BFRL FIRE PUBLICATIONS, 1993

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ABSTRACT

BFRL Fire Publications, 1993 contains references to the publications prepared by the members of the Building and Fire Research Laboratory (BFRL) fire research staff, by other National Institute of Standards and Technology (NIST) personnel for BFRL, or by external laboratories under contract or grant from the BFRL during the calendar year 1993. Building program staff citations will appear in a combined publication entitled Building and Fire Research Laboratory Publications, 1993; it will be published later.

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1. Author Index Arranged by First Author

A

1. Atreya, A.
   Extinguishment of Combustible Porous Solids by Water Droplets. Annual
   Progress Report.
   Michigan State Univ., East Lansing
   Available from National Technical Information Services
   PB93-198893
   porous solids; extinguishment; diffusion flames; fire extinguishing; fire
   suppression; flame spread; droplets; water; infrared photography;
   polymethylmethacrylate

B

2. Babrauskas, V.
   Bench-Scale Predictions of Mattress and Upholstered Chair Fires:
   Similarities and Differences.
   National Institute of Standards and Technology, Gaithersburg, MD
   Available from National Technical Information Services
   PB93-186005
   mattresses; upholstered furniture; fire hazards; fire tests; heat release
   rate; scaling; fire spread; prisions

3. Babrauskas, V.
   Letter to the Editor.
   National Institute of Standards and Technology, Gaithersburg, MD
   1993.
   fire models; surveys

4. Babrauskas, V.
   Specimen Heat Fluxes for Bench-Scale Heat Release Rate Testing.
   National Institute of Standards and Technology, Gaithersburg, MD
   Interscience Communications Ltd.; National Institute of Standards and
   Technology; Building Research Establishment; and Society of Fire Protection
   fire safety; fire science; cone calorimeters; heat release rate; heat flux;
   radiant heating; corner tests; room fires; upholstered furniture; wall
   fires
5. Babrauskas, V.
Ten Years of Heat Release Research With the Cone Calorimeter.
National Institute of Standards and Technology, Gaithersburg, MD
Tsukuba Building Test Laboratory, Center for Better Living, Japan Symposium
W14/93/2 (J), Tsukuba, Japan, III/1-8 pp, 1993.
heat release; fire hazard; cone calorimeters; standards; databases; heat
release rate

6. Babrauskas, V.; Twilley, W. H.; Parker, W. J.
Effects of Specimen Edge Conditions on Heat Release Rate.
National Institute of Standards and Technology, Gaithersburg, MD
heat release rate; cone calorimeters; fire models

Time-Dependent Mass Loss rate Behavior of Wall Materials Under External
Radiation.
Pennsylvania State Univ., University Park, PA
walls; mass loss; data analysis; enclosures; flammability

8. Bukowski, R. W.
National Institute of Standards and Technology, Gaithersburg, MD
Available from National Technical Information Services
PB94-108388
containment; fire detectors; fire risk; reliability; sprinklers

9. Bukowski, R. W.
National Institute of Standards and Technology, Gaithersburg, MD
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10. Bukowski, R. W.
   Studies Assess Performance of Residential Detectors.
   National Institute of Standards and Technology, Gaithersburg, MD
   smoke detectors; heat detectors; residential buildings; standards;
   technology utilization

C

   Experimental and Numerical Studies on Two-Dimensional Gravity Currents in a
   Horizontal Channel.
   California Institute of Technology, Pasadena, CA
   Available from National Technical Information Services
   compartment fires; fire models; fire research; gravity current; inclined
   tests; room fires; smoke

   Simultaneous Optical Measurement of Soot Volume Fraction and Temperature.
   National Institute of Standards and Technology, Gaithersburg, MD
   Combustion Institute/Central and Eastern States Section. Combustion
   Fundamentals and Applications. Joint Technical Meeting. March 15-17,
   soot; optical measurement; volume fraction; temperature

13. Cooper, L. Y.
   Combined Buoyancy- and Pressure-Driven Flow Through a Horizontal Vent:
   Theoretical Considerations.
   National Institute of Standards and Technology, Gaithersburg, MD
   Available from National Technical Information Services
   PB94-103694
   vents; building fires; compartment fires; computer models; fire models;
   mathematical models; zone models

14. Cooper, L. Y.
   Discharge of Fire Suppression Agents From a Pressurized Vessel: A
   Mathematical Model and Its Application to Experimental Design.
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   discharge pressure; halons
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16. Cooper, L. Y.  
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D

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Experimental Study of Multiple Droplet Evaporative Cooling. Final Report.  
Maryland Univ., College Park  
Available from National Technical Information Services  
PB93-198463  
cooling; drop sizes; droplets; evaporation; solid surfaces; water

18. Deal, S.  
Evaluating Small Board and Care Homes: Sprinklered vs. Nonsprinklered Fire Protection.  
National Institute of Standards and Technology, Gaithersburg, MD  
Available from National Technical Information Services  
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19. Duffin, W. J., Editor
National Institute of Standards and Technology, Gaithersburg, MD
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fire risk; fire tests; flame spread; halons; plumes; suppression; water;
smoke

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sprinklers; fire suppression; hazard analysis; cribs; crib fires; fire
protection

21. Fernandez-Pello, A. C.
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California Univ., Berkeley
fire spread; gas flow; oxygen concentration; experiments; turbulent flow;
laminar flow

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Field Modeling: Effects of Flat Beamed Ceilings on Detector and Sprinkler
Report. Year 1.
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Park, Quincy, MA 02269
fire detection; ceilings; detector response; sprinkler response; equations;
turbulence; heat transfer; case histories; data analysis
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Developments Needed to Expand the Role of Fire Modeling in Material Fire Hazard Assessment.
National Institute of Standards and Technology, Gaithersburg, MD
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Fire Hazard Model Developments and Research Efforts at NIST.
National Institute of Standards and Technology, Gaithersburg, MD
fire safety; research facilities; fire research; fire hazards; validation; databases

G

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National Institute of Standards and Technology, Gaithersburg, MD
halons; ozone; halon 1301; compatability; residues; storage; stability; combustion products; corrosion; elastomers; exposure

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Massachusetts Institute of Technology, Cambridge
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plumes; dispersion; smoke
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   Facility for Assessing Suppression Effectiveness in High Speed Turbulent
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   Guide to Board and Care Fire Safety Requirements in the 1991 Edition of the
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   emergency planning; fire safety; handicapped; NFPA 101; residential
   buildings; sprinklers

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   Environment.
   National Institute of Standards and Technology, Gaithersburg, MD
   NIST TN 1402; 52 p. April 1993.
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   models; radiation; combustion; radiative heat transfer; spectra; spectral
   absorptivity; spectral emissivity

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   Early Detection of Room Fires Through Acoustic Emission.
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   acoustic properties; acoustic sensors; fire detection; ionization
   detectors; walls; ceilings; noise (sound)
Agent Screening for Halon 1301 Aviation Replacement.
National Institute of Standards and Technology, Gaithersburg, MD
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National Environmental Program. International CFC and Halon Alternatives
Conерence, 1993. Stratospheric Ozone Protection for the 90's. October
halons; ozone; halon 1301; thermal properties; dispersions; fluid
mechanics; flame extinguishment; flammable materials

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Turbulent Spray Burner for Assessing Halon Alternative Fire Suppressants.
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halons; halon 1301; in-flight fires; fire protection; air velocity;
injection; nitrogen; pressure

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Validation of a Turbulent Spray Flame Facility for the Assessment of Halon
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University of New Mexico; New Mexico Engineering Research Institute; Center
for Global Environmental Technologies; National Association of Fire
Equipment Distributors, Inc.; Halon Alternative Research Corp.; Fire
Suppression Systems Assoc.; and Hughes Associates, Inc. Halon Alternatives
halons; validation; experiments; air velocity; injection; nitrogen; air
temperature

H

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Fires. Special Analysis.
National Fire Protection Association, Quincy, MA
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board and care homes; building codes; building construction; building
fires; death; egress; evacuation; exits; fire investigations; fire
protection; human behavior
35. Hamins, A.
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National Institute of Standards and Technology, Gaithersburg, MD
Environmental Implications of Combustion Processes. Chapter 3, CRC Press,
soot; health hazards; flame radiation; carbon monoxide; soot formation;
flame research; smoke yield; smoke production

36. Hamins, A.; Yang, M. H.; Puri, I. K.
Structure of Inhibited Counterflowing Nonpremixed Flames.
National Institute of Standards and Technology, Gaithersburg, MD
Illinois Univ., Chicago
University of New Mexico; New Mexico Engineering Research Institute; Center
for Global Environmental Technologies; National Association of Fire
Equipment Distributors, Inc.; Halon Alternative Research Corp.; Fire
Suppression Systems Assoc.; and Hughes Associates, Inc. Halon Alternatives
halons; suppression; flame structure; methodology; flame extinguishment

37. Harrington, J. E.; Smyth, K. C.
Laser-Induced Fluorescence Measurements of Formaldehyde in a Methane/Air
Diffusion Flame.
National Institute of Standards and Technology, Gaithersburg, MD
diffusion flames; formaldehyde; lasers; fluorescence

J

38. Jaluria, Y.; Lee, S. H. K.; Mercier, G. P.; Tan, Q.
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Pressure Differences.
Rutgers, The State University of New Jersey, New Brunswick
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Conference. August 1993, Atlanta, GA, Am. Soc. of Mechanical Engineers,
vents; water flow; air flow; flow visualization; experiments
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PB93-188845
fire research; building technology; earthquakes; refrigerants; fire suppression

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Evolution of a United States Information System.
National Institute of Standards and Technology, Gaithersburg, MD
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databases; fire engineering; fire research; fire safety; information
retrieval; information dissemination; libraries; information retrieval

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databases; fire engineering; fire research; fire safety; information
retrieval; information dissemination; manuals

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Information Transfer in the 21st Century.
National Institute of Standards and Technology, Gaithersburg, MD
Society of Fire Protection Engineers. International Fire Information
Conference, 1st. Proceedings. Cosponsored by International Fire
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Information and Reference Exchange (inFIRE). April 27-May 1, 1992,
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databases; fire engineering; fire research; fire safety; information
retrieval; information dissemination; libraries; technology transfer

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Locating Fire Engineering Information.
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information retrieval; fire research; fire protection engineering; fire
science; databases; information storage
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fire research; building technology; earthquakes; large fires; refrigerants;
fire suppression

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National Institute of Standards and Technology, Gaithersburg, MD
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charring; combustion; fire models; fire research; flame spread; blowout
fires; hazards; ignition; polymers; soot; smoke; sprinklers

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Improvement in Predicting Smoke Movement in Compartmented Structures.
National Institute of Standards and Technology, Gaithersburg, MD
smoke movement; structures; fire growth; smoke transport; toxic gases;
compartments; zone models; equations; buoyant flow

47. Jones, W. W.; Forney, G. P.
Modeling Smoke Movement Through Compartmented Structures.
National Institute of Standards and Technology, Gaithersburg, MD
Samgore Army Materials Research Conference, 9th, September 16-17, 1992,
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Natural Resources (UJNR), Fire Research and Safety. 11th Joint Panel
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smoke; compartment fires; fire growth; mathematical models; numerical
models; room fires; toxicity
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Fire Induced Thermal Fields in Window Glass I - Theory.
California Univ., Berkeley
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glass; windows; computer models; fire models; mathematical models;
radiation; thermal stresses; vents; equations; temperature profiles; heat
flux

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Thermally Stable Environment: A Problem in Enclosure Fires.
Rutgers, The State University of New Jersey, New Brunswick
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enclosures; turbulent jets; flow fields; heat transfer; flow visualization;
penetration

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Effects of Sample Mounting on Flammability Properties of Intumescent
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Interscience Communications Limited. Heat Release and Fire Hazard. 1st U.
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calorimeters; char; heat release rate; heat of combustion; soot; flame
spread; flame spread rate

51. Kashiwagi, T.; Cleary, T. G.; Davis, G. C.; Lupinski, J. H.
Non-Halogenated, Flame Retarded Polycarbonate.
National Institute of Standards and Technology, Gaithersburg, MD
General Electric Co., Schenectady, NY
DOT/FAA/CT-93/3.
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Promotion of Advanced Fire Resistant Aircraft Interior Materials. February
Available from National Technical Information Services
aircraft interiors; fire resistant materials; test methods; fire safety;
polycarbonates; cone calorimeters; flame spread; furniture calorimeters;
siloxanes; heat release rate; ignition delay; char
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Air Moving Systems and Fire Protection.
National Institute of Standards and Technology, Gaithersburg, MD
Available from National Technical Information Services
PB93-234722
  air movement; air conditioning; fire protection; fire safety; heating;
  smoke control; stairwells; ventilation systems

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Design of Smoke Control Systems for Areas of Refuge.
National Institute of Standards and Technology, Gaithersburg, MD
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PB93-183754
  smoke control; refuge; elevators (lifts); evacuation; handicapped; life
  safety

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Design of Smoke Control Systems for Areas of Refuge.
National Institute of Standards and Technology, Gaithersburg, MD
  smoke control; refuge; elevators (lifts); evacuation; handicapped; life
  safety

55. Kloe, J. H.
Method for Calculation of Elevator Evacuation Time.
National Institute of Standards and Technology, Gaithersburg, MD
  elevators (lifts); evacuation time; computer programs; people movement;
  time; emergencies

Fire Evacuation by Elevators.
National Institute of Standards and Technology, Gaithersburg, MD
  evacuation; elevators (lifts); smoke control; staging areas; human beings;
  water; sprinklers
Workshop on Elevator Use During Fires.  
National Institute of Standards and Technology, Gaithersburg, MD  
George Mason Univ., Fairfax, VA  
Edward A. Donoghue Associates Inc., Salem, NY  
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elevators (lifts); smoke control; evacuation; staging areas

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Zone Fire Modeling With Natural Building Flows and a Zero Order Shaft  
Model.  
National Institute of Standards and Technology, Gaithersburg, MD  
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PB94-112166  
zones models; air movement; fire models; smoke movement; stairwells

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Time Dependency in Multiple Objective Dynamic Programming.  
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time; planning; algorithms

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Michigan Univ., Ann Arbor  
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diffusion flames; fire plumes; fire research; optical properties; Rayleigh  
light scattering; soot

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Journal of Research of the National Institute of Standards and Technology,  
agglomerates; light scattering; smoke; equations
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National Institute of Standards and Technology, Gaithersburg, MD
fire tests; flooring radiant panel test; hazard assessment; radiant flux profile

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Affordable Fire Safety in Board and Care Homes. A Regulatory Challenge.
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board and care homes; egress; elderly persons; evacuation; fire safety codes; handicapped; NFPA 101; residential buildings; sprinklers

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Investigation of the Thermal Stability and Char-Forming Tendency of Cross-Linked Poly(methyl methacrylate).
National Institute of Standards and Technology, Gaithersburg, MD
polymethylmethacrylate; thermal stability; char formation; crosslinking; thermal degradation

65. McGrattan, K. B.; Putorti, A. D.; Twilley, W. H.; Evans, D. D.
Smoke Plume Trajectory From In Situ Burning of Crude Oil in Alaska.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5273; 70 p. October 1993.
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crude oil; oil spills; pool fires; smoke; fire plumes
66. Mitler, H. E.; Walton, G. N.
National Institute of Standards and Technology, Gaithersburg, MD
NIST SP 852; Volume 3; 169 p. August 1993.
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PB94-109014
- cigarettes; ignition; furniture; computer models; mathematical models;
  pyrolysis; simulation; smoldering; substrates

N

Comparison of Experimental and Computed Species Concentration and
Temperature Profiles in Laminar, Two-Dimensional Methane/Air Diffusion
Flames.
National Institute of Standards and Technology, Gaithersburg, MD
George Washington Univ., Washington, DC
Yale Univ., New Haven, CT
- laminar flames; diffusion flames; species concentrations; temperature
  profiles; flame structure

68. Notarianni, K. A.
Measurement of Room Conditions and Response of Sprinklers and Smoke
Detectors During a Simulated Two-Bed Hospital Patient Room Fire.
National Institute of Standards and Technology, Gaithersburg, MD
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- sprinklers; fire research; fire tests; sprinkler response; smoke detectors;
  hospital fires; life safety

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Water Mist Fire Suppression Workshop Summary.
National Institute of Standards and Technology, Gaithersburg, MD
SFPE Bulletin, 8-9, Summer 1993.
- fire suppression; water fog; water mist; water sprays; fire research;
  droplets; drop size; fire extinguishment; sprinklers; aircraft
70. Notarianni, K. A.; Davis, W. D.
Use of Computer Models to Predict Temperature and Smoke Movement in High Bay Spaces.
National Institute of Standards and Technology, Gaithersburg, MD
Available from National Technical Information Services
computer models; temperature; smoke movement; clean rooms; computational fluid dynamics; detector response; field modeling; fire detection; fire models; forced air flow; fire plumes; fire tests; high bays; response time; sprinkler response

71. Notarianni, K. A.; Davis, W. D.
Use of Computer Models to Predict the Response of Sprinklers and Detectors in Large Spaces.
National Institute of Standards and Technology, Gaithersburg, MD
Society of Fire Protection Engineers and Worcester Polytechnic Institute.
computers; fire protection; computer models; sprinkler response; detector response; aircraft hangars; test fires; fire models

72. Notarianni, K. A.; Evans, D. D.; Walton, W. D.
Smoke Production From Large Oil Pool Fires.
National Institute of Standards and Technology, Gaithersburg, MD
fire safety; fire science; pool fires; smoke production; oil spills; crude oil; smoke yield

73. Notarianni, K. A.; Jason, N. H., Editors
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NISTIR 5207; June 1993.
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fire suppression; water fog; water mist; water sprays; fire research; droplets; drop sizes; fire extinguishment; sprinklers; aircraft; electronic facilities; marine transportation
74. Nyden, M. R.; Brown, J. E.
Computer-Aided Molecular Design of Fire Resistant Aircraft Materials.
National Institute of Standards and Technology, Gaithersburg, MD
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aircraft interiors; fire resistant materials; test methods; fire safety;
computer models; simulation; cone calorimeters; polyethylene; composite
materials; commercial aircraft; ceilings

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Assessing the Flammability of Composite Materials.
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composite materials; flammability; ignition source; bulkheads; heat release
rate; flame spread

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One- and Two-Sided Burning of Thermally Thin Materials.
National Institute of Standards and Technology, Gaithersburg, MD
heat release rate; experiments; combustion; flammability; composite
materials

77. Ohlemiller, T. J.; Villa, K. M.; Braun, E.; Eberhardt, K. R.; Harris, R. H., Jr.;
Lawson, J. R.; Gann, R. G.
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Furnishings. Volume 2.
National Institute of Standards and Technology, Gaithersburg, MD
NIST SP 851; Volume 2; 166 p. August 1993.
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PB94-108644
cigarettes; test methods; ignition; upholstered furniture; statistical
analysis
78. Parker, W. J.; Filipczak, R.
aircraft compartments; heat release rate; calorimeters; computer models


SN003-003-03194-1
compartment fires; fire growth; mathematical models; numerical models; room fires; toxicity

Verification of a Model of Fire and Smoke Transport. National Institute of Standards and Technology, Gaithersburg, MD Fire Safety Journal, Vol. 21, No. 2, 89-129, 1993. fire models; smoke transport; computer models; experiments; zone models; fire tests

82. Pitts, W. M.
83. Pitts, W. M.; Bryner, N. P.; Johnsson, E. L.
Production Mechanisms for Carbon Monoxide in Enclosure Fires.
National Institute of Standards and Technology, Gaithersburg, MD
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carbon monoxide; enclosures; experiments; entrainment; pyrolysis

84. Pitts, W. M.; Yang, J. C.; Breuel, B. D.; Cleveland, W.; Gmurczyk, G.
Dynamics of the Release of Alternate Halon Replacement Agents From
Pressurized Bottles.
National Institute of Standards and Technology, Gaithersburg, MD
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for Global Environmental Technologies; National Association of Fire
Equipment Distributors, Inc.; Halon Alternative Research Corp.; Fire
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nacelle fires

85. Portier, R. W.
National Institute of Standards and Technology, Gaithersburg, MD
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- fire research
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- room fires
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