



## 120s Discharge time for Inertech

*designed for use with*

### Inertech Inert Gas systems

The Inertech 140 litre cylinder assemblies have been configured to meet the current and impending internationally recognised standards for system discharge times of 120 seconds.

#### **ISO 14520**

The current International Standards Organisation ISO 14520-1 Gaseous fire-extinguishing systems – Physical properties and system design – Part 1: General requirements states that “95% of the extinguishant required to achieve the design concentration for flame extinguishing at 20 degC and shall not exceed 120 s for Class A hazards”. (see extract)

#### **NFPA 2001**

The internationally recognised NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems states “For inert gas agents, the discharge time required to achieve to achieve 95% of the minimum design concentration for flame extinguishment shall not exceed 120 seconds for Class A surface fire hazards or Class C hazards”. (see extract)

#### **EN 15004**

The new 2019 European Standard EN 15004 Fixed firefighting systems – Gas extinguishing systems – Part 1 Design, installation and maintenance states: “For inert gas agents, the discharge time is the time required to discharge from the nozzles 95% of the extinguishant required to achieve the minimum design concentration for flame extinguishing at 20 degC and shall not exceed 60 s for Class B fuel hazards, 120 s for Class A hazards”. (see extract)

**NOTE:** Please note that for Class B concentrations, all the standards state that **ONLY** 60 seconds can be used as the discharge time.

#### **Conclusion**

FSL recommends that a discharge time for Inertech be 120 seconds for 80 and 140 litre capacity cylinders.



### ISO 14520-1:2015(E)

7.8.2 It is essential to determine the likely period during which the extinguishing concentration will be maintained within the protected enclosure. This is known as the hold time. The hold time shall be predicted by the door fan test specified in Annex E or determined by a full discharge test based on the following criteria.

- a) The start of the hold time, is when the concentration throughout the enclosure shall be the minimum design concentration.
- b) At the end of the hold time, the extinguishant concentration at the elevation of the protected hazard shall be not less than 85 % of the design concentration.
- c) The hold time shall be not less than 10 min, unless otherwise specified by the authority.

### 7.9 System performance

#### 7.9.1 Discharge time

##### 7.9.1.1 Liquefied extinguishant

The liquefied extinguishant discharge shall be completed as quickly as possible to suppress the fire and limit the formation of decomposition products. In no case shall the discharge time required to achieve 95 % of the design concentration exceed 10 s at 20 °C, or as otherwise required by the authority.

The discharge time period is defined as the time required to discharge from the nozzles 95 % of the extinguishant mass required to achieve the design concentration at 20 °C. For liquefied extinguishants, this can be approximated as the interval between the first appearance of liquid at the nozzle and the time when the discharge becomes predominantly gaseous. Flow calculations performed in accordance with 7.3 or with the approved pre-engineered systems instruction manuals shall be used to demonstrate compliance with this.

##### 7.9.1.2 Non-liquefied extinguishant

For inert gas agents, the discharge time is the time required to discharge from the nozzles 95 % of the extinguishant required to achieve the minimum design concentration for flame extinguishing at 20 °C and shall not exceed 60 s for Class B fuel hazards, 120 s for Class A hazards. Flow calculations performed in accordance with 7.3 or with the approved pre-engineered systems instruction manuals shall be used to demonstrate compliance with this.

### NFPA 2001

#### 5.7 Distribution System.

##### 5.7.1 Rate of Application.

###### 5.7.1.1\* Discharge Time.

5.7.1.1.1\* For halocarbon agents, the discharge time required to achieve 95 percent of the minimum design concentration for flame extinguishment based on a 20 percent safety factor shall not exceed 10 seconds or as otherwise required by the authority having jurisdiction.

5.7.1.1.2\* For inert gas agents, the discharge time required to achieve 95 percent of the minimum design concentration for flame extinguishment shall not exceed 60 seconds for Class B fuel hazards, 120 seconds for Class A surface fire hazards or Class C hazards, or as otherwise required by the authority having jurisdiction.

5.7.1.1.3\* The discharge time period is defined as the time required to discharge from the nozzles 95 percent of the agent mass [at 70°F (21°C)] necessary to achieve the minimum design concentration based on a 20 percent safety factor for flame extinguishment.

### 7.9 System performance

#### 7.9.1 Discharge time

##### 7.9.1.1 Liquefied extinguishant

The liquefied extinguishant discharge shall be completed as quickly as possible to suppress the fire and limit the formation of decomposition products. In no case shall the discharge time required to achieve 95 % of the design concentration exceed 10 s at 20 °C, or as otherwise required by the authority.

The discharge time period is defined as the time required to discharge from the nozzles 95 % of the calculated extinguishant mass required to achieve the design concentration at 20 °C. For liquefied

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extinguishants, this can be approximated as the interval between the first appearance of liquid at the nozzle and the time when the discharge becomes predominantly gaseous. Flow calculations performed in accordance with 7.3 or with the approved pre-engineered systems instruction manuals shall be used to demonstrate compliance with this.

##### 7.9.1.2 Non-liquefied extinguishant

For inert gas agents, the discharge time is the time required to discharge from the nozzles 95 % of the extinguishant required to achieve the minimum design concentration for flame extinguishing at 20 °C and shall not exceed 60 s for Class B fuel hazards, 120 s for Class A hazards. Flow calculations performed in accordance with 7.3 or with the approved pre-engineered systems instruction manuals shall be used to demonstrate compliance with this.