



CITY OF EAST LANSING

Quality Services for a Quality Community

CO2, Nitrogen and helium storage or system installation:

PURPOSE: To identify the most frequently cited code requirements for bulk systems. Below is a list of applicable codes (and excerpts) most often referenced and applied to new systems. Other requirements are identified in the following documents:

Michigan Building Code (MBC) 2015

International Fire Code (IFC)- 2015

Michigan Mechanical Code (MMC)- 2015

NFPA 55 - Compressed Gases and Cryogenic Fluids Code - 2013 Edition

NFPA72- National Fire Alarm and Signaling Code- 2013 edition

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APPLICABLE CODE REQUIREMENTS:

MBC 101.4.5 Provisions of the International Fire Code shall apply to conditions hazardous to life, property or public welfare

MBC 116.1 Existing equipment that is unsafe shall be deemed an unsafe condition. Such assemblies shall be taken down and removed or made safe.

IFC 102.9 Requirements essential for the public safety of an existing or proposed activity, building or structure (or occupants thereof), that are not specifically provided for by this code, shall be determined by the fire code official.

MMC 102.9 Requirements not covered by this code. Requirements necessary for the public safety, health and general welfare, not specifically covered by this code, shall be determined by the code official.

IFC Section 5307 CO2 Systems for Beverage Dispensing

Regulates storage, use and handling of liquid carbon dioxide with this code and the applicable requirements of NFPA 55, Chapter 13 **where quantities exceed 100 lbs.**

By reference of 5307:

IFC 5303.4.3 Piping shall be marked with contents and direction of flow at valves, wall and floor penetrations and every 20 feet. **IFC 5305.5**

Venting of gases shall be to an approved location. Venting shall comply with the MMC.

IFC 5307.2 Permits: As required at the end of this document.

IFC 5307.3 Equipment: Storage, use and handling of CO2 shall be governed by Chapter 53 of the IFC and Chapter 13 of the NFPA 55

IFC 5307.4 CO2 systems shall be secured and protected from damage

IFC 5307.5 Required protection:

Where system leaks could collect indoors, ventilation **or** emergency alarms shall be provided.

Ventilation shall be 1 cubic foot per minute per sq. foot drawn from within 12" AFF and maintain negative air pressure in relation to surrounding areas. Exhaust system shall be installed in accordance with the MMC and discharge in an approved location.

-or-

Alarm systems Shall be provided and shall activate a local alarm (notification devices in approved locations) at not more than 5,000PPM. Indoor systems shall have CO2 sensors mounted no more than 12 inches AFF in areas that CO2 may accumulate (as determined by AHJ). Detection/Alarm systems shall have approved, reliable power and should be “hardwired” versus “plug-in” type equipment (or approved alternative) **IFC5001.3.3.9**.

NFPA55 Chapter 13 Outdoor systems

13.3.1.1.1 To be considered unenclosed, enclosures shall be constructed without roof or overhead cover. Supports and walls shall not obstruct more than 3 sides nor more than 75% of the perimeter (25% of the perimeter must be open to the atmosphere). If not “un-enclosed” ventilation or alarm requirements are the same as indoor systems. Where piping from tanks (in excess of 100 pounds) to indoor locations, ventilation or alarms is required where CO2 may accumulate (as determined by AHJ).

NFPA55 Chapter 13: Signage

Signage shall be posted at the entrance to where the CO2 containers are stored (and other protected areas), sized 8 inches wide and 6 inches high, stating:

CAUTION — CARBON DIOXIDE GAS. Ventilate the area before entering.

A high carbon dioxide (CO2) gas concentration in this area can cause suffocation.

Inspection procedures and scheduling:

A rough inspection is required for all work not visible at final inspection (before covering).

Final inspections shall include testing of all initiation and notification devices. Contractor shall provide any material necessary for testing. Required exhaust CFM shall be verified in approved manner).

Mechanical Permit is required for exhaust fans, ducts and process piping with rough inspection, pressure test (at 1.5 times working pressure) and device testing/final inspections scheduled through mechanical inspector.

Electrical/alarm permit required for low or line voltage wiring and fixtures with rough, device testing/final inspections scheduled through electrical inspector.

Refer Questions to Mechanical Inspector: (517) 319-6983