

# Computer Models For Fire and Smoke

<i>Model Name:</i>	OZone
<i>Version:</i>	1.1
<i>Classification:</i>	Zone Model
<i>Very Short Description:</i>	A one zone model to predict the temperatures in a compartment in order to evaluate structural resistance of elements.
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<i>User's Guide:</i>	A User's Guide for OZone is distributed with the model.
<i>Technical References:</i>	A Technical Reference for OZone is distributed with the model : <i>The One Zone Model OZone - Description and Validation Based on 54 Experimental Fire Tests</i> Also available in : Competitive Steel Buildings through Natural Fire Safety Concept. Part 2 : Natural Fire Models. Final Report. Profil ARBED. March 1999.
<i>Validation References:</i>	A validation reference for OZone is distributed with the model : <i>The One Zone Model OZone - Description and Validation Based On 54 Experimental Fire Tests</i> Also available in : Competitive Steel Buildings through Natural Fire Safety Concept. Part 2 : Natural Fire Models. Final Report. Profil ARBED. March 1999.
<i>Availability:</i>	Available from University of Liège (send an email to contacts)
<i>Price:</i>	There is no cost to receive OZone by email. A letter of agreement has to be signed.
<i>Necessary Hardware:</i>	Windows <b>based P.C.</b>

*Computer Language:* FORTRAN - Visual Basic (Graphic Interface)

*Size:* Approximately 5MB of disk space.

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*Detailed Description:*

In OZone several improvements on existing one zone models have been made. The basic equations of the model have been written considering that the specific heat of the gas in the compartment is a function of the temperature. The wall model is made by the finite element method and is implicit. And finally different combustion models have been developed to cover different situations of use of the code (Design situation, Test modelling...).

This one zone model has been developed in the scope of the ECSC research "Competitive Steel Buildings through Natural Fire Safety Concept". Within the same research a database of natural fire tests has been created. The code has been validated on 54 tests of this database and a comparison of OZone and another one zone model NAT has been made.

A Graphic User Interface has been developed to define the input data. The Natural Fire Safety Concept developed in the research "Competitive Steel Buildings through Natural Fire Safety Concept" is integrated in the Graphic User Interface.