





**TABLE B.3**  
**Preliminary operating cost estimates**

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- A. Direct production cost
    - 1. Materials
      - a. Raw materials: estimate from price lists, government and trade group reports
      - b. Byproduct and scrap credit: estimate from price lists
    - 2. Utilities: from literature or similar operations
    - 3. Labor: from historical data, manning tables, literature, or similar operations
    - 4. Supervision: 10–25% of labor
    - 5. Fringe benefits and FICA: 30–45% of labor plus supervision
    - 6. Maintenance: 2–10% of investment per year
    - 7. Operating supplies: 0.5–1.0% of investment per year, or 6–10% of operating labor
    - 8. Laboratory: 10–20% of labor per year
    - 9. Waste disposal: from literature, similar operations, or separate estimate
    - 10. Royalties: 1–5% of sales
    - 11. Contingencies: 1–5% of sales
  - B. Indirect costs
    - 1. Depreciation: 10–20% of investment per year
    - 2. Real estate taxes: 1–2% of investment per year
    - 3. Insurance: 0.5–1.0% of investment per year
    - 4. Interest: 10–12% of investment per year
    - 5. General administrative overhead: 50–70% of labor, supervision, and maintenance, or 6–10% of sales
  - C. Distribution costs
    - 1. Packaging: estimate from container costs
    - 2. Shipping: from carriers or 1–3% of sales
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*Sources:* Jelen and Black (1983), Garrett (1989), Turton et al. (1998).