

Subject Index

A

- Aeration, 603
- Air conditioning systems, 44
- Air flow measurements, 44
- Airspace reflective cavities, 24
- Air sparging, 603
- Asphalt (cutback), 595
- ASTM standards
 - C 236 -- Test Method for Steady-State Thermal Performance of Building Assemblies by Measns of a Guarded Hot Box, 24, 326, 558
 - C 177 -- Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot Plate Apparatus, 502
 - C 518 -- Test Method for Heat Flow Meter Apparatus, 142, 502
 - C 687 -- Practice for Determination of the Thermal Resistance of Loose-Fill Building Insulation, 534
 - C 976 -- Calibrated Hot Box Test Method, 326, 558
 - C 1114 -- Test Method for Thin Heater Apparatus, 142, 572
 - E 119 -- Fire tests of Building Construction and Materials, 430
 - E 691 -- Conducting an Interlaboratory Test Program to Determine the Precision of a Test Method, 558

B

- Building applications (residential)
 - attic air spaces, 44
 - attic ceilings, 109, 263, 371
 - attic floors, 100, 275, 371
 - attic simulations, 354
 - basements, 109
 - building assemblies, 326, 603

- construction techniques, 92, 430, 633
- ductwork, 109
- exterior joints, 92
- exterior sheathing, 389, 401
- exterior surfaces, 7, 109, 313
- interior walls, 313, 633
- piping systems, 595
- opaque components, 7
- roofs, 7, 142, 292
- water heaters, 109
- Building applications (commercial), 142
- Buoyancy measurements, 44

C

- Calibration coefficient, 502
- Cellular concrete, 415
- CFC alternative blowing agents
 - appliance applications, 455
- long-term performance studies, 7, 197
- manufacturing, 214
- permeability, 237
- status report, 229
- thermal performance evaluations, 123, 142, 167
- vapor conductivity, 237
- Computer simulation models, 44, 167, 292
- Computerized data bases, 109
- Conduction, 354, 371
- Conductivity testing, 441, (see also Thermal conductivity)
- Control joints, 619
- Corrosion behavior, 603

D

- Department of Energy (U.S.) testing programs, 24, 109, 237
- Diffusion barriers, 237
- Diffusion coefficients, 142, 197
- Dimensional stability, 633
- Durability testing, 633

E

Electrochemical testing methods, 603
Emissivity low, 441
Energy conservation strategies, 73, 92
Energy conservation, 1, 7
Energy simulation program, 313
Energy standards development, 73
Engineering economics, 109
EPA testing programs, 237
Environmental protection, 1
Expansion joints, 619
Exterior insulation finish system, 619

F

Fabrication arrangements, 441
Filtered insulation leachates, 603
Fire tests, 430
Flammability tests, 430
Florida Solar Energy Center research, 44, 371
Foam blowing agents, 123, 229, 237 (*see also* CFC alternative blowing agents and HCFCs)
Foams, 123, 142, 167 (*see also* Insulation types)
Foam cell structure, 197
Foam gas pressure, 214
Forced convection effects, 292

G

Gamma ray spectroscopy, 389

H

HCFCs comparative materials analysis, 229
heat transfer measurement, 479
long-term performance studies, 1, 197
processing techniques, 229
thermal performance evaluations, 123, 142, 214

Heat flux measurements, 263, 371, 572
Heat flux transducer, 415, 502
Heat transfer modeling, 354
natural convection, 275
processes, 1, 479
radiative, 237, 371, 455
Heat flow meters, 502, 534
Hot boxes apparatus, 275, 292
calibration, 326, 502, 558
development, 479
testing procedures, 502, 534, 558
Humidity gradient, 389
Hydrolysis testing, 633

I

Impermeable facers, 123
Imprecision, 534
Indoor air survey, 633
Infrared reflectance, 7
Infrared transmission spectra, 455
Insulation types blanket, 263
calcium silicate, 592
cellular concrete, 415
cellular glass, 595
cellular plastic, 1, 123, 197, 603
fiberglass (blanket), 292, 371, 534
fiberglass (loose-fill), 100, 275
fibrous batt, 354, 534, 603
foamboard, 214, 479, 502
formaldehyde, 633
gas-filled panels, 441
general, 2, 7
gypsum wall board, 572 -
interior versus exterior, 313
loose-fill, 502
mineral fiber, 603
mineral wool, 100, 263, 534
perlite, 534
polycrystalline spheres, 464

Insulation types (continued)

polyisocyanurate, 142, 229, 237, 572
 polystyrene, 197, 214, 558, 572
 polyurethane, 167, 229, 237
 rock wool, 100
 silica aerogel, 1, 455
 Internal air barriers, 292
 Interlaboratory testing programs, 502, 520, 534

L

Laminated layer (lumina), 619
 Life cycle cost analyses, 73, 109, 313
 Linear shrinkage, 633

M

Mass transfer, 371
 Material installation, 441
 Mathematical models, 1, 389
 Microconcrete, 415
 Minnesota Energy Code, 92
 Montreal Protocol of 1987, 123, 142
 Moisture content of geological materials, 415
 Moisture diffusivity coefficient, 389
 Multifoil products, 24
 Multiple air spaces, 24

N

National Institute of Standards and Technology testing programs, 109, 502
 Natural convection, 263
 Nitrogen sparging, 603

O

Oak Ridge National Laboratory guidelines, 24 experiments, 237, 275, 354

P

Permeable facers, 123
 Precision and bias, 534, 558

Q

Quality control measurements, 100

R

Radiation coatings, 7
 Radiation scattering, 464
 Radiative heat transfer, 44, 455 (see also Heat transfer)

S

Scalar ratios, 73
 Secondary heat transfer, 237
 Shotcrete, 415
 Solar emittance, 7, 44
 Solar heating, 7
 Solar reflectance, 7
 Specific heat, 572
 Steam/condensate piping, 595
 Steady-state testing, 572
 Steel corrosion effects, 603
 Stratified air model, 44
 Standard reference materials, 502, 572

T

Temperature gradients, 572
 Tensile properties, 619
 Test method evaluation, 1, 7
 Testing apparatus, 142 (see also Hot boxes and Heat flow meters)
 Thermal conductivity aging, 167 comparative materials testing, 441, 502, 534 computer modeling, 292 heat transfer modeling, 354 low density materials, 1, 455, 464, 572 low temperature, 479 numerical modeling, 371 opacification agents, 455 reduction, 464 Thermal performance parameters acidity, 633 adsorption, 371 aging, 167, 197, 237

- Thermal performance parameters
(continued)
- air flow rates, 44, 263, 275
air leakage, 92
carbon dioxide effusion, 167
conductivity, 167, 214 (*see also* Thermal conductivity)
convection flow patterns, 92, 292
desorption, 371
density, 100
dimensional stability, 167
flammability, 430
heat transfer, 214 (*see also* Heat transfer)
humidity, 263, 633
infrared reflectance, 7
k-factor, 123, 142, 197
moisture content, 92, 401, 415
moisture diffusion, 371, 389
pH level, 603
R-value, 24, 100, (*see also* Thermal resistance)
radiated heat transfer, 371
resistivity, 123, 142 (*see also* Thermal resistance)
solar emittance, 7, 24
solar reflectance, 7, 24
thickness, 100, 214
transmittance, 92
vapor conductivity, 237
wind wash, 92
Thermal properties, 292, 520, 572 (*see also* Thermal performance parameters)
Thermal resistance
aqueous environments, 603
building assemblies, 326
cellular plastics, 123, 502
closed-cell foams, 214, 237
exterior sheathing, 401
fiberglass, 275, 502, 534
gas-filled foams, 142, 558
guarded hot boxes, 558
gypsum board, 275
infrared absorbing compounds, 455
interlaboratory testing, 520
low temperature, 479
mineral insulating materials, 263, 534
quality control analysis, 100
reflective systems, 24
silica aerogel, 455
Tracer gas measurements, 263
Transient testing, 572
- U-V
- Underground piping systems, 595
 Unguarded thin heater apparatus, 572
 Urea Formaldehyde, 633
 Vacuum elements (foams), 237
- W-Z
- Wall heat gain, 7
Waterproofing, 595
Zip code insulation program, 109