

## **List of Table:**

Table (4.1) summary of material balance calculation by using Excel sheet.....	21
Table (5.1) Heat capacity constants for ideal gases.....	23
Table(5.2) Heat capacity constants for liquid. ....	23
Table (5.3) bubble point calculation of stream 15. ....	24
Table (5.4) ratio of component(i)in the feed to isobutylene feed.....	26
Table (5.5) summary of agent amount.....	33
Table (5.6) summary of energy balance calculation made by using Excel sheet.....	33
Table (6.1) feed stream composition. ....	36
Table (6.2) top stream composition.....	36
Table (6.3) bottom stream composition.....	36
Table (6.4) average relative volatility of composition. ....	37
Table (6.5) summary of design calculation. ....	46
Table (6.6) Summary of material balance around reactor. ....	47
Table (6.7) relation between conversion & temperature.....	48
Table (7.1) pumps cost.....	52
Table (7.2) Heat exchanger cost costs.....	52
Table (7.3) The modified cost.....	53
Table (7.4) direct costs.....	54
Table (7.5) in direct costs.....	54
Table (7.6) variable costs.....	55
Table (7.7) Estimation of general expenses costs.....	56