

Warm air (continued)

air distribution, 475
automatic control, 496, 957
ceiling panel system, 497
cooling methods, 1291
continuous circulation, 496
dampers, 477
design procedure, 479, 493
ducts, 478
fans, 422
filters, 422
furnace, 421
heavy duty, 423
selection, 496
humidification, 427
large systems, 493
perimeter system, 479-492
pressure drop, 502
registers and grilles, 476
panel heating, 497
radiators, 399

Washer, washers, 853

air, 1, 844, 853
cooling, 857
dehumidification, 857
humidification, 855

Water

analysis, 1046
atmospheric cooling equip-
ment, 861, 863
characteristics, 1046
classification, 1046
coils, 882, 1193
content of radiators, 571
control temperature service,
1195
cooled
condenser, 923
cooling tower, 863
corrosion treatment, 1061
demand, 1178, 1187-1190
faucets, 1178
fittings, loss, 1178, 1185

Water (continued)

fixtures, 1178
fixture units, 1178
formed deposits, 1045
heater
coal-fired, 1190
solar, 1197
heating, 1190
in building material, 219
load, 1177
make-up, 877, 1055
maximum main temperature,
856
meters, 1183
mineralized, 1046
properties of, 40, 1046
services, 1177
storage capacity, 1187
supply piping, 1194
arrangement, 1194
temperature control, 1195
thermodynamic properties of,
40
treating chemicals, 1045, 1066
well temperatures, 658
Water vapor, 25, 32-39, 217
condensation in buildings, 217
saturation pressure, 25, 40
specific enthalpy, 4
specific volume, 10, 40
surface condensation, 229
Weather conditions
design outdoor, 262, 289
Welding, 684
Wet-bulb temperature (see
Temperature), 9, 26, 869
Wet cup, 224
Wet return, 8, 505
Wind, winds
forces, 240, 247
due to stack effect, 240
natural draft equipment, 433
selection of, velocity, 203, 291

Window, windows

coefficients of transmission,
212
leakage, 241
solar radiation through, 309
ventilators, 650
Winter
air conditioning system, 735,
1201
comfort chart, 124
freezing equipment, 878
Wound rotor motor, 978
Wrought-iron pipe, 665
Wrought-steel pipe, 665

Y

Year-round air conditioning

system, 735, 1201
air flow in, 741, 1206
control methods, 735, 962
design procedure, 735, 781
equipment arrangement, 750
installation, 735, 1201
location of apparatus, 750, 1205
residential, 957
selection, 748, 1201

Z

Zero, absolute, 1

Zone, zones

control, 6, 87, 737, 959
evaporative regulation, 115
metabolic regulation, 114
thermal neutrality, 123
vaco-motor regulation, 114

Zoning, 577, 741, 957

control, 741, 957
hot water system, 577
reheat, 742
volume control, 741

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.

Adsorbent: 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 process of treating air so as to control simultaneously its temperature, humidity, cleanliness, and distribution to meet the requirements of the conditioned space.

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