NISTIR 5397

BFRL FIRE PUBLICATIONS, 1993

Nora H. Jason
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National Institute of Standards and Technology
Gaithersburg, MD 20899

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U.S. Department of Commerce
Ronald H. Brown, *Secretary*
Technology Administration
Mary L. Good, *Under Secretary for Technology*
National Institute of Standards and Technology
Arati Prabhakar, *Director*

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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

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1. Atreya, A.
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Michigan State Univ., East Lansing
NIST-GCR-93-621; Annual Progress Report; 28 p. April 1993.
Available from National Technical Information Services
PB93-198893
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2. Babrauskas, V.
Bench-Scale Predictions of Mattress and Upholstered Chair Fires: Similarities and Differences.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5152; 22 p. March 1993.
Available from National Technical Information Services
PB93-186005
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3. Babrauskas, V.
Letter to the Editor.
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Fire Protection Engineering, Vol. 5, No. 1, 35, January/March 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 Engineers. Interflam '93. Fire Safety. International Fire Conference, 6th. March 30-April 1, 1993, Oxford, England, Interscience Communications Ltd., London, England, Franks, C. A., Editor, 57-74 pp, 1993.
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 on Heat Release and Fire Hazard, First (1st) Proceedings. Session 3. Scope for Next-Generation Fire Saety Testing Technology. May 10-11, 1993, CIB 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
Fire and Materials, Vol. 17, No. 2, 51-63, March/April 1993.
heat release rate; cone calorimeters; fire models

7. Brehob, E. G.; Kulkarni, A. K.
Time-Dependent Mass Loss rate Behavior of Wall Materials Under External Radiation.
Pennsylvania State Univ., University Park, PA
Fire and Materials, Vol. 17, No. 5, 249-254, September/October 1993.
walls; mass loss; data analysis; enclosures; flammability

8. Bukowski, R. W.
Balanced Design Concepts Workshop. June 30, July 1-2, 1993.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5264; 212 p. September 1993.
Available from National Technical Information Services
PB94-108388
containment; fire detectors; fire risk; reliability; sprinklers

9. Bukowski, R. W.
Review of International Fire Risk Prediction Methods.
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 Engineers. Interflam '93. Fire Safety. International Fire Conference, 6th. March 30-April 1, 1993, Oxford, England, Interscience Communications Ltd., London, England, Franks, C. A., Editor, 437-446 pp, 1993.
fire safety; fire science; risk assessment; fire risk

10. Bukowski, R. W.
Studies Assess Performance of Residential Detectors.
National Institute of Standards and Technology, Gaithersburg, MD
NFPA Journal, Vol. 87, No. 1, 48-54, January/February 1993.
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11. Chan, W. R.; Zukowski, E. E.; Kubota, T.
Experimental and Numerical Studies on Two-Dimensional Gravity Currents in a Horizontal Channel.
California Institute of Technology, Pasadena, CA
NIST-GCR-93-630; 261 p. July 1993.
Available from National Technical Information Services
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12. Choi, M. Y.; Hamins, A.; Kashiwagi, T.
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, 1993, New Orleans, LA, 1-5 pp, 1993.
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
NISTIR 5252; 17 p. September 1993.
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.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5181; 59 p. May 1993.
Available from National Technical Information Services
PB93-198927
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15. Cooper, L. Y.
Dispersion of Fire Suppression Agents Discharged From High Pressure Vessels: Establishing Initial/Boundary Conditions for the Flow Outside the Vessel.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5219; September 1993.
Available from National Technical Information Services
PB94-103660

agents; aircraft safety; discharge pressure; fire extinguishment; fire safety; halons

16. Cooper, L. Y.
Some Factors Affecting the Design of a Furniture Calorimeter Hood and Exhaust.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5298; 25 p. December 1993.
Available from National Technical Information Services
PB94-139193

furniture calorimeter; exhaust systems; buoyant plumes; calorimeters; fire plumes; flame length; wall flows

D

17. Dawson, H.; diMarzo, M.
Experimental Study of Multiple Droplet Evaporative Cooling. Final Report. September 1991-December 1992.
Maryland Univ., College Park
NIST-GCR-93-624; Report 92-1; 116 p. April 1993.
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
NISTIR 5302; 63 p. November 1993.
Available from National Technical Information Services

board and care homes; sprinklers; fire protection; computer models; hazard analysis; evacuation time; fire detection; compartmentation; safety; toxicity

19. Duffin, W. J., Editor
1993 Annual Conference on Fire Research: Book of Abstracts.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5280; 209 p. October 1993.
Available from National Technical Information Services
PB94-121324
fire research; burning rate; fire detection; hazard analysis; fire models; fire risk; fire tests; flame spread; halons; plumes; suppression; water; smoke

E

20. Evans, D. D.
Sprinkler Fire Suppression Algorithm for HAZARD.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5254; 21 p. August 1993.
U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 11th Joint Panel Meeting. October 27-November 2, 1992, NISTIR 5254, Tsukuba, Japan, Building Research Inst., Ibaraki, Japan, 114-120 pp, 1992.
Available from National Technical Information Services
PB94-103678
sprinklers; fire suppression; hazard analysis; cribs; crib fires; fire protection

F

21. Fernandez-Pello, A. C.
Fire Propagation in Concurrent Flows. Annual Progress Report. September 1, 1991-August 31, 1992.
California Univ., Berkeley
Annual Progress Report; 17 p. 1993.
fire spread; gas flow; oxygen concentration; experiments; turbulent flow; laminar flow

22. Forney, G. P.; Bukowski, R. W.; Davis, W. D.
Field Modeling: Effects of Flat Beamed Ceilings on Detector and Sprinkler Response. International Fire Detection Research Project. Technical Report. Year 1.
National Institute of Standards and Technology, Gaithersburg, MD
Technical Report; Year 1; 59 p. October 1993.
Available from National Fire Protection Research Foundation, Batterymarch Park, Quincy, MA 02269
fire detection; ceilings; detector response; sprinkler response; equations; turbulence; heat transfer; case histories; data analysis

23. Fowell, A. J.
Developments Needed to Expand the Role of Fire Modeling in Material Fire Hazard Assessment.
National Institute of Standards and Technology, Gaithersburg, MD
DOT/FAA/CT-93/3.
Federal Aviation Administration (FAA). International Conference for the Promotion of Advanced Fire Resistant Aircraft Interior Materials. February 9-11, 1993, DOT/FAA/CT-93/3, Atlantic City, NJ, 255-262 pp, 1993.
Available from National Technical Information Services
aircraft interiors; fire resistant materials; test methods; fire safety; fire hazard; hazard assessment; fire models; validation; databases

24. Fowell, A. J.
Fire Hazard Model Developments and Research Efforts at NIST.
National Institute of Standards and Technology, Gaithersburg, MD
Fire Retardant Chemicals Association. International Conference on Fire Safety. Spring Conference, 1993. March 21-24, 1993, New Orleans, LA, Fire Retardant Chemicals Assoc., Lancaster, PA, 205-212 pp, 1993.
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G

25. Gann, R. G.; Braun, E.; Cleary, T. G.; Harris, R. H., Jr.; Horkay, F.; Linteris, G. T.; McKenna, G. B.; Nyden, M. R.; Peacock, R. D.; Ricker, R. E.; Stoudt, M. R.; Waldron, W. K.
Agent/System Compatibility for Halon 1301 Aviation Replacement.
National Institute of Standards and Technology, Gaithersburg, MD
U. S. Environmental Protection Agency, Enviornment Canada and United National Environmental Program. International CFC and Halon Alternatives Congerence, 1993. Stratospheric Ozone Protection for the 90's. October 20-22, 1993, Washington, DC, 753-760 pp, 1993.
halons; ozone; halon 1301; compatability; residues; storage; stability; combustion products; corrosion; elastomers; exposure

26. Ghoniem, A. F.; Zhang, X.; Knio, O.; Baum, H. R.; Rehm, R. G.
Dispersion and Deposition of Smoke Plumes Generated in Massive Fires.
Massachusetts Institute of Technology, Cambridge
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Hazardous Materials, Vol. 33, 275-293, 1993.
plumes; dispersion; smoke

27. Gmurczyk, G.; Grosshandler, W. L.; Peltz, M.; Lowe, D. L.
Facility for Assessing Suppression Effectiveness in High Speed Turbulent Flames.
National Institute of Standards and Technology, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical Processes in Combustion. Fall Technical Meeting, 1993. October 25-27, 1993, Princeton, NJ, 1-4 pp, 1993.
turbulent flames; suppression; halon 1301; aircraft engines; nacelle fires; fire protection; nitrogen

28. Groner, N. E.
Guide to Board and Care Fire Safety Requirements in the 1991 Edition of the Life Safety Code.
George Mason Univ., Fairfax, VA
NIST-GCR-93-629; 151 p. July 1993.
Available from National Technical Information Services
PB93-220820
board and care homes; codes; egress; elderly persons; evacuation; fire emergency planning; fire safety; handicapped; NFPA 101; residential buildings; sprinklers

29. Grosshandler, W. L.
RADCAL: A Narrow-Band Model for Radiation Calculations in a Combustion Environment.
National Institute of Standards and Technology, Gaithersburg, MD
NIST TN 1402; 52 p. April 1993.
Available from Government Printing Office
SN003-003-03215-8
PB93-200889
models; radiation; combustion; radiative heat transfer; spectra; spectral absorptivity; spectral emissivity

30. Grosshandler, W. L.; Braun, E.
Early Detection of Room Fires Through Acoustic Emission.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5269; 17 p. October 1993.
Available from National Technical Information Services
PB94-112257
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31. Grosshandler, W. L.; Gann, R. G.; Hamins, A.; Nyden, M. R.; Pitts, W. M.; Yang, J.; Zachariah, M.
Agent Screening for Halon 1301 Aviation Replacement.
National Institute of Standards and Technology, Gaithersburg, MD
U. S. Environmental Protection Agency, Enviornment Canada and United National Environmental Program. International CFC and Halon Alternatives Congerence, 1993. Stratospheric Ozone Protection for the 90's. October 20-22, 1993, Washington, DC, 744-752 pp, 1993.
halons; ozone; halon 1301; thermal properties; dispersions; fluid mechanics; flame extinguishment; flammable materials

32. Grosshandler, W. L.; Lowe, D. L.; Rinkinen, W. J.; Presser, C.
Turbulent Spray Burner for Assessing Halon Alternative Fire Suppressants.
National Institute of Standards and Technology, Gaithersburg, MD
93-WA/HT-23;
American Society of Mechanical Engineers (ASME). Winter Annual Meeting. November 28-December 3, 1993, 93-WA/HT-23, New Orleans, LA, 1-8 pp, 1993.
halons; halon 1301; in-flight fires; fire protection; air velocity; injection; nitrogen; pressure

33. Grosshandler, W. L.; Presser, C.; Lowe, D. L.
Validation of a Turbulent Spray Flame Facility for the Assessment of Halon Alternatives.
National Institute of Standards and Technology, Gaithersburg, MD
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 Technical Working Conference 1993. Proceedings. May 11-13, 1993, Albuquerque, NM, 129-136 pp, 1993.
halons; validation; experiments; air velocity; injection; nitrogen; air temperature

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34. Hall, J. R., Jr.
U.S. Fires in "Board and Care" Homes Matrix Display of Selected Fatal Fires. Special Analysis.
National Fire Protection Association, Quincy, MA
NIST-GCR-93-627; 106 p. April 1993.
Available from National Technical Information Services
PB93-198869
board and care homes; building codes; building construction; building fires; death; egress; evacuation; exits; fire investigations; fire protection; human behavior

35. Hamins, A.
Soot.
National Institute of Standards and Technology, Gaithersburg, MD
Environmental Implications of Combustion Processes. Chapter 3, CRC Press, Boca Raton, FL, Puri, I. K., Editor(s), 71-95 p., 1993.
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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 Technical Working Conference 1993. Proceedings. May 11-13, 1993, Albuquerque, NM, 503-510 pp, 1993.
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
Chemical Physics Letters, Vol. 202, No. 3-4, 196-202, January 22, 1993.
diffusion flames; formaldehyde; lasers; fluorescence

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38. Jaluria, Y.; Lee, S. H. K.; Mercier, G. P.; Tan, Q.
Visualization of Transport Across a Horizontal Vent Due to Density and Pressure Differences.
Rutgers, The State University of New Jersey, New Brunswick
American Society of Mechanical Engineers (ASME). National Heat Transfer Conference. August 1993, Atlanta, GA, Am. Soc. of Mechanical Engineers, New York, NY, 1-17 pp, 1993.
vents; water flow; air flow; flow visualization; experiments

39. Jason, N. H.
Building and Fire Research Laboratory Publications, 1992.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5172; 86 p. April 1993.
Available from National Technical Information Services
PB93-188845
fire research; building technology; earthquakes; refrigerants; fire suppression

40. Jason, N. H.
Evolution of a United States Information System.
National Institute of Standards and Technology, Gaithersburg, MD
National Fire Protection Association and International Association of Fire Chiefs. inFIRE (international network for Fire Information and Reference Exchange. Annual Conference. Proceedings. April 28-30, 1993, Norwood, MA, Barnhart, A.; Swing, A., Editors, 89-98 pp, 1993.
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41. Jason, N. H.
FIREDOC Users Manual. 3rd Edition.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5305; 44 p. December 1993.
Available from National Technical Information Services
databases; fire engineering; fire research; fire safety; information retrieval; information dissemination; manuals

42. Jason, N. H.
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 Information Conference (IFIC) and international network for Fire Information and Reference Exchange (inFIRE). April 27-May 1, 1992, Moreton-in-Marsh, England, Society of Fire Protection Engineers, Boston, MA, Green, J. B.; Jason, N. H., Editors, 133-142 pp, 1993.
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43. Jason, N. H.
Locating Fire Engineering Information.
National Institute of Standards and Technology, Gaithersburg, MD
SFPE Bulletin, 5-8, September/October 1993.
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44. Jason, N. H.
NIST Building and Fire Research Laboratory Publications, 1992.
National Institute of Standards and Technology, Gaithersburg, MD
NIST SP 838-2; 87 p. September 1993.
Available from Government Printing Office
Available from National Technical Information Services
SN003-003-03235-2
PB93-188845
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45. Jason, N. H.
Summaries of BFRL Fire Research In-House Projects and Grants, 1993.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5263; 184 p. September 1993.
Available from National Technical Information Services
PB94-121050
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46. Jones, W. W.; Forney, G. P.
Improvement in Predicting Smoke Movement in Compartmented Structures.
National Institute of Standards and Technology, Gaithersburg, MD
Fire Safety Journal, Vol. 21, No. 4, 269-297, 1993.
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
Journal of Fire Sciences, Vol. 11, No. 2, 172-183, March/April 1993.
Sagamore Army Materials Research Conference, 39th. September 16-17, 1992, Plymouth, MA, 1992 AND U.S./Japan Government Cooperative Program on Natural Resources (UJNR). Fire Research and Safety. 11th Joint Panel Meeting. October 27-November 2, 1992, Tsukuba, Japan, Building Research Inst., Ibaraki, Japan, Fire Research Inst., Tokyo, Japan, 34-41 pp, 1992.
smoke; compartment fires; fire growth; mathematical models; numerical models; room fires; toxicity

48. Joshi, A. A.; Pagni, P. J.
Fire Induced Thermal Fields in Window Glass I - Theory.
California Univ., Berkeley
Fire Safety Journal, Vol. 22, No. 1, 25-43, 1994.
NIST-GCR-93-634; 34 p. December 1993.
Available from National Technical Information Services
PB94-139722

glass; windows; computer models; fire models; mathematical models; radiation; thermal stresses; vents; equations; temperature profiles; heat flux

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49. Kapoor, K.; Jaluria, Y.
Penetrative Convection of a Plane Turbulent Wall Jet in a Two-Layer Thermally Stable Environment: A Problem in Enclosure Fires.
Rutgers, The State University of New Jersey, New Brunswick
International Journal of Heat and Mass Transfer, Vol. 36, No. 1, 155-167, 1993.

enclosures; turbulent jets; flow fields; heat transfer; flow visualization; penetration

50. Kashiwagi, T.; Cleary, T. G.
Effects of Sample Mounting on Flammability Properties of Intumescent Polymers.
National Institute of Standards and Technology, Gaithersburg, MD
Fire Safety Journal, Vol. 20, No. 3, 203-225, 1993.
Interscience Communications Limited. Heat Release and Fire Hazard. 1st U. S. Symposium. Abstracts. December 1991, San Diego, CA, 4 pp, 1991.

heat release; fire hazard; sampling; flammability; polycarbonates; cone 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.
Federal Aviation Administration (FAA). International Conference for the Promotion of Advanced Fire Resistant Aircraft Interior Materials. February 9-11, 1993, DOT/FAA/CT-93/3, Atlantic City, NJ, 175-187 pp, 1993.
Available from National Technical Information Services

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52. Klote, J. H.
Air Moving Systems and Fire Protection.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5227; 17 p. July 1993.
Available from National Technical Information Services
PB93-234722
air movement; air conditioning; fire protection; fire safety; heating; smoke control; stairwells; ventilation systems

53. Klote, J. H.
Design of Smoke Control Systems for Areas of Refuge.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5132; March 1993.
Available from National Technical Information Services
PB93-183754
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54. Klote, J. H.
Design of Smoke Control Systems for Areas of Refuge.
National Institute of Standards and Technology, Gaithersburg, MD
ASHRAE Transactions, Vol. 99, No. 2, 793-807, 1993.
smoke control; refuge; elevators (lifts); evacuation; handicapped; life safety

55. Klote, J. H.
Method for Calculation of Elevator Evacuation Time.
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Fire Protection Engineering, Vol. 5, No. 3, 83-96, 1993.
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56. Klote, J. H.; Deal, S.; Donoghue, E. A.; Levin, B. M.; Groner, N. E.
Fire Evacuation by Elevators.
National Institute of Standards and Technology, Gaithersburg, MD
Elevator World, Vol. 41, No. 6, 66-70,72-75, June 1993.
evacuation; elevators (lifts); smoke control; staging areas; human beings; water; sprinklers

57. Klote, J. H.; Deal, S.; Levin, B. M.; Groner, N. E.; Donoghue, E. A.
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
NISTIR 4993; 18 p. January 1993.
Available from National Technical Information Services
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58. Klote, J. H.; Forney, G. P.
Zone Fire Modeling With Natural Building Flows and a Zero Order Shaft Model.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5251; 42 p. September 1993.
Available from National Technical Information Services
PB94-112166
zone models; air movement; fire models; smoke movement; stairwells

59. Kostreva, M. M.; Wiecek, M. M.
Time Dependency in Multiple Objective Dynamic Programming.
Clemson Univ., SC
Journal of Mathematical Analysis and Applications, Vol. 173, No. 1, 289-307, February 1993.
time; planning; algorithms

60. Koylu, U. U.; Dai, Z.; Tseng, L. K.; Faeth, F. M.
Radiation and Mixing Properties of Buoyant Turbulent Diffusion Flames.
Michigan Univ., Ann Arbor
NIST-GCR-93-631; 60 p. July 1993.
Available from National Technical Information Services
diffusion flames; fire plumes; fire research; optical properties; Rayleigh light scattering; soot

L

61. Lakhtakia, A.; Mulholland, G. W.
On Two Numerical Techniques for Light Scattering by Dielectric Agglomerated Structures.
Pennsylvania State Univ., University Part
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Research of the National Institute of Standards and Technology, Vol. 98, No. 6, 699-716, 1993.
agglomerates; light scattering; smoke; equations

62. Lawson, J. R.
Fire Tests and Flooring Materials.
National Institute of Standards and Technology, Gaithersburg, MD
Interscience Communications Limited. Fire and Materials. International Conference, 2nd. September 23-24, 1993, Arlington, VA, 253-262 pp, 1993.
fire tests; flooring radiant panel test; hazard assessment; radiant flux profile

63. Levin, B. M.; Groner, N. E.; Paulsen, R.
Affordable Fire Safety in Board and Care Homes. A Regulatory Challenge. Final Report.
George Mason Univ., Fairfax, VA
NIST-GCR-93-632; 79 p. July 1993.
Available from National Technical Information Services
PB93-219723
board and care homes; egress; elderly persons; evacuation; fire safety codes; handicapped; NFPA 101; residential buildings; sprinklers

64. Lomakin, S. M.; Brown, J. E.; Breese, R. S.; Nyden, M. R.
Investigation of the Thermal Stability and Char-Forming Tendency of Cross-Linked Poly(methyl methacrylate).
National Institute of Standards and Technology, Gaithersburg, MD
Polymer Degradation and Stability, Vol. 41, 229-243, 1993.
polymethylmethacrylate; thermal stability; char formation; crosslinking; thermal degradation

M

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.
Available from National Technical Information Services
PB94-114519
crude oil; oil spills; pool fires; smoke; fire plumes

66. Mitler, H. E.; Walton, G. N.
Modeling the Ignition of Soft Furnishings by a Cigarette. Volume 3.
National Institute of Standards and Technology, Gaithersburg, MD
NIST SP 852; Volume 3; 169 p. August 1993.
Available from National Technical Information Services
Available from Government Printing Office
Available from U.S. Consumer Product Safety Commission, Washington, DC 20207
PB94-109014
cigarettes; ignition; furniture; computer models; mathematical models; pyrolysis; simulation; smoldering; substrates

N

67. Norton, T. S.; Smyth, K. C.; Miller, J. H.; Smooke, M. D.
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
Combustion Science and Technology, Vol. 90, No. 1-4, 1-34, 1993.
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
NISTIR 5240; 138 p. July 1993.
Available from National Technical Information Services
sprinklers; fire research; fire tests; sprinkler response; smoke detectors; hospital fires; life safety

69. Notarianni, K. A.
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
NISTIR 5304; 64 p. December 1993.
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. Computer Applications in Fire Protection. Proceedings. June 28-29, 1993, Worcester, MA, 27-33 pp, 1993.
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
Interscience Communications Ltd.; National Institute of Standards and Technology; Building Research Establishment; and Society of Fire Protection Engineers. Interflam '93. Fire Safety. International Fire Conference, 6th. March 30-April 1, 1993, Oxford, England, Interscience Communications Ltd., London, England, Franks, C. A., Editor, 111-119 pp, 1993.
fire safety; fire science; pool fires; smoke production; oil spills; crude oil; smoke yield

73. Notarianni, K. A.; Jason, N. H., Editors
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5207; June 1993.
National Institute of Standards and Technology. Water Mist Fire Suppression Workshop. Proceedings. March 1-2, 1993, NISTIR 5207, Gaithersburg, MD, Notarianni, K. A.; Jason, N. H., Editors, 156 pp, 1993.
Available from National Technical Information Services
PB93-219780
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
DOT/FAA/CT-93/3;
Federal Aviation Administration (FAA). International Conference for the Promotion of Advanced Fire Resistant Aircraft Interior Materials. February 9-11, 1993, DOT/FAA/CT-93/3, Atlantic City, NJ, 147-158 pp, 1993.
Available from National Technical Information Services
aircraft interiors; fire resistant materials; test methods; fire safety; computer models; simulation; cone calorimeters; polyethylene; composite materials; commercial aircraft; ceilings

O

75. Ohlemiller, T. J.; Cleary, T. G.; Brown, J. E.; Shields, J. R.
Assessing the Flammability of Composite Materials.
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Fire Sciences, Vol. 11, No. 4, 308-319, July/August 1993.
Sagamore Army Materials Research Conference, 39th. September 16-17, 1992, Plymouth, MA, 1992.
composite materials; flammability; ignition source; bulkheads; heat release rate; flame spread

76. Ohlemiller, T. J.; Shields, J. R.
One- and Two-Sided Burning of Thermally Thin Materials.
National Institute of Standards and Technology, Gaithersburg, MD
Fire and Materials, Vol. 17, 103-110, 1993.
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.
Test Methods for Quantifying the Propensity of Cigarettes to Ignite Soft Furnishings. Volume 2.
National Institute of Standards and Technology, Gaithersburg, MD
NIST SP 851; Volume 2; 166 p. August 1993.
Available from National Technical Information Services
Available from Government Printing Office
Available from U.S. Consumer Product Safety Commission, Washington, DC 20207
PB94-108644
cigarettes; test methods; ignition; upholstered furniture; statistical analysis

P

78. Parker, W. J.; Filipczak, R.
Modeling the Heat Release Rate of Aircraft Cabin Panels. Final Report.
National Institute of Standards and Technology, Gaithersburg, MD
DOT/FAA/CT-92/3; ACD-240; 52 p. February 1993.
Available from National Technical Information Services
aircraft compartments; heat release rate; calorimeters; computer models

79. Peacock, R. D.; Bukowski, R. W.; Jones, W. W.; Reneke, P. A.
New Concepts for Fire Protection of Passenger Rail Transportation Vehicles.
National Institute of Standards and Technology, Gaithersburg, MD
Interscience Communications Limited. Fire and Materials. International
Conference, 2nd. September 23-24, 1993, Arlington, VA, 171-180 pp, 1993.
fire protection; passenger vehicles; transportation; heat release rate;
hazard analysis; fire hazard; risk assessment

80. Peacock, R. D.; Forney, G. P.; Reneke, P. A.; Portier, R. W.; Jones, W. W.
CFAST, The Consolidated Model of Fire Growth and Smoke Transport.
National Institute of Standards and Technology, Gaithersburg, MD
NIST TN 1299; 246 p. February 1993.
Available from Government Printing Office
SN003-003-03194-1
compartment fires; fire growth; mathematical models; numerical models; room
fires; toxicity

81. Peacock, R. D.; Jones, W. W.; Bukowski, R. W.
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.
Rayleigh Light Scattering Studies of Turbulent Mixing.
National Institute of Standards and Technology, Gaithersburg, MD
Combustion Institute/Eastern States Section. Chemical and Physical
Processes in Combustion. Fall Technical Meeting, 1993. October 25-27,
1993, Princeton, NJ, 8-16 pp, 1993.
rayleigh light scattering; turbulent mixing; turbulent combustion;
concentration measurement; flow fields; velocity measurement; turbulent jet
flames; diffusion flames; axisymmetric jets

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
Combustion Institute/Central and Eastern States Section. Combustion Fundamentals and Applications. Joint Technical Meeting. March 15-17, 1993, New Orleans, LA, 102-106 pp, 1993.
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
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 Technical Working Conference 1993. Proceedings. May 11-13, 1993, Albuquerque, NM, 75-82 pp, 1993.
halons; experiments; halon 1301; military facilities; military aircraft; nacelle fires

85. Portier, R. W.
Programmer's Reference Guide to FDMS File Formats.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5162; 42 p. April 1993.
Available from National Technical Information Services
PB93-182038
computers; databases; cone calorimeters; furniture calorimeters

86. Puri, R.; Richardson, T. F.; Santoro, R. J.; Dobbins, R. A.
Aerosol Dynamic Processes of Soot Aggregates in a Laminar Ethene Diffusion Flame.
Pennsylvania State Univ., University Park
Brown Univ., Providence, RI
Combustion and Flame, Vol. 92, No. 3, 320-333, February 1993.
diffusion flames; laminar flames; aerosols; soot; data analysis

Q

87. Quintiere, J. G.
Canadian Mass Fire Experiment, 1989.
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Fire Protection Engineering, Vol. 5, No. 2, 67-78, April/June 1993.
NISTIR 4444; 63 p. November 1990.
Available from National Technical Information Services
PB91-143305
mass fires; energy transfer; forest fires; smoke emissions

R

88. Rehm, R. G.; Baum, H. R.; Tang, H. C.; Lozier, D. C.
Finite-Rate Diffusion-Controlled Reaction in a Vortex.
National Institute of Standards and Technology, Gaithersburg, MD
Combustion Science and Technology, Vol. 91, No. 1-3, 143-161, 1993.
flame fronts; formulations; equations; diffusion flames

89. Richards, C. D.; Pitts, W. M.
Global Density Effects on the Self-Preservation Behavior of Turbulent Free Jets.
National Institute of Standards and Technology, Gaithersburg, MD
Journal of Fluid Mechanics, Vol. 254, 417-435, 1993.
density effects; turbulent jets; flow fields; turbulent flow

S

90. Saito, K.
Study of Fire Induced Flow Along the Vertical Corner Wall. Part 2. Final Report.
Kentucky Univ., Lexington
NIST-GCR-93-628; 61 p. April 1993.
Available from National Technical Information Services
PB93-205623
corner tests; walls; building fires; flame height; flame spread rate; heat flux; infrared photography; room fires

91. Santoro, R. J.
Fundamental Mechanisms for CO and Soot Formation in Diffusion Flames. Annual Progress Report and Quarterly Report. April 1, 1992-August 31, 1992.
Pennsylvania State Univ., University Park, PA
Annual Progress Report; Quarterly Report; 108 p. March 1993.
diffusion flames; carbon monoxide; soot formation; hydroxyl radicals; sampling; laminar flames; probes

92. Smyth, K. C.; Harrington, J. E.; Johnsson, E. L.; Pitts, W. M.
Greatly Enhanced Soot Scattering in Flickering CH4/Air Diffusion Flames.
National Institute of Standards and Technology, Gaithersburg, MD
Combustion and Flame, Vol. 95, 229-239, 1993.
diffusion flames; soot; laminar flames

93. Snell, J. E.
Elements of a Framework for Fire Safety Engineering.
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 Engineers. Interflam '93. Fire Safety. International Fire Conference, 6th. March 30-April 1, 1993, Oxford, England, Interscience Communications Ltd., London, England, Franks, C. A., Editor, 447-456 pp, 1993.
fire safety; fire science; safety engineering; decision making; life safety

94. Snell, J. E.
Forum for International Cooperation on Fire Research.
National Institute of Standards and Technology, Gaithersburg, MD
VTT-Technical Research Center of Finland and Forum for International Cooperation in Fire Research. Nordic Fire Safety Engineering Symposium. Development and Verification of Tools for Performance Codes. August 30-September 1, 1993, Espoo, Finland, 1-9 pp, 1993.
fire safety; safety engineering; codes; fire research; technology transfer

95. Snell, J. E.
Status of Performance Fire Codes in the USA.
National Institute of Standards and Technology, Gaithersburg, MD
VTT-Technical Research Center of Finland and Forum for International Cooperation in Fire Research. Nordic Fire Safety Engineering Symposium. Development and Verification of Tools for Performance Codes. August 30-September 1, 1993, Espoo, Finland, 1-9 pp, 1993.
fire safety; safety engineering; codes; fire codes; regulations

T

96. Tartarini, P.; Liao, Y.; diMarzo, M.
Transient Cooling of a Hot Surface by Droplets Evaporation. Final Report.
July 1989-July 1990.
Maryland Univ., College Park
NIST-GCR-93-622; Report 90-6; 104 p. April 1993.
Available from National Technical Information Services
PB93-189421
droplets; evaporation; solid fuels; thermal conductivity; water; vaporization

97. Tartarini, P.; Liao, Y.; Kidder, C.; diMarzo, M.
Transient Cooling of a Hot Surface by Droplets Evaporation. Final Report.
July 1990-July 1991.
Maryland Univ., College Park
NIST-GCR-93-623; Report 91-1; 169 p. April 1993.
Available from National Technical Information Services
computer programs; cooling; droplets; evaporation; solid surfaces; water

U

98. Urbas, J.; Parker, W. J.
Surface Temperature Measurements on Burning Wood Specimens in the Cone Calorimeter and the Effect of Grain Orientation.
Weyerhaeuser Co., Washington, DC
Fire Technology Consultant, Germantown, MD
Fire and Materials, Vol. 17, No. 5, 205-208, September/October 1993.
wood; surface temperature; combustion; cone calorimeters; thermocouples; pyrometers; temperature measurement

W

99. Walton, W. D.
In Situ Burning of Oil Spills: Mesoscale Experiments and Analysis.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5192; 39 p. September 1993.
Available from National Technical Information Services
PB94-101839
oil spills; crude oil; burning rate; particle size distribution; plumes; fire tests; heat release rate; pool fires; smoke yield

100.Walton, W. D.
In-Situ Burning of Oil Spills: Mesoscale Experiments.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 5266; 62 p. November 1993.
PB94-142973
oil spills; burning rate; crude oil; fire tests; heat release rate; particle size distribution; plumes; pool fires; smoke yield; water sprays

101.Walton, W. D.; Evans, D. D.; McGrattan, K. B.; Baum, H. R.; Twilley, W. H.; Madrzykowski, D.; Putorti, A. D.; Rehm, R. G.; Koseki, H.; Tennyson, E. J.
In Situ Burning of Oil Spills: Mesoscale Experiments and Analysis.
National Institute of Standards and Technology, Gaithersburg, MD
Fire Research Institute, Tokyo, Japan
Minerals Management Service, Herndon, VA
Environment Canada. Arctic and Marine Oil Spill Program Technical Seminar, 16th. Volume 2. June 7-9, 1993, Edmonton, Alberta, Canada, Environment Canada, Ottawa, Ontario, 679-734 pp, 1993.
oil spills; experiments; crude oil; water; instruments; burning rate; particle size distribution; temperature; carbon dioxide; plumes; visibility; mathematical models; equations

102.Walton, W. D.; Evans, D. D.; McGrattan, K. B.; Baum, H. R.; Twilley, W. H.; Madrzykowski, D.; Putorti, A. D.; Rehm, R. G.; Koseki, H.; Tennyson, E. J.
In Situ Burning of Oil Spills: Mesoscale Experiments and Analysis.
National Institute of Standards and Technology, Gaithersburg, MD
Fire Research Institute, Tokyo, Japan
Minerals Management Service, Herndon, VA
Environment Canada. Arctic and Marine Oil Spill Program Technical Seminar, 16th. Volume 2. June 7-9, 1993, Edmonton, Alberta, Canada, Environment Canada, Ottawa, Ontario, 679-734 pp, 1993.
oil spills; experiments; crude oil; water; instruments; burning rate; particle size distribution; temperature; carbon dioxide; plumes; visibility; mathematical models; equations

103.Walton, W. D.; Notarianni, K. A.
Comparison of Ceiling Jet Temperatures Measured in an Aircraft hanger Test Fire With Temperatures Predicted by the DETACT-QS and LAVENT Computer Models.
National Institute of Standards and Technology, Gaithersburg, MD
NISTIR 4947; 35 p. January 1993.
Available from National Technical Information Services
computer models; ceiling jets; temperature; aircraft hangers; building technology; detector response; fire models; fire plumes; fire tests; pool fires; response time; sprinkler response

104.Wilson, M. R.
Time Dependent Vector Dynamic Programming Algorithm for the Path Planning Problem.
Clemson Univ., SC
NIST-GCR-93-636; 53 p. December 1993.
Available from National Technical Information Services
computer programs; building fires; egress; escape; fire models; fire research

Y

105.Yamashita, H.; Baum, H. R.; Kushida, G.; Nakabe, K.; Kashiwagi, T.
Heat Transfer From Radiatively Heated Material in a Low Reynolds Number Microgravity Environment.
Nagoya Univ., Japan
National Institute of Standards and Technology, Gaithersburg, MD
Osaka Univ., Japan
Journal of Heat Transfer, Vol. 115, 418-425, May 1993.
heat transfer; reynolds number; microgravity; mathematical models; vapor phases; equations; fluid flow

106.Yang, J. C.
Heterogeneous Combustion.
National Institute of Standards and Technology, Gaithersburg, MD
Environmental Implications of Combustion Processes. Chapter 4, CRC Press, Boca Raton, FL, Puri, I. K., Editor(s), 97-137 p., 1993.
heterogeneous combustion; droplets; sparys; coal; smoldering combustion

107.Yang, J. C.; Breuel, B. D.; Grosshandler, W. L.
Solubilities of Nitrogen and Freon-23 in Alternative Halon Replacement Agents.
National Institute of Standards and Technology, Gaithersburg, MD
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 Technical Working Conference 1993. Proceedings. May 11-13, 1993, Albuquerque, NM, 107-114 pp, 1993.
halons; nitrogen; thermodynamic properties; solubility

108.Yang, M. H.; Puri, I. K.; Hamins, A.
Extinction of Inhibited, Stretched and Diluted Counterflowing Flames.
Illinois Univ., Chicago
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, 1993, New Orleans, LA, 56-60 pp, 1993.
flame research; methodology; kinetics; flame extinguishment

Z

109.Zhang, X.; Ghoniem, A. F.
Computational Model for the Rise and Dispersion of Wind-Blown, Buoyancy-Driven Plumes. Part 2. Linearly Stratified Atmosphere.
Massachusetts Institute of Technology, Cambridge
NIST-GCR-93-637; 47 p. December 1993.
Available from National Technical Information Services
PB94-143427
buoyant flows; computation; entrainment; fire phases; large fires; simulation; urban fires; wildland fires; wind effects

110.Zhou, L.; Fernandez-Pello, A. C.
Turbulent, Concurrent, Ceiling Flame Spread: The Effect of Buoyancy.
California Univ., Berkeley
Combustion and Flame, Vol. 92, No. 1-2, 45-59, 1993.
flame spread; ceilings; air flow; polymethylmethacrylate; turbulence; air; buoyancy; flame fronts

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3.0 KEYWORD INDEX

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