

# PROPERTIES AND USES OF MONOCHLOROBENZENE

## Physical Properties of Chlorobenzene

Molecular weight	112.56	
Melting point (°C)	-45.21	
Boiling point (°C)	131.5	
Specific gravity	1.106	
Vapor density (air=1)	3.9	
Steam distillation point (°C)	90	
Flash point (°C)	24	
Critical temp. (°C)	352.2	
Critical pressure, mm Hg	33962	
Critical density	0.3654	
Latent heat of combustion (Kcal/g-mole)	763.88	
Latent heat of vaporization (Kcal/g-mole)	8.73	
Specific heat, Cp (T = K)	0.2988 + 0.00074 T	
Flammable limits in air	1.3(lower)	
(Volume % NTP)	7.1(upper)	
Vapor pressure (mm of Hg)	32°F-108°F	108°F-446°F
Antoine equation constants		
A	7.1069	6.94504
B	1500.0	1413.12
C	224.0	216

## Thermodynamic and physical properties:

Property	Temp (K)	Ben (l)	Ben (g)	MCB (l)	MCB (g)	DCB (l)	DCB (g)
Heat Capacity (KJ/kmol)	298	136	82	152	92	-	103
	350	148	99	161	108	193	118
	400	163	113	170	121	238	131
	450	179	126	181	134	296	143
	500	200	137	192	145	366	155
Heat of Formation (KJ/kmol)	298	49	82.9	7.5	46.1	-42	5
Density (kg/m <sup>3</sup> )	298	872	-	1100	-	-	-
	350	815	-	1040	-	1230	-
	400	761	-	989	-	1170	-
	450	693	-	932	-	1100	-
	500	612	-	875	-	1020	-
Viscosity (Ns/m <sup>2</sup> )	298	.598	-	.75	-	-	-
	350	.326	-	.435	-	.697	-
	400	.207	-	.305	-	.476	-
	450	.134	-	.278	-	.335	-
	500	.095	-	.158	-	.226	-
Surface Tension (N/m)	298	.028	-	.0214	-	-	-
	350	.022	-	.0276	-	.0304	-
	400	.162	-	.0232	-	.0259	-
	450	.104	-	.0177	-	.0205	-
	500	.0047	-	.0155	-	.0142	-

## **USES**

Chlorobenzene is consumed annually, in high tonnage, in the manufacture of DDT insecticide, phenol, and dyestuff intermediates. It is estimated that 60% of the Chlorobenzene produced is consumed in the manufacture of phenol, 20-25% in the production of DDT and the related insecticides, and the remainder in the making of a range of dye intermediates, including aniline. It also has extensive applications as a solvent. Since the 1940s, large quantities of monochlorobenzene have been used in the production of DDT. However since DDT causes serious ecological problems, its use has been severely restricted. The use of Chlorobenzene in the production of Phenol has declined drastically since the Cumene process now produces most Phenol. Future growth for Chlorobenzene will depend upon the growth of dye intermediates and solvent use.