Piattaforma polifunzionale Ponticelle

Nulla Osta di Fattibilità (N.O.F.)

D.Lgs. 26 giugno 2015 n. 105 e s.m.i.

RAPPORTO PRELIMINARE DI SICUREZZA
Piattaforma polifunzionale Ponticelle

APPENDICE E.1
Output sistema di calcolo EFFECTS

Approvato HA	R. Boschi E. Zamagni		**Approvato** ER	G. Romano F. Lia		GOLDER
Controllato HA	M. Facchini L. Pernetta		**Controllato** ER	E. Lagrotta M. Campello		
Redatto Golder		F. De Giorgi C. Zaffaroni P. Zoppellari				
Cod. Doc. HA	CO 05 RA VA 01 RP DT 10.00		**Cod. Doc.** ER	160053-ENG-F-F5-2460_All.E.1		
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A TOP EVENT 1.A - PERDITA DA FUSTI/CISTERNETTE E TOP EVENT 3.A – RILASCIO IN FASE DI RICONFEZIONAMENTO

A.1 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI INFIAMMABILI – FLASH FIRE (ACETONE)

Model: Pool evaporation - D5 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard
Results	
Source Definition	
Time pool spreading ends (s)	4
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,3668
Purple book representative evaporation duration (s)	1392,2
Representative temperature (°C)	19,902
Representative pool diameter (m)	8,373
Density after mixing with air (kg/m3)	1,2215
Total evaporated mass (kg)	510,67
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	55,062
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,3668
Duration of the release (s)	1392,2
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	3	0	0	9	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,3668
Duration of the release (s)	1392,2
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	3	0	0	9	6037,3

Model: Pool evaporation -F2 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,21523
Purple book representative evaporation duration (s)	1718,4
Representative temperature (°C)	19,98
Representative pool diameter (m)	9,2205
Density after mixing with air (kg/m3)	1,2284
Total evaporated mass (kg)	369,85
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	66,772
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,21523
Duration of the release (s)	1718,4
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	23	0	0	9	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,21523
Duration of the release (s)	1718,4
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	23	0	0	9	6037,3

Model: Pool evaporation - D5 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,47693
Purple book representative evaporation duration (s)	1371,8
Representative temperature (°C)	20,98
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,1802
Total evaporated mass (kg)	654,23
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,47693
Duration of the release (s)	1371,8
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	9	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,47693
Duration of the release (s)	1371,8
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	9	6037,3

Model: Pool evaporation -F2 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,2911
Purple book representative evaporation duration (s)	1688,2
Representative temperature (°C)	26,427
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,1915
Total evaporated mass (kg)	491,44
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,2911
Duration of the release (s)	1688,2
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	1,5614
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0,1
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	38	0	0	10	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,2911
Duration of the release (s)	1688,2
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	38	0	0	10	6037,3

A.2 STIMA DELL'IRRAGGIAMENTO TERMICO (ACETONE)

Model: pool fire - Acetone (5 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (25/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	70
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	9,4407
Flame footprint dimensions D,-D,DMW,MW	12;-5;4;9
Calculated pool surface area (m2)	70
Combustion rate (kg/s)	2,66
Duration of fire (s)	375,94
Surface emissive power flame (kW/m2)	32,301
Soot fraction used (-)	0,8
Flame tilt (deg)	54,919
Flame temperature (°C)	598,41
Length of the flame (m)	8,641
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37

Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0069078
Atmospheric Transmissivity at Xd (%)	54,058
Viewfactor at Xd (%)	0,039561
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,026312
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	14	-7	3	16	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	13	-6	2	15	12,5
7 kW/m2 heat radiation contour	15	-8	3	18	7
5 kW/m2 heat radiation contour	16	-9	3	21	5
3 kW/m2 heat radiation contour	18	-11	3	26	3

Model: pool fire - Acetone (2 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (25/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	70
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	

Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	9,4407
Flame footprint dimensions D,-D,DMW,MW	12;-5;4;9
Calculated pool surface area (m2)	70
Combustion rate (kg/s)	2,66
Duration of fire (s)	375,94
Surface emissive power flame (kW/m2)	29,972
Soot fraction used (-)	0,8
Flame tilt (deg)	41,957
Flame temperature (°C)	582,47
Length of the flame (m)	10,474
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,010014
Atmospheric Transmissivity at Xd (%)	53,642
Viewfactor at Xd (%)	0,062287
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,043171
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	13	-7	2	17	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	12	-7	2	15	12,5
7 kW/m2 heat radiation contour	15	-8	2	20	7
5 kW/m2 heat radiation contour	17	-10	3	24	5
3 kW/m2 heat radiation contour	20	-12	3	30	3

Model: pool fire - Acetone (5 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	70
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	9,4407
Flame footprint dimensions D,-D,DMW,MW	12;-5;4;9
Calculated pool surface area (m2)	70
Combustion rate (kg/s)	2,66
Duration of fire (s)	375,94
Surface emissive power flame (kW/m2)	31,985
Soot fraction used (-)	0,8
Flame tilt (deg)	54,807
Flame temperature (°C)	596,7
Length of the flame (m)	8,8582
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0064091
Atmospheric Transmissivity at Xd (%)	49,259

Viewfactor at Xd (%)	0,040679
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,02381
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	14	-7	3	16	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	13	-6	2	14	12,5
7 kW/m2 heat radiation contour	15	-8	3	18	7
5 kW/m2 heat radiation contour	16	-9	3	21	5
3 kW/m2 heat radiation contour	18	-11	3	26	3

Model: pool fire - Acetone (2 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	1000
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	70
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium

Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	9,4407
Flame footprint dimensions D,-D,DMW,MW	12;-5;4;9
Calculated pool surface area (m2)	70
Combustion rate (kg/s)	2,66
Duration of fire (s)	375,94
Surface emissive power flame (kW/m2)	29,692
Soot fraction used (-)	0,8
Flame tilt (deg)	41,82
Flame temperature (°C)	580,91
Length of the flame (m)	10,738
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0092626
Atmospheric Transmissivity at Xd (%)	48,759
Viewfactor at Xd (%)	0,06398
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,038905
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions

Lethality Contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [%]
1 % lethality contour	13	-7	2	17	1

Heat Radiation Contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [kW/m2]
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	12	-6	2	15	12,5
7 kW/m2 heat radiation contour	15	-8	2	20	7
5 kW/m2 heat radiation contour	17	-9	3	23	5
3 kW/m2 heat radiation contour	20	-12	3	29	3

A.3 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI TOSSICI (METANOLO)

Model: Pool evaporation - D5 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	600
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,11448
Purple book representative evaporation duration (s)	1777,8
Representative temperature (°C)	13,038
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,2016
Total evaporated mass (kg)	203,53
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,11448
Duration of the release (s)	1777,8
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	90,941
Maximum concentration at Zd (mg/m3)	690,53
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,11448
Duration of the release (s)	1777,8
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	90,941
Maximum concentration at Zd (mg/m3)	690,53
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,11448
Duration of the release (s)	1777,8
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	90,941
Maximum concentration at Zd (mg/m3)	690,53
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	600
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,084944
Purple book representative evaporation duration (s)	1783,5
Representative temperature (°C)	20,99
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,2022
Total evaporated mass (kg)	151,5
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,084944
Duration of the release (s)	1783,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	667,72
Maximum concentration at Zd (mg/m3)	1280,3
...at distance (m)	28,1
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,084944
Duration of the release (s)	1783,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	667,72
Maximum concentration at Zd (mg/m3)	1280,3
...at distance (m)	28,1
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,084944
Duration of the release (s)	1783,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	667,72
Maximum concentration at Zd (mg/m3)	1280,3
...at distance (m)	27,8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration at 1.7m at 600s	83	10	16	9	799,38
User defined concentration outer contour at 1.7m	83	10	16	9	799,38

Model: Pool evaporation - D5 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)
Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An

advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	600
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,16077
Purple book representative evaporation duration (s)	1696,5
Representative temperature (°C)	19,489
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,1562
Total evaporated mass (kg)	272,74
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,16077
Duration of the release (s)	1696,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	127,71
Maximum concentration at Zd (mg/m3)	969,71
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,16077
Duration of the release (s)	1696,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	127,71
Maximum concentration at Zd (mg/m3)	969,71
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,16077
Duration of the release (s)	1696,5
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	127,71
Maximum concentration at Zd (mg/m3)	969,71
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration at 1.7m at 600s	18	4	5	8	799,38
User defined concentration outer contour at 1.7m	18	4	5	8	799,38

Model: Pool evaporation - F2 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (23/02/2021)
Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	600
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	70
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,12341
Purple book representative evaporation duration (s)	1710
Representative temperature (°C)	28,599
Representative pool diameter (m)	9,4407
Density after mixing with air (kg/m3)	1,1572
Total evaporated mass (kg)	211,04
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	70
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,12341
Duration of the release (s)	1710
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	970,12
Maximum concentration at Zd (mg/m3)	1860,1
...at distance (m)	28,1
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,12341
Duration of the release (s)	1710
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	970,12
Maximum concentration at Zd (mg/m3)	1860,1
...at distance (m)	27,8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,12341
Duration of the release (s)	1710
Pool surface area (m2)	70
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	970,12
Maximum concentration at Zd (mg/m3)	1860,1
...at distance (m)	28,1
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration outer contour at 1.7m	119	8	26	10	799,38
User defined concentration at 1.7m at 600s	119	8	26	10	799,38

B TOP EVENT 1.B - PERDITA DA FUSTI/CISTERNETTE E TOP EVENT 3.B – RILASCIO IN FASE DI RICONFEZIONAMENTO

B.1 VALUTAZIONE DELLA DISPERSIONE DEI PRODOTTI DI COMBUSTIONE (ACIDO CLORIDRICO)

Model: Combustion and toxic combustion products 20°C

Model: Combustion and Toxic Combustion Products

version: v2021.02.9ce8d1b (23/02/2021)

Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	600
Surface of the fire (m2)	70
Environment	
Ambient temperature (°C)	20

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	2,7937
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	9,4407
(Convective) Heat production fire (MW)	12,478
Duration of the fire (s)	214,77
Total formation rate of combustion products (kg/s)	4,1283
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	2,0518
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,50177
H2O formation rate (kg/s)	1,0272
Soot formation rate (kg/s)	0,54751
Height of the Flame (m)	12,19

Contour Dimensions

Model: Combustion and toxic combustion products 30°C

Model: Combustion and Toxic Combustion Products

version: v2021.02.9ce8d1b (23/02/2021)

Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	600
Surface of the fire (m2)	70
Environment	
Ambient temperature (°C)	30

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	2,8925
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	9,4407
(Convective) Heat production fire (MW)	12,919
Duration of the fire (s)	207,43
Total formation rate of combustion products (kg/s)	4,2743
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	2,1244
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,51951
H2O formation rate (kg/s)	1,0635
Soot formation rate (kg/s)	0,56687
Height of the Flame (m)	12,451

Contour Dimensions

B.2 INNALZAMENTO DEL PENNACCHIO

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (23/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	2,0518
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	9,4407
(Convective) Heat production fire (MW)	12,478

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	122,26
Distance to max plume height (m)	794,33
Penetration fraction (-)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH Max	285	1	129	43	75,802
IDLH at Zd	107	1	5	39	75,802
User defined concentration at Zd	228	1	89	55	7,58
User defined concentration Max	1245	1	623	137	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (23/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	2,0518
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	9,4407
(Convective) Heat production fire (MW)	12,478

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	80,688
Distance to max plume height (m)	2290,9
Penetration fraction (-)	0,66279

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH Max	1059	1	541	59	75,802
IDLH at Zd	19	1	1	36	75,802
User defined concentration Max	5130	1	2722	237	7,58
User defined concentration at Zd	24	1	1	42	7,58

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (23/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	2,1244
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	9,4407
(Convective) Heat production fire (MW)	12,919

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	125
Distance to max plume height (m)	794,33
Penetration fraction (-)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH at Zd	105	1	5	39	75,802
IDLH Max	292	1	132	43	75,802
User defined concentration at Zd	224	1	81	54	7,58
User defined concentration Max	1274	1	624	140	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (23/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	2,1244
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	9,4407
(Convective) Heat production fire (MW)	12,919

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	82,726
Distance to max plume height (m)	181,97
Penetration fraction (-)	0,93726

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH at Zd	19	1	1	36	75,802
IDLH Max	1035	1	497	59	75,802
User defined concentration at Zd	24	1	1	42	7,58
User defined concentration Max	4468	1	2280	216	7,58

B.3 VALUTAZIONE DELLA DISPERSIONE DEI PRODOTTI DI COMBUSTIONE (ACIDO CLORIDRICO)

Model: Neutral Gas Dispersion: Concentration HCl – LOC -Classe di Pasquill D5 20°C
Model: Neutral Gas - Concentration
version: v2021.02.022757e (23/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	2,0518
Duration of the release (min)	3,58
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	122,26
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No
Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,0040552
Maximum concentration at Zd (mg/m3)	2,0956
...at distance (m)	1522,4
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,82557
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2535
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Contour Dimensions	

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 20°C LOC
Model: Neutral Gas - Concentration

version: v2021.02.022757e (23/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	2,0518
Duration of the release (min)	3,58
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	69
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,18723
Maximum concentration at Zd (mg/m3)	6,719
...at distance (m)	4679,4
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,01672
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,024437
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill D5 30°C LOC
Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	

Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	2,1244
Duration of the release (s)	207,43
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	125
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,0036505
Maximum concentration at Zd (mg/m3)	1,9936
...at distance (m)	1522,4
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,82402
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2525
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 30°C LOC

Model: Neutral Gas – Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	

Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	2,1244
Duration of the release (s)	207,43
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	69
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,18142
Maximum concentration at Zd (mg/m3)	6,896
...at distance (m)	4646,3
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,01672
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,024437
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

C TOP EVENT 2 A/2.B: PERDITA DA MANICHETTA DI CARICO/SCARICO ATB

C.1 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI INFIAMMABILI – FLASH FIRE (ACETONE)

Model: Pool evaporation - D5 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard
Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,071815
Purple book representative evaporation duration (s)	1675,5
Representative temperature (°C)	19,553
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,2102
Total evaporated mass (kg)	120,33
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613
Contour Dimensions	

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,071815
Duration of the release (s)	1675,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	1	0	0	4	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,071815
Duration of the release (s)	1675,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	1	0	0	4	6037,3

Model: Pool evaporation -F2 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,035661
Purple book representative evaporation duration (s)	1774,5
Representative temperature (°C)	19,909
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,2125
Total evaporated mass (kg)	63,282
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters

Inputs

Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,035661
Duration of the release (s)	1774,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	4	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters

Inputs

Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,035661
Duration of the release (s)	1774,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	4	6037,3

Model: Pool evaporation - D5 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters

Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,07328
Purple book representative evaporation duration (s)	1722
Representative temperature (°C)	20,058
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,1651
Total evaporated mass (kg)	126,19
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,07328
Duration of the release (s)	1722
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	1	0	0	4	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,07328
Duration of the release (s)	1722
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	1	0	0	4	6037,3

Model: Pool evaporation -F2 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,037038
Purple book representative evaporation duration (s)	1790,4
Representative temperature (°C)	20,843
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,1678
Total evaporated mass (kg)	66,314
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,037038
Duration of the release (s)	1790,4
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	6	0	0	4	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,037038
Duration of the release (s)	1790,4
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	6	0	0	4	6037,3

C.2 STIMA DELL'IRRAGGIAMENTO TERMICO (ACETONE)

Model: pool fire - Acetone (5 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	10
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	3,5682
Flame footprint dimensions D,-D,DMW,MW	5;-2;2;4
Calculated pool surface area (m2)	10
Combustion rate (kg/s)	0,38
Duration of fire (s)	11053
Surface emissive power flame (kW/m2)	29,242
Soot fraction used (-)	0,8
Flame tilt (deg)	58,181
Flame temperature (°C)	577,28
Length of the flame (m)	4,2266
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37

Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,001003
Atmospheric Transmissivity at Xd (%)	53,196
Viewfactor at Xd (%)	0,0064481
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,0020081
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	6	-2	1	6	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	6	-2	1	5	12,5
7 kW/m2 heat radiation contour	6	-3	1	7	7
5 kW/m2 heat radiation contour	7	-4	1	8	5
3 kW/m2 heat radiation contour	7	-5	1	10	3

Model: pool fire - Acetone (2 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	10
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333

Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	3,5682
Flame footprint dimensions D,-D,DMW,MW	5;-2;2;4
Calculated pool surface area (m2)	10
Combustion rate (kg/s)	0,38
Duration of fire (s)	11053
Surface emissive power flame (kW/m2)	27,268
Soot fraction used (-)	0,8
Flame tilt (deg)	46,012
Flame temperature (°C)	562,76
Length of the flame (m)	5,1234
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0014917
Atmospheric Transmissivity at Xd (%)	52,822
Viewfactor at Xd (%)	0,010356
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,0034088
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	6	-3	1	7	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	6	-2	1	6	12,5
7 kW/m2 heat radiation contour	7	-3	1	8	7
5 kW/m2 heat radiation contour	7	-4	1	10	5
3 kW/m2 heat radiation contour	9	-5	1	12	3

Model: pool fire - Acetone (5 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Semi-continuous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Mass flow rate of the source (kg/s)	14
Duration of the release (min)	5
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	10
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	3,5682
Flame footprint dimensions D,-D,DMW,MW	5;-2;2;4
Calculated pool surface area (m2)	10
Combustion rate (kg/s)	0,38
Duration of fire (s)	11053
Surface emissive power flame (kW/m2)	28,973
Soot fraction used (-)	0,8
Flame tilt (deg)	58,077
Flame temperature (°C)	575,78
Length of the flame (m)	4,3328
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,00092817

Atmospheric Transmissivity at Xd (%)	48,283
Viewfactor at Xd (%)	0,0066351
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,0018108
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	6	-2	1	6	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	6	-2	1	5	12,5
7 kW/m2 heat radiation contour	6	-3	1	7	7
5 kW/m2 heat radiation contour	7	-4	1	8	5
3 kW/m2 heat radiation contour	7	-5	1	10	3

Model: pool fire - Acetone (2 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Semi-continuous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Mass flow rate of the source (kg/s)	14
Duration of the release (min)	5
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	10
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333

Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	3,5682
Flame footprint dimensions D,-D,DMW,MW	6;-2;2;4
Calculated pool surface area (m2)	10
Combustion rate (kg/s)	0,38
Duration of fire (s)	11053
Surface emissive power flame (kW/m2)	27,032
Soot fraction used (-)	0,8
Flame tilt (deg)	45,881
Flame temperature (°C)	561,43
Length of the flame (m)	5,2522
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0013756
Atmospheric Transmissivity at Xd (%)	47,835
Viewfactor at Xd (%)	0,010638
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,0030597
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	6	-3	1	7	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	6	-2	1	6	12,5
7 kW/m2 heat radiation contour	7	-3	1	8	7
5 kW/m2 heat radiation contour	7	-4	1	9	5
3 kW/m2 heat radiation contour	9	-5	1	12	3

C.3 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI TOSSICI (METANOLO)

Model: Pool evaporation - D5 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,024686
Purple book representative evaporation duration (s)	1733,4
Representative temperature (°C)	18,805
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,201
Total evaporated mass (kg)	42,791
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,024686
Duration of the release (s)	1733,4
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	20,532
Maximum concentration at Zd (mg/m3)	383,6
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,024686
Duration of the release (s)	1733,4

Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	20,532
Maximum concentration at Zd (mg/m3)	383,6
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,024686
Duration of the release (s)	1733,4
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	20,532
Maximum concentration at Zd (mg/m3)	383,6
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,012817
Purple book representative evaporation duration (s)	1797,9
Representative temperature (°C)	19,96
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,2011
Total evaporated mass (kg)	23,043
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,012817
Duration of the release (s)	1797,9
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	119,28
Maximum concentration at Zd (mg/m3)	456,38
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH
Model: Neutral Gas - Concentration
version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,012817
Duration of the release (s)	1797,9
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	119,28
Maximum concentration at Zd (mg/m3)	456,38
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,012817
Duration of the release (s)	1797,9
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	119,28
Maximum concentration at Zd (mg/m3)	456,38
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - D5 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,026364
Purple book representative evaporation duration (s)	1757,5
Representative temperature (°C)	20,097
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,1552
Total evaporated mass (kg)	46,335
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,026364
Duration of the release (s)	1757,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	21,927
Maximum concentration at Zd (mg/m3)	409,67
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,026364
Duration of the release (s)	1757,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	21,927
Maximum concentration at Zd (mg/m3)	409,67
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,026364
Duration of the release (s)	1757,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	21,927
Maximum concentration at Zd (mg/m3)	409,67
...at distance (m)	7,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	10
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,014124
Purple book representative evaporation duration (s)	1767,5
Representative temperature (°C)	21,886
Representative pool diameter (m)	3,5682
Density after mixing with air (kg/m3)	1,1554
Total evaporated mass (kg)	24,964
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	10
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,014124
Duration of the release (s)	1767,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	131,44
Maximum concentration at Zd (mg/m3)	502,94
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,014124
Duration of the release (s)	1767,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	131,44
Maximum concentration at Zd (mg/m3)	502,94
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,014124
Duration of the release (s)	1767,5
Pool surface area (m2)	10
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	131,44
Maximum concentration at Zd (mg/m3)	502,94
...at distance (m)	20
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

D TOP EVENT 8 A: ROTTURA/PERDITA DA TUBAZIONE DI TRASFERIMENTO

D.1 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI INFIAMMABILI – FLASH FIRE (ACETONE)

D.1.1 Pozza 37 m²

Model: Pool evaporation - D5 20
Model: Pool Evaporation
version: v2021.02.8cf0fe9 (24/02/2021)
Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	1,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,23907
Purple book representative evaporation duration (s)	1508,3
Representative temperature (°C)	19,987
Representative pool diameter (m)	6,6738
Density after mixing with air (kg/m3)	1,2177
Total evaporated mass (kg)	360,59
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	34,981
Schmidt number used	1,2728
Dispersion model strategy	

Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,23907
Duration of the release (s)	1508,3
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [mg/m3]**
IDLH outer contour	3	0	0	7	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,23907
Duration of the release (s)	1508,3
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions					
Concentration contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [mg/m3]**
IDLH outer contour	3	0	0	7	6037,3

Model: Pool evaporation -F2 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	1,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,122
Purple book representative evaporation duration (s)	1746,5
Representative temperature (°C)	19,998
Representative pool diameter (m)	6,826
Density after mixing with air (kg/m3)	1,2219
Total evaporated mass (kg)	213,07
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	36,595
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,122
Duration of the release (s)	1746,5
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	15	0	0	7	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,122
Duration of the release (s)	1746,5
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	15	0	0	7	6037,3

Model: Pool evaporation - D5 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	1,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,25496
Purple book representative evaporation duration (s)	1606,6
Representative temperature (°C)	20,316
Representative pool diameter (m)	6,8637
Density after mixing with air (kg/m3)	1,1736
Total evaporated mass (kg)	409,63
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,25496
Duration of the release (s)	1606,6
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	3	0	0	7	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,25496
Duration of the release (s)	1606,6
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	3	0	0	7	6037,3

Model: Pool evaporation -F2 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	1,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,13746
Purple book representative evaporation duration (s)	1777,1
Representative temperature (°C)	22,692
Representative pool diameter (m)	6,8637
Density after mixing with air (kg/m3)	1,1796
Total evaporated mass (kg)	244,28
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,13746
Duration of the release (s)	1777,1
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	18	0	0	7	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,13746
Duration of the release (s)	1777,1
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	18	0	0	7	6037,3

D.1.2 Pozza da 50 m²

Model: Pool evaporation - D5 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,25368
Purple book representative evaporation duration (s)	816,7
Representative temperature (°C)	19,739
Representative pool diameter (m)	6,9124
Density after mixing with air (kg/m3)	1,2182
Total evaporated mass (kg)	207,18
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37,528
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,25368
Duration of the release (s)	816,7
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,25368
Duration of the release (s)	816,7
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Model: Pool evaporation -F2 20

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,15334
Purple book representative evaporation duration (s)	1190,7
Representative temperature (°C)	19,944
Representative pool diameter (m)	7,7025
Density after mixing with air (kg/m3)	1,2243
Total evaporated mass (kg)	182,57
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	46,597
Schmidt number used	1,2728
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,15334
Duration of the release (s)	1190,7
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	17	0	0	8	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,15334
Duration of the release (s)	1190,7
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	17	0	0	8	6037,3

Model: Pool evaporation - D5 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,37007
Purple book representative evaporation duration (s)	609,94
Representative temperature (°C)	22,663
Representative pool diameter (m)	7,9788
Density after mixing with air (kg/m3)	1,1778
Total evaporated mass (kg)	225,72
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	50
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,37007
Duration of the release (s)	609,94
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	8	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - D5 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,37007
Duration of the release (s)	609,94
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	5	0	0	8	6037,3

Model: Pool evaporation -F2 30

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,23032
Purple book representative evaporation duration (s)	904,75
Representative temperature (°C)	28,626
Representative pool diameter (m)	7,9788
Density after mixing with air (kg/m3)	1,1885
Total evaporated mass (kg)	208,38
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	50
Schmidt number used	1,2736
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _0,5LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,23032
Duration of the release (s)	904,75
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	Yes
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	31394
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	1,4464
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0,1
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	35	0	0	8	6037,3

Model: Neutral Gas Dispersion: Flammable Cloud - F2 _LEL

Model: Neutral Gas - Flammable Cloud

version: v2021.02.f87b15d (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,23032
Duration of the release (s)	904,75
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Reporting time flammable cloud	Time maximum area cloud
Concentration averaging time (s)	20
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	Yes
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Concentration Results	
Flammability threshold concentration (mg/m3)	62788
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Maximum distance to flammable concentration (m)	
Maximum flammable mass (kg)	0
Maximum area of flammable cloud (m2)	0
at Time T (s)	0
Flammable mass at time t (kg)	0
Area flammable cloud at time t (m2)	0
Volume of the flammable cloud at time t (m3)	
Height to LFL at time t (m)	0
Length of flammable cloud at time t (m)	0
Width of flammable cloud at time t (m)	0
Offset flammable cloud at time t (m)	0
Offset flammable cloud centre at time t (m)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH outer contour	35	0	0	8	6037,3

D.2 STIMA DELL'IRRAGGIAMENTO TERMICO (ACETONE)

D.2.1 Pozza da 37 m²

Model: pool fire - Acetone (5 m/s) 20°C
Model: Pool Fire
version: v2021.02.0caf297 (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	37
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	6,8637
Flame footprint dimensions D,-D,DMW,MW	9;-3;3;7
Calculated pool surface area (m2)	37
Combustion rate (kg/s)	1,406
Duration of fire (s)	2987,2
Surface emissive power flame (kW/m2)	31,245
Soot fraction used (-)	0,8
Flame tilt (deg)	56,016
Flame temperature (°C)	591,29
Length of the flame (m)	6,836
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0

Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0036524
Atmospheric Transmissivity at Xd (%)	53,743
Viewfactor at Xd (%)	0,021751
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,01125
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. [m]**	**DistMin. [m]**	**DistDist. [m]**	**WidthMax. [m]**	**Width Value [%]**
1 % lethality contour	10	-5	2	12	1
Heat Radiation Contours					
Names	**Max. [m]**	**DistMin. [m]**	**DistDist. [m]**	**WidthMax. [m]**	**WidthValue [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	10	-5	2	11	12,5
7 kW/m2 heat radiation contour	11	-6	2	14	7
5 kW/m2 heat radiation contour	12	-7	2	16	5
3 kW/m2 heat radiation contour	14	-8	2	19	3

Model: pool fire - Acetone (2 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	37
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56

Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	6,8637
Flame footprint dimensions D,-D,DMW,MW	9;-3;3;7
Calculated pool surface area (m2)	37
Combustion rate (kg/s)	1,406
Duration of fire (s)	2987,2
Surface emissive power flame (kW/m2)	29,035
Soot fraction used (-)	0,8
Flame tilt (deg)	43,304
Flame temperature (°C)	575,79
Length of the flame (m)	8,2865
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0053454
Atmospheric Transmissivity at Xd (%)	53,341
Viewfactor at Xd (%)	0,034514
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,018693
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	10	-5	2	13	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	9	-5	2	11	12,5
7 kW/m2 heat radiation contour	12	-6	2	15	7
5 kW/m2 heat radiation contour	13	-7	2	18	5
3 kW/m2 heat radiation contour	15	-9	2	22	3

Model: pool fire - Acetone (5 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	37
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	6,8637
Flame footprint dimensions D,-D,DMW,MW	9;-3;3;7
Calculated pool surface area (m2)	37
Combustion rate (kg/s)	1,406
Duration of fire (s)	2987,2
Surface emissive power flame (kW/m2)	30,945
Soot fraction used (-)	0,8
Flame tilt (deg)	55,907
Flame temperature (°C)	589,65
Length of the flame (m)	7,0078
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0033887
Atmospheric Transmissivity at Xd (%)	48,904

Viewfactor at Xd (%)	0,022392
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,01018
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	10	-5	2	12	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	10	-4	2	10	12,5
7 kW/m2 heat radiation contour	11	-6	2	13	7
5 kW/m2 heat radiation contour	12	-7	2	15	5
3 kW/m2 heat radiation contour	14	-8	2	19	3

Model: pool fire - Acetone (2 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	4200
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	37
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7

Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	6,8637
Flame footprint dimensions D,-D,DMW,MW	9;-3;3;7
Calculated pool surface area (m2)	37
Combustion rate (kg/s)	1,406
Duration of fire (s)	2987,2
Surface emissive power flame (kW/m2)	28,769
Soot fraction used (-)	0,8
Flame tilt (deg)	43,169
Flame temperature (°C)	574,31
Length of the flame (m)	8,4948
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0049398
Atmospheric Transmissivity at Xd (%)	48,422
Viewfactor at Xd (%)	0,03546
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,016826
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	10	-5	2	13	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	9	-5	1	11	12,5
7 kW/m2 heat radiation contour	11	-6	2	15	7
5 kW/m2 heat radiation contour	13	-7	2	17	5
3 kW/m2 heat radiation contour	15	-9	2	22	3

D.2.2 Pozza da 50 m²

Model: pool fire - Acetone (5 m/s) 20°C
Model: Pool Fire
version: v2021.02.0caf297 (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	50
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	7,9788
Flame footprint dimensions D,-D,DMW,MW	10;-4;3;8
Calculated pool surface area (m2)	50
Combustion rate (kg/s)	1,9
Duration of fire (s)	131,58
Surface emissive power flame (kW/m2)	31,737
Soot fraction used (-)	0,8
Flame tilt (deg)	55,501
Flame temperature (°C)	594,63
Length of the flame (m)	7,6359
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37

Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0049324
Atmospheric Transmissivity at Xd (%)	53,887
Viewfactor at Xd (%)	0,028841
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,016792
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	12	-6	2	14	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	11	-5	2	12	12,5
7 kW/m2 heat radiation contour	13	-7	2	16	7
5 kW/m2 heat radiation contour	14	-8	2	18	5
3 kW/m2 heat radiation contour	16	-9	2	22	3

Model: pool fire - Acetone (2 m/s) 20°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	50
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	

Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	7,9788
Flame footprint dimensions D,-D,DMW,MW	10;-4;3;8
Calculated pool surface area (m2)	50
Combustion rate (kg/s)	1,9
Duration of fire (s)	131,58
Surface emissive power flame (kW/m2)	29,471
Soot fraction used (-)	0,8
Flame tilt (deg)	42,67
Flame temperature (°C)	578,92
Length of the flame (m)	9,2561
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0071817
Atmospheric Transmissivity at Xd (%)	53,479
Viewfactor at Xd (%)	0,045567
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,027712
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	12	-6	2	15	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	10	-6	2	13	12,5
7 kW/m2 heat radiation contour	13	-7	2	17	7
5 kW/m2 heat radiation contour	15	-8	2	20	5
3 kW/m2 heat radiation contour	17	-10	2	25	3

Model: pool fire - Acetone (5 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	50
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7
Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	7,9788
Flame footprint dimensions D,-D,DMW,MW	10;-4;3;8
Calculated pool surface area (m2)	50
Combustion rate (kg/s)	1,9
Duration of fire (s)	131,58
Surface emissive power flame (kW/m2)	31,43
Soot fraction used (-)	0,8
Flame tilt (deg)	55,391
Flame temperature (°C)	592,96
Length of the flame (m)	7,8278
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0045784
Atmospheric Transmissivity at Xd (%)	49,067

Viewfactor at Xd (%)	0,029688
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,015205
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	12	-6	2	13	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	11	-5	2	12	12,5
7 kW/m2 heat radiation contour	13	-7	2	15	7
5 kW/m2 heat radiation contour	14	-7	2	18	5
3 kW/m2 heat radiation contour	16	-9	2	22	3

Model: pool fire - Acetone (2 m/s) 30°C

Model: Pool Fire

version: v2021.02.0caf297 (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	ACETONE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	250
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool surface poolfire (m2)	50
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	NNE
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Medium
Reporting	
Reporting/receiver height (Zd) (m)	1,7

Reporting distance (Xd) (m)	200

Results	
Fire Results	
Equivalent diameter poolfire (m)	7,9788
Flame footprint dimensions D,-D,DMW,MW	10;-4;3;8
Calculated pool surface area (m2)	50
Combustion rate (kg/s)	1,9
Duration of fire (s)	131,58
Surface emissive power flame (kW/m2)	29,198
Soot fraction used (-)	0,8
Flame tilt (deg)	42,534
Flame temperature (°C)	577,4
Length of the flame (m)	9,4887
Weight ratio of HCL/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	227,37
Weight ratio of H2O/chemical (%)	93,091
Heat radiation at Xd (kW/m2)	0,0066515
Atmospheric Transmissivity at Xd (%)	48,577
Viewfactor at Xd (%)	0,046896
Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,025018
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage third degree burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour Dimensions					
Lethality Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [%]**
1 % lethality contour	11	-6	2	14	1
Heat Radiation Contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [kW/m2]**
37,5 kW/m2 heat radiation contour	0	0	0	0	37,5
12,5 kW/m2 heat radiation contour	10	-5	2	13	12,5
7 kW/m2 heat radiation contour	13	-7	2	17	7
5 kW/m2 heat radiation contour	14	-8	2	20	5
3 kW/m2 heat radiation contour	17	-10	2	25	3

D.3 STIMA DEGLI EFFETTI DELLA DISPERSIONE DI VAPORI TOSSICI (METANOLO)

D.3.1 Pozza da 37 m³

Model: Pool evaporation - D5 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	2
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,08526
Purple book representative evaporation duration (s)	1526,7
Representative temperature (°C)	19,987
Representative pool diameter (m)	6,6521
Density after mixing with air (kg/m3)	1,2015
Total evaporated mass (kg)	130,17
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	34,754
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,08526
Duration of the release (s)	1526,7
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	69,445
Maximum concentration at Zd (mg/m3)	707,21
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	
Contour Dimensions	

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous

Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,08526
Duration of the release (s)	1526,7
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	69,445
Maximum concentration at Zd (mg/m3)	707,21
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,08526
Duration of the release (s)	1526,7
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	69,445
Maximum concentration at Zd (mg/m3)	707,21
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	2
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,044859
Purple book representative evaporation duration (s)	1792,3
Representative temperature (°C)	20,282
Representative pool diameter (m)	6,8637
Density after mixing with air (kg/m3)	1,2018
Total evaporated mass (kg)	80,402
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,044859
Duration of the release (s)	1792,3
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	385,68
Maximum concentration at Zd (mg/m3)	923,42
...at distance (m)	26,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,044859
Duration of the release (s)	1792,3
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	385,68
Maximum concentration at Zd (mg/m3)	923,42
...at distance (m)	26,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,044859
Duration of the release (s)	1792,3
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	385,68
Maximum concentration at Zd (mg/m3)	923,4
...at distance (m)	26,7
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration outer contour at 1.7m	45	15	18	4	799,38
User defined concentration at 1.7m at 600s	45	15	18	4	799,38

Model: Pool evaporation - D5 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)
Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	2
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,092609
Purple book representative evaporation duration (s)	1696,8
Representative temperature (°C)	20,489
Representative pool diameter (m)	6,8637
Density after mixing with air (kg/m3)	1,1558
Total evaporated mass (kg)	157,14
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,092609
Duration of the release (s)	1696,8
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	75,43
Maximum concentration at Zd (mg/m3)	768,17
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,092609
Duration of the release (s)	1696,8
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	75,43
Maximum concentration at Zd (mg/m3)	768,17
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,092609
Duration of the release (s)	1696,8
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	75,43
Maximum concentration at Zd (mg/m3)	768,17
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	2520
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	37
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	2
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,057175
Purple book representative evaporation duration (s)	1732,4
Representative temperature (°C)	25,146
Representative pool diameter (m)	6,8637
Density after mixing with air (kg/m3)	1,1564
Total evaporated mass (kg)	99,051
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	37
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,057175
Duration of the release (s)	1732,4
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	491,57
Maximum concentration at Zd (mg/m3)	1177
...at distance (m)	26,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,057175
Duration of the release (s)	1732,4
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	491,57
Maximum concentration at Zd (mg/m3)	1177
...at distance (m)	26,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,057175
Duration of the release (s)	1732,4
Pool surface area (m2)	37
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	491,57
Maximum concentration at Zd (mg/m3)	1176,9
...at distance (m)	26,7
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration outer contour at 1.7m	62	11	19	6	799,38
User defined concentration at 1.7m at 600s	62	11	15	6	799,38

D.3.2 Pozza da 50 m²

Model: Pool evaporation - D5 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	150
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,052795
Purple book representative evaporation duration (s)	1474,9
Representative temperature (°C)	12,614
Representative pool diameter (m)	6,3449
Density after mixing with air (kg/m3)	1,2012
Total evaporated mass (kg)	77,865
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	31,619
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,052795
Duration of the release (s)	1474,9
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	42,577
Maximum concentration at Zd (mg/m3)	376,76
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,052795
Duration of the release (s)	1474,9
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	42,577
Maximum concentration at Zd (mg/m3)	376,76
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,052795
Duration of the release (s)	1474,9
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	42,577
Maximum concentration at Zd (mg/m3)	376,76
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 20 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	150
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	20
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,040356
Purple book representative evaporation duration (s)	1587,4
Representative temperature (°C)	20,377
Representative pool diameter (m)	6,4734
Density after mixing with air (kg/m3)	1,2017
Total evaporated mass (kg)	64,061
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	32,912
Schmidt number used	0,91478
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4613

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,040356
Duration of the release (s)	1587,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	334,62
Maximum concentration at Zd (mg/m3)	718,25
...at distance (m)	27
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,040356
Duration of the release (s)	1587,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	334,62
Maximum concentration at Zd (mg/m3)	718,25
...at distance (m)	27
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,040356
Duration of the release (s)	1587,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	334,62
Maximum concentration at Zd (mg/m3)	718,33
...at distance (m)	27,4
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - D5 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	150
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	5
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,074528
Purple book representative evaporation duration (s)	1270,1
Representative temperature (°C)	19,737
Representative pool diameter (m)	6,2432
Density after mixing with air (kg/m3)	1,1557
Total evaporated mass (kg)	94,657
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	30,613
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,074528
Duration of the release (s)	1270,1
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	60,104
Maximum concentration at Zd (mg/m3)	531,85
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,074528
Duration of the release (s)	1270,1
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	60,104
Maximum concentration at Zd (mg/m3)	531,85
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,074528
Duration of the release (s)	1270,1
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	60,104
Maximum concentration at Zd (mg/m3)	531,85
...at distance (m)	8
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,89223
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2984
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Pool evaporation - F2 30 tossico

Model: Pool Evaporation

version: v2021.02.8cf0fe9 (24/02/2021)

Reference: Yellow Book CPR14E 2rd Edition - Chapter 5: Evaporation. Trijssenaar-Buhre, I.J.M, Sterkenburg, R.P., Wijnant-Timmerman, S.I.: An advanced model for spreading and evaporation of accidentally released hazardous liquids on land. Diffusion coefficient in Schmidt number based on Fuller, Schetter and Gitting correlation, see http://www.thermopedia.com/content/696

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Calculation Method	
Use which representative rate	Second 20% average (toxic)
Evaporation from land or water	Land
Type of release in pool	Instantaneous
Maximum evaluation time for evaporation (s)	1800
Source Definition	
Total mass released (kg)	150
Temperature of the pool (°C)	20
Process Dimensions	
Type of pool growth on Land	Spreading in bunds
Maximum pool surface area (m2)	50
Meteo Definition	
Wind speed at 10 m height (m/s)	2
Environment	
Temperature of the subsoil (°C)	40
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
Ambient relative humidity (%)	75
Solar radiation flux	Calculate value
Cloud cover (%)	0
Date: day number	20
Date: month number	6
North/South latitude of the location (deg)	44
Type of subsoil (evaporation)	Heavy concrete
Subsurface roughness description (pool)	flat sandy soil, concrete, tiles, plant-yard

Results	
Source Definition	
Time pool spreading ends (s)	4,5
Time until pool has totally evaporated (s)	
Purple book representative evaporation rate (kg/s)	0,058419
Purple book representative evaporation duration (s)	1398,4
Representative temperature (°C)	28,473
Representative pool diameter (m)	6,3754
Density after mixing with air (kg/m3)	1,1564
Total evaporated mass (kg)	81,69
... duration evaporation time (s)	1799,5
Corresponding representative pool surface area (m2)	31,923
Schmidt number used	0,91541
Dispersion model strategy	
Environment	
Heat flux from solar radiation (kW/m2)	1,4747

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LC50

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,058419
Duration of the release (s)	1398,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	32375
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	32375
Concentration at (Xd, Yd, Zd, t) (mg/m3)	484,4
Maximum concentration at Zd (mg/m3)	1039,7
...at distance (m)	27
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - IDLH

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,058419
Duration of the release (s)	1398,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	No
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7993,8
Concentration at (Xd, Yd, Zd, t) (mg/m3)	484,4
Maximum concentration at Zd (mg/m3)	1039,7
...at distance (m)	27
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration - LOC

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	METHANOL (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	Evaporating pool release
Mass flow rate of the source (kg/s)	0,058419
Duration of the release (s)	1398,4
Pool surface area (m2)	50
Process Dimensions	
Height of release (Z-coordinate) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	N
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0133
North/South latitude of the location (deg)	44
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	Low
Reporting	
Time t after start release (s)	600
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	100
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	799,38
Use dynamic concentration presentation	Yes

Results	
Meteo Definition	
Mixing height used (m)	68,863
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	799,38
Concentration at (Xd, Yd, Zd, t) (mg/m3)	484,4
Maximum concentration at Zd (mg/m3)	1039,9
...at distance (m)	27,4
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,19728
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,28833
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
User defined concentration at 1.7m at 600s	59	13	17	6	799,38
User defined concentration outer contour at 1.7m	59	13	16	6	799,38

E TOP EVENT 8.B: ROTTURA/PERDITA DA TUBAZIONE DI TRASFERIMENTO

E.1 VALUTAZIONE DELLA DISPERSIONE DEI PRODOTTI DI COMBUSTIONE (ACIDO CLORIDRICO)

E.1.1 Pozza da 37 m³

Model: Combustion and toxic combustion products 20°C
Model: Combustion and Toxic Combustion Products
version: v2021.02.9ce8d1b (24/02/2021)
Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	2520
Surface of the fire (m2)	37
Environment	
Ambient temperature (°C)	20

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	1,4767
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	6,8637
(Convective) Heat production fire (MW)	6,5956
Duration of the fire (s)	1706,5
Total formation rate of combustion products (kg/s)	2,1821
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	1,0845
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,26522
H2O formation rate (kg/s)	0,54294
Soot formation rate (kg/s)	0,2894
Height of the Flame (m)	9,7676

Contour Dimensions

Model: Combustion and toxic combustion products 30°C

Model: Combustion and Toxic Combustion Products

version: v2021.02.9ce8d1b (24/02/2021)

Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	2520
Surface of the fire (m2)	37
Environment	
Ambient temperature (°C)	30

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	1,5289
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	6,8637
(Convective) Heat production fire (MW)	6,8288
Duration of the fire (s)	1648,3
Total formation rate of combustion products (kg/s)	2,2593
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	1,1229
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,2746
H2O formation rate (kg/s)	0,56214
Soot formation rate (kg/s)	0,29963
Height of the Flame (m)	9,9768

Contour Dimensions

E.1.2 Pozza da 50 m³

Model: Combustion and toxic combustion products 20°C
Model: Combustion and Toxic Combustion Products
version: v2021.02.9ce8d1b (24/02/2021)
Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	150
Surface of the fire (m2)	50
Environment	
Ambient temperature (°C)	20

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	1,9955
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	7,9788
(Convective) Heat production fire (MW)	8,9129
Duration of the fire (s)	75,169
Total formation rate of combustion products (kg/s)	2,9488
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	1,4656
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,35841
H2O formation rate (kg/s)	0,73371
Soot formation rate (kg/s)	0,39108
Height of the Flame (m)	10,845

Contour Dimensions

Model: Combustion and toxic combustion products 30°C

Model: Combustion and Toxic Combustion Products

version: v2021.02.9ce8d1b (24/02/2021)

Reference: Solids: Page 30 CPR 15/2 report TNO 94-316 proj. 24514 (including 35% conversion rate for NO2). Liquids: Green Book 1992, chapter 4 page 9

Parameters	
Inputs	
Process Conditions	
Phase	Liquid
Chemical name	1,2-DICHLOROETHANE (DIPPR)
Calculation Method	
NO2 conversion fraction (-)	0,35
Fraction combustion heat radiated (-)	0,35
Fraction of soot (unburned carbon) (-)	0,8
Source Definition	
Total mass released (kg)	150
Surface of the fire (m2)	50
Environment	
Ambient temperature (°C)	30

Results	
Process Conditions	
Averaged molecular formula used	C2H4Cl2
Source Definition	
Calculated molecular mass of the chemical (kg/kmol)	98,959
Fire Results	
Combustion rate of the chemical (kg/s)	2,0661
Heat of combustion material (kJ/kg)	11166
Equivalent diameter poolfire (m)	7,9788
(Convective) Heat production fire (MW)	9,228
Duration of the fire (s)	72,602
Total formation rate of combustion products (kg/s)	3,0531
NO2 formation rate (kg/s)	0
SO2 formation rate (kg/s)	0
HCl formation rate (kg/s)	1,5174
HBr formation rate (kg/s)	0
HF formation rate (kg/s)	0
CO2 formation rate (kg/s)	0,37108
H2O formation rate (kg/s)	0,75965
Soot formation rate (kg/s)	0,40491
Height of the Flame (m)	11,077

Contour Dimensions

E.2 INNALZAMENTO DEL PENNACCHIO

E.2.1 Pozza da 37 m³

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,0845
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	6,8637
(Convective) Heat production fire (MW)	6,5956

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	83,043
Distance to max plume height (m)	630,96
Penetration fraction (-)	0

Contour Dimensions

Concentration contours

Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [mg/m3]**
IDLH at Zd	104	1	5	29	75,802
IDLH Max	207	1	91	32	75,802
User defined concentration Max	881	1	459	102	7,58
User defined concentration at Zd	263	1	116	49	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,0845
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	6,8637
(Convective) Heat production fire (MW)	6,5956

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	65,876
Distance to max plume height (m)	2290,9
Penetration fraction (-)	0,44464

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH Max	750	1	360	43	75,802
IDLH at Zd	18	1	1	26	75,802
User defined concentration Max	3759	1	1995	174	7,58
User defined concentration at Zd	23	1	1	30	7,58

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,1229
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	6,8637
(Convective) Heat production fire (MW)	6,8288

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	84,912
Distance to max plume height (m)	630,96
Penetration fraction (-)	0

Contour Dimensions

Concentration contours

Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [mg/m3]**
IDLH Max	211	1	95	33	75,802
IDLH at Zd	103	1	5	29	75,802
User defined concentration at Zd	259	1	117	49	7,58
User defined concentration Max	902	1	433	103	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,1229
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	6,8637
(Convective) Heat production fire (MW)	6,8288

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	67,524
Distance to max plume height (m)	181,97
Penetration fraction (-)	0,39517

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH at Zd	18	1	1	26	75,802
IDLH Max	794	1	406	45	75,802
User defined concentration Max	3981	1	2072	183	7,58
User defined concentration at Zd	22	1	1	30	7,58

E.2.2 Pozza da 50 m³

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,4656
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	7,9788
(Convective) Heat production fire (MW)	8,9129

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	99,689
Distance to max plume height (m)	691,83
Penetration fraction (-)	0

Contour Dimensions					
Concentration contours					
Names	**Max. Dist [m]**	**Min. Dist [m]**	**Dist. Width [m]**	**Max. Width [m]**	**Value [mg/m3]**
IDLH at Zd	105	1	5	33	75,802
IDLH Max	240	1	103	37	75,802
User defined concentration at Zd	246	1	101	51	7,58
User defined concentration Max	1035	1	497	117	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,4656
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	7,9788
(Convective) Heat production fire (MW)	8,9129

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	72,508
Distance to max plume height (m)	2290,9
Penetration fraction (-)	0,54559

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH Max	881	1	414	50	75,802
IDLH at Zd	18	1	1	31	75,802
User defined concentration at Zd	23	1	1	35	7,58
User defined concentration Max	4365	1	2272	202	7,58

Model: Plume Rise from Fires D5

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,5174
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	7,9788
(Convective) Heat production fire (MW)	9,228

Results	
Meteo Definition	
Mixing height used (m)	500
Concentration Results	
Max (center) height of plume (m)	101,93
Distance to max plume height (m)	724,44
Penetration fraction (-)	0

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH Max	246	1	111	37	75,802
IDLH at Zd	104	1	5	33	75,802
User defined concentration at Zd	241	1	94	51	7,58
User defined concentration Max	1059	1	519	119	7,58

Model: Plume Rise from Fires F2

Model: Plume Rise from Fires

version: v2021.02.1efd91c (24/02/2021)

Reference: Yellow Book. (2nd Edition, 1992). Methods for the calculation of Physical Effects. The Hague: CPR14E. Mills, M. (November 1987). Modelling the release and dispersion of toxic combustion products from chemical fires. International Conference on Vapour Cloud Modeling. Boston, MA. Carter, D. (1989). Methods for estimating the dispersion of toxic combustion producs from large fires. Chemical Engineering Res. Des, 67, 348-352.

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Mass flow rate of the source (kg/s)	1,5174
Process Dimensions	
Release height (Stack height) (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Reporting	
Concentration averaging time (s)	600
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
End point for graphs (m)	10000
Fire Results	
(Representative) Diameter of fire (m)	7,9788
(Convective) Heat production fire (MW)	9,228

Results	
Meteo Definition	
Mixing height used (m)	69,499
Concentration Results	
Max (center) height of plume (m)	74,33
Distance to max plume height (m)	181,97
Penetration fraction (-)	0,72854

Contour Dimensions

Concentration contours

Names	Max. Dist [m]	Min. Dist [m]	Dist. Width [m]	Max. Width [m]	Value [mg/m3]
IDLH at Zd	18	1	1	31	75,802
IDLH Max	842	1	396	49	75,802
User defined concentration Max	3936	1	2049	186	7,58
User defined concentration at Zd	23	1	1	35	7,58

E.3 VALUTAZIONE DELLA DISPERSIONE DEI PRODOTTI DI COMBUSTIONE (ACIDO CLORIDRICO)

E.3.1 Pozza da 37 m³

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill D5 20°C
Model: Neutral Gas - Concentration
version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,0845
Duration of the release (s)	1706,5
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	83,043
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,29071
Maximum concentration at Zd (mg/m3)	2,4745
...at distance (m)	945,3
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,84752
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2681
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 20°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,0845
Duration of the release (s)	1706,5
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	65,876
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	2,8475
Maximum concentration at Zd (mg/m3)	3,5787
...at distance (m)	4778
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,045041
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,065828
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill D5 30°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,1229
Duration of the release (s)	1648,3
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	84,912
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,29897
Maximum concentration at Zd (mg/m3)	2,3535
...at distance (m)	945,3
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,84649
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2674
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 30°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,1229
Duration of the release (s)	1648,3
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	67,524
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	2,8946
Maximum concentration at Zd (mg/m3)	3,6099
...at distance (m)	4778
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,033258
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,048607
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

E.3.2 Pozza da 50 m³

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill D5 20°C
Model: Neutral Gas - Concentration
version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,4656
Duration of the release (s)	75,169
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	99,689
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,0010862
Maximum concentration at Zd (mg/m3)	3,2888
...at distance (m)	1384
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,83828
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2619
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 20°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)

Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,4656
Duration of the release (s)	75,169
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	69
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,028974
Maximum concentration at Zd (mg/m3)	2,8785
...at distance (m)	4009,2
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,01672
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,024437
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill D5 30°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	
Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,5174
Duration of the release (s)	72,602
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	101,93
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	D (Neutral)
Wind speed at 10 m height (m/s)	5
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	500
Inverse Monin-Obukhov length (1/L) used (1/m)	0
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,001008
Maximum concentration at Zd (mg/m3)	3,1658
...at distance (m)	1384
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,83702
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	1,2611
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions

Model: Neutral Gas Dispersion: Concentration HCl - Classe di Pasquill F2 30°C

Model: Neutral Gas - Concentration

version: v2021.02.022757e (24/02/2021)
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Chapter 4

Parameters	
Inputs	

Process Conditions	
Chemical name	HYDROGEN CHLORIDE (DIPPR)
Source Definition	
Type of neutral gas release	Semi-continuous
Type of continuos source	User defined window
Mass flow rate of the source (kg/s)	1,5174
Duration of the release (s)	72,602
Length source in wind (x) direction (m)	0
Width source in crosswind (y) direction (m)	0
Height source in vertical (z) direction (m)	0
Process Dimensions	
Height of release (Z-coordinate) (m)	69
Offset X direction (distance) start dispersion (m)	0
Offset Z direction (height) start dispersion (m)	0
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	User defined
Wind comes from (North = 0 degrees) (deg)	270
Environment	
Ambient temperature (°C)	30
Ambient pressure (bar)	1,0151
North/South latitude of the location (deg)	43
Roughness length description	Parkland, bushes; numerous obstacles, x/h < 15.
Accuracy	
Grid resolution	High
Reporting	
Time t after start release (s)	1800
Concentration averaging time (s)	600
Reporting distance (Xd) (m)	10000
Reporting/receiver height (Zd) (m)	1,7
Predefined concentration	User defined
User defined threshold concentration (mg/m3)	7,58
Use dynamic concentration presentation	No

Results	
Meteo Definition	
Mixing height used (m)	69,499
Inverse Monin-Obukhov length (1/L) used (1/m)	0,050692
Concentration Results	
Threshold concentration used (mg/m3)	7,58
Concentration at (Xd, Yd, Zd, t) (mg/m3)	0,028834
Maximum concentration at Zd (mg/m3)	2,9111
...at distance (m)	3981,6
Stand. dev. of turbulent velocity in vert. direction used (m/s)	0,01672
Stand. dev. of turbulent velocity in horiz. direction used (m/s)	0,024437
Temperature after mixing and expansion (°C)	
Density after mixing and expansion (kg/m3)	

Contour Dimensions