

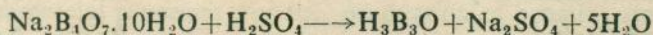
Boric Acid

Introduction

Boric acid is used in ceramic glazes, boro silicate glass and in making boro-alloys. It is also extensively used in pharmaceutical preparations. It can be manufactured on small scale.

Process of Manufacture

For manufacturing orthoboric acid borax is charged into an acidifier and dilute sulphuric acid is added slowly until the solution becomes strongly acidic. It is produced by acidifying a saturated solution of borax or orthoborate materials. The following reaction takes place :



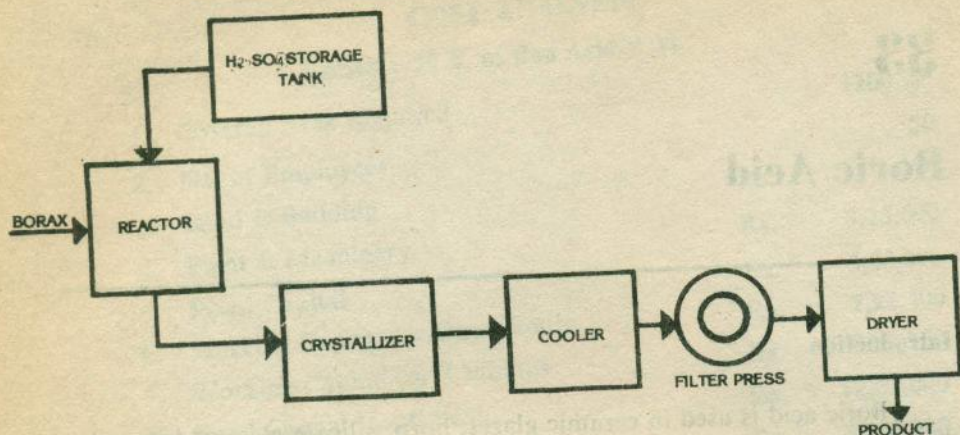
3 parts of borax in 12 parts of hot water requires 1 part of concentrated sulphuric acid in a lead lined vessel. The hot solution is vacuum crystallized and is cooled. First crop comes of boric acid and on further cooling sodium sulphate.

The crude boric acid is purified by recrystallization from hot water to give 1 P grade boric acid.

List of Plant and Machinery

1. Lead lined Reaction Vessel
2. Sulphuric acid storage tank
3. Crystallizer
4. Tray Dryer
5. Cooler
6. Wooden Filter Press
7. Ancillary Equipments

PROCESS FLOW-SHEET FOR THE MANUFACTURE OF ORTHO-BORIC ACID



COST ANALYSIS

BASIS : 30 M.T. Orthoboric Acid/P.M.

1. Covered Area Required		500 m ²
2. No. of Employees		21
3. Land & Building	Rs.	93,500
4. Plant & Machinery	Rs.	2,02,950
5. Fixed Capital	Rs.	2,96,450
6. Working Capital for One Month	Rs.	9,88,000
7. Working Capital for 3 Months	Rs.	29,64,000
8. Total Capital Investment	Rs.	32,60,450
9. Cost of Production Per Annum	Rs.	1,23,63,725
10. Receipt Per Annum	Rs.	1,33,48,749
11. Profit Per Annum	Rs.	9,85,024
12. Rate of Return		30.2%
13. Break Even Point		38% (Approx.)