



NFPA 10 Requirements for High Flow Fire Extinguishers

09.10.2015

tyco
Fire Protection Products

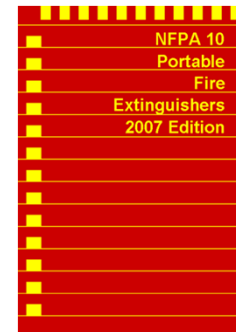
Alberta Fire Code 2014

- Updated to NFPA10 – 2010 (Division B – 1.3.1.2)
- Excludes paragraph 4.4.1
- Division B – Appendix A A-4.7.5.1.(1) The intent of this sentence is to ensure that portable extinguishers used at bulk plants have a sufficient rating to be effective for extra hazard Class B fires. NFPA 10, “Portable Fire Extinguishers,” provides additional guidance for the selection and placement of portable fire extinguishers for Class B fires based on Extinguisher ratings and travel distances. These factors need to be considered when assessing portable extinguisher needs for the special hazards for operations and storage encountered in bulk plants.



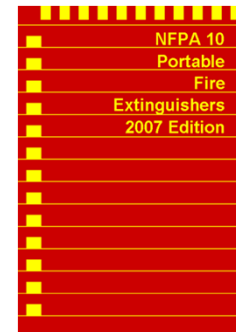
NFPA 10 - 2007

- Many applications today have the incorrect fire extinguisher in place.
- In 2007, due to the significant risk identified, NFPA 10 was changed to require high flow extinguishers for pressure flammable liquid and gas hazards such as at construction sites, fuel stations, propane filling locations, etc.



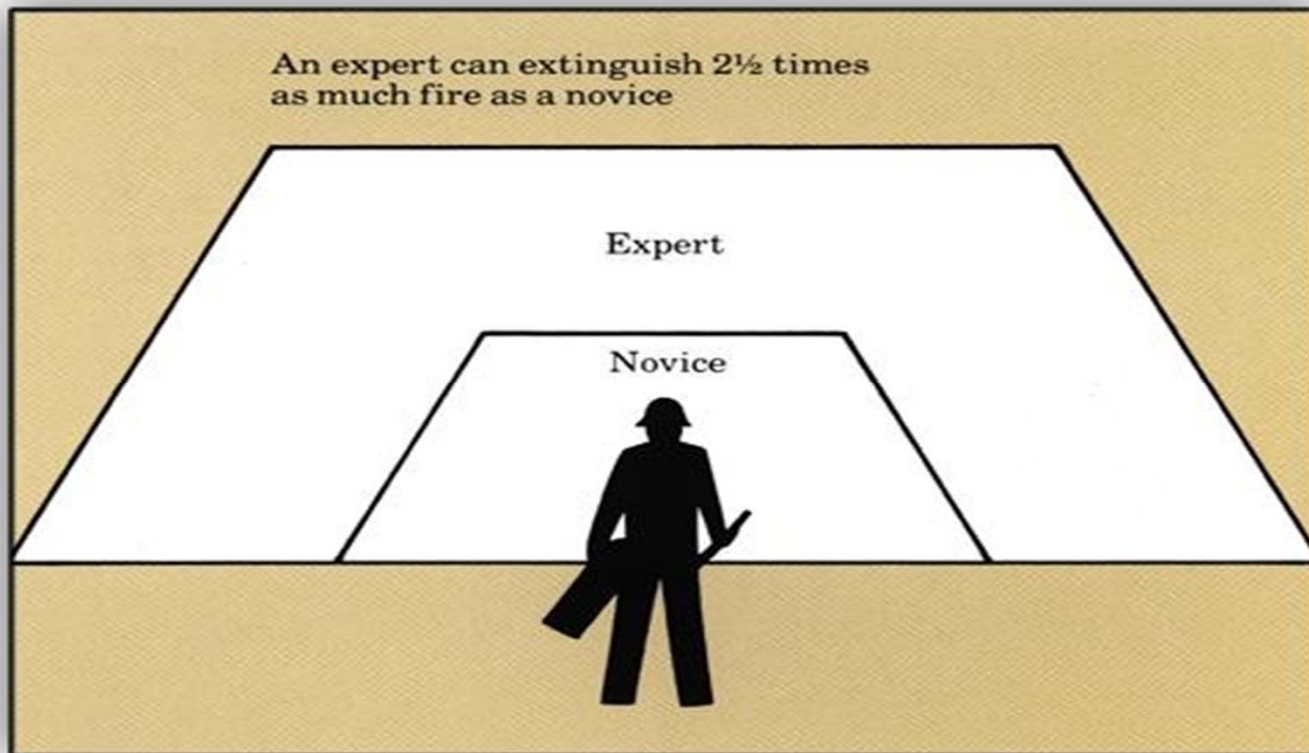
NFPA 10 - 2007

- A.5.5.1.1 - Pressurized flammable liquids and pressurized gas fires are considered to be a special hazard. Class B fire extinguishers containing agents other than dry chemical are relatively ineffective on this type of hazard due to stream and agent characteristics. The system used to rate the effectiveness of extinguishers on Class B fires (flammable liquids in depth) is not applicable to these types of hazards. It has been determined that special nozzle design and rates of agent application are required to cope with such hazards



Extinguisher Ratings (fire extinguishers 101)

Novice vs. Trained Responder



Extinguisher Ratings

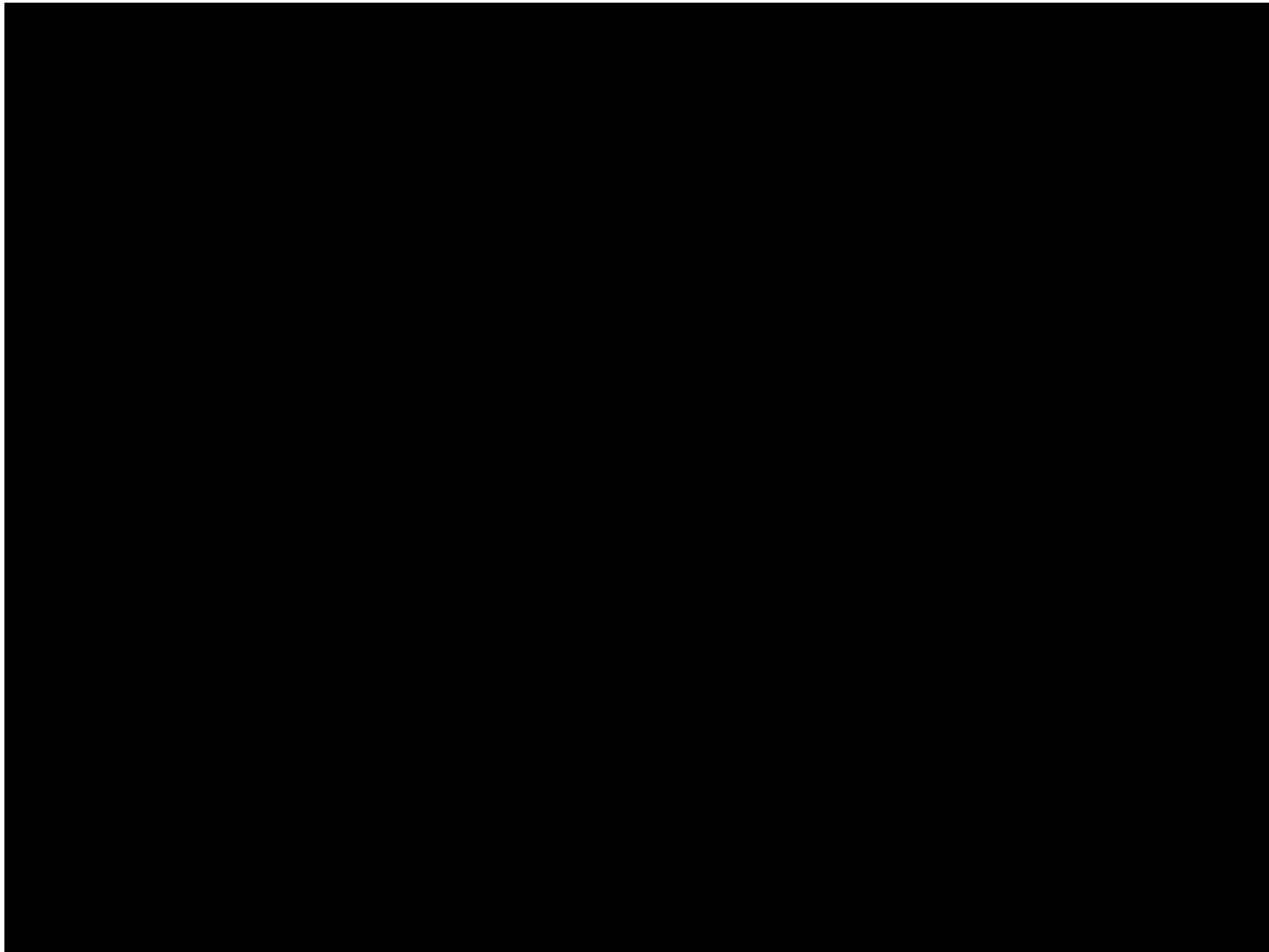
UL / ULC Class B rating

40 B rating = 40 sq ft pan for novice

40 sq ft pan for novice = 100 sq ft for professional

Expert fights square pan fire 2 1/2 times larger
to arrive at novice rating.

Class B 50 Sq Ft Pan Fire



High-Flow Stored Pressure Ratings

	Capacity	Agent	Flow Rate	Rating
High Flow	10 lb/4.5kg	ABC	1.26 lb/sec (.57kg/sec)	1-A:20-B:C
	10 lb/4.5kg	Purple K	1.30 lb/sec (.59kg/sec)	20-B:C
	20 lb/9.0kg	ABC	1.20 lb/sec (.54kg/sec)	4-A:60-B:C
	20 lb/9.0kg	Purple K	1.19 lb/sec (.54kg/sec)	60-B:C
Corrosion Resistant High Flow	10 lb/4.5kg	ABC	1.26 lb/sec (.57kg/sec)	1-A:20-B:C
	10 lb/4.5kg	Purple K	1.30 lb/sec (.59kg/sec)	20-B:C
	20 lb/9.0kg	ABC	1.20 lb/sec (.54kg/sec)	4-A:60-B:C
	20 lb/9.0kg	Purple K	1.19 lb/sec (.54kg/sec)	60-B:C

Extinguisher Ratings

Compare flow rates versus required discharge times

SENTRY Model	Type	UL/ULC Rating	Discharge Rate lb/sec (kg/sec)
HF-AA10S	10 lb. ABC	1-A:20-B:C	1.26 (0.572)
HF-PK10S	10 lb. BC	20-B:C	1.30 (0.590)
CR-HF-AA10SI	10 lb. ABC Corrosion Resistant	1-A:20-B:C	1.26 (0.572)
CR-HF-PK10SI	10 lb. BC Corrosion Resistant	20-B:C	1.30 (0.590)
HF-AA20-1	20 lb. ABC	4-A:60-B:C	1.20 (0.544)
HF-PK20	20 lb. BC	60-B:C	1.19 (0.540)
CR-HF-AA20I-1	20 lb. ABC Corrosion Resistant	4-A:60-B:C	1.20 (0.544)
CR-HF-PK20I	20 lb. BC Corrosion Resistant	60-B:C	1.19 (0.540)

AA05-1/AA05VB-1	AA10S	AA20-1
434732/ 434735	436500	434747
434753/ 434756	436509	434765
429146	435793	30937
5 lb (2.27 kg) FORAY	10 lb (4.54 kg) FORAY	20 lb (9.07 kg) FORAY
3-A:40-B:C	4-A:80-B:C	10-A:120-B:C
Type A, Size II Type B, C, Size I	Type A, Size Type B, C, Si	Type A, Size II Type B, C, Size III
14 seconds	21 seconds	28 seconds

High Flow 10/20lb – 9/18 seconds

NFPA 10 – 2007

NFPA 10 - Provides general requirements and recommendations on selection, installation and inspection of extinguishers

High-Flow extinguisher requirement in place since 2007

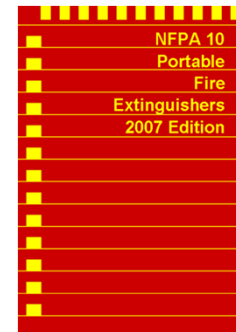
Fire Extinguishers for Pressurized Flammable Liquids and Pressurized Gas Fires

- Rated to address Class B Fires
- Including three dimensional, obstacle and fuel in depth fires

Section 5.5.1.1.1

- “Selection of fire extinguishers for this type of hazard shall be made on the basis of recommendations by manufacturers of this specialized equipment.”*

*NFPA 10 2013 Edition



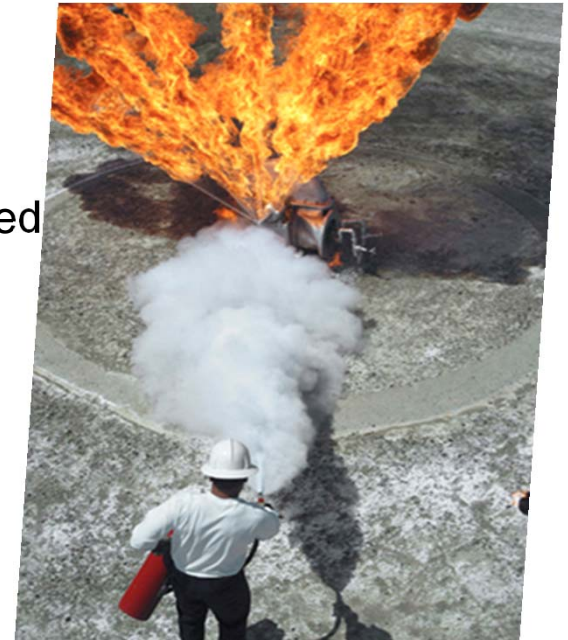
NFPA 10, Section 5.5 Defined

Fire Extinguishers shall:

- Have a minimum agent discharge rate of 1 lb./sec
- Have an agent volume of 10 lbs (4.54 kg) or greater

High-Flow Stored Pressure fire extinguishers meet or exceed

- ANSI/UL299 and 711
- CAN/ULC S504 and S508 standards



NFPA 10, Section 5.5.1.1

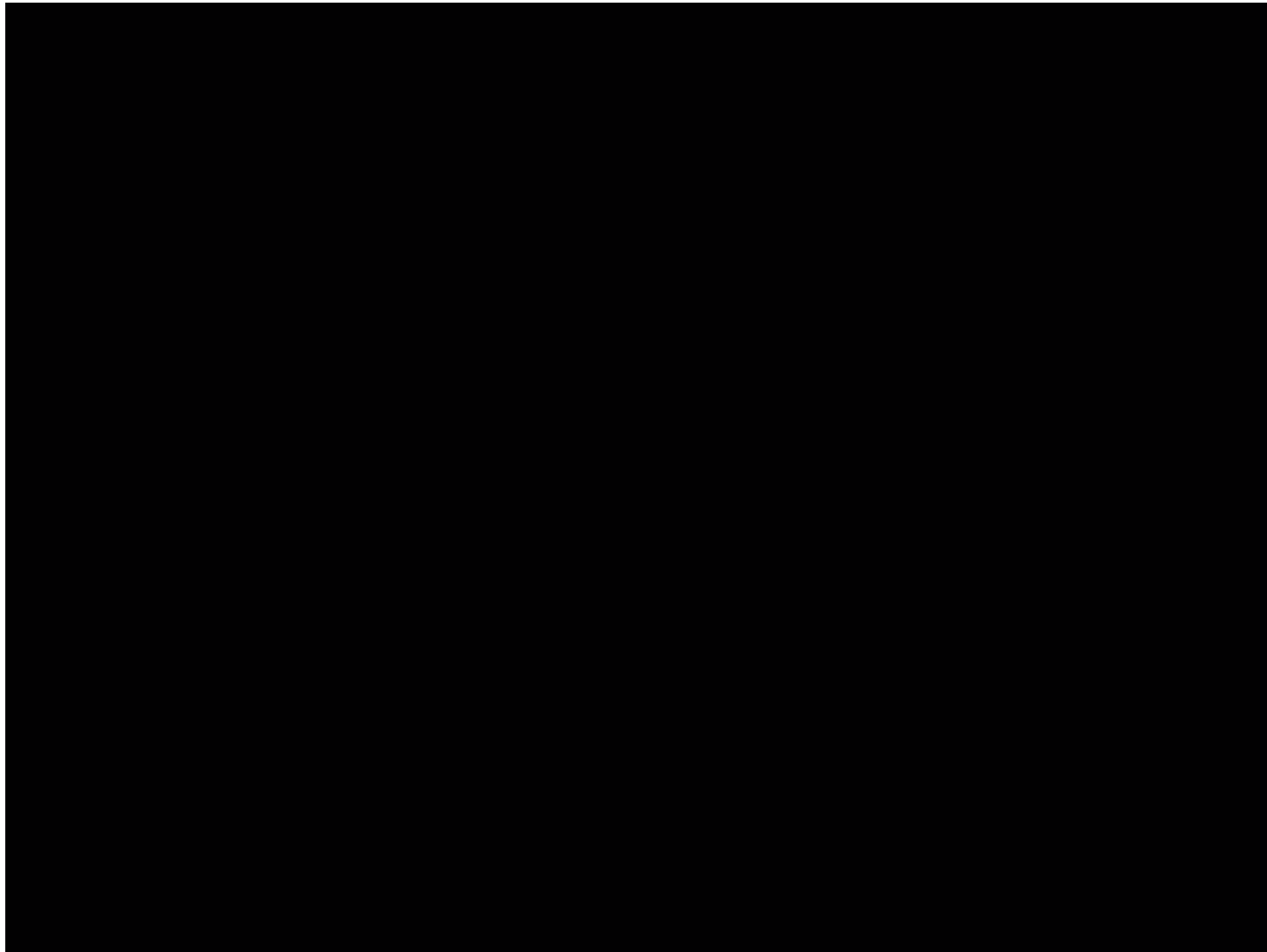
Pressurized Flammable Liquids and Gas Fires

5.5.1.1.2

- Large-capacity dry chemical extinguisher of 10lb (4.54 kg) or greater and having a discharge rate of 1 lb/second (0.45 kg/sec) or more shall be used to protect these hazards.
- A.5.5.1.1 Pressurized flammable liquids and pressurized gas fires are considered to be a special hazard. Class B fire extinguishers containing agents other than dry chemical are relatively ineffective on this type of hazard due to stream and agent characteristics. The system used to rate the effectiveness of extinguishers on Class B fires (flammable liquids in depth) is not applicable to these types of hazards. It has been determined that special nozzle design and rates of agent application are required to cope with such hazards



Standard discharge vs. High Flow



NFPA 10, Section 5.5.2

Three Dimensional Fires

5.5.2

- Large-capacity dry chemical extinguisher of 10lb (4.54 kg) or greater and having a discharge rate of 1 lb/second (0.45 kg/sec) or more shall be used to protect these hazards.

A.5.5.1.1.2

- A three-dimensional Class B fire involves Class B materials in motion, such as pouring, running, or dripping flammable liquids, and generally includes vertical as well as one or more horizontal surfaces. Fires of this nature are considered to be a special hazard. The system used to rate the effectiveness of extinguishers on Class B fires (flammable liquids in depth) is not applicable to these types of hazards. It has been determined that special nozzle design and rates of agent application are required to cope with such hazards. Caution: It is undesirable to attempt to extinguish this type of fire unless there is reasonable assurance that the source of fuel can be promptly shut off.



NFPA 10, Section 5.5.4

Obstacle Fires

5.5.4

- Selection of a fire extinguisher for this type of hazard shall be based on one of the following.
 1. Extinguisher containing a vapor-suppression foam agent
 2. Multiple extinguishers containing non-vapor suppression Class B agents intended for simultaneous operation*
 3. Large capacity of 10lb (4.54 kg) or greater and a minimum a discharge rate of 1 lb/second (0.45 kg/sec)

* additional information in Annex A of NFPA 10



SENTRY High-Flow Stored Pressure Fire Test



High-Flow Stored Pressure Fire Extinguisher



High-Flow Stored Pressure Fire Extinguisher



High-Flow Stored Pressure Fire Extinguisher

Propane forklifts...
Cleaner, greener and ready for tomorrow.



Examples of Pressurized Fire Risks

COMMERCIAL/COMPLIANCE MARKETS (LOWER RISK APPLICATION)

- Construction Sites
- Fuel Stations
- Hazardous Material Cabinets
- Maintenance Facilities
- Marinas and Marine Terminals
- Paint Booths and Repair Facilities
- Propane Filling and Storage Locations
- Salvage and Recycling Facilities
- Warehouses and Storage Facilities

**ANSUL®
Sentry**
High Flow Stored Pressure

INDUSTRIAL MARKETS (HIGH RISK APPLICATION)

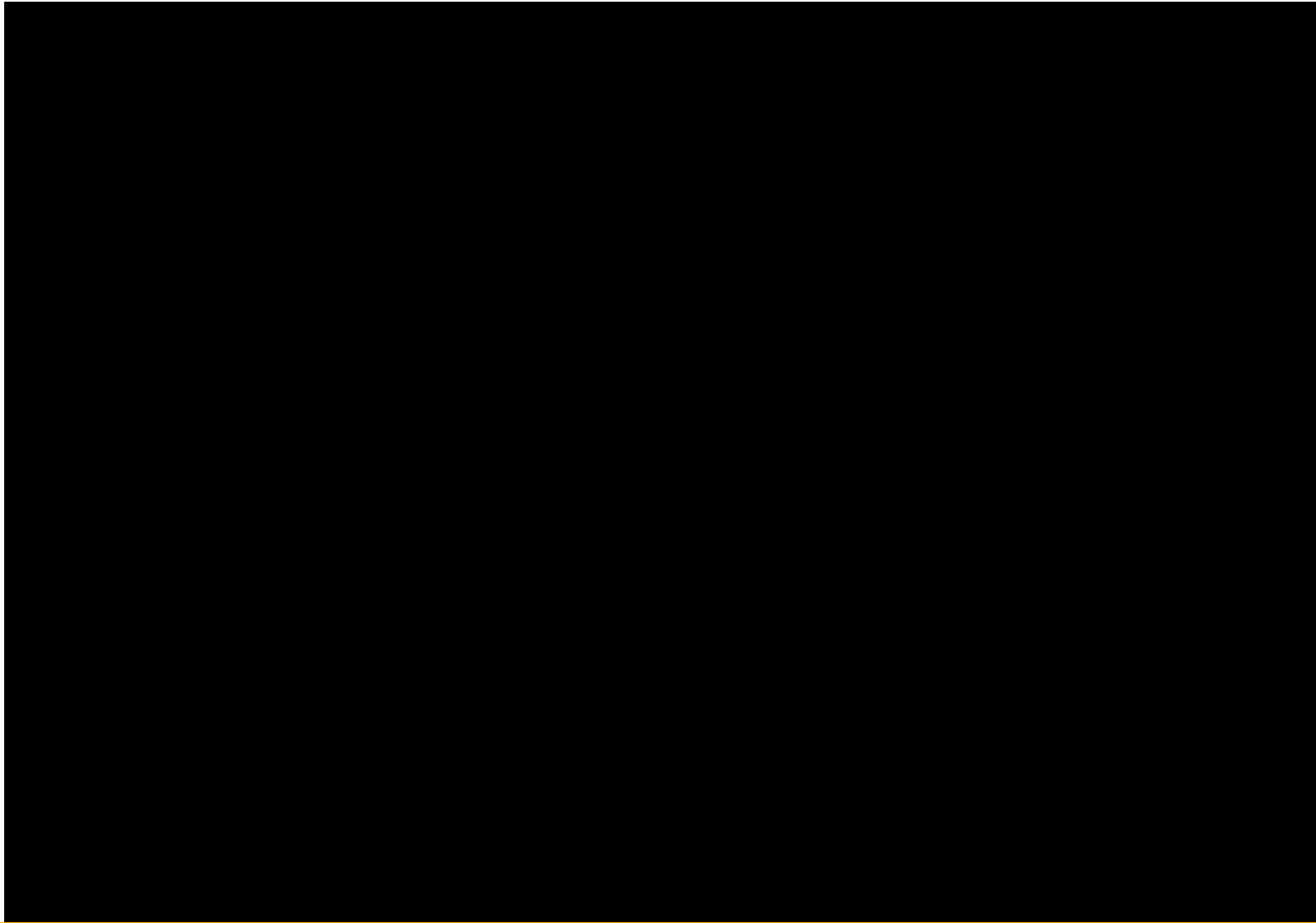
- Aircraft Hangars and Ramps
- Commercial Vehicles and Buses
- Emergency Response Vehicles
- Flammable Material Handling
- Fuel Truck and Tanker Transports
- Industrial Manufacturing – Steel/Slag
- Mining and Agricultural Equipment
- Off-Road Equipment and Vehicles
- Offshore Platforms
- Petrochemical Plants
- Port Transfer Sites
- Race Tracks
- Rail Transportation
- Refineries
- Ships and Vessels

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High Flow Cartridge Operated

Questions?



Actual UL/ULC 6A Panel Test



Thank You