

## **Codes and Standards Citations for Hydrogen Fuel**

### **ANNUAL INSPECTIONS**

CGA G-5.4, Standard for Hydrogen Piping Systems at Consumer Locations  
(Compressed Gas Association 2005)

7.0 Maintenance and Repair

CGA G-5.5, Hydrogen Vent Systems (Compressed Gas Association 2004)

9 Maintenance

IFC (International Code Council 2006)

406.2 Frequency

901.6.2 Records

907.2 Inspection, Testing, and Maintenance

2206.2.1.1 Inventory Control for Underground Tanks

3204.5.2 Corrosion Protection

3205.4 Filling and Dispensing

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.2.15 General System Requirements

### **BALANCE OF PLANT**

#### **Piping & Tubing**

ASME B31.3, Process Piping (American Society of Mechanical Engineers 2006)

F323.4(5) Specific Material Considerations-Metals

IX K305 Pipe

ASME B31.12, Hydrogen Piping and Pipelines

CGA G-5.4, Standard for Hydrogen Piping Systems at Consumer Locations  
(Compressed Gas Association 2005)

3.1 General

3.2 Piping Materials

5.0 Installation

5.1 Piping Installation General

5.2 Piping Installation Above Ground Installation

5.3 Piping Installation Underground Installation

IFC (International Code Council 2006)

2201.1 Scope

2209.3.2.3 Indoors

2209.3.2.6 Canopy Tops

3501.1 Scope

International Fuel Gas Code (International Code Council 2006)

101.2.1 Gaseous Hydrogen Systems

704 Piping, Use, and Handling

705 Testing of Hydrogen Piping Systems

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.8 Installation of Piping and Hoses

9.9 System Testing

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and

## **Codes and Standards Citations for Hydrogen Fuel**

Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

11.2.3 Piping, Tubing, and Fittings

CGA H-3 Cryogenic Hydrogen Storage (Compressed Gas Association 2006)

10.0 External piping

### **Pressure Relief**

CGA S-1.3, PRD Standards Part 3 - Stationary Storage Containers for Compressed Gases (Compressed Gas Association 2005)

5.3.2 Nonliquid Compressed Gases

IFC (International Code Council 2006)

2209.2.1 Approved Equipment

2209.5.4.2 Pressure Relief Devices

3003.3 Pressure Relief Devices

3203.2 Pressure Relief Devices

3203.3 Pressure Relief Vent Piping

3203.5.4 Physical Protection

3203.8 Service and Repair

3205.1.2.3.2 Shutoff Valves on Piping

International Fuel Gas Code (International Code Council 2006)

703.3 Pressure Relief Devices

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

5.4 Pressure Relief Devices

5.6 Pressure Gauges

5.7 Pressure Regulators

9.6 Installation of Pressure Regulators

9.7 Installation of Pressure Gauges

14.6 Pressure Relief Devices

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

7.1.2.5 Pressure-Relief Devices

10.2.1 Pressure-Relief Devices

### **Valving and Fittings**

ASME B31.3, Process Piping (American Society of Mechanical Engineers 2006)

IX K306 Fittings, Bends, and Branch Connections

IX K307 Valves and Specialty Components

CGA G-5.4, Standard for Hydrogen Piping Systems at Consumer Locations (Compressed Gas Association 2005)

3.3.2 Isolation Valves

3.3.3 Emergency Isolation Valves

## **Codes and Standards Citations for Hydrogen Fuel**

- 3.3.4 Excess Flow Valves
- 3.3.5 Check Valves
- 3.3.7 Gasket and Sealing Materials
- 3.3.8 Additional Requirements
- 5.0 Installation
- 5.1 Installation General

IFC (International Code Council 2006)

- 2209.5.2 Emergency Shutoff Valves
- 2211.8.1.2.4 Grounding and bonding
- 2703.2.2 Piping, Tubing, Valves, and Fittings
- 2703.9.3 Protection from Vehicles
- 2703.10.1 Valve Protection
- 2705.1.10 Liquid Transfer
- 3003.6 Valve Protection
- 3005.3 Piping Systems
- 3005.4 Valves
- 3203.2.6 Shutoffs Between Pressure Relief Devices and Containers
- 3205.1.2 Piping Systems
- 3205.3.2 Emergency Shutoff Valves
- 3503.1.3 Emergency Shutoff

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 5.9 Valves

### **Venting and Other Equipment**

CGA G-5.5, Hydrogen Vent Systems (Compressed Gas Association 2004)

- 6.0 Vent System
- 6.2 Sizing
- 6.3 Design
- 6.4 Materials
- 6.5 Components
- 7 Installation

IFC (International Code Council 2006)

- 2209.5.4 Venting of Hydrogen Systems
- 2211.8.1.2 Atmospheric Venting of Hydrogen from Motor Vehicle Fuel Storage Containers
- 3003.16.8 Connections
- 3005.5 Venting
- 3203.3 Pressure Relief Vent Piping
- 3204.4.5 Venting of Underground Tanks

International Fuel Gas Code (International Code Council 2006)

- 703.4 Venting

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 5.5 Vent Pipe Termination

## **Codes and Standards Citations for Hydrogen Fuel**

### 9.3.3.3 Indoors

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

#### 10.2.1.1 Pressure-Relief Devices

## **CANOPY TOPS**

**International Building Code (International Code Council 2009)**

### **406.5.2.1 Canopies use to support gaseous hydrogen systems**

IFC (International Code Council 2006)

#### 2209.3.2.6 Canopy Tops

#### 2209.3.3 Canopies

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

#### 9.3.2.3 Outdoors

## **COMPRESSED HYDROGEN GAS STORAGE**

### **Equipment Location**

IFC (International Code Council 2006)

#### 2209.3 Location on Property

#### 3503 General Requirements

#### 3504 Storage

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

#### 9.3 System Siting

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

#### 10.3.2 Specific Requirements

## **General Safety Requirements**

IFC (International Code Council 2006)

#### 2209.5 Safety Precautions

#### 2211.7 Repair Garages for Vehicles Fueled by Lighter-than-Air Fuels

#### 2211.8 Defueling of Hydrogen from Motor Vehicle Fuel Storage Containers

#### 3003 General Requirements

#### 3503 General Requirements

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

#### 9.2.3 Equipment Security and Vehicle Protection

#### 9.2.4 General System Requirements

#### 9.2.5 General System Requirements

#### 9.2.6 General System Requirements

## Codes and Standards Citations for Hydrogen Fuel

- 9.2.7 General System Requirements
- 9.2.8 General System Requirements
- 9.2.9 General System Requirements
- 9.2.10 General System Requirements
- 9.2.11 General System Requirements
- 9.2.12 General System Requirements
- 9.2.13 General System Requirements
- 9.2.14 General System Requirements
- 9.2.15 General System Requirements
- 9.2.16 General System Requirements

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

- 7.1.4 Security

### **Storage Containers**

CGA PS-20, Direct Burial of Gaseous Hydrogen Storage Tanks (Compressed Gas Association 2006)

CGA PS-21, Adjacent Storage of Compressed Hydrogen and Other Flammable Gases (Compressed Gas Association 2005)

IFC (International Code Council 2006)

- 2703.2.1 Design and Construction of Containers, Cylinders, and Tanks
- 3003.2 Design and Construction
- 3503.1.2 Storage Containers

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 5.3 Design and Construction of Containers

### **COMPRESSION SYSTEMS AND EQUIPMENT**

IFC (International Code Council 2006)

- 2209.2 Equipment
- 2209.3 Location on Property
  - 2209.5.3.1 System Requirements
    - 2209.5.4.2.1 Minimum Rate of Discharge

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 9.2.7 General System Requirements
- 9.2.8 General System Requirements
- 9.2.9 General System Requirements
- 9.2.10 General System Requirements
- 9.2.11 General System Requirements
- 9.2.12 General System Requirements
- 9.2.13 General System Requirements
- 9.2.14 General System Requirements

## **Codes and Standards Citations for Hydrogen Fuel**

- 9.3.1 General
- 14.8 Stationary Pumps and Compressors

### **DESIGN**

#### **Barrier Walls**

- IFC (International Code Council 2006)
  - 2209.3.1.1 Barrier Wall Construction – Gaseous Hydrogen

#### **Equipment**

- International Fire Code (International Code Council 2006)
  - 2209.2 Equipment
- NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)
  - 9.2 General System Requirements

#### **Fuel Stations**

- IFC (International Code Council 2006)
  - 35 Flammable Gases
    - 2209.1 General
- NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)
  - 7.3 Motor Fuel Dispensing Facilities
- NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)
  - 9.3 System Siting
    - 14.2 Facility Design
- NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)
  - 7.1.6 Separation from Hazardous Conditions

#### **Weather Protection**

- IFC (International Code Council 2006)
  - 2209.3.2.2 Weather Protection
  - 2704.13 Weather Protection

### **DISPENSING**

#### **Electrical Equipment**

- IFC (International Code Council 2006)
  - 2201.5 Electrical
  - 2205.4 Sources of Ignition
  - 2209.2.3 Electrical Equipment
  - 2211.3.1 Equipment
    - 2211.8.1.2.4 Grounding and bonding
  - 2703.9.4 Electrical Wiring and Equipment

## **Codes and Standards Citations for Hydrogen Fuel**

3003.8 Wiring and Equipment  
3003.16.14 Classified Areas  
3203.7 Electrical Wiring and Equipment  
3503.1.5.1 Bonding of Electrically Conductive Materials and Equipment  
NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)  
6.7 Emergency Electrical Disconnects  
8 Electrical Installations  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
9.11 Installation of Electrical Equipment  
9.12 Stray or Impressed Currents and Bonding

### **Fuel Lines**

CGA G-5.4, Standard for Hydrogen Piping Systems at Consumer Locations (Compressed Gas Association 2005)  
3.0 Piping System Criteria  
IFC (International Code Council 2006)  
2201 Scope  
2209.3.2.3 Indoors  
2209.3.2.6 Canopy Tops  
3501.1 Scope  
International Fuel Gas Code (International Code Council 2006)  
101.2.1 Gaseous Hydrogen Systems  
704 Piping, Use, and Handling  
705 Testing of Hydrogen Piping Systems  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
5.8 Fuel Lines

### **Gaseous Dispensers**

IFC (International Code Council 2006)  
2209.2 Equipment  
2209.3 Location on Property  
2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
9.2 General System Requirements  
9.3 System Siting

### **Hoses and Connectors**

IFC (International Code Council 2006)  
2209.2 Equipment  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
5.10 Hose and Hose Connections

## **Codes and Standards Citations for Hydrogen Fuel**

### **Liquid Dispensers**

IFC (International Code Council 2006)

2206.7.4 Dispenser Emergency Valve

2206.7.5 Dispenser Hose

2206.7.6 Fuel Delivery Nozzles

2209.2 Equipment

2209.3 Location on Property

2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

6.3 Requirements for Dispensing Devices

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

14 Liquid Hydrogen Fueling Facilities

### **Vehicle Connectors**

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

5.11 Vehicle Fueling Connection

SAE J2600, Compressed Hydrogen Surface Vehicle Refueling Connection Devices (Society of Automotive Engineers 2002)

## **DISPENSING, OPERATIONS, AND MAINTENANCE SAFETY Gaseous Hydrogen**

CGA G-5.5, Hydrogen Vent Systems (Compressed Gas Association 2004)

9 Maintenance

IFC (International Code Council 2006)

2204 Dispensing Operations

2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

9.2.2 Tank Filling and Bulk Delivery

9.4 Operating Requirements for Attended Self-Service Motor Fuel Dispensing Facilities

9.5 Operating Requirements for Unattended Self-Service Motor Fuel Dispensing Facilities

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.13 System Operation

9.14 Fire Protection

9.15 Maintenance System

## **Codes and Standards Citations for Hydrogen Fuel**

### **Liquid Hydrogen**

CGA G-5.5, Hydrogen Vent Systems (Compressed Gas Association 2004)

9 Maintenance

IFC (International Code Council 2006)

2204 Dispensing Operations

2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

9.2.2 Tank Filling and Bulk Delivery

9.4 Operating Requirements for Attended Self-Service Motor Fuel Dispensing Facilities

9.5 Operating Requirements for Unattended Self-Service Motor Fuel Dispensing Facilities

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

14.4.6 Liquid Hydrogen Vehicle Dispensing Systems

14.4.9 Liquid Hydrogen Vehicle Dispensing Systems

14.4.10 Liquid Hydrogen Vehicle Dispensing Systems

14.4.11 Liquid Hydrogen Vehicle Dispensing Systems

14.13 Maintenance

### **FIRE SAFETY**

#### **Construction**

IFC (International Code Council 2006)

911 Explosion Control

2209.5 Safety Precautions

International Fuel Gas Code (International Code Council 2006)

706.3 Outdoor Gaseous Hydrogen Systems

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.12 Stray or Impressed Currents and Bonding

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

7.1.6 Separation from Hazardous Conditions

#### **Equipment**

IFC (International Code Council 2006)

404 Fire Safety and Evacuation Plan

406 Employee Training and Response Procedures

407 Hazard Communication

906 Portable Fire Extinguishers

907 Fire Alarm and Detection Systems

## **Codes and Standards Citations for Hydrogen Fuel**

2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

2209.5 Safety Precautions

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.2.3 Equipment Security and Vehicle Protection

9.2.4 General System Requirements

9.2.5 General System Requirements

9.2.15 General System Requirements

9.3.3 Indoors

9.14 Fire Protection

14.2.4 Indoor Fueling

14.4.3 Liquid Hydrogen Vehicle Dispensing Systems

### **Signage**

IFC (International Code Council 2006)

2204.3.5 Emergency Procedures

2209.5.2.1 Identification

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.3.3.12 Warning Signs

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

6.12 Hazard Identification Signs

10.2.4 Marking

11.3.1.4 General

### **LIQUID HYDROGEN STORAGE**

#### **Equipment Location**

IFC (International Code Council 2006)

2209.3 Location on Property

3203.5.4 Physical Protection

3203.6 Separation from Hazardous Conditions

3204.3.1.1 Location

3204.4.2 Location

3504 Storage

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

11.3.1 General

11.3.2 Specific Requirements

#### **General Safety Requirements**

## **Codes and Standards Citations for Hydrogen Fuel**

IFC (International Code Council 2006)  
2209.5 Safety Precautions  
2211.7 Repair Garages for Vehicles Fueled by Lighter-than-Air Fuels  
2211.8 Defueling of Hydrogen from Motor Vehicle Fuel Storage Containers  
3003 General Requirements  
3203 General Safety Requirements  
3503 General Requirements  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
14.2 Facility Design

### **Storage Containers**

IFC (International Code Council 2006)  
2703.2 Systems, Equipment, and Processes  
3203.1 Containers  
3203.5 Security  
3203.6 Separation from Hazardous Conditions  
3204.3.1 Stationary Containers  
3204.4 Underground Tanks  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
5.3 Design and Construction of Containers  
NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)  
11.3.2 Specific Requirements  
11.4.2 Underground Tanks  
CGA H-3 Cryogenic Hydrogen Storage (Compressed Gas Association 2006)  
6.0 Tank design and manufacturing criteria  
7.0 Inner vessel  
8.0 Outer jacket

### **ON-SITE HYDROGEN PRODUCTION**

IFC (International Code Council 2006)  
2209.3.1 Separation from Outdoor Exposure Hazards  
International Fuel Gas Code (International Code Council 2006)  
703.1 General Requirements  
NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)  
5.2 System Approvals

### **OPERATION APPROVALS**

#### **Dispensing**

IFC (International Code Council 2006)  
2204.2 Attended Self-Service Motor Fuel-Dispensing Facilities

## **Codes and Standards Citations for Hydrogen Fuel**

- 2204.3 Unattended Self-Service Motor Fuel-Dispensing Facilities
- 2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

- 6.2 General Requirements
- 6.3 Requirements for Dispensing Devices

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 14.4.1 Liquid Hydrogen Vehicle Dispensing Systems
- 14.4.2 Liquid Hydrogen Vehicle Dispensing Systems
- 14.4.3 Liquid Hydrogen Vehicle Dispensing Systems
- 14.4.11 Liquid Hydrogen Vehicle Dispensing Systems

### **Fire And Emergency Planning**

IFC (International Code Council 2006)

- 404 Fire Safety and Evacuation Plan
- 406 Employee Training and Response Procedures
- 407 Hazard Communication
- 906 Portable Fire Extinguishers
- 907 Fire Alarm and Detection Systems
- 2209.3.2.6.2 Fire-Extinguishing Systems
- 2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities
- 2209.5.1 Protection from Vehicles
- 2209.5.2 Emergency Shutoff Valves
- 2209.5.3 Emergency Shutdown Controls
- 2209.5.4 Venting of Hydrogen Systems

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

- 7.3.5 Fixed Fire Protection

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

- 9.2.16 General System Requirements
- 9.10.5 Installation of Emergency Shutdown Equipment

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

- 4.1 Permits
- 4.2 Emergency Plan
- 7.1.6 Separation from Hazardous Conditions

### **Fuel Delivery**

IFC (International Code Council 2006)

- 105.6.8 Compressed Gases

## **Codes and Standards Citations for Hydrogen Fuel**

105.6.10 Cryogenic Fluids

2205.1 Tank Filling Operation for Class I, II, or IIIA Liquids

3205.4 Filling and Dispensing

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

6.3.7 Requirements for Dispensing Devices

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.2.3 Equipment Security and Vehicle Protection

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

10.3 Location of Gaseous Hydrogen Systems

### **Ignition Control**

IFC (International Code Council 2006)

2209.3.2.3.3 Ignition Source Control

3503.1.4 Ignition Source Control

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

4.8 Ignition Source Controls

7.6.3 Ignition Source Control

### **Personnel Issues and Training**

IFC (International Code Council 2006)

406 Employee Training and Response Procedures

2209.4 Dispensing into Motor Vehicles at Self-Service Hydrogen Motor Fuel-Dispensing Facilities

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

9.4 Operating Requirements for Attended Self-Service Motor Fuel Dispensing Facilities

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

4.6 Personnel Training

4.7 Fire Department Liaison

### **Signage**

IFC (International Code Council 2006)

2204.3.5 Emergency Procedures

2209.3.2.3.2 Smoking

2209.3.2.6.3 Signage

## **Codes and Standards Citations for Hydrogen Fuel**

### 2209.5.2.1 Identification

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

### 9.3.3.12 Warning Signs

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

### 4.9 Signs

## **Vehicle Access**

IFC (International Code Council 2006)

### 105.6.8 Compressed Gases

### 105.6.10 Cryogenic Fluids

### 105.6.39 Repair Garages and Motor Fuel-Dispensing Facilities

### 404.3.2 Fire Safety Plans

### 3205.4 Filling and Dispensing

NFPA 30A, Code for Motor Fuel Dispensing Facilities and Repair Garages (National Fire Protection Association 2003)

### 6.3.7 Requirements for Dispensing Devices

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

### 9.2.3 Equipment Security and Vehicle Protection

### 14.2.1.6 General

### 14.4.2 Liquid Hydrogen Vehicle Dispensing Systems

### 14.4.5 Liquid Hydrogen Vehicle Dispensing Systems

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

### 10.3 Location of Gaseous Hydrogen Systems

## **SETBACKS AND FOOTPRINTS**

### **Liquid Systems**

IFC (International Code Council 2006)

### 2209.3.1 Separation from Outdoor Exposure Hazards

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

### 14.2.2 Siting

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

### 11.3.2.1 Specific Requirements

### 11.3.2.2 Specific Requirements

## **Outdoor Gaseous Systems**

## **Codes and Standards Citations for Hydrogen Fuel**

IFC (International Code Council 2006)

2209.3.1 Separation from Outdoor Exposure Hazards

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

9.3.1.3 General

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

10.3.2.1 Specific Requirements

10.3.2.2 Minimum Distance

### **TRANSPORTATION**

#### **Compressed Hydrogen Gas**

CGA P-1, Safe Handling of Compressed Gases in Containers (Compressed Gas Association 2006)

4.1 Transportation Regulating Authorities

4.2 Container Regulations

4.3 Container Filling Regulations

4.4 Regulating Authorities of Employee Safety and Health

6.2 Flammable Gases

IFC (International Code Council 2006)

2705 Use, Dispensing, and Handling

3005.7 Transfer

3505 Use

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

4 General Requirements

7.3.1.10 Use and Handling

#### **Liquid Hydrogen**

CGA P-12, Safe Handling of Cryogenic Liquids (Compressed Gas Association 2005)

5.5.4 Additional Safety Practices for Liquid Hydrogen

6.4 Hydrogen Fires

7.9 Handling Considerations for Hydrogen and Helium Transfer

IFC (International Code Council 2006)

2705 Use Dispensing and Handling

3201.1 Scope

3203.6.1.1 Point-of-Fill Connections

3205.4.2 Vehicle Loading and Unloading Areas

NFPA 52, Vehicular Fuel Systems Code (National Fire Protection Association 2006)

14.3 Cargo Transport Unloading

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and

## **Codes and Standards Citations for Hydrogen Fuel**

Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

4 General Requirements

8.3.5 Overfilling

8.13.1.2 Attended Delivery

8.13.10.3 Filling and Dispensing

### **Natural Gas**

ASME B31.8, Gas Transmission and Distribution Systems (American Society of Mechanical Engineers 2003)

### **VAPORIZERS**

IFC (International Code Council 2006)

2209.2 Equipment

2209.3 Location on Property

3203.1.3 Foundations and Supports

3203.2.2 Vessels or Equipment Other than Containers

3203.5.3 Securing of Vaporizers

IFC (International Code Council 2006)

708 Design of Liquefied Hydrogen Systems Associated with Hydrogen Vaporization Operations

NFPA 55, Standard for Storage, Use and Handling of Compressed Gases and Cryogenic Fluids in Portable and Stationary Containers, Cylinders and Tanks (National Fire Protection Association 2005)

11.2.5 Liquefied Hydrogen Vaporizers