

# Computer Models For Fire and Smoke

*Model Name:* WALLEX

*Very Short Description:* Model for the calculation of heat transfer from window fire plume to wall above window.

*Modeler, Organization:* I. Oleszkiewicz, National Fire Laboratory, Institute for Research in Construction, National Research Council of Canada.

*References:*

1. Oleszkiewicz, I., "Heat Transfer from a Window Fire Plume to a Building Facade," Collected Papers in Heat Transfer – 1989, HTD – vol. 123, pp. 163-170, American Society of Mechanical Engineers, New York, NY
2. Law, M., "Fire Safety of Bare External Structural Steel," The Steel Construction Institute, U.K. 1989

*Availability:* Program will be available in future. Calculations can be made by NRCC at present.

*Hardware:* Apple Macintosh, IBM-compatible PC

*Language:* BASIC

*Size:* 10 kB

*Detailed Description:*

*Input:*

Fire compartment dimensions, window(s) dimensions and fire load or expected heat release rate.

*Output:*

Total (radiant + convective) heat flux density along centerline above window.

*Assumptions:*

The model uses formulae for flame dimensions and temperature, developed by M. Law and modified by I. Oleszkiewicz. The heat transfer formulae are semi-

empirical and are based on general formulae for heat transfer and data collected in full-scale experiments at NRCC.