FARADAY'S ENCYCLOPEDIA

OF

HYDROCARBON COMPOUNDS

VOLUME 2

C_6 - C_7

FARADAY'S
ENCYCLOPEDIA
OF
HYDROCARBON COMPOUNDS

Compiled by
Dr. JOSEPH ESCOTT FARADAY

C_6 CLASS

Compounds with SIX Carbon Atoms

HC:C.C:C.C:CH

C_6H_2

F 900

HEXATRIYNE-(1,3,5)
1,3,5-HEXATRIYNE
HEXA-1,3,5-TRIYNE
TRIACETYLENE

PREPARED : SHEET 1

P1 by interaction of 1,6-dihydroxy-2,4-hexadiyne with thionyl-chloride, treatment of the 1,6-dichloro-2,4-hexadiyne formed with 50% sodium-hydroxide in ammonia containing silver-nitrate and decomposition of the silver-triacetylene with hydrogen-sulphide ; and by cracking methane in the electric-arc, with other products (*Chem. Ber.* 1950, **83**, 213 ; *CA* 1950, **44**, 9911/*g*, 9912/*f* ; *BA* 1951 *AII* 671) (*A*, *B*) ;

P2 from 1,6-dichloro-hexadiyne-(2,4) with sodamide and ammonium-chloride (*JCS* 1952, 2010 ; *BA* 1953, *AII* 304) (*B*) ;

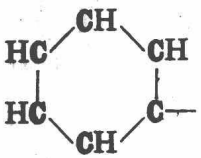
PROPERTIES :

CM1 Mp -20° (*item P*1) ;

CB1 Bp -20° at 11 mm. (*item P*1) ;
CB2 Bp -10° at 19.4 mm. (*item P*1) ;

CP1 Detonates in air at room temperature (*item P*2) ;

CI1 Octabromide additive Mp 157° (*item P*2) ;



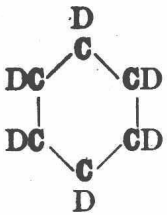
C_6H_5

F - - -

PHENYL

PREPARED : SHEET 1

1 by heating lead-tetraphenyl at 215-220° at 0.01 mm (JACS 1933,55,3998) (B) ;
2 by the action of sodium vapour on bromo-benzene (Z.physikal.Chem.1934,B,25,151 ; BCA 1934 A 641) (*B*) ;
3 presence in the Fittig reaction confirmed (JACS 1938, 60,1999) (B) ;
4 by thermal decomposition of acetophenone with methyl radicals (JCS 1939,589) (*B*) ;
5 by heating tin-tetraphenyl (J.Gen Chem. USSR 1932,2, 345 ; CA 1933,27,275) (*A*) ;
6 by decomposition of phenyl derivatives of mercury, lead and tin (J.Gen Chem.USSR 1935,5,361 ; CA 1935, 29,6281) (*A*) ;
7 preparation (JCS 1935,380) (C) ;
8 preparation (Trans.Faraday Soc.1938,34,413 ; C.1938,I, 4435) (C) ;
9 by photolysis of acetophenone and benzophenone (JCS 1939,589) (A) ;
10 by decomposition of phenyl-diazonium-chloride in acetone (JCS 1939,864) (A) ;
11 by treating iodo-benzene with copper bronze in a sealed tube in presence of excess ethyl-benzoate (Nature 1941, 147,675 ; CA 1941,35,5481) (A) ;



C_6D_6

F 000

HEXADEUTERO-BENZENE
BENZENE-d_6

PREPARED : SHEET 1

P1 from benzene and deuterium-oxide in presence of nickel on kieselguhr at 200° in 99% purity (*JACS* 1935, **67**, 960) (*B*) ;
P2 from dideutero-acetylene over a tellurium catalyst (*JCS* 1935, 851) (*B*) ;
P3 by distilling dry $C_6(COO)_6Ca_3$ with $Ca(OD)_2$, from Ca and D_2O (*Helv.* 1935, **18**, 1464) (*B*) ;
P4 from benzene and deuterium-chloride in presence of aluminium-chloride in ≥8% purity (*Z. physikal. Chem.* **1936, 176, 65** ; *BCA* 1936 *A* 714) (*B*) ;
P5 from benzene and deuterium-chloride in presence of aluminium-chloride (*Nature*-1935, **135, 956** ; *CA* **1935, 29,** 5745) (*A*) ;
P6 from benzene and D_2SO_4 (*JCS* 1946, 915) (*A*) ;
P7 preparation (*JACS* 1938, 60, 1260) (*A*) ;
P8 by deuteration of pure thiophen-free benzene with successive portions of heavy sulphuric-acid (*JCS* **1946, 243** ; *CA* 1946, **40,** 4356/7) (*A*) ;
P9 preparation of 99.3% purity (*JCS* **1953, 2650** ; *C.* 1954, 3665) (*C*) ;
P10 from benzene by method of Ingold (*J. Phys. Chem.* **1954, 58,** 424 ; *C.* 1955, 1244) (*C*) ;
P11 from benzene and deutero-sulphuric-acid at room temperature by agitating under nitrogen for 10 days (*JACS* **1954, 76,** 2197 ; *C.* 1955, 9773 ; *CA* **1955, 49,** 5335/c) (*A, C*) ;

HEXADEUTRO-BENZENE
BENZENE-d_6

C_6D_6
F 000

PROPERTIES :

CM1 Mp 6.8° (*Helv.* 1935, **18,** 1464) (*A*) ;
CM2 Mp 6.8° (*JCS* 1936, 915) (*A*) ;
CM3 Mp 6.5° (*JCS* 1938, **60,** 1260) (*A*) ;
CM4 Mp -1.0° (*JCS* 1935, 851) (*B*) ;
CM5 Mp 5.5° (*JCS* 1939, 1960 ; *BCA* 1940 *AII* 40) (*B*) ;

CBE Bp 79.3° at 760 mm (Egloff) ;
CB1 Bp 78.5° (*Helv.* 1935, **18,** 1464) (*A*) ;
CB2 Bp 79.3° (*JCS* 1936, 915) (*A*) ;
CB3 Bp 79.4° (*Helv.* 1935, **18,** 1464) (*C*) ;
CB4 Bp 82.5° (*JCS* 1935, 851) (*C*) ;
CB5 Bp 80.0° at 748.8 mm. (*item P*10) ;

CD1 Density (25/4) 0.9429 (*JCS* 1936, 915) (*A*) ;
CD2 Density (20/4) 0.9483 (*Z. physikal. Chem.* 1936, *A* **176,** 65 ; *CA* 1936, **30,** 5091) (*A*) ;
CD3 Density (17) 0.954 (*JCS* 1935, 851) (*C*) ;
CD4 Density (25/25) 0.9404 (*JACS* 1938, **60,** 1260) (*A*) ;
CD5 Density (25/4) 0.9417 (*JACS* 1935, **57,** 960) (*B*) ;
CD6 Density (25/25) 0.9456 (*item P*9) ;
CD7 Density (25) 0.8733 (*item P*10) ;
CD8 Density (20) 0.9488 (*item P*11) ;
CD9 Density (20) 0.9494 (*item P*11) ;
CD10 Density (40) 0.9257 (*item P*11) ;
CD11 Density (40) 0.9263 (*item P*11) ;
CD12 Density (60) 0.9022 (*item P*11) ;
CD13 Density (60) 0.9028 (*item P*11) ;

CN1 Refractive Index (20/D) 1.4997 (*Helv.* 1935, **18,** 1464) (*C*) ;
CN2 Refractive Index (22/D) 1.49779 (*JCS* 1936, 915) (*A*) ;
CN3 Refractive Index (25/D) 1.4976 (*item P*10) ;
CN4 Refractive Index (20/D) 1.4991 (*item P*11) ;
CN5 Refractive Index (30/D) 1.49279 (*item P*11) ;
CN6 Refractive Index (40/D) 1.48646 (*item P*11) ;

HEXADEUTERO-BENZENE

C_6D_6

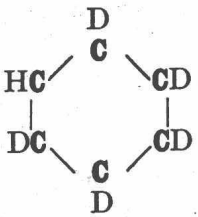
F 000

PROPERTIES :

CP1 Separation from benzene by thermal diffusion in the liquid (*Naturwiss.* 1943, **31**, 348 ; *BA* 1945 *AII* 146) (*B*) ;

CP2 Physical constants (*Egloff* **III**, 37) (*E*) ;

CI1 Mononitro-derivative (*item P9*) ;
Bp 64-65° at 5 mm. ;
Bp 215-217° at 711 mm. ;
Density (25/25) 1.2533 ;
Refractive Index (20/D) 1.5504 ;



C_6HD_5

F 000

PENTADEUTERO-BENZENE
BENZENE-d_5

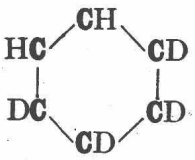
PREPARED : SHEET 1

P1 from 2,3,4,6-tetrabromo-iodo-benzene (*Kgl. Danske Videnskab. Selskab., Math-fys. Medd.* 1937, **15**, *No.* 13. 22 *pp.* ; *CA* 1938, **32**, 2516) (*A*) ;

P2 by decomposition with concentrated hydrochloric-acid of the Grignard compound from bromo-pentadeutero-benzene (*JCS* 1946, 243 ; *CA* 1946, **40**, 4356/6) (*A*) ;

PROPERTIES :

CB1 Bp 79.60° (*item P1*) ;



$C_6H_2D_4$

F 000

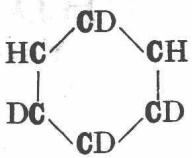
1,2,3,4-TETRADEUTERO-BENZENE

PREPARED : SHEET 1

1 from 2,3,6-tribromo-iodo-benzene (Kgl.Danske Videnskab.Selskab., Math-fys.Medd.1937,15,No.13,22p. ; CA 1938,32,2516) (A) ;

PROPERTIES :

Bp 79.60° ;



$C_6H_2D_4$

F 000

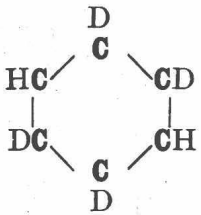
1,2,3,5-TETRADEUTERO-BENZENE

PREPARED : SHEET 1

1 from 2,4,6-tridromo-iodo-benzene (Klg.Danske Videnskab.Selskab., Math-fys.Medd.1937,15,No.13, 22p. ; CA 1938,32,2516) (A) ;

PROPERTIES :

Bp 79.65° ;



$C_6H_2D_4$

1,2,4,5-TETRADEUTERO-BENZENE

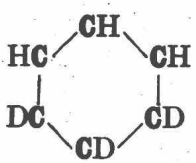
PREPARED : SHEET 1

P1 from 2,4,5-tribromo-iodo-benzene (*Kgl. Danske Videnskab. Selskab., Math-fys. Medd.* 1937, **15,** *No.* 13, 22 *pp.* ; *CA* 1938, **32,** 2516) (*A*) ;

P2 by decomposition of the Grignard compound of 1,4-dibromo-tetradeutero-benzene with light water (*JCS* 1946, 241 ; *CA* 1946, **40,** 4356/6) (*A*) ;

PROPERTIES :

CD1 Density (25/25) 0.92274 (*item P2*) ;



$C_6H_3D_3$

M 000

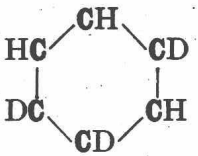
1,2,3-TRIDEUTERO-BENZENE

PREPARED : SHEET 1

1 from 2,6-dibromo-iodo-benzene (Kgl.Danske Videnskab. selskab., Math-fys.Medd 1937,15,No.13, 22p ; CA 1938, 32,2516) (A) ;

PROPERTIES :

Bp 79.80° ;



$C_6H_3D_3$

F 000

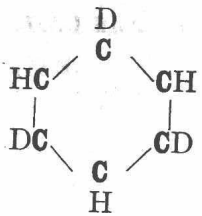
1,2,4-TRIDEUTERO-BENZENE

PREPARED : SHEET 1

1 from 2,5-dibromo-iodo-benzene (Klg.Danske Videnskab.Selskab., Math-fys.Medd. 1937,15,No.13, 22p ; CA 1938,32,2516) (A) ;

PROPERTIES :

Bp 79.85° ;



$C_6H_3D_3$

F 000

1,3,5-TRIDEUTERO-BENZENE

PREPARED : SHEET 1

P1 by decarboxylation of trimesic-acid (?) with $Ca(OD)_2$ (*Nature* 1936, **137,** 70 ; *BCA* 1936 *A* 195) (*B*) ;

P2 from 1,3,5-tribromo-benzene (*Kgl. Danske Videnskab. Selskab., Math-fys. Medd.* 1937, **15,** *No.* 13, 22 *pp.* ; *CA* 1938, **32,** 2516) (*A*) ;

P3 by deamination of 2,4,6-trideutero-aniline by diazotisation and treatment with sodium-stannite (*JCS* 1946, 240 ; *CA* 1946, **40,** 4356/6) (*A*) ;

PROPERTIES :

CM1 Mp 6.1° (*item P*1) ;

CB1 Bp 79.55° (*item P*2) ;

CD1 Density (25/25) 0.91100, 0.91113, 0.91116 (*item P*3) ;

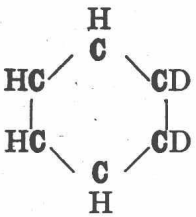
$C_6H_3D_3$

F 000

TRIDEUTERO-BENZENE of unspecified structure
BENZENE-d_3

PREPARED : SHEET 1

1 see Nature 1936,137,70 ; C.1936,I,2527 (C) ;



$C_6H_4D_2$

F 000

1,2-DIDEUTERO-BENZENE

PREPARED : SHEET 1

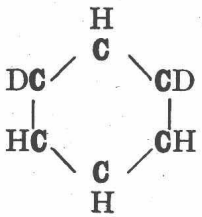
P1 from 1,2-dibromo-benzene (*Kgl. Danske Videnskab. Selskab., Math-fys. Medd.* 1937, **15,** *No.* 13, 22 *pp.*; *CA* 1938, **32,** 2516) (*A*) ;

P2 by use of the Grignard compound from 1,2-dibromo-benzene (*Monats.* 1936, **67,** 213 ; *Monats.* 1937, **68,** 374) (*O*) ;

P3 product of item P2 was seriously impure (*JCS* 1946, 235 ; *CA* 1946, **40,** 4356/1) (*A*) ;

PROPERTIES :

CB1 Bp 79.95° (*item P1*) ;



$C_6H_4D_2$

F 000

1,3-DIDEUTERO-BENZENE

PREPARED : SHEET 1

P1 from 1,3-dibromo-benzene (*Kgl. Danske Videnskab. Selskab., Math-fys. Medd.* 1937, **15,** *No.* 13, 22 *pp.*; *CA* 1938, **32,** 2516) (*A*) ;

P2 by use of the Grignard compound from 1,3-dibromo-benzene (*Monats.* 1936, **67,** 213 ; *Monats.* **68,** 374) (*O*) ;

P3 product of item P2 was seriously impure (*JCS* 1946, 235 ; *CA* 1946, **40,** 4356/1) (*A*) ;

PROPERTIES :

CB1 Bp 79.75° (*item P*1) ;

