

SUMMARY REPORT

Unique Audit Number:

157



Study Folder: TOP EVENT 10-14

PHAST v6.00



TOP EVENT 10-14



Methanol spill out

Disk rupture opening

Base Case

CASE Name:

Data

User-Defined Data

Material

| | |
|------------------------------------|--------------------|
| Material Identifier | METHANOL |
| Type of Vessel | Pressurized Gas |
| Pressure Specification | Pressure specified |
| Discharge Pressure (gauge) | 0.49 bar |
| Discharge Temperature | 120 C |
| Inventory of material to discharge | 8000 kg |

Scenario

| | |
|------------------------------|--------------|
| Type of Event | Disc rupture |
| Phase | Vapour |
| Pipe Diameter | 75 mm |
| Number of Excess Flow Valves | 0 |
| Number of Non-Return Valves | 0 |
| Number of Shut-Off Valves | 0 |

Location

| | |
|--|---|
| Northern location of dispersion source | 0 m |
| Eastern location of dispersion source | 0 m |
| Dispersion Concentration of Interest | 1 ppm |
| Averaging time associated with Concentration | Flammable |
| Status of Dike | No dike present |
| ERPG selection | ERPG is not set |
| IDLH selection | IDLH is not set |
| STEL selection | STEL is not set |
| User Defined Averaging | No user defined averaging time supplied |

Indoor/Outdoor

| | |
|---------------------|---------------------|
| Building Height | 3 m |
| Building Length | 9 m |
| Building Width | 13.5 m |
| Type of Ventilation | Natural ventilation |
| Droplet state | No droplets trapped |

Flammable

| | |
|------------------------------|-------|
| Method to use for explosions | TNT |
| Jet Fire Method | Shell |

Discharge Parameters

| | |
|------------------------|---------|
| Default volume changes | 30 /day |
| Release height | 2 m |

Dispersion

| | |
|-----------------------------------|----------------------|
| Ignition Location | No ignition location |
| Inventory of material to Disperse | 8000 kg |

Bleve Parameters

| | |
|-------------------------|---------|
| BLEVE radiation level 1 | 3 kW/m2 |
|-------------------------|---------|

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| | |
|---------------------------------|--------------|
| BLEVE radiation level 2 | 5 kW/m2 |
| BLEVE radiation level 3 | 7 kW/m2 |
| Jet Fire Parameters | |
| Jet fire radiation level 1 | 3 kW/m2 |
| Jet fire radiation level 2 | 5 kW/m2 |
| Jet fire radiation level 3 | 7 kW/m2 |
| Pool Fire Parameters | |
| Pool fire radiation level 1 | 3 kW/m2 |
| Pool fire radiation level 2 | 5 kW/m2 |
| Pool fire radiation level 3 | 7 kW/m2 |
| Multi Energy Explosion | |
| Use Unconfined Volumes | No |
| Use Fractions | No |
| Use 1st Confined Source | No |
| Use 2nd Confined Source | No |
| Use 3rd Confined Source | No |
| Use 4th Confined Source | No |
| Use 5th Confined Source | No |
| Use 6th Confined Source | No |
| Use 7th Confined Source | No |
| TNT Explosion Parameters | |
| Air or Ground burst | Ground burst |

Discharge Data

User-Defined Quantities

| | |
|-------------|--------------|
| Material | METHANOL |
| Temperature | 120,00 C |
| Pressure | 1,50 bar |
| Inventory | 8.000,00 kg |
| Scenario | Disc Rupture |

Calculated Quantities

Weather: Category 2/F

Mass Flow of Air (Vent from Vapor Space Only) n/a kg/s

Average Values for Segment Number 1

| | |
|--------------------------|---------------|
| Liquid Fraction | 0,00 fraction |
| FinalTemperature | 106,94 C |
| Final Velocity | 193,56 m/s |
| Droplet Diameter | 0,00 mm |
| Continuous Release Data: | |
| Mass Flowrate | 0,89 kg/s |
| Release Duration | 3.600,00 s |
| Orifice Velocity | 193,56 m/s |
| Exit Pressure | 1,01 bar |
| Exit Temperature | 106,94 C |
| Discharge Coefficient | 0,69 |
| Expanded Radius | 0,04 m |

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Weather: Category 5/D

Mass Flow of Air (Vent from Vapor Space Only) n/a kg/s

Average Values for Segment Number 1

Liquid Fraction 0,00 fraction

Final Temperature 106,94 C

Final Velocity 193,56 m/s

Droplet Diameter 0,00 mm

Continuous Release Data:

Mass Flowrate 0,89 kg/s

Release Duration 3.600,00 s

Orifice Velocity 193,56 m/s

Exit Pressure 1,01 bar

Exit Temperature 106,94 C

Discharge Coefficient 0,69

Expanded Radius 0,04 m

Consequence Results

Distance to Concentration Results

| Concentration(ppm) Averaging Time | | | | Distance (m) | |
|-----------------------------------|-------|---|--|--------------|--------------|
| | | | | Category 2/F | Category 5/D |
| User Conc (1) | 18.75 | s | | 289.757 | 5716.84 |
| UFL (360000) | 18.75 | s | | No Hazard | No Hazard |
| LFL (73000) | 18.75 | s | | 1.1676 | 0.246539 |
| LFL Frac (36500) | 18.75 | s | | 1.44148 | 0.292205 |

Concentration At Distance Results

| Distance | | Conc.(ppm) at Flammable Avg.Time of 18.75 s | |
|----------|---|---|--------------|
| | | Category 2/F | Category 5/D |
| 10 | m | 43.5271 | 2026.49 |
| 25 | m | 108.637 | 2018.26 |
| 50 | m | 108.162 | 1290.87 |

| Distance | | Conc.(ppm) at Core Avg.Time of 18.75 s | |
|----------|---|--|--------------|
| | | Category 2/F | Category 5/D |
| 10 | m | 43.5271 | 2026.49 |
| 25 | m | 108.637 | 2018.26 |
| 50 | m | 108.162 | 1290.87 |

Flash Fire Envelope

| | | | | Distance (m) | |
|-----------------|-------|-----|--|--------------|--------------|
| | | | | Category 2/F | Category 5/D |
| Furthest Extent | 36500 | ppm | | 1.44148 | 0.292205 |
| Furthest Extent | 73000 | ppm | | 1.1676 | 0.246539 |

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In-Building Release Notes

**** Warning ****

The average concentration in the building is above the lower flammable limit. A fire or explosion in the building is likely.

The plume does not clear the building wake.
All results could be affected by the wake.

Weather Conditions

| | | Category 2/F | Category 5/D |
|-----------------------------|----------|--------------|--------------|
| Wind Speed | m/s | 2 | 5 |
| Pasquill Stability | | F | D |
| Surface Roughness Parameter | | 0.1 | 0.1 |
| Atmospheric Temperature | C | 9.85 | 9.85 |
| Surface Temperature | C | 9.85 | 9.85 |
| Relative Humidity | fraction | 0.7 | 0.7 |