

Velocity (continued):
return grilles, 728
unit heater, 595

Ventilation, 10, 278
animal shelters, 242-246
dairy stables, 243
garages, 240
living space, 223, 278
natural, 235
general rules, 241
passenger bus in summer, 1094
railway passenger car, 1091
rules, 241
ship, 1100
symbols for drawings, 17
systems, 677
walls and attics, 224
wind forces, 236

Ventilator, ventilators, 240
control, 241
roof, 240
unit, 604
control, 607, 917
window, 608

Vertical blow unit heater, 595

Vertical openings, 234
sealing of, 228
Vibration, machine, 959
Viscous filters, 783
impingement, 783
Visitation of air, 111
Volume
control, 725
furnace, 374, 381
specific, 10

W

Wall, walls
heat flow through, 190-193, 289
heat transfer coefficients, 89,
190-193
infiltration through, 228
time lag of solar radiation, 310

Warm air
gravity heating system, 463
combination carrying capacity, 469, 470
design procedure, 465, 469,
473
extended plenum, 473
furnace capacity, 413
installation practice, 463,
464, 466
standardized combinations,
468-470
mechanical heating systems,
475
air distribution, 457
automatic control, 415, 490,
895
ceiling panel system, 490

Warm air (continued)
combination of parts, 478
cooling methods, 1129
continuous circulation, 490
dampers, 477
design procedure, 472, 481
ducts, 477
fans, 410
filters, 410
furnace, 409
heavy duty, 411
selection, 473, 484
humidification, 415
large systems, 481
perimeter system, 491
pressure drop, 489
registers and grilles, 476
standard combinations, 466,
478
panel heating, 490
radiators, 337

Washer, washers, 803
air, 1, 799, 801
cooling, 807
dehumidification, 807
humidification, 805

Water
analysis, 982
atmospheric cooling equipment, 811, 813
characteristics, 982
classification, 982
coils, 832, 1121
content of radiators, 550
control temperature service,
1123
cooled
condenser, 872
cooling tower, 813
corrosion treatment, 997
demand, 1106, 1115-1118
faucets, 1106
fittings, loss, 1106, 1111
fixtures, 1106
fixture units, 1106
formed deposits, 981
heater
coal-fired, 1118
solar, 1123
heating, 1118
in building material, 207
load, 1106
make-up, 827, 990
maximum main temperature,
806
meters, 1111
mineralized, 982
properties of, 40, 982
services, 1105
storage capacity, 1115
supply piping, 1122
arrangement, 1122
temperature control, 1123

Water (continued)
thermodynamic properties of,
40
treating chemicals, 681, 1002
well temperatures, 808
Water vapor, 25, 32-39, 205
condensation in buildings, 205
saturation pressure, 25, 40
specific enthalpy, 4
specific volume, 10, 40
surface condensation, 217

Welding, 623

Wet-bulb temperature (see Temperature), 9, 26, 619
Wet cup, 212
Wet return, 8, 493

Wind, winds
forces, 228, 235
due to stack effect, 228
natural draft equipment, 421
selection of, velocity, 250, 251,
278

Window, windows
coefficients of transmission,
200
leakage, 229
solar radiation through, 297
ventilators, 607

Winter
air conditioning system, 635,
1129
comfort zone, 124
freezing equipment, 828
Wound rotor motor, 928
Wrought-iron pipe, 923
Wrought-steel pipe, 633

Y

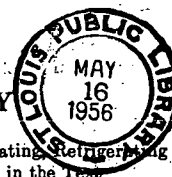
Year-round air conditioning system, 685, 1129
air flow in, 637, 1133
control methods, 687, 912
design procedure, 685, 731
equipment arrangement, 700
installation, 685, 1129
location of apparatus, 700, 1132
residential, 908
selection, 698, 1129

Z

Zone control, 687
Zone of evaporative regulation,
1115
Zoning, 552, 687, 908
control, 687, 908
hot water system, 552
reheat, 688
volume control, 687

CHAPTER 1 TERMINOLOGY

Glossary of Physical and Heating, Ventilating, Refrigerating and Air Conditioning Terms Used in the Text



Absolute Zero: The zero from which absolute temperature is reckoned. Approximately -273.15°C or -459.67°F . These values were established by the Tenth General Conference on Weights and Measures, 1954.

Absorbent: A sorbent which changes physically or chemically, or both, during the sorption process.

Absorption: The action of a material in extracting one or more substances present in an atmosphere or mixture of gases or liquids; accompanied by physical change, chemical change, or both, of the sorbent.

Acceleration: The time rate of change of velocity, i.e., the derivative of velocity with respect to time. In the cgs system the unit of acceleration is the centimeter per (second) (second); in the fps system the unit is the foot per (second) (second), $a = \frac{dv}{dt}$.

Acceleration Due to Gravity: The rate of gain in velocity of a freely falling body the value of which varies with latitude and elevation. The international gravity standard has the value of 980.665 cm per (sec) (sec) or 32.174 ft per (sec) (sec) which is the actual value of this acceleration at sea level and about 45 deg latitude.

Adiabatic: An adjective descriptive of a process such that no heat is added to, or taken from, a substance or system undergoing the process.

Absorbent: A sorbent which does not change physically or chemically during the sorption process.

Adsorption: The action, associated with surface adherence, of a material in extracting one or more substances present in an atmosphere or mixture of gases and liquids, unaccompanied by physical or chemical change. Commercial adsorbent materials have enormous internal surfaces.

Aerosol: An assemblage of small particles, solid or liquid, suspended in air. The diameters of the particles may vary from 100 microns down to 0.01 micron or less, e.g., dust, fog, smoke.

Air Cleaner: A device designed for the purpose of removing airborne impurities such as dusts, gases, vapors, fumes and smokes. (Air cleaners include air washers, air filters, electrostatic precipitators and charcoal filters.)

Air Conditioning: The simultaneous control of all, or at least the first three, of the following factors affecting both the physical and chemical conditions of the atmosphere within a structure: temperature, humidity, motion, distribution, pressure, dust, bacteria, odors, toxic gases, and ionization.

Air, Dry: In psychrometry, air unmixed with, or containing no, water vapor.

Air, Saturated: A mixture of dry air and saturated water vapor, all at the same dry-bulb temperature.

Air, Standard: Air with a density of 0.075 lb per cu ft and an absolute viscosity of 1.22×10^{-4} lb mass per (ft) (sec). This is substantially equivalent to dry air at 70 F and 29.92 in. (Hg) barometer.

Air Washer: An enclosure in which air is drawn or forced through a spray of water in order to cleanse, humidify, or dehumidify the air.

Anemometer: An instrument for measuring the velocity of a fluid.

Aspect Ratio: In air distribution outlets, the ratio of the length of the core of a grille, face or register to the width.

In rectangular ducts, the ratio of the width to the depth.

Atmospheric Pressure: The pressure of the atmosphere to be measured by means of the barometer. *Standard Atmospheric Pressure* or *Standard Atmosphere* is exactly 1,013,250 dynes per square centimeter by recent action of the Tenth General Conference on Weights and Measures (1954). It is approximately the pressure exerted by a column of mercury 76 cm high at standard gravitational acceleration, 980.665