

*Gmelin handbook of inorganic chemistry*, 8th edit., *Br — Bromine, Supplement Volume A: The Element*, Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1985, xxii + 523 pages, DM 1788, ISBN 3-540-93511-8.

It is remarkable that this is the first Supplement to the Main Volume describing bromine (System No. 7) when it is considered that the Main Volume was published in 1931. However, the wait has been worthwhile! This volume not only describes the preparation and properties of the element, but also considers its positive and negative ions (including the polybromides). In detail, this volume describes the source of raw materials, manufacture, the preparation of high purity bromine from commercial bromine, the laboratory preparation of bromine, storage, transport, economic aspects, uses, health and safety (but see below), the preparation of bromine isotopes and their physical properties, the electronic structure and physical properties of the bromine atom and atomic ions, the molecular properties and relaxation properties of dibromine, the crystal and liquid structure of bromine, the mechanical, thermal, electrical and optical properties of bromine, the electrochemical behaviour (both aqueous and non-aqueous) of bromine, isotope exchange reactions, reactions involving bromine dissociation and recombination in the gas phase, reactions of bromine with electrons and positronium, reactions of bromine with non-metals, reactions of bromine with metals, reactions of bromine with inorganic compounds {including water, hydrogen peroxide, ammonia, nitrogen oxides, HX (X = F, Cl, I or At), interhalogens, halogen oxides, and (briefly) other compounds of both metals and non-metals}, the bromine-water system, bromine in non-aqueous solvents,  $\text{Br}_3$ ,  $(\text{Br}_2)_2$ ,  $\text{Br}^+$ ,  $[\text{Br}_2]^{n+}$  ( $n = 1$  or  $2$ ),  $[\text{Br}_n]^+$  ( $n = 3, 4, 5$  or  $6$ ),  $\text{Br}^-$ ,  $\text{Br}^{2-}$ ,  $[\text{Br}_2]^-$ , and  $[\text{Br}_n]^-$  ( $n = 3, 4, 5, 7, 8, 9$  or  $11$ ).

The authors (J. v. Jouanne, H. Keller-Rudek, P. Kuhn, H. List, P. Merlet, S. Ruprecht, H. Vanecek and J. Wagner) have completed a difficult task (the lower the System Number of an element, the harder is the problem of cross-referencing) in a precise and scholarly manner. The text is clearly presented, well-argued and comprehensive up to mid-1983. This volume is well up to the standards which we expect, de jure, from the Gmelin Institute, and should form a part of every chemistry library attached to academic and industrial institutions. My only significant criticism of this excellent volume is that only half-a-page is devoted to health and safety. We are informed that bromine rapidly attacks skin and other tissues producing irritation and necrosis, but are not told the emergency treatment recommended for such burns. Similarly, having been warned of the serious inflammation and oedema (frequently followed by pneumonia) which result from excessive exposure to high concentrations of bromine vapour, we are not advised as to the recommended action should such exposure occur.

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