

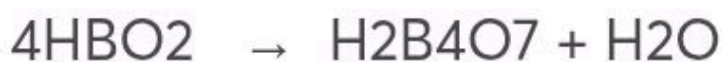
# Chemical Properties

## 1. Heating:

1. Heating boric acid at 1700C gives metaboric acid. The reaction is as:



2. While it gives tetraboric acid on heating at 3000C. The reaction is as:



3. But at 3300C, it gives boron trioxide on heating. The reaction is as:  $\text{H}_2\text{B}_4\text{O}_7 \rightarrow 2\text{B}_2\text{O}_3 + \text{H}_2\text{O}$

4. It easily got dissolved in sulphuric acid whose reaction is as follows:  $\text{B}(\text{OH})_3 + 6\text{H}_2\text{SO}_4 \rightarrow \text{B}(\text{HSO}_4)_4^- + 2\text{HSO}_4^- + 3\text{H}_3\text{O}^+$

5. It reacts with alcohols to give borate esters. The reaction is as given below:



6. It forms sodium metaborate and tetraborate when reacts with NaOH.

7. It does not get completely ionised in water or any other solvents.

# Physical Properties

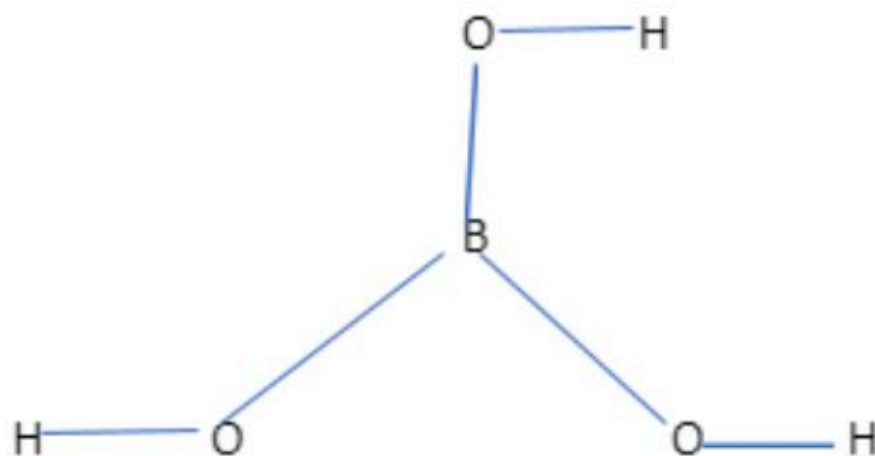
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Some of the basic physical properties of Boric Acid are as follows:

1. It has a molecular mass of 61.83 g/mol.
2. It is a colourless and odourless substance.
3. It is generally a white crystalline solid at room temperature i.e., at 25°C.
4. It is fairly soluble in water. The solubility of boric acid in water in room temperature is 57 grams per litre.
5. It is also slightly soluble in acetone and sparingly soluble in pyridine.
6. The boiling point of Boric Acid is 500°C (or 573°F).
7. The melting point of this compound is 170.9°C (or 339.6°F).
8. It has a density of 1.43 g/cm<sup>3</sup>.

## STRUCTURE OF BORIC ACID

The chemical structure of boric acid is generally known as  $H_3BO_3$ , sometimes which is also written as  $B(OH)_3$ . From this formula we can easily see that, the compound contains one boron atom, three hydrogen and three oxygen atoms in which three  $-OH$  groups i.e., hydroxyl groups are attached to one boron atom. The structure of the compound is as depicted below:



It has basically a two-dimensional structure, which lies on a plane. According to VSEPR theory, the molecular geometry of this compound is found to be trigonal planar.