

sen has produced either better data of his own or at least a complete alternative explanation (reactions and equilibrium constants), which can be compared with experimental data.

I might add, that a limited set of core-links complexes, (especially a set of only two species) has often proved a useful approximation but cases with a considerable number of core-links complexes do not seem to be as frequent as I may once have thought on the basis of our earliest data. It is an irony of fate that B. S. Jensen now is trying to revive these concepts too.

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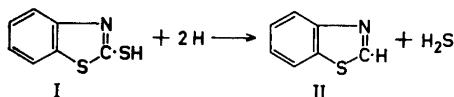
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Reduction of 2-Mercaptobenzothiazole to Benzothiazole

BENGT WEIBULL

Research Laboratory, Mo och Domsjö AB,
Örnköldsvik, Sweden

2-Mercaptobenzothiazole (I) is widely used as a component in corrosion inhibitors for automotive anti-freezes¹. Accordingly, its stability in the presence of iron is of great importance. In neutral or alkaline solution it was found to be quite stable, but in acid solution it was reduced by iron powder to benzothiazole (II):



This simple reduction seems not to have been observed for the unsubstituted compound. However, the corresponding reaction was reported for 2-mercapto-6-methylbenzothiazole, while 2-mercapto-4-nitro-6-methyl- and 2-mercapto-4-nitro-6-methoxybenzothiazole did not yield identifiable products², so the reaction is not of general applicability. Reductive degradation of 2-mercaptobenzothiazole under more drastic conditions has been reported. Treatment with Raney nickel³ or Raney cobalt⁴ thus yielded benzothiazole and further degraded compounds. Hydrogenation over a cobalt sulphide catalyst at high pressure and elevated temperature gave equal parts of *o*-aminothiophenol and benzothiazole⁵.

Experimental. The directions of Blomquist and Diuguid² were partly followed. I (10 g) was mixed with iron powder (Ferrum reductum, 10 g), glacial acetic acid (90 ml), ethanol (25 ml), and water (10 ml). The mixture was heated at 100° for 36 h, after which time no more hydrogen sulphide was evolved. The mixture was made strongly alkaline and distilled with steam until the distillate was clear. It was extracted with ether, the ether solution dried over potassium carbonate, the ether evaporated, and the residue fractionated in vacuum. The main fraction (4.1 g; 51 %) had b.p. 93.0–93.5°/8 mm Hg. Titration with perchloric acid in glacial acetic acid gave equiv. wt. 135.2, calc. for II 135.18. Picrate, m.p. 169° (depends upon rate of heating), lit.³ 169.5–170°. The identity of the compound was further confirmed by its infrared spectrum, which was found to coincide with that given for benzothiazole by Randall *et al.*⁶

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