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# Fundamentals of Thermodynamics

Claus Borgnakke
Richard E. Sonntag

WILEY

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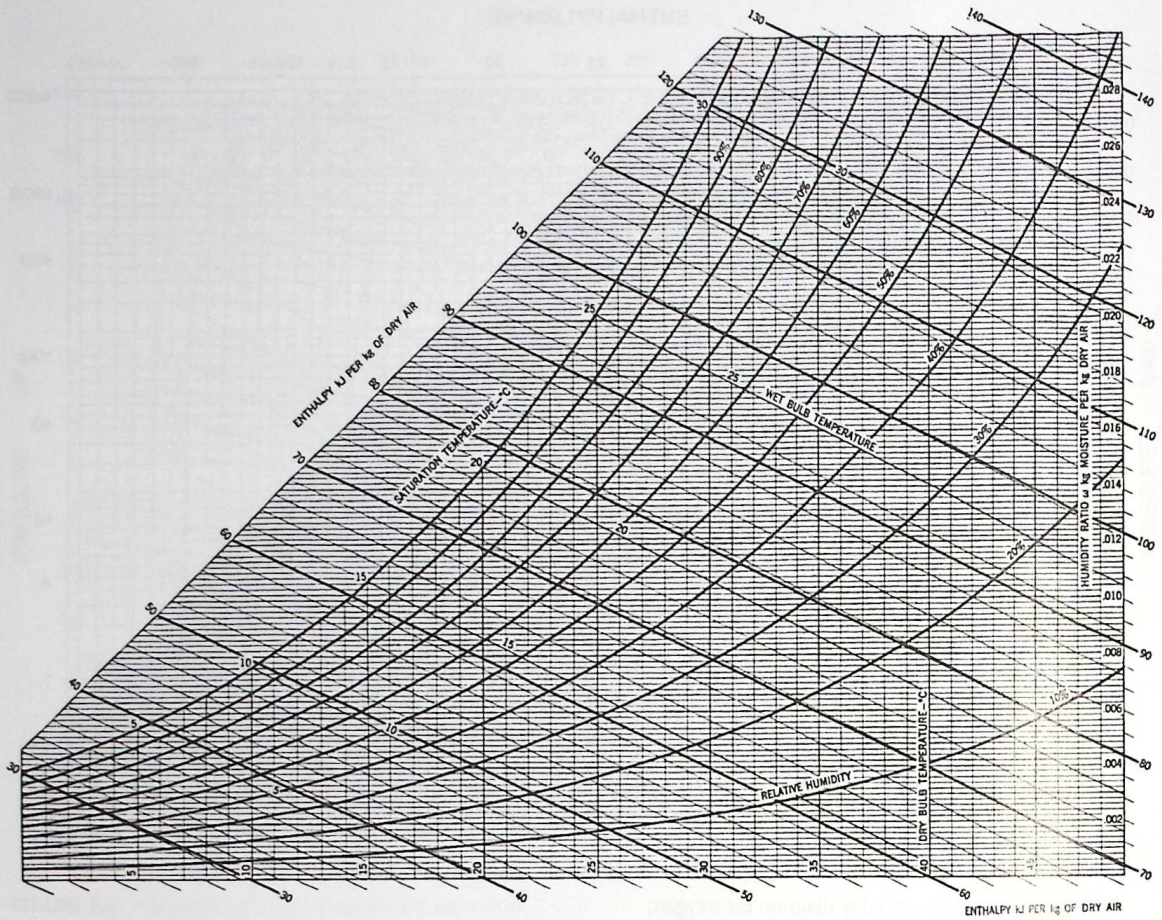
# SYMBOLS

| | |
|---|---|
| $a$ | acceleration |
| $A$ | area |
| $a, A$ | specific Helmholtz function and total Helmholtz function |
| $AF$ | air-fuel ratio |
| $B_S$ | adiabatic bulk modulus |
| $B_T$ | isothermal bulk modulus |
| $c$ | velocity of sound |
| c | mass fraction |
| $C_D$ | coefficient of discharge |
| $C_p$ | constant-pressure specific heat |
| $C_v$ | constant-volume specific heat |
| $C_{po}$ | zero-pressure constant-pressure specific heat |
| $C_{vo}$ | zero-pressure constant-volume specific heat |
| COP | coefficient of performance |
| CR | compression ratio |
| $e, E$ | specific energy and total energy |
| EMF | electromotive force, electrical potential, volt |
| ER | expansion ratio |
| $f$ | fugacity, pseudo pressure |
| F | Faradays constant |
| $F$ | force, also tension |
| $FA$ | fuel-air ratio |
| $g$ | acceleration due to gravity |
| $g, G$ | specific Gibbs function and total Gibbs function |
| $h, H$ | specific enthalpy and total enthalpy |
| HR, HP | enthalpy of reactants and enthalpy of products |
| HV | heating value |
| $i$ | electrical current |
| $i, I$ | specifc and total irreversibility |
| $k$ | conductivity |
| $k$ | specific heat ratio: $C_p/C_v$ |
| $K$ | equilibrium constant |
| ke, KE | specific and total kinetic energy |

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