Material Balance Calculations

(Incorporating calculations of ideal gas laws, unit operations and chemical reactions etc.)

THEORETICAL BACKGROUND

Ideal Gas Law :

$$PV = nRT$$

where, P = Total pressure of system
V = Volume
n = Number of moles
T = Absolute temperature
R = Universal gas constant

Values of universal gas constant (R).

In different units, the values of universal gas constant are as under :

Unit	Numerical value of R
$\dfrac{(\text{atm.}) (\text{lit.})}{\text{gm mole } °K}$	0.08205
$\dfrac{(\text{atm.}) \text{ m}^3}{\text{kg. mole } °K}$	0.08205
$\dfrac{(\text{atm.}) (\text{cc})}{\text{gm mole } °K}$	82.05
$\dfrac{(\text{Psi}) \text{ ft}^3}{\text{lb. mole } °R}$	10.73
$\dfrac{(\text{atm.}) \text{ ft}^3}{\text{lb. mole } °R}$	0.73
$\dfrac{(\text{mm Hg}) \text{ lit.}}{\text{gm mole } °K}$	62.359
$\dfrac{\text{kcal}}{\text{kg. mole } °K}$	1.987

Solved Examples In Chemical Engineering By Gk Roy

B Lingard

Solved Examples In Chemical Engineering By Gk Roy :

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development of the cyclone flow pattern and distribution of velocities within the cyclone body operational characteristics and areas of application in different phase separations and the operating and design variables affecting the performance of the hydrocyclone Categories of cyclone commercially available cyclone equipment and the specific industrial applications of the hydrocyclone are also surveyed The text will be of practical use to industrial engineers mechanical engineers plant operators miners and researchers   **Indian Science Abstracts** ,2007-11   **Indian Journal of Environmental Protection** ,1988   *The Subject Index to Periodicals* ,1920   **Chemical Age** ,1920   **Chemical Age International** ,1920   **Coal Abstracts** ,1992   **Subject Index to Periodicals** ,1925

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