



## CLARK COUNTY FIRE DEPARTMENT - FIRE PREVENTION BUREAU

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Website: [Fire Department \(clarkcountynv.gov\)](http://Fire Department (clarkcountynv.gov))

Email: [FPPCQ@clarkcountynv.gov](mailto:FPPCQ@clarkcountynv.gov)

### Permit Submittal Guideline

## **CROYGEN FLUID**

This guide is to assist in the permitting process for the storage or use of cryogenic fluids. A cryogenic fluid is a liquefied compressed/cooled gas that boils at -130°F or lower. Cryogenic fluids can be permitted three different ways:

PERMIT TYPE	PERMIT INFORMATION
CONSTRUCTION	-permit required per CCFC Section 105.6.4 -used for the installation or alteration to stationary Cryogenic Fluid Station -Permits are valid for the duration of the construction and then converted to Annual Renewable Permit
ANNUAL RENEWABLE	-permit required per IFC 105.5.11 -when using, handling, or storing cryogenic fluids -permits are valid for 1 year and need to renewed annually -changes are submitted on revisions
TEMPORARY	-required for temporary cryogenic fog effects using Liquid Nitrogen. -permits are valid for 1-180 calendar days -PLEASE NOTE: for Carbon Dioxide fog effects see that permit guide

PERMIT AMOUNTS FOR CRYOGENIC FLUIDS (REF. IFC TABLE 105.5.11)		
TYPE OF CRYOGENIC FLUID	LOCATION IN STORAGE IN GALLONS	
	INSIDE BUILDING	OUTSIDE BUILDING
FLAMMABLE	MORE THAN 1	60
INERT	60	500
OXIDIZING (INCLUDING OXYGEN)	10	50
PHYSICAL OR HEALTH HAZARD NOT INDICATED ABOVE	ANY AMOUNT	ANY AMOUNT

### **APPLICABLE CODES:**

The following codes and standard apply to this permit.

- *International Fire Code, 2024 edition (IFC)*
- *Clark County Fire Code Amendments, 2024 edition (CCFC)*
- *Compressed Gases and Cryogenic Fluids Code, 2023 Edition NFPA 55*

## **ANNUAL RENEWABLE AND CONSTRUCTION PERMITS:**

### **SUBMITTAL CHECKLIST:**

The requirements listed in this guide are not intended to be all inclusive, nor do they entail a limit to the extent of the information, etc., which may be necessary to properly evaluate the submitted plans and documents. Not all items may apply to your project. All documents shall be printed to .PDF file and uploaded as a PLAN.

#### **1. PROJECT INFORMATION:**

- Project name, address, and APN (Assessor's Parcel Number).
- Contractor's/Owner's contact information.
- Provide complete submittal including the following items:

#### **2. SITE PLAN: Provide site plan of the building showing the following locations:**

- Scaled plan view of the building and all areas of the project.
- Identify minimum separation have been met reference IFC table 5504.3.1.1/5504.3.1.2.1
- Indicate the fire extinguisher location and type:
  - At least (1) 2A:20B:C shall be located in an accessible location.
- If applicable, such as using flammable liquids provide the location of required "No Smoking" signs when there is a point of transfer within 25ft.

#### **3. TANK: Provide information on Storage Tank(s). Cryogenic Fluids must be stored or used in approved containers.**

- Include quantity, make, model, and size of the tank.
- Manufacturer's specification sheets for tank.
- Provide information on stored fluid.
- Information on tank restraint
- Vehicular protection
- Distance from storage to exposure
- Tank surface, provide information on surface on which the tank is placed (oxygen tanks shall not be placed on asphaltic concrete).
- Provide design pressure, maximum operating pressure and test pressure.
- Show that pressure relief devices are provided.

#### **4. PIPING: Show piping routing and connections on plans**

- Provide pipe type and size include make/model; ensure it is suitable for gaseous/liquid carbon dioxide service.
- Include information on valves, fittings, vent lines, nozzles, and devices used to distribute fluids.
- Pipe support information

#### **5. SYSTEM ACTIVATION/NOTIFICATION: Indicate type of alarm to be used**

- Provide sensor locations
- Provide information on the gas detection system. It shall be capable of detecting the gas and activating notification (alarms) of a gas release.
- Provide the emergency shut off valve locations, filling location, pressure relief venting locations

**6. SIGNAGE: Provide information marking:**

- Clarify NFPA 704 marking and provide at entrances to buildings or areas in which cryogenic fluids are stored, handled, or used.
- Containers shall be marked with the name of the cryogen contained

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## **TEMPORARY PERMITS FOR CRYOGEN OR COMPRESSED GAS FOG EFFECTS**

### **SUBMITTAL CHECKLIST:**

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Liquid nitrogen and carbon dioxide are used in shows and movies for special effects like smoke, fog and mist. Cryogen liquids can displace oxygen as they vaporize which can create asphyxiation in enclosed spaces. Plan submittals need to clarify

#### **1. PROJECT INFORMATION:**

- Project name, address, and APN (Assessor's Parcel Number).
- Contractor's/Owner's contact information.

#### **2. SITE PLAN: Provide site plan of the building showing the following locations:**

- Overall Site Plan: Ensure the square footage of venue and stage are provided and identified on plans, distance to audience.
- Location and direction of fog effects
- Location of the HVAC ventilation equipment
- Show the tank locations and the separation dimensions, markings, and fire extinguisher requirements

#### **3. FOG EFFECT INFORMATION:**

- Make and model for effect
- Manufacturer's data sheet and support details

#### **4. CALCULATIONS: Information may be needed from property management for the facility. Excel spreadsheet is available. Email [FPPCQ@Clarkcountynv.gov](mailto:FPPCQ@Clarkcountynv.gov).**

- Provide square footage of the stage (sq ft).
- Provide the Volume of the Venue (cu ft).
- HVAC exhaust capacity @ 100% (cfm)
- Provide length of the show in minutes
- Provide information on the alarm system; include initiating device locations, auxiliary controlled equipment, and annunciation equipment locations.
- Provide specification sheets for the HVAC equipment;
  - Provide the ventilation rate in cubic feet per minute. Minimum ventilation rate = not less than 1 cu ft/min (cfm) for each sq ft of floor area of the storage or use.
  - Provide the percent of fresh air in the supply air.

#### **5. TANK: Provide information on Storage Tank(s). Cryogenic Fluids must be stored or used in approved containers.**

- Manufacturer's specification sheets for tank.
- Include quantity, make, model, and size of the tank.
- Provide information on stored fluid.
- Information on tank restraint
- Vehicular protection

- Distance from storage to exposure
- Tank surface, provide information on surface on which the tank is placed (oxygen tanks shall not be placed on asphaltic concrete).
- Provide design pressure, maximum operating pressure and test pressure.
- Show that pressure relief devices are provided.

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