20.58%. Two isomers are described in the literature: 1,3-Dinitrosobenzene, yel crysts(from alc+eth), mp 146.5°; readily sol in alc, benz or hot glac AcOH; mod sol in ligroin; diffc sol in eth; insol in w. The melted mass and the solns are colored grn(Ref 1)

1,4-Dinitrosobenzene, dk-yel, mp- at  $184^{\circ}$  begins to turn brn and at  $245^{\circ}$ , compd is completely darkened; dec at temp of steam bath; diffc sol in most org solvs(Ref 2). The prepn of the dinitroso compds is given in the Refs *Refs*: 1)Beil 5, 232 2)Beil 5, [171]

Hexanitrosobenzene, ON.C-C(NO)=C.NO; mw

ON.C-C(NO)=C.NO 252.14, N 33.35%; crysts, mp 195°; was claimed to be obtd by Turek(Ref 2) when sym-trinitrotriazidobenzene(qv) was heated above  $131^{\circ}$  in xylene. According to Blatt(Ref 3), this compd has an Impact Sensitiveness, FI, 26% PA; a Lead Block Expansion value 178% PA, and, although not a primary expl, it is equal to Tetryl as a booster. This compd is not listed in CA indices *Re/s*: 1)Beil- not found 2)O.Turek, Chim&Ind (Paris) **26**, 785(129T)(footnote)(1931) & CA **26**, 848(1932) 3)Blatt, OSRD **2014**(1944)

Mononitronitrosobenzene, O<sub>2</sub>N.C<sub>5</sub>H<sub>4</sub>.NO; mw 152.11, N 18.42%. Three isomers are described in the literature: 2-Nitro-1-nitrosobenzene, yel -wh crysts(from et acet or acet), mp 126-126.5°, turns grn at ca 120°; readily sol in hot chlf, hot benz or hot acet; mod sol in hot alc or hot ligroin; diffe sol in eth and nearly insol in petr eth or w. The solns are colored intensively grn(Ref 1); 3-Nitro-1-nitrosobenzene, col ndls, mp 89.5-91° to a grn liq; readily sol in hot alc, chlf, acet or glac AcOH; diffc sol in eth; almost insol in petr eth(Ref 2); 4-Nitro-1-nitrosobenzene, lt yel ndls (from alc), mp 118-9-119° to a grn liq; readily sol with a grn color in benz, chlf, glac AcOH, acet or hot alc; mod sol in ligroin; diffe sol in eth; nearly insol in w(Ref 3). The mononitronitrosobenzenes are volat at the temp of a steam bath. Their prepn is given in the Refs Refs: 1)Beil 5,256 2)Beil 5,257 & [192] 3)Beil

**5,**257 & [192-3]

2,4-Dinitro-l-nitrosobenzene,  $(O_2N)_2C_6H_3$ .NO; mw 197.11, N 21.32%; dk-yel ndls(from glac AcOH), mp 133° to a dk-grn liq; sol in warm alc, glac AcOH or benz with a grn-colored soln; dec in warm NaOH soln. Can be prepd by treating  $\beta$ -[2,4-dinitrophenyl] - hydroxylamine with cold chromic acetate(Refs 1 & 3)

Friederich(Ref 2) patented the use of the Basic Pb salt of dinitronitrosobenzene as a component of primary compns

Refs: 1)Beil 5, [202] 2)W.Friederich,BritP 192830(1921) & JSCI 42,332A(1923) 3)W.Borsche, Ber 56,1498(1923)

2,4,6•Trinitros lenitros obenzene,  $(O_2N)_3C_6H_2$ .NO; mw 242.11, N 23.14%; grn-yel lfts(from glac Ac-OH), mp 198°; dec on contact with concd HNO<sub>3</sub>. Can be prepd by oxidn of 2,4,6-trinitrophenyl hydroxylamine with Cr trioxide in AcOH soln (Refs 1 & 2). Its expl props were not investigated *Refs*: 1)Beil 5,276 2)R.Nietzki & R.Dietschy, Ber 34,59(1901)

Dinitrodinitrosobenzene, (O<sub>2</sub>N)<sub>2</sub>C<sub>6</sub>H<sub>2</sub>(NO)<sub>2</sub>; mw 226.11, N 24.78%. The 4,6-Dinitro-1-2-dinitrosobenzene is the only isomer described in the literature: crysts(from alc), mp 172°, dec by exposure to light. This compd appears to have been first prepd by Rathsburg(Ref 3) and later by Korczyński & Namyslowski(Ref 4) by heating picryl chloride in alc at 100° with aq NaN. Rathsburg(Ref 3) called this compd 1, 3-dinitro-4,-5-dinitrosobenzene and prepd its K, Na and Pb salts which were proposed for use in detonators, Mixts suitable as a top(primary) chge in detonators consisted of the K salt of dinitrodinitro sobenzene and the diffe sol salts of hydrazoic acid, tetrazole derivs, etc(Ref 2). Boyer & Schoen(Ref 6) studied the reduction and other reactions of this compd which they called 1,5-dinitro-2, 3-dinitrosobenzene. Blatt(Ref 5) lists this compd as 1, 3-dinitro-4, 5-dinitrosobenzene Refs: 1)Beil- not found 2)H.Rathsburg.BritP 177744(1921); CA 16,3399(1922) & JSCI 41,441A (1922) 3)H.Rathsburg,BritP 190844(1921); CA 17,2960(1923) & JSCI 42,332A(1923) 4)A. Korczyński & St.Namyslowski, BullFr 35, 1186 -94(1924) & CA 19,644(1925) 5)Blatt,OSRD 2014(1944) 6) J.H.Boyer & W.Schoen, JACS 78. 423-5(1956) & CA 50,13017(1956) Note: Compare with info on Dinitrobenzofuroxan under Benzofuroxan and Derivatives

## Nitro-Derivatives of Benzene

**Mononitrobenzene(MNB)** or **Oil of Mirbane**(called Nitrobenzol or Mirbanöl in Ger),  $C_{6}H_{5}$ .NO<sub>2</sub>; mw 123.11, N 11.38%; lt yel oil, mp 5.6-5.7°, bp 210° -9°, vap press 0.262 mm Hg at 20°(Ref 10), d 1.205 at 18°;  $Q_{C}^{p}$  740kcal/mol(Ref 3) or 6033 cal/g(Ref 5); readily sol in alc, eth or benz; sl sol in w(0.19% at 20°). MNB is toxic and its MAC in air is 1ppm or 5mg per m<sup>3</sup> of air(Ref 11). It represents a moderate expln hazard when exposed to heat or flame(Ref 11). Its thermal decompn was studied by Condit & Haynor(Ref 8)