

F.R.A.M.E. calculation report

This report is generated by the "FRAME for Windows program "

The calculation is made for: Airport_building

location: Düsseldorf

The compartment is: Ankunfsthalle

The occupancy or use is:: airport

Date of the calculation: 2001.11.20

Version: Brand_11041996

CALCULATION of the POTENTIAL RISKS

Data of the compartment :

The fire load 'immobile' Q_i is (in MJ/m²) : 300.00

The fire load ' mobile' Q_m is (in MJ/m²) : 600.00

This gives for the fire load factor q : 1.42

The temperature ris T in °C is: 250.00

The average dimension m (in meters) is: 0.30

The combustibility class, M is: 1.50

This gives for fire spread factor i : 0.95

The theoretical length l is: 560.00 meter

The equivalent width b is: 70.00 meter

This gives for the area factor g : 3.85

The level number E is: 1.50

This gives for the level factor e : 1.30

The ceiling height h is: 5.00 meter

The flow of the ventilation system is (in Nm³/h): 0.00

The aerodynamic surface of the smoke vents is (in m²): 0.00 m²

The surface of the windows in the roof and upper third of the walls is: 0.00 m²

The smoke venting ratio is: 0.00

This gives for the venting factor v : 1.12

The height difference with the access level is: 0.00 meter

The number of access directions is: 2.00

This gives for access factor z : 1.05

These data give the following results:

The potential risk P for property is: 7.95

The potential risk P_1 for the persons is: 2.07

The potential risk P_2 for the activities is: 5.60

CALCULATION of the ACCEPTANCE LEVELS

The following elements determine the possibility of starting a fire:

Main activity:

Non industrial activities

Heating systems:

Heat transfer through pulsed air or through oil

Heat generator in a fire separated room

Energy source: electricity, coal, fuel oil

Electrical installations:

In compliance with the rules and regularly checked

Explosion hazards:

No explosion hazard

Secondary activities :

This gives for the activation factor a : 0.10

The following elements interfere with the evacuation of the compartment:

The number of persons to evacuate is: 2000.00

The number of exit units is: 55.00

The number of exit paths is: 2.00

The mobility factor p is defined as follows:

mobile but dependent persons

This gives for evacuation time factor t : 0.61

The following elements define the value of the content:

Replacement factor c_1 is: 0.00

The value of the content is estimated at:

150.00 millions EURO

with an inflation correction for 2000 of : 1.00

This gives for content factor c : 0.34

The environment factor r is defined with Q_i and M and is: 0.40

The dependency factor d is: 0.30

These data give the following results:

The acceptance level A for the property is: 0.56

The acceptance level A1 for the persons is: 0.50

The acceptance level A2 for the activities is: 0.86

THE ORIENTATION VALUE R_o , The Initial Risk :

The fire resistance of the structure is: 90.00

This gives with the calculated values of P and A , an orientation value R_o of: 7.83

CALCULATION of the PROTECTION LEVELS

The following elements define the value of the water supplies:

Type of storage:

Water storage for general use, automatically filled

The available quantity is adequate

Distribution network:

Distribution network adequate

Hydrants:

The number of outlets is adequate

Pressure on the network:

The static pressure is adequate

This gives for factor W: 1.00

The following elements define the value of the normal protection :

Notification:

All the elements of the notification chain are present

Manual extinguishment means:

Extinguishers adequate

Hose stations adequate

Arrival time for the fire brigade:

First fire brigade arrival in less than 10 min.

Training of people:

Only a limited number of persons trained

This gives for factor N: 0.90

The following elements define the value of the special protection :

Type of automatic detection:

type of special water supplies :

Under control of building user (independent)

Highly reliable (double energy supply)

type of special protection:

type of fire brigade:

Large professional public fire brigade

Temporary private fire brigade

This gives for factor S: 4.12

This factor S and the following elements define the value of the fire resistance :

The fire resistance of the structure is: 90.00

The fire resistance of the exterior walls is: 60.00

The fire resistance of the ceiling or roof is: 60.00

The fire resistance of the internal walls is: 0.00

This gives for factor F : 1.51

The following elements define the value of the escape possibilities:

Detection and signalisation:

Safeguarding of exit paths:

Complete evacuation plan with adequate signalling

Protection by:

Large professional public fire brigade

Temporary private fire brigade

This gives for factor U : 2.29

The following elements define the value of the salvage factor :

Protection and organisation:

Safeguarded financial and economical data

Easy access to spare parts and replacements

This gives for factor Y : 1.34

These data give the following results:

The protection level D for the property is: 5.61

The protection level D1 for the persons is: 2.07

The protection level D2 for the activities is: 4.98

The calculated risk R is for the property: 2.55

The calculated risk R1 is for the persons: 2.01

The calculated risk R2 is for the activities: 1.30