Condensers, 769
air cooled, 769
design data, 732
evaporative, 770
water cooled, 770
Condition line, 61, 861

Conductance, 2, 3, 118
air space, 118, 123
building materials, 119
insulators, 119
surface, 122, 586

Conduction, 3, 101, 118
drying methods, 915
electric heaters, 607
equation, 102
steady-state solutions, 112

Conductivity, 3, 101, 117
bat type insulation, 121
building boards, 119
building materials, 118
homogeneous materials, 119
insulating materials, 121, 126, 582
insulation blankets, 121, 126
insulators, 121, 126, 582
loose-fill insulation, 122
masonry materials, 119, 126
plastering materials, 120, 126
reflective insulation, 118, 126
rigid insulation, 121, 127
roofing construction, 120, 127
woods, 120, 127
Conductor, 3
Conduits for piping, 597

Control, controls
actuated, 664
actuating, 664
airborne infection, 233
all year conditioning, 668, 670, 858
application, 670
automatic, 447, 663
fuel appliances, 357, 663, 666
temperature, 663
basic types, 663
central fan system, 672, 858
all year system, 663, 857
heating cycle, 863
coal fired plant, 666
cooling units, 670
dehumidification, 671
dehydrating equipment, 739, 944
designation, 663
draft, 344
electric heating, 607, 667
equipment for motors, 677
fan, 643
gas burner, 666
gas-fired appliances, 364, 666
heating unit, 666
hot water supply, 961
humidity, railway cars, 930
indicating, 676
individual rooms, 664
limit, 667
modulating, 663
motor, 679
oil burners, 666
panel heating, 675

Control, controls (*continued*)
pneumatic systems, 663
rate of biochemical reactions, 891
rate of chemical reactions, 891
rate of crystallization, 891
recording, 676
refrigeration equipment, 671
compressor type, 671
ice cooling, 671, 764
well water, 671
regain, 888
residential systems, 666
room thermostat, 667
service water temperature, 961
single phase motor, 690
small buildings, 666
sound, 837
squirrel-cage motor, 690
stoker, 356, 666
system control, 667
terminology, 663
two-position control, 663
unit cooler, 670
unit heaters, 670
unit systems, 670
unit ventilators, 670
valves, 501, 576, 665
ventilator, 174
volume, 800
zone, 668
Controllers, 663
functions, 663
types, 663

Convection, 3, 101, 105
equation, 103
unit conductances, 104

Convector, convectors, 3, 521, 523
correction factor, 525
heat emission, 524
heating effect, 525
ratings, 524
Converging vanes, 791
Conversion
burners, 357, 365
equations, 15
Coolers, 697, 703, 707

Cooling, 271, 697
air conditioning units, 697
atmospheric water, 709, 724
coil selection, 157, 541
evaporative, 867
load, 56, 271, 862
methods, 457
performance of coils, 151
ponds, 713
residential, 457
sensible, 867
spray, 717, 858, 867
effect of wind, 718, 720
make-up water, 733
size of equipment, 709
winter freezing, 733
systems, 457, 867, 928
tower design, 726
tower performance, 728
units, 697
component parts, 698
control, 704

Cooling, units (*continued*)
definitions, 697
defrosting, 708
design, 707
performance, 707
ratings, 704
remote, 699
types of, 708
water, 725
Copper elbow equivalents, 505
Core area, 784

Corrosion, 699, 965
air ducts, 981
atmospheric, 980
cathodic protection, 983
chimney, 410
coal storage equipment, 981
cold water, 976
flues, 981
hot water, 977
industrial exhaust systems, 907
minimizing condensate, 978
pipe, 982
prevention, 978
refrigerating systems, 977
underwater, 975
Cost of air conditioning, 873
amortization, 873
condenser water, 883
first, 873
fixed charges, 873
heating, 884
installed, 875
insurance, 879
maintenance, 879
owning and operating, 873
rent, 879
service, 881
Crack length
used for computations, 163, 264
Crystallization
control rate of, 892
Cylinder dryer, 916

D

Dalton's rule, 23, 65
Damper, dampers, 445, 800, 857
Darcy formula, 77
Decibel, 837
Definitions, 1
Defrosting, 708

Degree-day, 3, 420, 422
for cities, 422
formula for, method, 421
operating unit, 430
unit fuel consumption, 425
Degree of saturation, 8, 36

Dehumidification, 713, 735, 861
air conditioning units, 699
air washers, 713
coil selection, 157, 539
comparison of methods, 735
control, 739
definitions and methods, 735
equipment, 739, 741
performance, 739, 741, 945

Dehumidification (*continued*)
estimating loads, 742
liquid methods, 740
ships, 945
solid methods, 737
Dehumidifying agents, 735
sorbents, 735
absorbents, 735
adsorbents, 735
Density of air, 3, 24
Dew-point
apparatus temperature, 54, 861
flue gas, 346
temperature, 9, 53
Dichlorodifluoromethane, 750

Direct
expansion coils, 533
fired unit heater, 546
indirect heating unit, 3
radiator 7, 521
return system, 3, 508
Disc fan, 631
Distribution of air (*see Air Distribution*), 443, 783

District heating, 595
automatic control, 606
glossary of rate terms, 603
meters, 601
piping, 595
conduits for, 597
inside, 599
overhead distribution, 599
sizes, 595
tunnels, 599
types of, 597, 599
rates, 603
steam requirement, 428, 603
utilization, 604
Diverging vanes, 791
Domestic oil burners, 357
Door, doors
coefficients of transmission, 142
leakage, 162, 165
natural ventilation, 169
Down-Feed
one-pipe riser, 3
steam heating, 3, 466, 468
system, 3

Draft, drafts, 3, 399, 443
available, 400
calculations, 399
control, 344
factors, 405
general equation, 400
head, 4
mechanical, 399
natural, 170, 399
regulation, 344
requirements, 344
theoretical, 399
Drawing symbols, 17
Drip, drips, 4, 497
Drum dryer, 915

Dry air, 1, 23
composition, 179, 333
density, 24
filters, 647

Dry air (*continued*)
properties of, 23
velocity head, 814
Dry-bulb temperature, 9
Dry cooling coils, 151, 529, 699, 867
Dry return, 8, 461

Dryer, dryers
cabinet, 916
calculations, 918
compartment, 916
cylinder, 916
drum, 916
rotary, 916
spray, 917
tunnel, 917
Dryer calculations, 918

Drying, 909
calculations, 918
chart, 912
conduction, 915
constant rate period, 909
convection, 916
control, 925
estimating methods, 919
example, 923
factors influencing, 912
general rules for, 909
air circulation, 913
humidity, 911
temperature, 912,
humidity, 913
mechanism of, 909
methods, 914
conduction, 915
convection, 915
radiant, 914
omissions in the cycle, 911
radiant, 612, 914
systems, 909

Duct, ducts, 433, 443, 807
air velocities in, 444, 822, 903
approaches to outlets, 800
attenuation, 839
circular equivalents, 811
construction details, 826, 904
design, 807, 821, 895, 904
exhaust design, 895
elbow friction losses, 815, 816, 842
friction losses, 807
heat loss coefficients, 829
lining, 844, 847
measurement of velocities, 199
noise transmitted, 839
recirculating, 435, 446
rectangular equivalents of round, 811
resistance, 809, 906
roughness correction, 810
side outlets, 802
sizes, 807
sound absorbers, 853
symbols for drawing, 18
system design, 436, 440, 446, 807

Duct sizes, 807
air velocities, 446, 822, 904
equal friction, 824
general rules, 821
static regain method, 824
velocity method, 823

Dust, 4, 179
combustible, 187
concentrations, 182, 185, 186
determination, 207
filters, 647, 650
precipitators, 657

Dust Collectors, 656
application, 657
centrifugal, 659
cinder catching, 660
cyclone, 659
dry dynamic, 659
high efficiency, 659
electrostatic, 657
fabric, 658
factors affecting selection, 656
settling chambers, 660
testing methods, 660
wet, 658
centrifugal, 659
disintegrator, 659
dynamic precipitator, 659
orifice type, 659
packed tower, 659
washers, 658
Dynamic head, 5

E

EDR (Equivalent direct radiation), 7, 381, 472, 476, 478, 480
defined, 7, 381, 524

Effective temperature (*see Temperature*), 9, 222, 227
chart, 227
difference, 863
index, 225
Ejector nozzles, 796
Elbow
attenuation, 842
copper equivalents, 505
friction losses, 477, 504, 906
iron equivalents, 477, 504

Electric, electrical
air conditioning, 609
boilers, 610
control systems, 663
heaters, 607
conduction, 607
gravity convection, 608
radiant, 608
heating, 607
auxiliary, 612
calculating capacities, 612
central fan, 609
control, 613
domestic water, 611
elements, 607
induction, 612
power problems, 613
resistors, 607
hot water heating, 610, 611
panel heating, 620, 627
precipitators, 650, 657
radiant heating, 608
resistors, 607
unit heaters, 608
Electricity static, 892
Emissivity, 107, 118, 618, 625
factors, 107, 625
Enclosed radiator, 523