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Schematic approach to the classification of hazardous areas

according to IEC 60079-10.1

Dynamic document determine Zones type

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Is there significant amount of flammable material which is capable of producing a dangerous volume of explosive gas atmosphere?

Such as : Flammable storage , Process plants, Flammable gases etc.

YES

NO

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Are there any sources of release?

Such as : openings in vessels, point of connection, flanges, vents, etc.

YES

NO

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Can the source of release be eliminated?

YES

NO

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The area is classified as

Non Hazardous Area

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Determine the grade of release

Continuous

Primary

Secondary

Examples for continuous

Examples for Primary

Examples for Secondary

BACK

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Secondary grade

Can it be eliminated?

YES

NO

BACK

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Secondary grade of release

Determine the grade of Ventilation

High (VH)

Medium (VM)

Low (VL)

Ventilation grades

BACK

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Secondary grade of release

Degree of ventilation - VH
Determine the availability of Ventilation

Good

Fair

Poor

BACK

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Secondary grade of release

Degree of ventilation - VH
Availability of Ventilation - Good

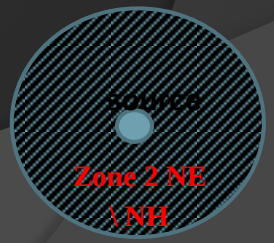
The type of zone is:

ZONE 2 NE / Non Hazardous

Indicates a theoretical zone which would be negligible extent under normal conditions.

BACK

Back to the beginning



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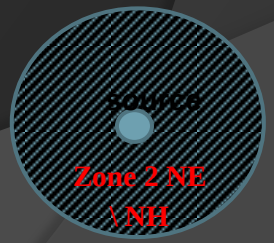

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Secondary grade of release

Degree of ventilation - VH
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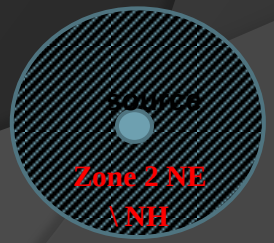
Back to the beginning



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Secondary grade of release

Degree of ventilation - VH
Availability of Ventilation - Poor

The type of zone is:

ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

BACK

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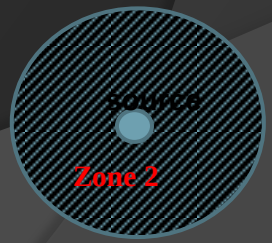

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Secondary grade of release

Degree of ventilation - VL

The type of zone is:

ZONE 1 and even 0

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Secondary grade of release

Degree of ventilation - VM
Determine the availability of Ventilation

Good

Fair

Poor

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Secondary grade of release

Degree of ventilation - VM
Availability of Ventilation - Good

The type of zone is:

ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

BACK

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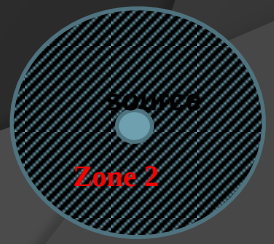

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Secondary grade of release

Degree of ventilation - VM
Availability of Ventilation - Fair

The type of zone is:

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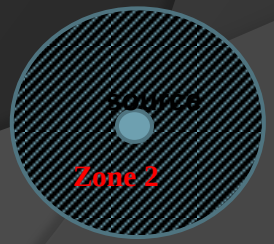
Back to the beginning



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Secondary grade of release

Degree of ventilation - VM
Availability of Ventilation - Poor

The type of zone is:

ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

BACK

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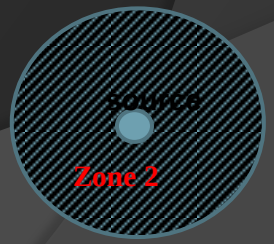

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Primary grade

Can it be changed to secondary grade?

YES

NO

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Primary grade of release

Determine the grade of Ventilation

High (VH)

Medium (VM)

Low (VL)

Ventilation grades

BACK

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Determine the availability of Ventilation

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Fair

Poor

BACK

Back to the beginning

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Primary grade of release

Degree of ventilation - VH
Availability of Ventilation - Good

The type of zone is:

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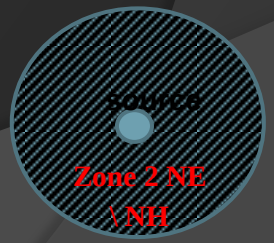
Indicates a theoretical zone which would be negligible extent under normal conditions.

BACK

Back to the beginning



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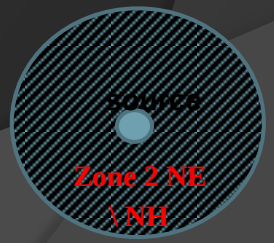
Back to the beginning



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Primary grade of release

Degree of ventilation - VH
Availability of Ventilation - Fair

The type of zone is:

ZONE 1 NE / ZONE 2

Indicates a theoretical zone which would be negligible extent under normal conditions.

BACK

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Primary grade of release

Degree of ventilation - VH
Availability of Ventilation - Poor

The type of zone is:

ZONE 1 NE / ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

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Primary grade of release

Degree of ventilation - VL

The type of zone is:

ZONE 1 and even 0

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Primary grade of release

Degree of ventilation - VM
Determine the availability of Ventilation

Good

Fair

Poor

BACK

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Primary grade of release

Degree of ventilation - VM
Availability of Ventilation - Good

The type of zone is:

ZONE 1

Use the appropriate code/model for calculating the extent of the zone.

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Primary grade of release

Degree of ventilation - VM
Availability of Ventilation - Fair

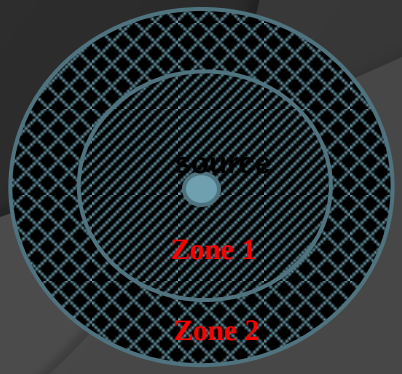
The type of zone is:

ZONE 1 + ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

BACK

Back to the beginning



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Primary grade of release

Degree of ventilation - VM
Availability of Ventilation - Poor

The type of zone is:

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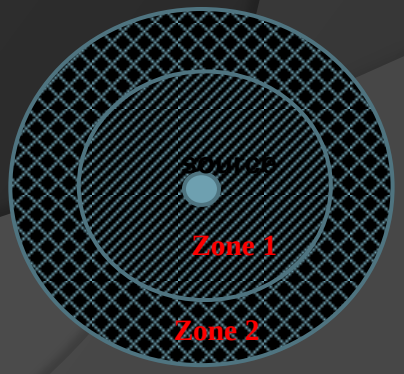
Use the appropriate code/model for calculating the extent of the zone.

BACK

Back to the beginning



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Continuous grade

Can it be changed to primary grade?

YES

NO

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Continuous grade of release

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Fair

Poor

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Back to the beginning

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Availability of Ventilation - Good

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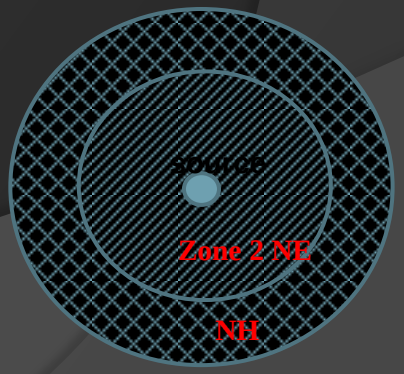

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Continuous grade of release

Degree of ventilation - VH
Availability of Ventilation - Fair

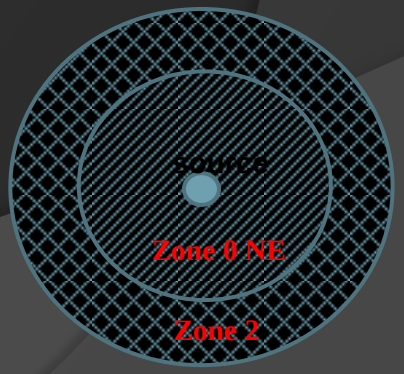
The type of zone is:

ZONE 0 NE / ZONE 2

Indicates a theoretical zone which would be negligible extent under normal conditions.

BACK

Back to the beginning



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Continuous grade of release

Degree of ventilation - VH
Availability of Ventilation - Poor

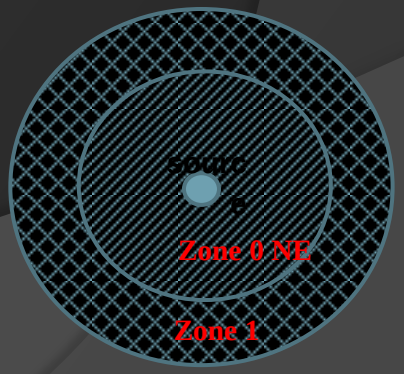
The type of zone is:

ZONE 0 NE / ZONE 1

Indicates a theoretical zone which would be negligible extent under normal conditions.

BACK

Back to the beginning



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Continuous grade of release

Degree of ventilation - VH
Availability of Ventilation - Poor

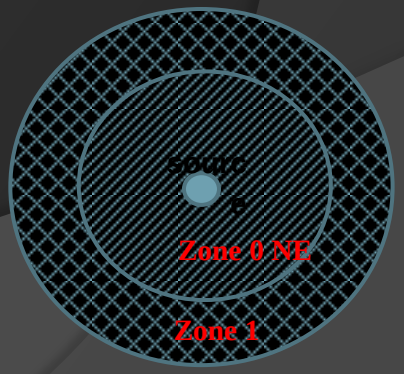
The type of zone is:

ZONE 0 NE / ZONE 1

Use the appropriate code/model for calculating the extent of the zone.

BACK

Back to the beginning



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Continuous grade of release

Degree of ventilation - VL

The type of zone is:

ZONE 0

BACK

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Continuous grade of release

Degree of ventilation - VM
Determine the availability of Ventilation

Good

Fair

Poor

BACK

Back to the beginning

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אינג' א. ארנן
יועץ לתעשייה בטיחות וסביבה
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Continuous grade of release

Degree of ventilation - VM
Availability of Ventilation - Good

The type of zone is:

ZONE 0

Use the appropriate code/model for calculating the extent of the zone.

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Continuous grade of release

Degree of ventilation - VM
Availability of Ventilation - Fair

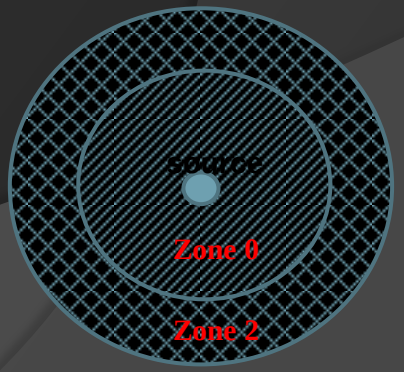
The type of zone is:

ZONE 0 + ZONE 2

Use the appropriate code/model for calculating the extent of the zone.

BACK

Back to the beginning



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Continuous grade of release

Degree of ventilation - VM
Availability of Ventilation - Poor

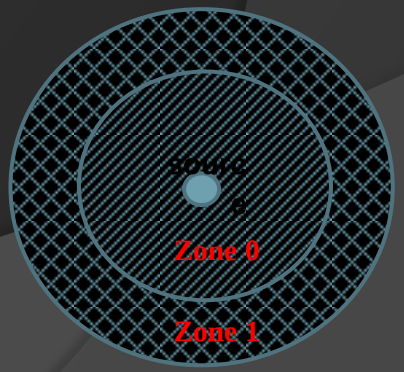
The type of zone is:

ZONE 0 + ZONE 1

Use the appropriate code/model for calculating the extent of the zone.

BACK

Back to the beginning



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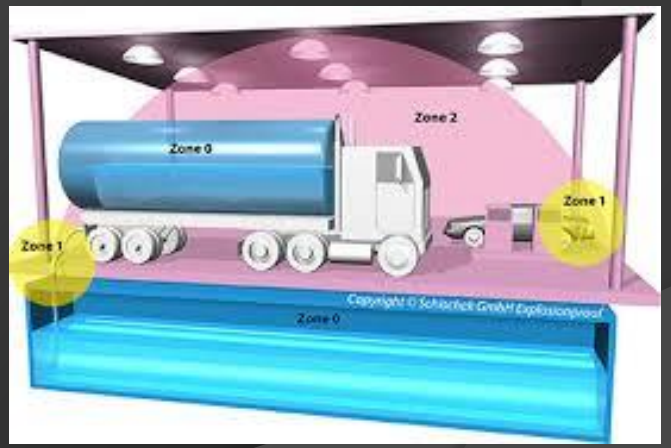
Examples for Continuous grade of release

a) The surface of a flammable liquid in a fixed roof tank, with a permanent vent to the atmosphere.

b) The surface of a flammable liquid which is open to the atmosphere continuously or for long periods

BACK

Back to the beginning



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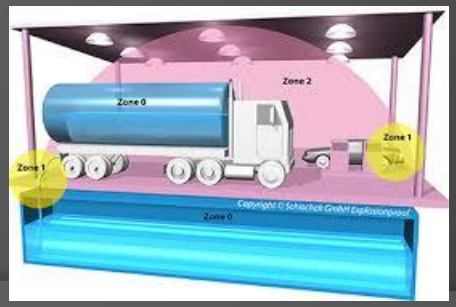
Examples for Primary grade of release

a) Seals of pumps, compressors or valves if release of flammable material during normal operation is expected.

b) Water drainage points on vessels which contain flammable liquids, which may release flammable material into the atmosphere while draining off water during normal operation.

c) Sample points which are expected to release flammable material into the atmosphere during normal operation.

d) Relief valves, vents and other openings which are expected to release flammable material into the atmosphere during normal operation.



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Examples for Secondary grade of release

a) Seals of pumps, compressors and valves where release of flammable material during normal operation of the equipment is not expected.

b) Flanges, connections and pipe fittings, where release of flammable material is not expected during normal operation.

c) Sample points which are not expected to release flammable material during normal operation.

d) Relief valves, vents and other openings which are not expected to release flammable material into the atmosphere during normal operation.

BACK

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High ventilation (VH)

Can reduce the concentration at the source of release virtually instantaneously, resulting in a concentration below the lower explosive limit. A zone of negligible extent results. However, where the availability of ventilation is not good, another type of zone may surround the zone of negligible extent

Medium ventilation (VM)

Can control the concentration, resulting in a zone stable boundary, whilst the release is in progress, and where the explosive gas atmosphere does not persist unduly after the release has stopped.

The extent and type of zone are limited to the design parameters

Low ventilation (VL)

Cannot control the concentration whilst release is in progress and/or cannot prevent undue persistence of a flammable atmosphere after release has stopped.

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BACK

Back to the beginning