectan	$CH_3-(CH_2)_{100}-CH_3$	
...		
Decahectan	$CH_3-(CH_2)_{108}-CH_3$	
...		
Eicosahectan	$CH_3-(CH_2)_{118}-CH_3$	
...		
Triacontahectan	$CH_3-(CH_2)_{128}-CH_3$	
...		
Tetracontahectan	$CH_3-(CH_2)_{138}-CH_3$	
...		
Pentacontahectan	$CH_3-(CH_2)_{148}-CH_3$	
...		
Hexacontahectan	$CH_3-(CH_2)_{158}-CH_3$	
...		
Heptacontahectan	$CH_3-(CH_2)_{168}-CH_3$	
...		
Octacontahectan	$CH_3-(CH_2)_{178}-CH_3$	
...		
Nonacontahectan	$CH_3-(CH_2)_{188}-CH_3$	
...		
Dictan	$CH_3-(CH_2)_{198}-CH_3$	
...		
Trictan	$CH_3-(CH_2)_{298}-CH_3$	
...		
Tetractan	$CH_3-(CH_2)_{398}-CH_3$	
...		
Pentactan	$CH_3-(CH_2)_{498}-CH_3$	
...		
Hexactan	$CH_3-(CH_2)_{598}-CH_3$	
...		
Heptactan	$CH_3-(CH_2)_{698}-CH_3$	
...		
Octactan	$CH_3-(CH_2)_{798}-CH_3$	
...		
Nonactan	$CH_3-(CH_2)_{898}-CH_3$	
...		
Kilian	$CH_3-(CH_2)_{998}-CH_3$	
...		
Dilian	$CH_3-(CH_2)_{1998}-CH_3$	
...		
Trilian	$CH_3-(CH_2)_{2998}-CH_3$	
...		
Tetralian	$CH_3-(CH_2)_{3998}-CH_3$	
...		
Pentalian	$CH_3-(CH_2)_{4998}-CH_3$	
...		
Hexalian	$CH_3-(CH_2)_{5998}-CH_3$	
...		
Heptalian	$CH_3-(CH_2)_{6998}-CH_3$	
...		
Octalian	$CH_3-(CH_2)_{7998}-CH_3$	
...		
Nonalian	$CH_3-(CH_2)_{8998}-CH_3$	
...		

Verzweigte Alkane

Regel 1: längste Kette = Hauptkette = Stammname
Seitenketten mit Restnamen in alphabetischer Reihenfolge
Regel 2: bei mehreren Ketten gleicher Länge erfolgt Wahl in folgender Reihenfolge:
a) Kette mit den meisten Seitenketten
b) Kette mit den niedrigsten Stellenangaben für Seitenketten
c) die Kette mit den meisten C-Atomen in den Nebenresten
Regel 3: Hauptkette wird so numeriert, das Seitenketten möglichst niedrige Stellenangaben haben
Regel 4: mehrere gleiche <u>einfache</u> Reste erhalten den Vorsatz di-, tri-, tetra-, penta-, hexa-, hepta-...
mehrere gleiche <u>komplexe</u> (gleichartig substituierte) Reste erhalten den Vorsatz bis- (bi-), tris-, tetrakis-, pentakis- usw

2-Methylpropan	$CH_3-CH(CH_3)_2$	*iso-Butan*	F.-160°C Kp.-11,7°C OZ 97,6
2-Methylbutan	$CH_3-CH(CH_3)-CH_2-CH_3$	*iso-Pentan*	F.-159°C Kp.27,9°C OZ 90,3 D.0,620
2-Methylpentan	$CH_3-CH(CH_3)-(CH_2)_2-CH_3$	*iso-Hexan*	F.-154°C Kp.60,3°C OZ 73,5 D.0,654
2-Methylhexan	$CH_3-CH(CH_3)-(CH_2)_3-CH_3$	*iso-Heptan*	F.-118°C Kp.90,1°C OZ 46,4 D.0,679
2-Methylheptan	$CH_3-CH(CH_3)-(CH_2)_4-CH_3$		OZ 23
3-Methylpentan	$CH_3-CH_2-CH(CH_3)-CH_2-CH_3$		F.-118°C Kp.63,3°C OZ 74,3 D.0,664
3-Methylhexan	$CH_3-CH_2-CH(CH_3)-(CH_2)_2-CH_3$		F.-119°C Kp.91,8°C OZ 55,8 D.0,687
3-Methylheptan	$CH_3-CH_2-CH(CH_3)-(CH_2)_3-CH_3$		OZ 35
4-Methylheptan	$CH_3-(CH_2)_2-CH(CH_3)-(CH_2)_2-CH_3$		OZ 39
3-Ethylpentan	$CH_3-CH_2-CH(C_2H_5)-CH_2-CH_3$		F.-118°C Kp.93,5°C OZ 69,3 D.0,698
3-Ethylhexan	$CH_3-CH_2-CH(C_2H_5)-(CH_2)_2-CH_3$		OZ 52
3-Ethyl-2-methylpentan	$CH_3-CH(CH_3)-CH(C_2H_5)-CH_2-CH_3$		OZ 91
3-Ethyl-3-methylpentan	$CH_3-CH_2-C(CH_3)(C_2H_5)-CH_2-CH_3$		OZ 102
5-Ethyl-2-methylheptan	$CH_3-CH(CH_3)-(CH_2)_2-CH(C_2H_5)-CH_2-CH_3$		
2,2-Dimethylpropan	$CH_3-C(CH_3)_2-CH_3$	*Neopentan*	F.-16,6°C Kp.9,5°C OZ 80,2 D.0,591
2,2-Dimethylbutan	$CH_3-C(CH_3)_2-CH_2-CH_3$	*Neohexan*	F.-99,7°C Kp.49,7°C OZ 93,4 D.0,649
2,3-Dimethylbutan	$CH_3-CH(CH_3)-CH(CH_3)-CH_3$	*Diisopropyl*	F.-129°C Kp.58,0°C OZ 94,3 D.0,662
2,2-Dimethylpentan	$CH_3-C(CH_3)_2-(CH_2)_2-CH_3$		F.-124°C Kp.79,2°C OZ 95,6 D.0,674
2,3-Dimethylpentan	$CH_3-CH(CH_3)-CH(CH_3)-CH_2-CH_3$		OZ 89
2,4-Dimethylpentan	$CH_3-CH(CH_3)-CH_2-CH(CH_3)-CH_3$		OZ 82
3,3-Dimethylpentan	$CH_3-CH_2-C(CH_3)_2-CH_2-CH_3$		OZ 84
2,2-Dimethylhexan	$CH_3-C(CH_3)_2-(CH_2)_3-CH_3$		OZ 76
2,3-Dimethylhexan	$CH_3-CH(CH_3)-CH(CH_3)-(CH_2)_2-CH_3$		OZ 85
2,4-Dimethylhexan	$CH_3-CH(CH_3)-CH_2-CH(CH_3)-CH_2-CH_3$		OZ 59
2,5-Dimethylhexan	$CH_3-CH(CH_3)-(CH_2)_2-CH(CH_3)-CH_3$	*Diisobutyl*	F.-91,3°C, Kp.109°C, D.0,700
3,3-Dimethylhexan	$CH_3-CH_2-C(CH_3)_2-(CH_2)_2-CH_3$		OZ 85
3,4-Dimethylhexan	$CH_3-CH_2-CH(CH_3)-CH(CH_3)-CH_2-CH_3$		OZ 88
2,6-Dimethylheptan	$CH_3-CH(CH_3)-(CH_2)_3-CH(CH_3)-CH_3$		OZ 25
2,7-Dimethyloctan	$CH_3-CH(CH_3)-(CH_2)_4-CH(CH_3)-CH_3$	*Diisoamyl*	F.-52,5°C, Kp.160°C, OZ 25, D.0,721
3,3-Dimethyloctan	$CH_3-CH_2-C(CH_3)_2-(CH_2)_4-CH_3$		OZ 52
3,4-Diethylhexan	$CH_3-CH_2-CH(C_2H_5)-CH(C_2H_5)-CH_2-CH_3$		OZ 62
2,2,3-Trimethylbutan	$CH_3-C(CH_3)_2-CH(CH_3)-CH_3$	*Triptan*	F.-25°C, Kp.80,9°C, OZ 101, D.0,689
2,2,3-Trimethylpentan	$CH_3-C(CH_3)_2-CH(CH_3)-CH_2-CH_3$		OZ 99
2,2,4-Trimethylpentan	$CH_3-C(CH_3)_2-CH_2-CH(CH_3)-CH_3$	*iso-Octan*	F.-107°C, Kp.99°C, D.0,691, OZ 100
2,3,3-Trimethylpentan	$CH_3-CH(CH_3)-C(CH_3)_2-CH_2-CH_3$		OZ 97
2,3,4-Trimethylpentan	$CH_3-CH(CH_3)-CH(CH_3)-CH(CH_3)-CH_3$		OZ 103
2,2,4-Trimethylhexan	$CH_3-C(CH_3)_2-CH_2-CH(CH_3)-CH_2-CH_3$		OZ 92
2,2,5-Trimethylhexan	$CH_3-C(CH_3)_2-(CH_2)_2-CH(CH_3)-CH_3$		OZ 91
2,2,6-Trimethylheptan	$CH_3-C(CH_3)_2-(CH_2)_3-CH(CH_3)-CH_3$		OZ 78
2,2,3,3-Tetramethylbutan	$CH_3-C(CH_3)_2-C(CH_3)_2-CH_3$		
2,2,3,4-Tetramethylhexan	$CH_3-C(CH_3)_2-CH(CH_3)-CH(CH_3)-CH_2-CH_3$		OZ 102
3,3,4,4-Tetramethylhexan	$CH_3-CH_2-C(CH_3)_2-C(CH_3)_2-CH_2-CH_3$		OZ 124

2 Alkene und Alkine

Unverzweigte Alkene ***Olefine, Alkylene***

Ethen	$H_2C=CH_2$	*Äthylen*	F.-169°C, Kp.-104°C
Propen	$H_2C=CH-CH_3$	*Propylen*	F.-185°C, Kp.-47,7°C
But-1-en	$H_2C=CH-CH_2-CH_3$	*1-Butylen*	F.-185°C, Kp.-6,5°C
But-2-en	$H_3C-CH=CH-CH_3$	*2-Butylen*	cis:F.-138°C, Kp.3,7°C; trans:F.-105°C, Kp.1°C
Pent-1-en	$H_2C=CH-(CH_2)_2-CH_3$	*n-Amylen*	F.-165°C, Kp.30°C, D.0,641
Pent-2-en	$H_3C-CH=CH-CH_2-CH_3$		F.-147°C, Kp.36,4°C, D.0,653
Hex-1-en	$H_2C=CH-(CH_2)_3-CH_3$		F.-140°C, Kp.63°C, D.0,673
Hex-2-en	$H_3C-CH=CH-(CH_2)_2-CH_3$		trans: F.-98°C, Kp.68°C, D.0,669
Hex-3-en	$H_3C-CH_2-CH=CH-CH_2-CH_3$		trans: Kp.67°C, D.0,677
Hept-1-en	$H_2C=CH-(CH_2)_4-CH_3$		F.-119°C, Kp.94°C, D.0,697
Hept-2-en	$H_3C-CH=CH-(CH_2)_3-CH_3$		cis: Kp.98°C, D.0,708 ; trans: Kp.98°C, D.0,701
Hept-3-en	$H_3C-CH_2-CH=CH-(CH_2)_2-CH_3$		cis: Kp.95,7°C, D.0,703 ; trans: F.-136,8°C, Kp.94°C, D.0,698
Oct-1-en	$H_2C=CH-(CH_2)_5-CH_3$		F.-101°C, Kp.122°C, D.0,715
Oct-2-en	$H_3C-CH=CH-(CH_2)_4-CH_3$		trans: Kp.123°C, D.0,718
Oct-3-en	$H_3C-CH_2-CH=CH-(CH_2)_3-CH_3$		
Oct-4-en	$H_3C-(CH_2)_2-CH=CH-(CH_2)_2-CH_3$		trans: Kp.123°C, D.0,715
Non-1-en	$H_2C=CH-(CH_2)_6-CH_3$		F.-81°C, Kp.146°C, D.0,730
Non-2-en	$H_3C-CH=CH-(CH_2)_5-CH_3$		trans: Kp.144°C, D.0,734
Non-3-en	$H_3C-CH_2-CH=CH-(CH_2)_4-CH_3$		trans: D.0,734
Non-4-en	$H_3C-(CH_2)_2-CH=CH-(CH_2)_3-CH_3$		
Dec-1-en	$H_2C=CH-(CH_2)_7-CH_3$		F.-66°C, Kp.170°C, D.0,741
Undec-1-en	$H_2C=CH-(CH_2)_8-CH_3$		F.-49°C, Kp.192°C, D.0,750
Dodec-1-en	$H_2C=CH-(CH_2)_9-CH_3$		F.-35°C, Kp.213°C, D.0,758
Tridec-1-en	$H_2C=CH-(CH_2)_{10}-CH_3$		F.-23°C, Kp.232°C, D.0,766
Tetradec-1-en	$H_2C=CH-(CH_2)_{11}-CH_3$		F.-12°C, Kp.246°C, D.0,775
Hexadec-1-en	$H_2C=CH-(CH_2)_{13}-CH_3$		F.2°C, D.0,781
Octadec-1-en	$H_2C=CH-(CH_2)_{15}-CH_3$		F.16°C, D.0,789

Propadien	$H_2C=C=CH_2$	*Allen*	F.-146°C, Kp.-34°C
Buta-1,2-dien	$H_2C=C=CH-CH_3$		
Buta-1,3-dien	$H_2C=CH-CH=CH_2$		F.-109°C, Kp.-4,5°C
Penta-1,2-dien	$H_2C=C=CH-CH_2-CH_3$		
Penta-1,3-dien	$H_2C=CH-CH=CH-CH_3$	*Piperylen*	cis: F-141°C,Kp44°C,D0,691 ; trans:F-87°C,Kp.42,3°C, D.0,676
Penta-1,4-dien	$H_2C=CH-CH_2-CH=CH_2$		F.-148°C, Kp.26°C, D.0,659
Penta-2,3-dien	$H_3C-CH=C=CH-CH_3$		
Hexa-1,2-dien	$H_2C=C=CH-(CH_2)_2-CH_3$		
Hexa-1,3-dien	$H_2C=CH-CH=CH-CH_2-CH_3$		Kp.73°C, D.0,714
Hexa-1,4-dien	$H_2C=CH-CH_2-CH=CH-CH_3$		
Hexa-1,5-dien	$H_2C=CH-(CH_2)_2-CH=CH_2$	*Diallyl*	F.-141°C, Kp.59,6°C, D.0,687
Hexa-2,3-dien	$H_3C-CH=C=CH-CH_2-CH_3$		
Hexa-2,4-dien	$H_3C-CH=CH-CH=CH-CH_3$		Kp.82°C, D.0,720
Octa-1,7-dien	$H_2C=CH-(CH_2)_4-CH=CH_2$		Kp.117°C, D.0,732, LW.0,08
...			
Butatrien	$H_2C=C=C=CH_2$		
Penta-1,2,3-trien	$H_2C=C=C=CH-CH_3$		
Penta-1,2,4-trien	$H_2C=C=CH-CH=CH_2$		
Hexa-1,2,3-trien	$H_2C=C=C=CH-CH_2-CH_3$		
Hexa-1,2,4-trien	$H_2C=C=CH-CH=CH-CH_3$		
Hexa-1,2,5-trien	$H_2C=C=CH-CH_2-CH=CH_2$		
Hexa-1,3,4-trien	$H_2C=CH-C=C=CH-CH_3$		

Hexa-1,3,5-trien	$H_2C=CH-CH=CH-CH=CH_2$	Kp.77°C, D.0,737
Hexa-2,3,4-trien	$H_3C-CH=C=C=CH-CH_3$	
Octa-1,4,7-trien	$H_2C=CH-CH_2-CH=CH-CH_2-CH=CH_2$	
Deca-1,5,9-trien	$H_2C=CH-(CH_2)_2-CH=CH-(CH_2)_2-CH=CH_2$	

Hinweise zur Isomerie bei Doppelbindungen

Bei Verbindungen mit Doppelbindungen kann cis-trans-Isomerie auftreten. Die zwei resultierenden Isomeren unterscheiden sich in der Konfiguration an einem C-Atom der Doppelbindung. Zur Kennzeichnung wurden früher die Bezeichnungen **cis-** (gleiche Gruppen auf der gleichen Seite) und **trans-** (gleiche Gruppen auf entgegengesetzter Seite) verwendet.
Diese Kennzeichnung ist jedoch nur eindeutig, wenn am linken und am rechten C-Atom der Doppelbindung jeweils eine Gruppe gleich ist. Jetzt benutzt man die BLACKWOOD-Methode (diese ist eindeutig und nicht nur auf C=C- Bindungen anwendbar).
Für jede Doppelbindung wird nach der *Sequenzregel* die Vorrangstellung der zwei Substituenten an jedem C-Atom bestimmt. Die Konfiguration, in der sich zwei Substituenten höherer Vorrangstellung auf der gleichen Seite befinden, wird mit **Z** (zusammenständig) benannt. Die Konfiguration, in der sich zwei Substituenten höherer Vorrangstellung auf der entgegengesetzten Seite befinden, wird mit **E** (entgegenständig) benannt

Sequenzregel

1. Die Substituenten sind in der Reihenfolge nach abnehmender Ordnungszahl der direkt gebundenen Atome zu ordnen. I > Br > Cl > S > P > F > O > N > C > H

2. Sind zwei oder mehrere gebundene Atome identisch, dann werden die Ordnungszahlen der mit ihnen verbundenen Atome herangezogen; dabei bevorzugt man Ketten welche die Atome mit höchsten Ordnungszahlen enthalten.

   Bsp.: $-CH_2Cl > -CH_2OH > -CH_2-CH_3$

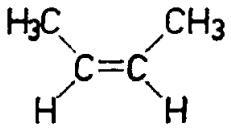
   $-C(CH_3)_3 > -CH(CH_3)_2 > -CH_2-CH_3 > -CH_3$

   $-C \equiv N > -C_6H_5 > -C \equiv CH > -CH = CH_2$

   $-OH > -CH_2-CH_3 > -CH_3 > -H$

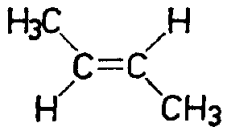
Beispiele zur Anwendung der Bezeichnungsweisen

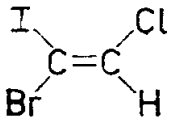
E- Konfiguration



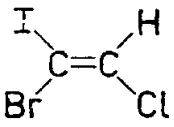
But-2-en

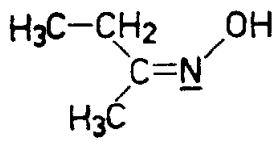
Z- Konfiguration



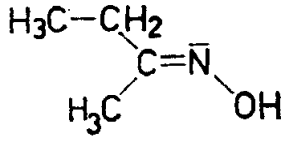


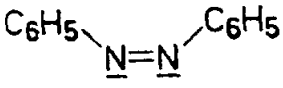
1-Brom-2-chlor-1-iod-ethan



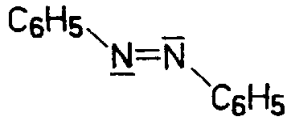


Butanonoxim





Azobenzen



Unverzweigte Alkine

Ethin	$HC{\equiv}CH$	*Acetylen*	F.-81,8°C,Kp.-84°C
Propin	$HC{\equiv}C\text{-}CH_3$	*Methylacetylen*, *Allylen*	F.-105°C,Kp.-23°C
But-1-in	$HC{\equiv}C\text{-}CH_2\text{-}CH_3$	*Äthylacetylen*	F-122°C, Kp.18°C, D.0,668
But-2-in	$H_3C\text{-}C{\equiv}C\text{-}CH_3$	*Dimethylacetylen*	Kp.27°C
Pent-1-in	$HC{\equiv}C\text{-}(CH_2)_2\text{-}CH_3$	*Propylacetylen*	Kp.40°C, D.0,691
Pent-2-in	$H_3C\text{-}C{\equiv}C\text{-}CH_2\text{-}CH_3$	*Äthylmethylacetylen*	F.-109°C, Kp.56°C, D.0,711
Hex-1-in	$HC{\equiv}C\text{-}(CH_2)_3\text{-}CH_3$		F.-132°C, Kp.71°C, D.0,716
Hex-2-in	$H_3C\text{-}C{\equiv}C\text{-}(CH_2)_2\text{-}CH_3$	*Methylpropylacetylen*	F.-20°C, Kp.84°C, D.0,735
Hex-3-in	$H_3C\text{-}CH_2\text{-}C{\equiv}C\text{-}CH_2\text{-}CH_3$		D.0,723
Hept-1-in	$HC{\equiv}C\text{-}(CH_2)_4\text{-}CH_3$		F.-81°C, Kp.100°C, D.0,735
Hept-2-in	$H_3C\text{-}C{\equiv}C\text{-}(CH_2)_3\text{-}CH_3$		
Hept-3-in	$H_3C\text{-}CH_2\text{-}C{\equiv}C\text{-}(CH_2)_2\text{-}CH_3$		
Oct-1-in	$HC{\equiv}C\text{-}(CH_2)_5\text{-}CH_3$		F.-79°C, Kp.127°C, D.0,746
Oct-4-in	$H_3C\text{-}(CH_2)_2\text{-}C{\equiv}C\text{-}(CH_2)_2\text{-}CH_3$		F.-103°C, Kp.132°C, D.0,752

...

Butadiin	$HC{\equiv}C\text{-}C{\equiv}CH$
Penta-1,3-diin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}CH_3$
Penta-1,4-diin	$HC{\equiv}C\text{-}CH_2\text{-}C{\equiv}CH$
Hexa-1,3-diin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}CH_2\text{-}CH_3$
Hexa-1,4-diin	$HC{\equiv}C\text{-}CH_2\text{-}C{\equiv}C\text{-}CH_3$
Hexa-1,5-diin	$HC{\equiv}C\text{-}(CH_2)_2\text{-}C{\equiv}CH$

...

Hexatriin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}C{\equiv}CH$
Hepta-1,3,5-triin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}C{\equiv}C\text{-}CH_3$
Hepta-1,3,6-triin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}CH_2\text{-}C{\equiv}CH$
Octa-1,3,5-triin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}C{\equiv}C\text{-}CH_2\text{-}CH_3$
Octa-1,3,6-triin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}CH_2\text{-}C{\equiv}C\text{-}CH_3$
Octa-1,3,7-triin	$HC{\equiv}C\text{-}C{\equiv}C\text{-}(CH_2)_2\text{-}C{\equiv}CH$
Octa-1,4,6-triin	$HC{\equiv}C\text{-}CH_2\text{-}C{\equiv}C\text{-}C{\equiv}C\text{-}CH_3$
Octa-1,4,7-triin	$HC{\equiv}C\text{-}CH_2\text{-}C{\equiv}C\text{-}CH_2\text{-}C{\equiv}CH$
Octa-2,4,6-triin	$H_3C\text{-}C{\equiv}C\text{-}C{\equiv}C\text{-}C{\equiv}C\text{-}CH_3$

...

Bei Wahl zwischen Doppel und Dreifachbindung wird die niedrigere Stellenangabe an die Doppelbindung gegeben.

But-1-en-3-in	$HC{\equiv}C\text{-}CH_2{=}CH_2$
Pent-1-en-3-in	$H_3C\text{-}C{\equiv}C\text{-}CH_2{=}CH_2$
Pent-1-en-4-in	$HC{\equiv}C\text{-}CH_2\text{-}CH{=}CH_2$
Pent-2-en-4-in	$HC{\equiv}C\text{-}CH{=}CH\text{-}CH_3$

Verzweigte Alkene und Alkine

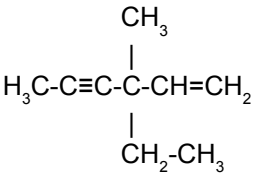
Regel 1: Hauptkette = Kette der meisten Mehrfachbindungen, auch wenn eine längere Kette mit weniger Mehrfachbindungen vorhanden ist. Bei zwei Ketten gleicher Länge und gleicher Anzahl Mehrfachbindungen wird die Kette mit größerer Anzahl Doppelbindungen zur Hauptkette.
Regel 2: Mehrfachbindungen erhalten möglichst niedrige Zahlen, Doppelbindungen vorrangig vor Dreifachbindungen

Achtung: Sind funktionelle Gruppen vorhanden, wird durch diese Gruppen die Numerierung bestimmt und anschließend erst durch die Mehrfachbindungen und Seitenketten.

Bsp: $H_2C=CH-(CH_2)_8-COOH$ Undec-10-ensäure

2-Methylpropen	$H_2C=C(CH_3)-CH_3$	*iso-Butylen*	F.-139°C, Kp.-6,6°C
2-Methylbut-1-en	$H_2C=C(CH_3)-CH_2-CH_3$		
2-Methylbut-2-en	$H_3C-C(CH_3)=CH-CH_3$	*Amylen, Trimethyläthylen*	F-134°C, Kp.37,2°C, D.0,668
3-Methylbut-1-en	$H_3C-CH(CH_3)-CH=CH_2$	*Isopropylethylen*	F.-168°C, Kp.20°C, D.0,633(15°C)
2-Methylbuta-1,3-dien	$H_2C=C(CH_3)-CH=CH_2$	*Isopren*	F.-120°C,Kp.34,1°C, D.0,685
2,3-Dimethyl-but-2-en	$H_3C-C(CH_3)=C(CH_3)-CH_3$	*Tetramethyläthylen*	F.-75°C, Kp.73°C, D.0,709
2,3-Dimethylbuta-1,4-dien	$H_2C=C(CH_3)-C(CH_3)=CH_2$		F.-65°C, Kp.67,5°C, D.0,730
2-Methylpenta-1,3-dien	$H_2C=C(CH_3)-CH=CH-CH_3$		Kp.75°C, D.0,718
2,4,4-Trimethyl-pent-1-en	$H_3C-C(CH_3)_2-CH_2-C(CH_3)=CH_2$	*Diisobutylen*	F.-101°C, Kp.118°C, D.0,715

3-Ethyl-3-methylhex-1-en-4-in



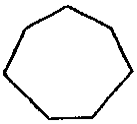
3 Cycloalkane

Cyclopropan
F.-127°C, Kp.-34°C
LW.370

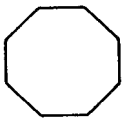
Cyclobutan
F.-90°C, Kp.12°C

Cyclopentan
F.-94°C, Kp.49°C

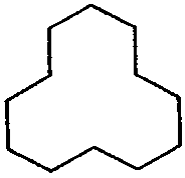
Cyclohexan
F.7°C, Kp.81°C, D.0,778



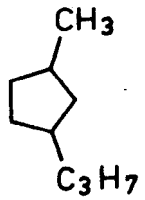
Cycloheptan
F.-8°C, Kp.119°C, D.0,811



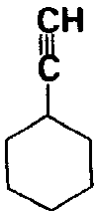
Cyclooctan
F.14°C, Kp.149°C, D.0,835



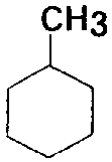
Cyclododecan
F.60°C, Kp.243°C



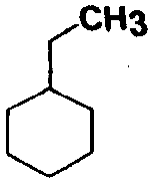
1-Methyl-3-propyl-cyclopentan



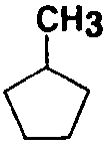
Ethinylcyclohexan
Kp.131°C, D.0,841



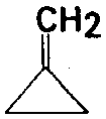
Methylcyclohexan
F.-126°C, Kp.100°C, D.0,77, LW.0,1



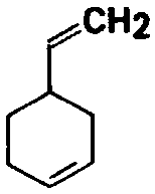
Ethylcyclohexan
F.-111°C, Kp.132°C, D.0,88



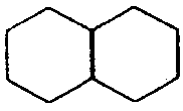
Methylcyclopentan
F.-142°C, Kp.72°C, D.0,748



Methylencyclopropan
F.-14°C, Kp.11°C

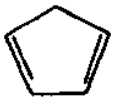


4-Ethenyl-cyclohex-1-en
F.-108°C, Kp.129°C, D.0,831

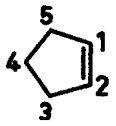


Bicyclo[4.4.0]decan
Decahydronaphthalin
Decalin

4 Cycloalkene

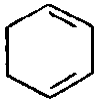


Cyclopenta-1,3-dien
F.-97°C, Kp.41°C, D.0,801



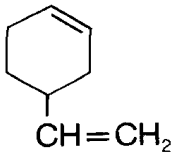
Cyclopent-1-en
F.-135°C, Kp.46°C, D.0,771

Cyclohexen
F.-104°C, Kp.83°C, D.0,81

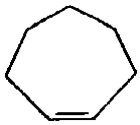


Cyclohexa-1,3-dien
F.-98°C, Kp.80°C, D.0,842

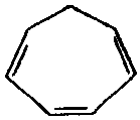
Cyclohexa-1,4-dien
F.-49°C, D.0,855



4-Ethenylcyclohex-1-en

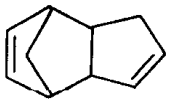


Cyclohepten
Suberen
Kp.112°C, D.0,83



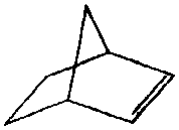
Cyclohepta-1,3,5-trien
Tropiliden
F.-80°C, Kp.117°C, D.0,891

Bicyclo-(2,2,1)-hepta-2,5-dien
Norbornadien
F.-20°C, Kp.91°C, D.0,91

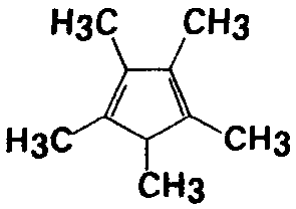


Tricyclo-[5,2,1,0]-deca-3,8-dien

D.0,97(30°C)

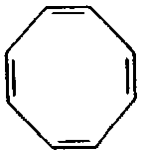


Bicyclo[2.2.1]hept-2-en
Norbornen
F.45°C, Kp.96°C

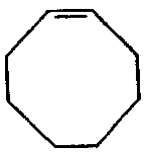


1,2,3,4,5-Pentamethylcyclopentadien

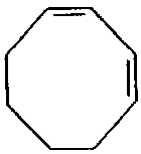
D.0,842



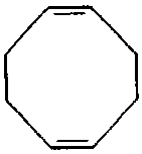
Cyclooctatetraen
F.-27°C, D.0,923



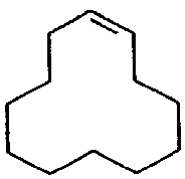
cis-Cycloocten
F.-16°C, Kp.144°C, D.0,847



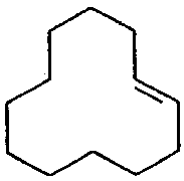
Cycloocta-1,3-dien
F.-53°C, Kp.143°C



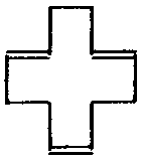
cis,cis-Cycloocta-1,5-dien
F.-70°C, Kp.151°C, D.0,881



cis-Cyclododecen



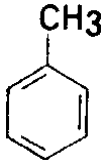
trans-Cyclododecen



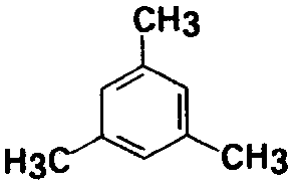
cis,trans,trans-Cyclododeca-1,5,9-trien
F.-18°C, Kp.241°C, D.0,895

5 Aromatische Kohlenwasserstoffe

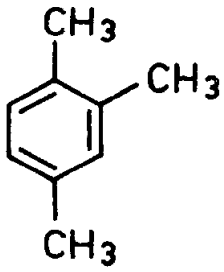
Benzen
Benzol
F.5,5°C, Kp.80,1°C, D.0,879



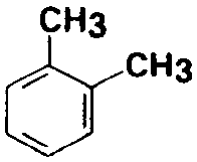
Methylbenzen
Toluol
F.-95°C, Kp.110,6°C, D.0,866



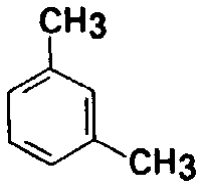
1,3,5-Trimethylbenzen
Mesitylen
F.-52,7°C, Kp.164°C, D.0,864



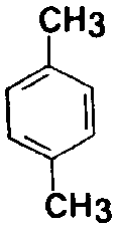
1,2,4-Trimethylbenzen
Pseudocumol
F.-57,4°C, Kp.168°C, D.0,878



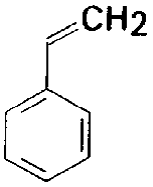
1,2-Dimethylbenzen
o-Xylol
F.-25°C, Kp.144°C, D.0,880



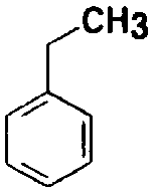
1,3-Dimethylbenzen
m-Xylol
F.-48°C, Kp.139°C, D.0,864



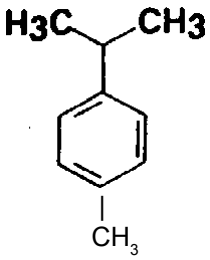
1,4-Dimethylbenzen
p-Xylol
F.13,2°C, Kp.138°C, D.0,861



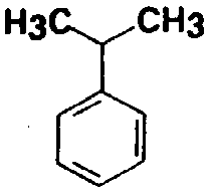
Ethenylbenzen
Styrol
F.-31°C, Kp.146°C, D.0,907



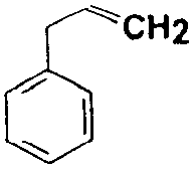
Ethylbenzen
F.-94°C, Kp.136°C, D.0,867



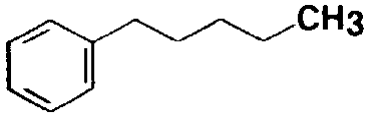
1-Methyl-4-methylethylbenzen *p-Cymol*
F.-73,5°C, Kp.176°C, D.0,858



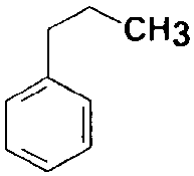
Methylethylbenzen
Cumol
F.-97°C, Kp.152°C, D.0,862



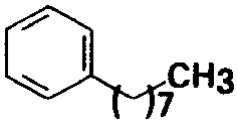
3-Phenyl-1-propen
Allylbenzol
F.~-45°C, Kp.156°C, D.0,893



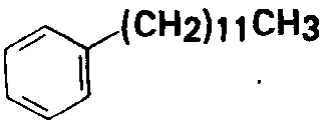
Pentylbenzen
n-Amylbenzol
F.-75°C, Kp.202°C, D.0,859



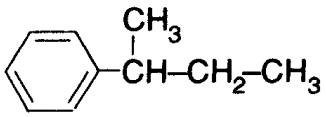
Propylbenzen
F.-101°C, Kp.159°C, D.0,862



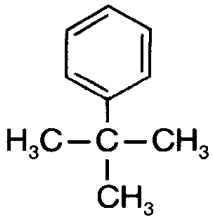
Octylbenzen
F.-37°C, D.0,856



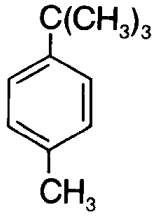
Dodecylbenzen
Kp.278°C, D.0,855



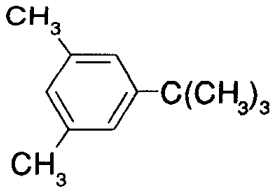
2-Phenylbutan
sek.-Butylbenzol
F.-76°C, Kp.174°C, D.0,861



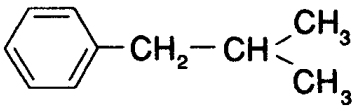
(1,1-Dimethylethyl)-benzen
tert.-Butylbenzol
F.-61°C, Kp.169°C, D.0,867



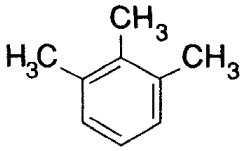
1-Methyl-4-(1,1-dimethylethyl)-benzen
p-tert.-Butyltoluol



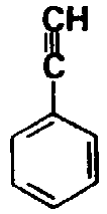
1,3-Dimethyl-5-(1,1-dimethylethyl)-benzen
5-tert.-Butyl-m-Xylol
Kp.207°C, D.0,868



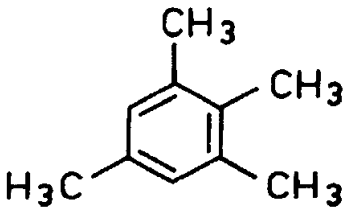
2-Methylpropylbenzen
iso-Butylbenzol
Kp.173°C, D.0,853



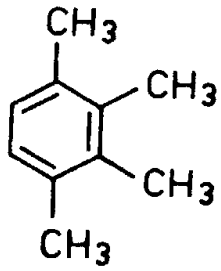
1,2,3-Trimethylbenzen
Hemimellitol
F.-25°C, Kp.176°C, D.0,894



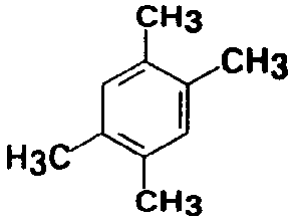
Ethinylbenzen
Phenylacetylen
F.-44°C, Kp.139°C, D.0,93



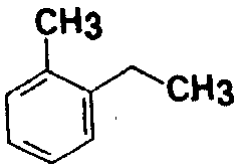
1,2,3,5-Tetramethylbenzen
F.-24°C, Kp.196°C, D.0,896(0°C)



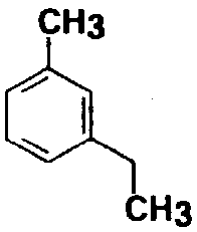
1,2,3,4-Tetramethylbenzen



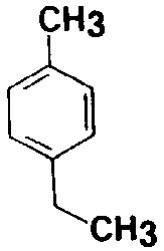
1,2,4,5-Tetramethylbenzen
Durol
F.79°C, Kp.192°C



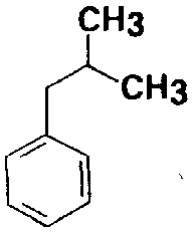
2-Ethyl-1-methyl-benzen
2-Äthyltoluol
F.-17°C, Kp.164°C, D.0,88



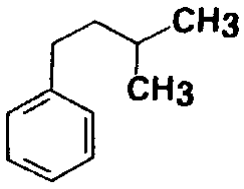
3-Ethyl-1-methyl-benzen
3-Äthyltoluol
Kp.159°C, D.0,864



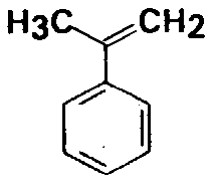
4-Ethyl-1-methyl-benzen
4-Äthyltoluol
F.-62°C, Kp.161°C, D.0,861



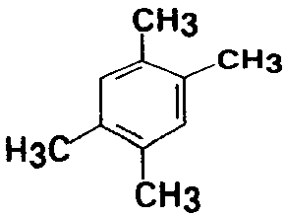
2-Methylpropylbenzen
Isobutylbenzol
F.-51°C, Kp.173°C, D.0,853



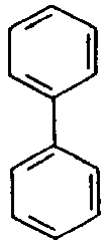
3-Methylbutylbenzen
Isoamylbenzol
Kp.198°C, D.0,852



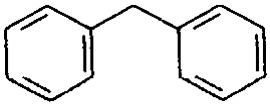
1-Methylethenylbenzen
Methylstyrol
F.-23°C, Kp.165°C, D.0,909



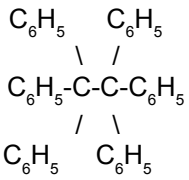
1,2,4,5-Tetramethylbenzen
Durol
F.80°C, Kp.192°C



Biphenyl
Diphenyl
F.69°C, Kp.255°C



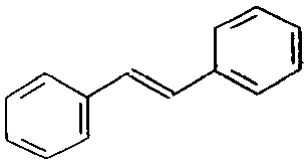
Diphenylmethan
Ditan
F.23°C, Kp.265°C



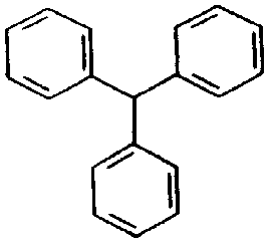
Hexaphenylethen

1,2-Diphenylethan $C_6H_5\text{-}CH_2\text{-}CH_2\text{-}C_6H_5$ *Dibenzyl*

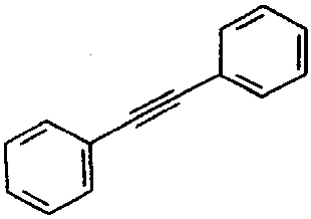
(Z)-1,2-Diphenylethen
cis-Stilben
F.2°C, D.1,02



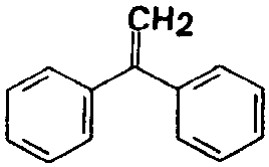
(E)-1,2-Diphenylethen
trans-Stilben
F.122°C, Kp.306°C



Triphenylmethan
Tritan
F.91°C, Kp.360°C

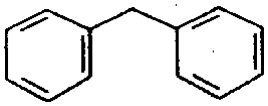


Diphenylethin
Tolan
F.55°C, Kp.302°C

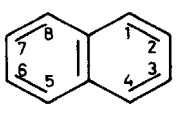


1,1-Diphenylethen

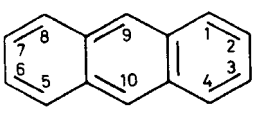
F.6°C, Kp.270°C, D.1,025



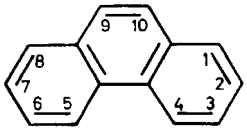
Diphenylmethan
Ditan
Kp.265°C



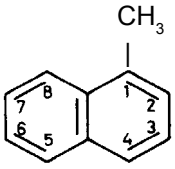
Naphthalen
F.81°C, Kp.218°C, D.1,145



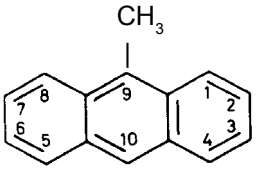
Anthracen
F.218°C; Kp.351°C, D.1,25



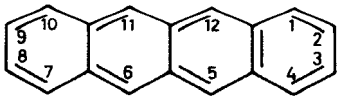
Phenanthren
F.98°C, Kp.338°C



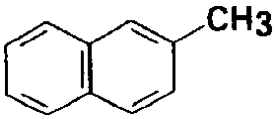
1-Methylnaphthalen
Kp.244°C, D.1,019



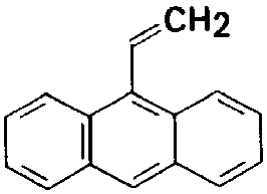
9-Methylanthracen
F.77°C



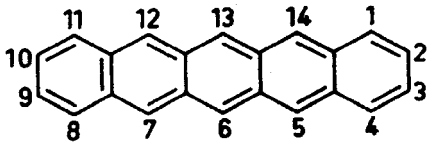
Naphthacen



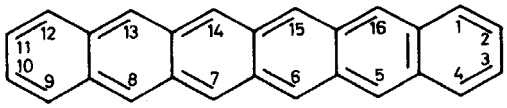
2-Methylnaphthalen
F.33°C, Kp.242°C



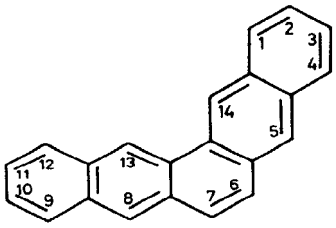
9-Ethenylanthracen
F.63°C



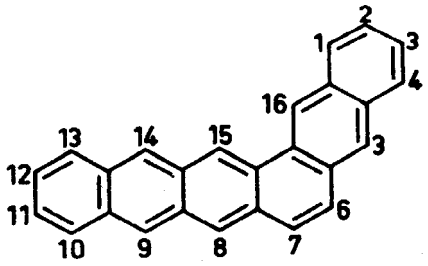
Pentacen



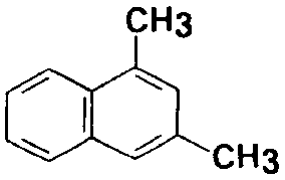
Hexacen



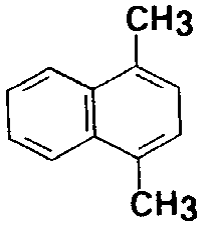
Pentaphen



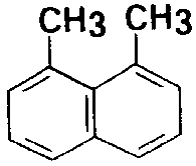
Hexaphen



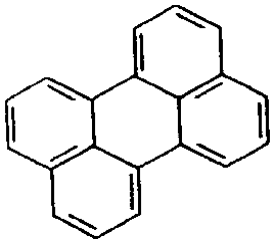
1,3-Dimethylnaphthalen
F.-5°C, Kp.263°C,D.1,006



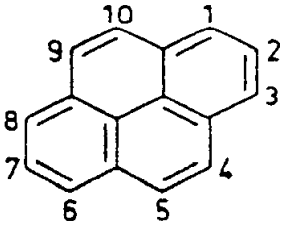
1,4-Dimethylnaphthalen
F.5°C, D.1,018



1,8-Dimethylnaphthalen
F.61°C, Kp.270°C

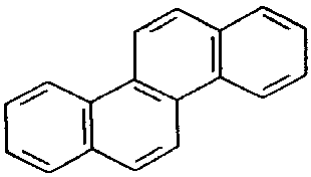


Dibenz(de,kl)anthracen
Perylen
F.276°C

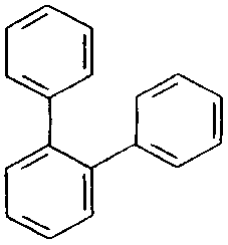


Pyren

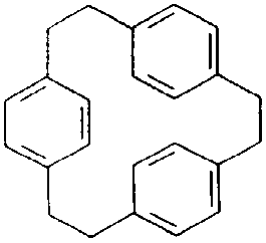
F.148°C, Kp.393°C



1,2-Benzophenanthren
Chrysen
F.255°C, Kp.448°C

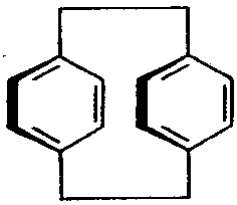


1,2-Diphenylbenzen
o-Terphenyl
F.55°C, Kp.332°C



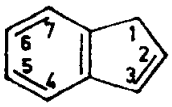
[2,2,2]-Paracyclophan

F.162°C



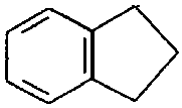
[2,2]-Paracyclophan

F.288°C

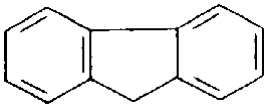


Inden

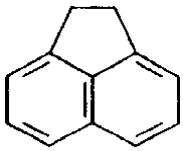
F.-2°C, Kp.182°C, D.0,991



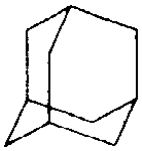
Indan
Hydrinden
Kp.177°C



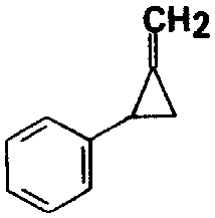
Fluoren
F.114°C, Kp.295°C



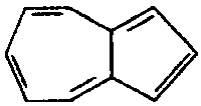
Acenaphthen
F.91°C



Adamantan

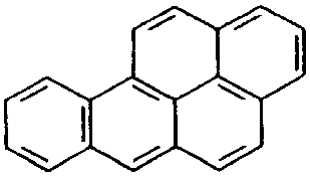


1-Methylen-2-phenylcyclopropen
D.0,945



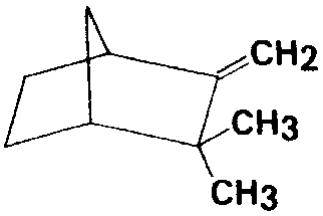
Azulen

F.99°C, Kp.242°C

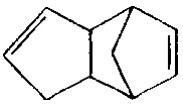


Benzo[a]pyren

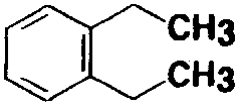
F.176°C



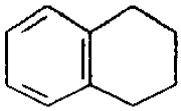
2,2-Dimethyl-3-methylenbicyclo[2.2.1]heptan
(+)-Camphen
F.43°C, Kp.158°C



Dicyclopentadien
F.32°C

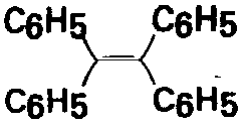


1,2-Diethylbenzen
F.-31°C, Kp.184°C, D.0,88



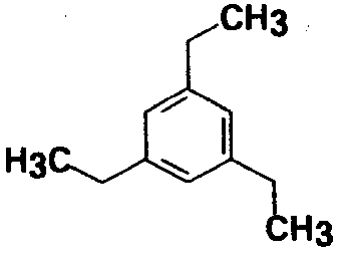
1,2,3,4-Tetrahydronaphthalen

F.-35°C, Kp.207°C, D.0,968



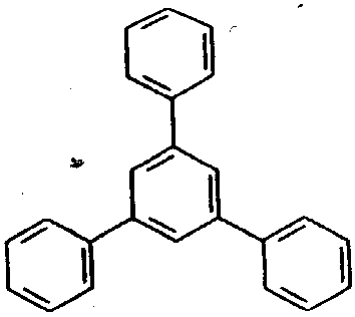
Tetraphenylethen

F.223°C, Kp.420°C



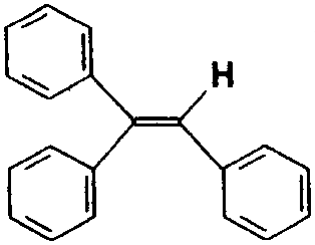
1,3,5-Triethylbenzen

D.0,862



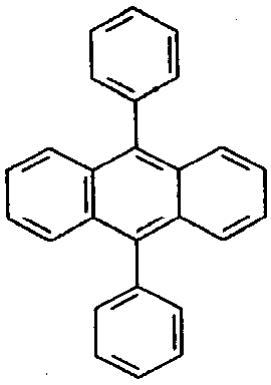
1,3,5-Triphenylbenzen

F.173°C, Kp.460°C



Triphenylethen

F.69°C



9,10-Diphenylanthracen

F.245°C