

Magnesia insulation, 657
 Manometer, 764, 777
 Masonry materials, heat transmission through, 107
 Mass, 778
 Mb, 587, 778
 Mbb, 587, 778
 Mean radiant temperature, 689, 692
 Mechanical,
 draft towers, 210
 equivalent of heat, 778
 refrigeration, 37
 ventilation, 79
 warm air furnace systems, 403
 Metabolism, 59, 81
 Meters,
 choice of, 680
 condensation, 681
 fluid, 680
 Nicholls heat flow, 769
 steam flow, 682
 types of, 680
 water, disc, 635
 Methyl chloride, 42, 206
 Metric units, 787
 Micron, 299, 778
 Mixture, air and water vapor, 10
 Moisture, 665
 content,
 of air, 77, 179, 212, 711
 as index of air distribution, 76
 calculations, 737
 equilibrium, 734
 of hygroscopic materials, 712, 729
 internal, gradient, 734
 loss by human body, 82, 84
 from outside air, 172
 produced by cattle, 99
 regain, 711
 Mol, 778
 Monitor openings, 92
 Monofluorotrichloromethane, 43
 Motive power, 747
 Motors, electric, 747
 adjustable speed, 748
 adjustable varying speed, 748
 alternating current, 747
 capacitor type, 750
 classification of, 752
 compound wound, 747
 constant speed, 748
 control equipment for, 753
 automatic, 754
 manual, 753
 multispeed, 756
 pilot, 754
 single phase, 758
 slip ring, 757
 direct current, 747
 control of, 755
 as heat source, 150
 induction,
 automatic start, 751
 repulsion start, 749
 slip ring wound rotor, 751
 squirrel cage, 750
 polyphase, 750
 selection of, 383
 series wound, 747
 shunt wound, 747
 single phase, 749
 special applications, 753
 split phase, 750
 synchronous, 751
 varying speed, 751
 MRT, mean radiant temperature, 689, 692

N

Natural draft towers, 210
 Natural dryers, 723
 Natural ventilation, 79, 89
 Nicholls heat flow meter, 769
 Noise (see also Sound)
 in buildings, 327

Noise (continued),
 control of, 329
 through ducts, 337
 with warm air systems, 406
 level,
 acceptable, 329
 of compressors, 191
 of fans, 317
 of unit heaters, 226
 of various apparatus, 328
 measurement of, 326
 Nozzle, 201
 air spray, 173
 oil atomizer, 495
 water spray, 213

O

Odors, 76
 of human origin, 57
 concentration, 79
 removed by outside air, 79
 Oil, oils,
 atomization of, 451
 burner, burners,
 accessory conditioning apparatus, 251
 air for combustion, 496
 air supply for, 495, 497
 automatic, 500
 boilers, 435, 437, 499
 carbon monoxide produced by, 496
 for commercial use, 500
 control of, 278, 499
 design considerations, 498
 for domestic hot water supply, 500
 for domestic use, classification, 494
 efficiency of combustion, 498
 flame with, 495
 furnace requirements, 404, 411, 496
 ignition, 495
 installation, 497
 oil consumption, 498, 509, 516
 operation, 495
 Orsat test, 498
 specifications, 479
 calorific value of, 480
 classifications, 479
 as corrosion inhibitor, 627
 cost of, 481
 heated electrically, 706
 ignition of, 480
 preheating, 500
 specifications, 479
 One-pipe steam heating systems,
 gravity air-vent, 533, 537, 565, 577
 down-feed, 537
 up-feed, 534
 vapor, 538
 Openings,
 air inlet, 92, 343
 characteristics, 343
 monitor, 92
 for natural ventilation,
 location of, 95
 resistance offered to flow, 96
 size of, 89
 types of, 90
 Orifice, orifices,
 friction heads, 596
 steam heating systems, 547, 559, 569, 577
 Orsat test apparatus, 498, 768
 Outlets (see also Registers, Grilles)
 design and location of, 173
 Oxygen, 626
 Ozone, 79

P

Paint,
 effect on radiators, 523
 spray booths, 378
 temperatures and humidities for processing, 718

Pan dryers, 727
 Partial pressures, Dalton's law of, 1
 Perspiration, 59, 79, 83, 85
 Petterson-Palmquist apparatus, 767
 Phon, 326
 Pipe, piping, 607
 bare, heat loss from, 653
 bends, 571, 613
 capacities (see Pipe, Sizes)
 coil radiators, 521
 conduit, 673
 connections, 572, 676 (see also Connections)
 copper, 608
 corrosion of, 626
 dimensions of, 608, 653 (see also Pipe, Sizes)
 down-feed systems, 536, 537, 538, 541
 expansion of, 571, 610, 673
 fittings, 586 (see also Connections, Fittings)
 for water supply, 634
 welding fittings, 622, 653
 flanges, 623, 653
 flexibility of, 610
 friction,
 of air in, 353
 heads in, 591
 gaskets, 620
 hangers, 614
 heat loss from, 505, 653
 for hot water heating systems, 587, 603
 insulation of, 653
 joints, 571, 673
 leader, 419
 radiators, 521
 scale in, 626
 sizes,
 for boiler runouts, 574, 672
 for central fan systems, 579
 for convactor connections, 579
 dimensions, 608, 610
 for district heating, 672
 for domestic hot water, 640
 effects of variation of, 595
 elbow equivalents, 591
 equivalent length of run, 561
 friction head, 592
 of orifices in unions, 596
 for Hartford return connection, 574
 for hot water heating systems, 588
 forced circulation systems, 590
 gravity circulation systems, 597
 for indirect heating units, 582
 for pipe coil connections, 579
 for radiator connections, 577
 return, capacity of, 564
 steam, 558, 562, 563
 underground, 671
 tables, 563, 610
 tees, 617
 for underground steam, 671
 for water supply, 633
 weights, 608
 steam, capacity of, 559
 for steam heating systems, 533, 557
 supports, 614
 sweating, 665
 systems, down-feed, 536, 537, 538, 541
 systems, up-feed, 534, 537, 539, 542
 tax, 441
 tees, dimensions of, 617
 threads, 614, 618
 tunnels, 675
 types of, 607
 underground,
 insulation of, 667
 steam, 671
 for unit heaters, 226
 up-feed systems, 534, 537, 539, 542
 valves, 622
 water supply, 629
 weights of, 608
 welding, 621

Pitot tube, 764
 Plastering materials, heat transmission through, 109
 Plenum,
 chamber, 778
 systems, automatic control of, 275
 Plumbing fixtures, 629
 Pollution of air, 287
 Polyphase motors, 750
 Ponds, cooling, 208
 Pool, swimming, 650
 Potassium permanganate, 209
 Potentiometer, 763, 778
 Power, 778
 conversion equations, 785
 electric, 708
 supply,
 railway air conditioning, 264
 Precipitators, dust, 294
 Pressure, pressures,
 absolute, 771
 air,
 in heating unit, 390
 measurement of, 764
 atmospheric, 761, 772
 for atomization, 202
 barometric, 455, 761
 basic, 3
 conversion equations, 786
 drop, formula for, 672
 dynamic, 774
 gage, 761, 776
 loss through ducts, 351
 measurement of, 761
 partial, Dalton's law of, 1
 refrigerating plant, 206
 of saturated vapor, 10
 static, 400, 780
 steam,
 in district heating, 672
 drop, 536, 558, 563
 initial, 558
 in orifice systems, 547
 saturated, 27
 in sub-atmospheric systems, 546
 total, 781
 vapor, 31, 782
 velocity, 782
 water, 26, 633
 Processing, 711
 cooling systems, 182
 industrial, temperatures and humidities for, 718
 of textiles, 713
 unit heaters, 228
 Propeller fans, test code for, 312
 Psychrometer, 779
 slip, 766
 Psychrometric,
 chart, 64, 65, 66 (back cover)
 for dryer, 740
 explanation, 24
 tests, 63
 Pump, pumps,
 circulating, 601
 condensation return, 549
 heat, 52, 706
 vacuum, 550
 ratings of, 550
 Pyrheliometer, 160
 Pyrometer, 763, 779
 mercurial, 763
 optical, 763
 radiation, 763
 thermo-electric, 763

Q

Quality,
 of air, 76, 80
 A.S.H.V.E. ventilation standards, 74
 impaired by recirculation, 80