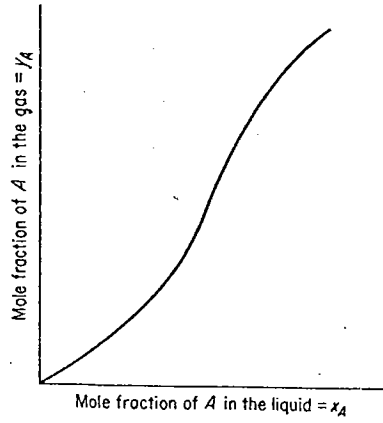


Air Pollution Control
Figures and tables for absorption



Equilibrium distribution of a solute between a gas and a liquid phase at constant temperature.

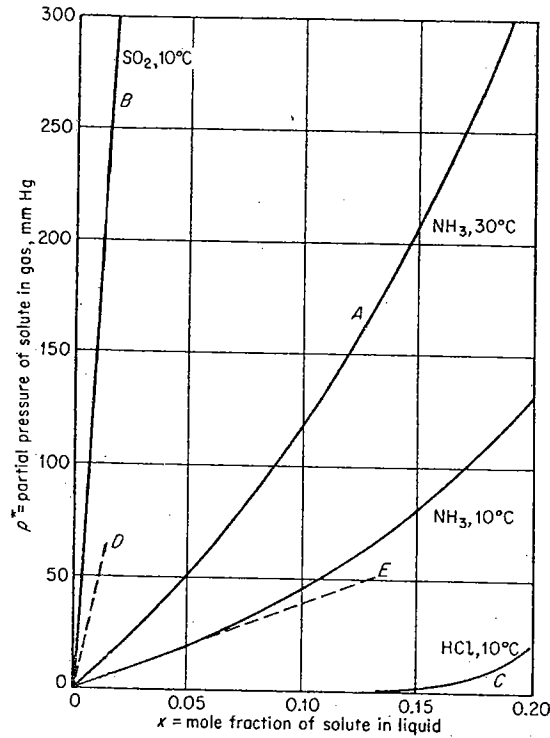


Figure 2

Solubilities of gases in water.

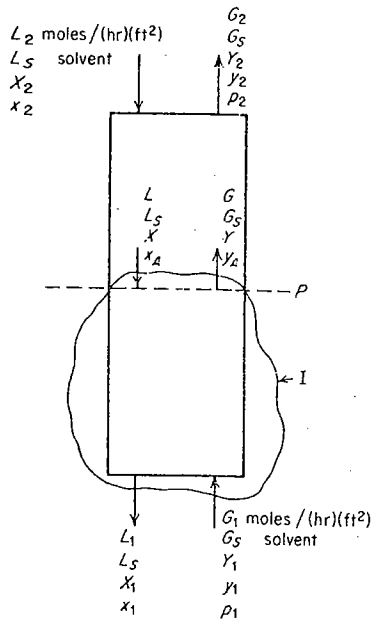


Figure 3

Flow quantities for an absorber or stripper.

Air Pollution Control
Figures and tables for absorption

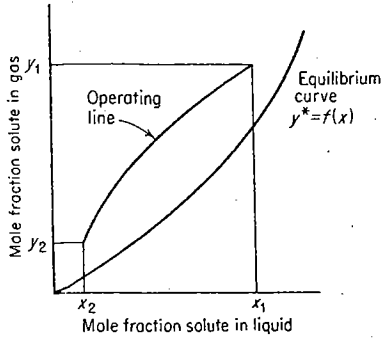


Figure 4

Operating line in mole fractions.

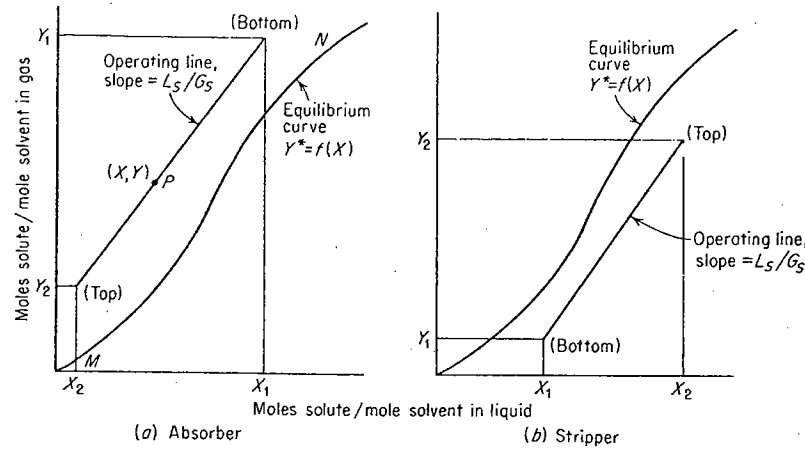
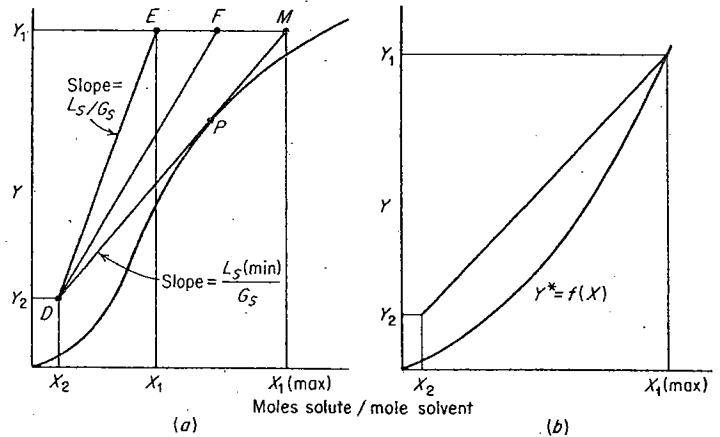
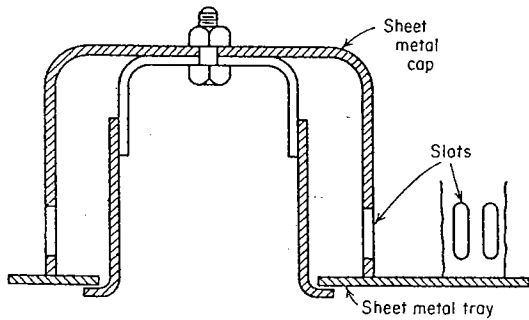
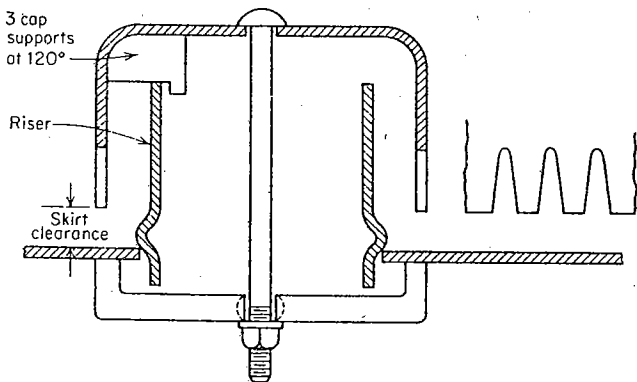


Figure 5

(a) Absorber (b) Stripper

Operating lines for absorber and stripper.

Figure 6



Minimum liquid-gas ratio, absorption.

Figure 9

Typical bubble-cap designs. (With permission of The Pressed Steel Company.)

Air Pollution Control
 Figures and tables for absorption

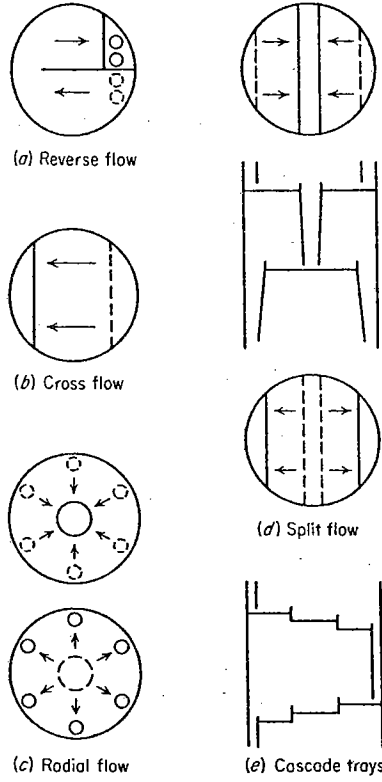


Figure 8

Tray arrangements. Arrows show direction of liquid flow.

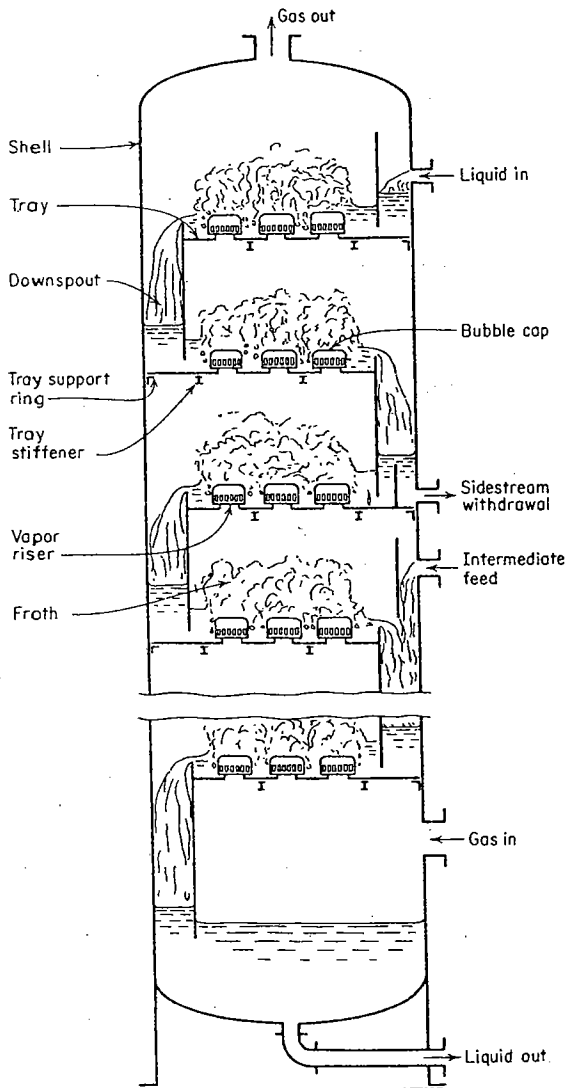
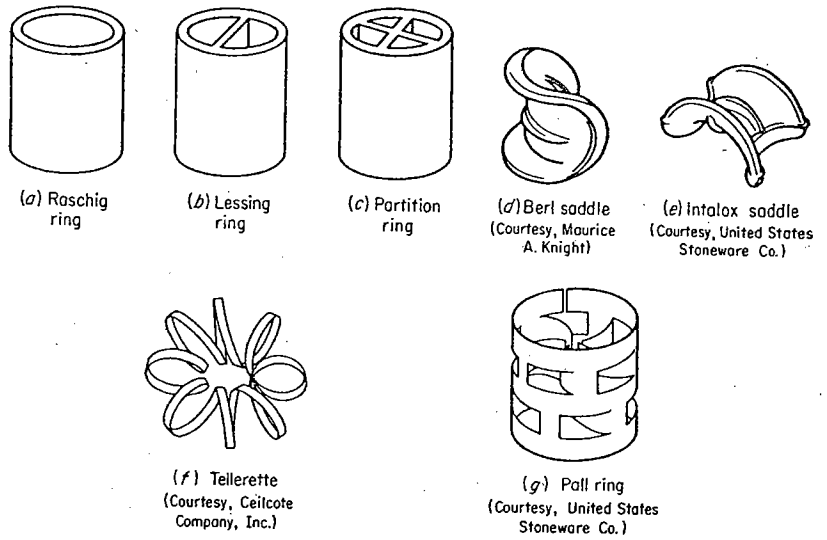


Figure 7

Schematic section through a bubble-cap tray tower.

Air Pollution Control
 Figures and tables for absorption



Random tower packings.

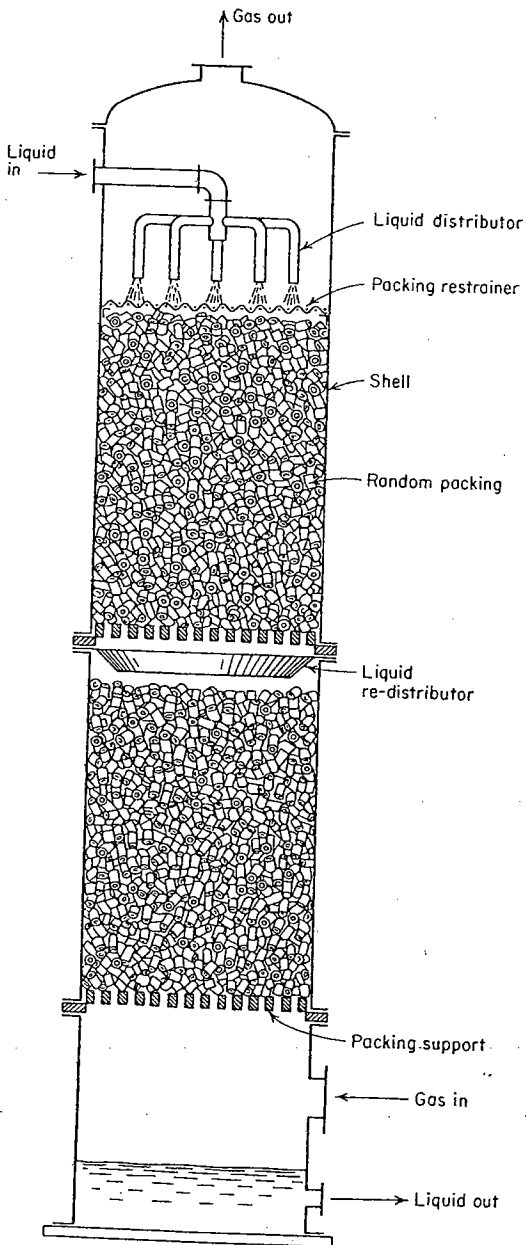


Figure 10

Packed tower.

Air Pollution Control
 Figures and tables for absorption

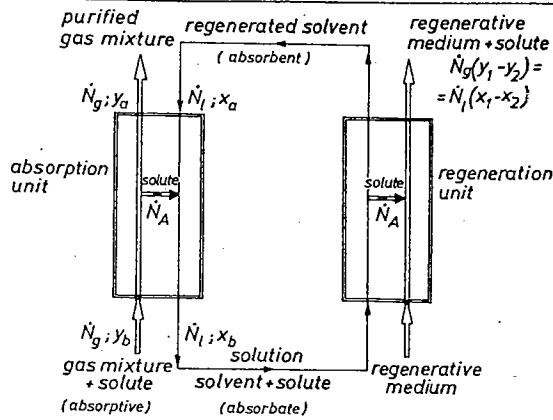


Figure 12

General layout of an absorption plant

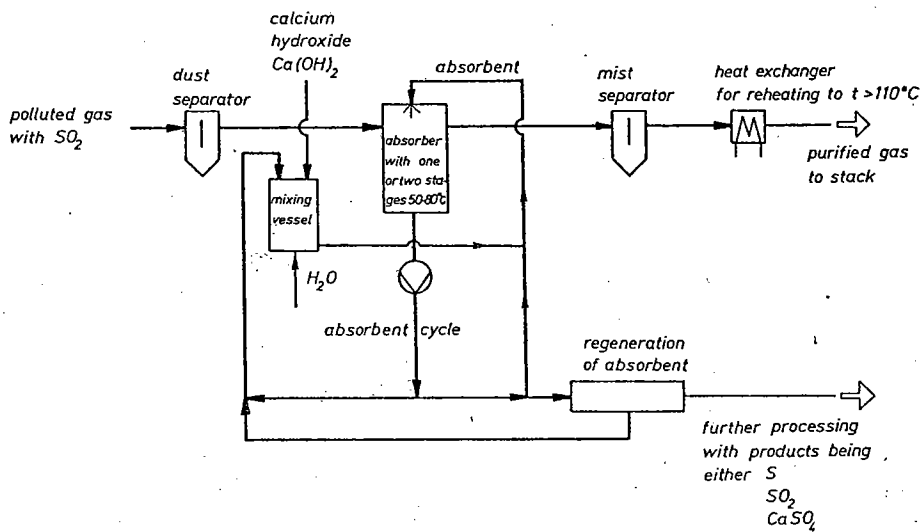


Figure 13

Process flow sheet for the absorption of sulfur dioxide (SO₂) from stack gases

Pollutant to be removed	Suitable absorbent
Hydrogen chloride	Water
Hydrogen fluoride	Water
Hydrogen bromide	Water
Sulphur dioxide	Sodium hydroxide, sodium sulphite, calcium hydroxide solution
Hydrogen sulphide	Sodium hydroxide
Organic acids	Sodium hydroxide
Phenols	Sodium hydroxide
Phosgene	Sodium hydroxide
Chlorine	Sodium hydroxide, sodium sulphite, sodium thiosulphite
Mercaptans	Sodium hydroxide solution
Ammonia	Sodium hypochlorite solution
Amines	Sulphuric acid, nitric acid
Formaldehyde	Ammonia solution

Table 1.

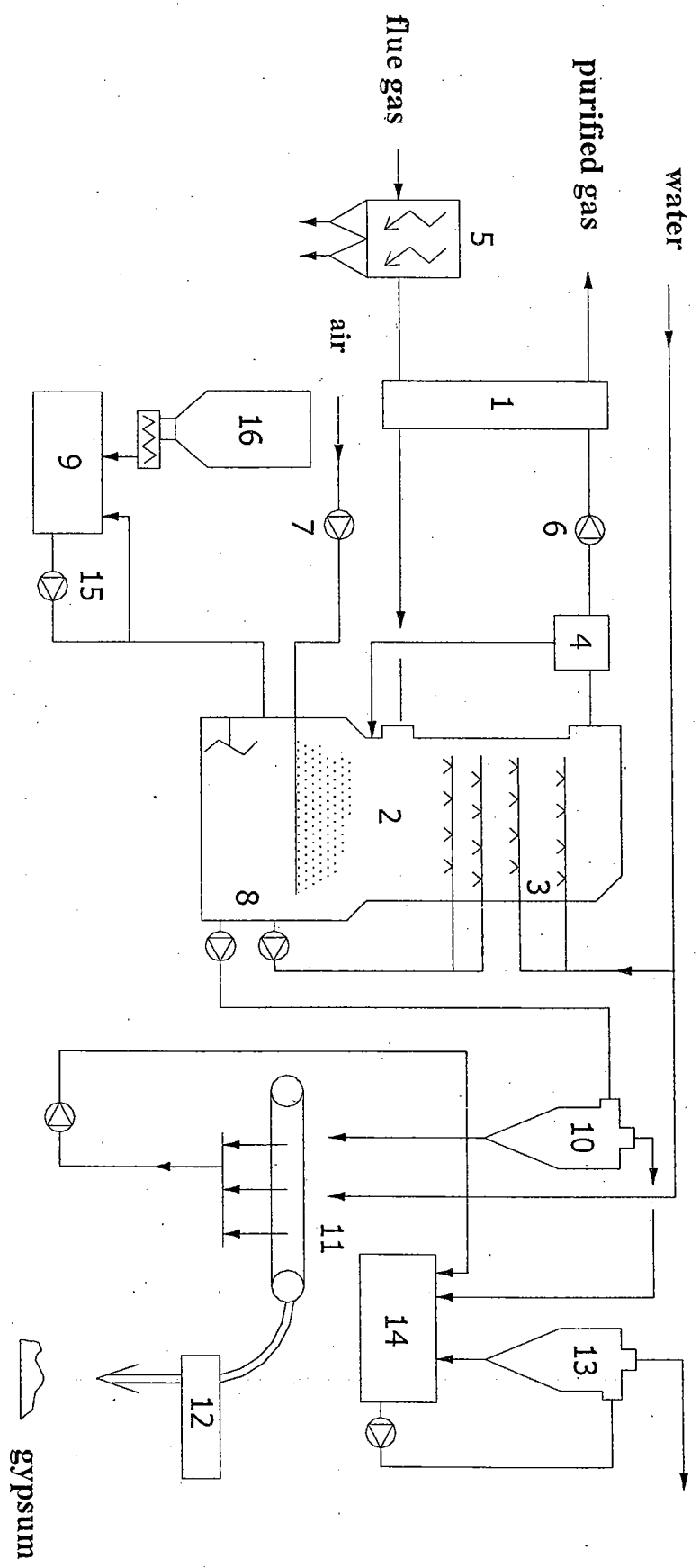


Figure 13.

Process flow sheet for the absorption of sulphur dioxide from stack gases

- 1: heat exchanger; 2: absorber; 3: spraying; 4: droplet separator; 5: electrostatic precipitator; 6: exhauster; 7: air fan;
- 8: absorbent recirculation pumps; 9: calcium hydroxide tank; 10: hydro-cyclone; 11: belt filter; 12: gypsum dryer;
- 13: water treatment; 14: recirculation tank; 15: pump; 16: limestone tank