



# NFPA 2

# Table Summary

## Chapter 6: General Hydrogen Requirements

Table 6.4.1.1.1 Maximum Allowable Quantity of Hydrogen per Control Area (Quantity Thresholds Requiring Special Provisions)				
Material	Unsprinklered Areas		Sprinklered Areas	
	No Gas Cabinet, Gas Room, or Exhausted Enclosure	Gas Cabinet, Gas Room, or Exhausted Enclosure	No Gas Cabinet, Gas Room, or Exhausted Enclosure	Gas Cabinet, Gas Room, or Exhausted Enclosure
LH <sub>2</sub>	0 gal (0 L)	45 gal (170 L) *	45 gal (170 L)	45 gal (170 L)
GH <sub>2</sub>	1000 scf (26.3 Nm <sup>3</sup> )	2000 scf (52.6 Nm <sup>3</sup> )	2000 scf (52.6 Nm <sup>3</sup> )	4000 scf (105.1 Nm <sup>3</sup> )

For SI units: 1 ft = 304.8 mm; 1 scf = 0.02832 Nm<sup>3</sup>.

Note: None allowed in unsprinklered buildings unless stored or used in gas rooms or in approved gas cabinets or exhausted enclosures, as specified in this code, and pressure-relief devices for stationary or portable containers vented directly outdoors or to an exhaust hood.

\*A gas cabinet or exhausted enclosure is required (see also 6.4.1.1.2).

## Chapter 7: Gaseous Hydrogen

<span>Pin Header</span> <span style="float: right;">Table 7.1.23.9.1 Protection Features Based on Use <span>×</span></span>				
HEE or a compartment in an HEE contains:	GH <sub>2</sub> storage	GH <sub>2</sub> storage	Hydrogen generation, compression and/or processing equipment	Support equipment room (in an HEE)
Enclosure Volume:	<200 ft <sup>3</sup>	≥200 ft <sup>3</sup>	Not limited	Not limited
Contains or is connected to a source of hydrogen:	Yes	Yes	Yes	No
Automatic isolation from GH <sub>2</sub> storage	Not required	Not required	Required	Not applicable
Ventilation	Natural or mechanical	Natural or mechanical	Mechanical	No additional requirement
Storage compartment separation	Not applicable	Not applicable	Required	Required
Electrical equipment	Per <i>NFPA 70</i> , Chapter 5	Per <i>NFPA 70</i> , Chapter 5	Per <i>NFPA 70</i> , Chapter 5	Unclassified
Bonding/grounding	Required	Required	Required	Per <i>NFPA 70</i>
Explosion control	Not required	Required	Required	Not required
Detection	Loss of ventilation*	GH <sub>2</sub> , Loss of ventilation*	GH <sub>2</sub> , Fire and Loss of ventilation	GH <sub>2</sub> if necessary to meet the requirements of 7.1.23.10.3.1

\*Where mechanical ventilation is provided

Table 7.2.1.1 Separation of Gas Cylinders, Containers, and Tanks by Hazard Class from Non-Bulk GH <sub>2</sub> Cylinders, Containers, Tanks, and Systems		
Gas Category	GH <sub>2</sub> *	
	ft	m
Toxic or highly toxic	20	6.1
Pyrophoric	20	6.1
Flammable	—	—
Oxidizing	20	6.1
Corrosive	20	6.1
Unstable reactive Class 2, Class 3, or Class 4	20	6.1
Other gas	NR	NR

NR: No separation required.  
\*See flammable gas column from Table 7.1.10.2 of NFPA 55.

Table 7.2.2.3.2 Distance to Exposures for Non-Bulk GH <sub>2</sub>						
Maximum Amount Per Storage Area (ft <sup>3</sup> )	Minimum Distance Between Storage Areas (ft)	Minimum Distance to Lot Lines of Property That Can Be Built Upon (ft)	Minimum Distance to Public Streets, Public Alleys, or Public Ways (ft)	Minimum Distance to Buildings on the Same Property		
				Less Than 2-Hour Construction	2-Hour Construction	4-Hour Construction
0–4225	5	5	5	5	0	0
4226–21,125	10	10	10	10	5	0
21,126–50,700	10	15	15	20	5	0
50,701–84,500	10	20	20	20	5	0
84,501–200,000	20	25	25	20	5	0

For SI units: 1 ft = 304.8 mm; 1 scf = 0.02832 Nm<sup>3</sup>.  
Note: The minimum required distances do not apply where fire barriers without openings or penetrations having a minimum fire-resistive rating of 2 hours interrupt the line of sight between the storage and the exposure. The configuration of the fire barriers shall be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

Location	Quantity of Hydrogen	
	≥5000 scf to <15,000 scf (≥142 Nm <sup>3</sup> to <425 Nm <sup>3</sup> )	≥15,000 scf (≥425 Nm <sup>3</sup> )
In a detached building in accordance with Section 6.5	A	A
In a Protection Level 2 occupancy, in accordance with Section 6.4	A	Detached building required in accordance with Section 6.5
Not in a Protection Level 2 occupancy	N/A	Detached building required in accordance with Section 6.5

A: Allowed. N/A: Not allowed.

A: Allowed. N/A: Not allowed.

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Table 7.3.2.3.1.2(B)(a) Minimum Distance (D) from Outdoor Bulk Hydrogen Compressed Gas Systems to Exposures – Typical Maximum Pipe Size

Pressure	>15 to ≤250 psig		>250 to ≤3000 psig		>3000 to ≤7500 psig		>7500 to ≤15000 psig	
Internal Pipe Diameter (ID)	>103.4 to ≤1724 kPa		>1724 to ≤20,684 kPa		>20,684 to ≤51,711 kPa		>51,711 to ≤103,421 kPa	
d <sub>mm</sub>	d = 52.5 <sub>mm</sub>		d = 18.97 <sub>mm</sub>		d = 7.31 <sub>mm</sub>		d = 7.16 <sub>mm</sub>	
Exposures Group 1	m	ft	m	ft	m	ft	m	ft
Lot lines	5	16	6	20	4	13	5	16
Air intakes (HVAC, compressors, other)								
Operable openings in buildings and structures								
Ignition sources such as open flames and welding								
Exposures Group 2	m	ft	m	ft	m	ft	m	ft
Exposed persons other than those servicing the system	5	16	6	20	3	10	4	13
Parked cars								
Exposures Group 3	m	ft	m	ft	m	ft	m	ft
Buildings of non-combustible non-fire-rated construction	4	13	5	16	3	10	4	13
Buildings of combustible construction								
Flammable gas storage systems above or below ground								
Hazardous materials storage systems above or below ground								
Heavy timber, coal, or other slow-burning combustible solids								
Ordinary combustibles, including fast-burning solids such as ordinary lumber, excelsior, paper, or combustible waste and vegetation other than that found in maintained landscaped areas								
Unopenable openings in building and structures								
Encroachment by overhead utilities (horizontal distance from the vertical plane Below the nearest overhead electrical wire of building service)								
Piping containing other hazardous materials								
Flammable gas metering and regulating stations such as natural gas or propane.								

Table 7.3.2.3.1.2(B)(b) Minimum Distance (D) from Outdoor Bulk Hydrogen Compressed Gas Systems to Exposures by Maximum Pipe Size with Pressures >15 to ≤3000 psig



Pressure		>15 to ≤250 psig >103.4 to ≤1724 kPa						>250 to ≤3000 psig >1724 to ≤20,684 kPa					
Internal Pipe Diameter (ID)		Exposures*†						Exposures*†					
		Group 1		Group 2		Group 3		Group 1		Group 2		Group 3	
ID (in.)	d (mm)	D = 0.0952d		D = 0.1019d - 0.3485		D = 0.0762		D = 0.3168d		D = 0.3384d - 0.4188		D = 0.2636d	
		m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
0.2	5.1	0.5	2	0.2	1	0.4	1	1.6	5	1.3	4	1.3	4
0.3	7.6	0.7	2	0.4	1	0.6	2	2.4	8	2.2	7	2.0	7
0.4	10.2	1.0	3	0.7	2	0.8	3	3.2	11	3.0	10	2.7	9
0.5	12.7	1.2	4	0.9	3	1.0	3	4.0	13	3.9	13	3.3	11
0.6	15.2	1.4	5	1.2	4	1.2	4	4.8	16	4.7	16	4.0	13
0.7	17.8	1.7	6	1.5	5	1.4	4	5.6	19	5.6	18	4.7	15
0.8	20.3	1.9	6	1.7	6	1.5	5	6.4	21	6.5	21	5.4	18
0.9	22.9	2.2	7	2.0	7	1.7	6	7.3	24	7.3	24	6.0	20
1.0	25.4	2.4	8	2.2	7	1.9	6	8.0	26	8.2	27	6.7	22
1.1	27.9	2.7	9	2.5	8	2.1	7	8.8	29	9.0	30	7.4	24
1.2	30.5	2.9	10	2.8	9	2.3	8	9.7	32	9.9	32	8.0	26
1.3	33.0	3.1	10	3.0	10	2.5	8	10.5	34	10.7	35	8.7	29
1.4	35.6	3.4	11	3.3	11	2.7	9	11.3	37	11.6	38	9.4	31
1.5	38.1	3.6	12	3.5	12	2.9	10	12.1	40	12.5	41	10.0	33
1.6	40.6	3.9	13	3.8	12	3.1	10	12.9	42	13.3	44	10.7	35
1.7	43.2	4.1	13	4.1	13	3.3	11	13.7	45	14.2	47	11.4	37
1.8	45.7	4.4	14	4.3	14	3.5	11	14.5	47	15.0	49	12.0	40
1.9	48.3	4.6	15	4.6	15	3.7	12	15.3	50	15.9	52	12.7	42
2.0	50.8	4.8	16	4.8	16	3.9	13	16.1	53	16.8	55	13.4	44
2.1	53.3	5.1	17	5.1	17	4.1	13	16.9	55	17.6	58	14.0	46

Note: Linear interpolation of internal pipe diameters and distances between table entries is allowed.

\*For a list of exposures in each exposure group, see Column 1 of Table 7.3.2.3.1.2(B)(a).

†When calculating the minimum separation distance (D) using the formulas indicated, based on the exposure group and pressure indicated, the internal pipe diameter (d) is entered in millimeters (mm). The calculated distance (D) is expressed in units of measure in meters (m). To convert distance (D) to units of measure in feet, multiply the value of (D) in meters by 3.2808 and round to the nearest whole foot.

Table 7.3.2.3.1.2(B)(c) Minimum Distance (D) from Outdoor Bulk Hydrogen Compressed Gas Systems to Exposures by Maximum Pipe Size with Pressures >3000 to ≤15,000 psig

Pressure		>3000 to ≤7500 psig >20,684 to ≤51,711 kPa						>7500 to ≤15,000 psig >51,711 to ≤103,421 kPa					
Internal Pipe Diameter (ID)		Exposures*†						Exposures*†					
		Group 1		Group 2		Group 3		Group 1		Group 2		Group 3	
ID (in.)	d (mm)	D = 1.105d - 4.078		D = 0.6831d - 1.99		D = 0.459d - 0.355		D = 1.448d - 5.368		D = 0.9291d - 2.65		D = 0.602d - 0.3103	
		m	ft	m	ft	m	ft	m	ft	m	ft	m	ft
0.2	5.1	1.6	5	1.5	5	2	7	2	7	2	7	3	9
0.3	7.6	4.3	14	3.2	11	3	10	6	18	4	14	4	14
0.4	10.2	7.2	24	5.0	16	4	14	9	31	7	22	6	19
0.5	12.7	10.0	33	6.7	22	5	18	13	43	9	30	7	24
0.6	15.2	12.7	42	8.4	28	7	22	17	55	11	38	9	29
0.7	17.8	15.6	51	10.2	33	8	26	20	67	14	46	10	34
0.8	20.3	18.4	60	11.9	39	9	29	24	79	16	53	12	39
0.9	22.9	21.2	70	13.7	45	10	33	28	91	19	61	13	44
1.0	25.4	24.0	79	15.4	50	11	37	31	103	21	69	15	49
1.1	27.9	26.8	88	17.1	56	12	41	35	115	23	76	16	54
1.2	30.5	29.6	97	18.8	62	14	45	39	127	26	84	18	59
1.3	33	32.4	106	20.6	67	15	49	42	139	28	92	20	64
1.4	35.6	35.3	116	22.3	73	16	52	46	152	30	100	21	69
1.5	38.1	38.0	125	24.0	79	17	56	50	163	33	107	23	74
1.6	40.6	40.8	134	25.7	84	18	60	53	175	35	115	24	79
1.7	43.2	43.7	143	27.5	90	19	64	57	188	37	123	26	84
1.8	45.7	46.4	152	29.2	96	21	68	61	199	40	131	27	89
1.9	48.3	49.3	162	31.0	102	22	72	65	212	42	139	29	94
2.0	50.8	52.1	171	32.7	107	23	75	68	224	45	146	30	99

Note: Linear interpolation of internal pipe diameters and distances between table entries is allowed.

\*For a list of exposures in each exposure group, see Column 1 of Table 7.3.2.3.1.2(B)(a).

†When calculating the minimum separation distance (D) using the formulas indicated, based on the exposure group and pressure indicated, the internal pipe diameter (d) is entered in millimeters (mm). The calculated distance (D) is expressed in units of measure in meters (m). To convert distance (D) to units of measure in feet, multiply the value of (D) in meters by 3.2808 and round to the nearest whole foot.



Table 7.3.2.3.1.7.1 Electrical Area Classification		
Location	Classification	Extent of Classified Area
Within 3 ft (1 m) of any vent outlet and any points where hydrogen is vented to the atmosphere under normal operations	Class 1, Division 1, Group B or Class I, Zone 1, Group IIC	Between 0 ft (0 m) and 3 ft (0.9 m) and measured spherically from the outlet.
Between 3 ft (1 m) and 15 ft (4.6 m) of any vent outlet and any points where hydrogen is vented to the atmosphere under normal operations.	Class I, Division 2, Group B or Class I, Zone 2, Group IIC	Between 3 ft (0.9 m) and 15 ft (4.6 m) and measured spherically from the vent outlet
Storage equipment excluding the piping system downstream of the source valve	Class I, Division 2, Group B or Class I, Zone 2, Group IIC	Between 0 ft (0 m) and 15 ft (4.6 m) and measured spherically from the source

# Chapter 8: Liquefied Hydrogen

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Location	Quantity of Hydrogen				
	MAQ	>MAQ to 300 gal (>170.32 to 1135.5 L)	>300 to 600 gal (>1135.5 to 2271 L)	>600 gal (>2271 L)	
Outdoors	A	A	A	A	
In a detached building	A	A	A	NA	
In a gas room	A	A	NA	NA	
Inside a building (not in a gas room or detached building) and exposed to other occupancies	A	NA	NA	NA	

MAQ: Maximum allowable quantity. A: Allowed. NA: Not allowed.

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Pin Header		Table 8.3.2.2.1.4 Location of [LH <sub>2</sub> ] Systems			
Location	Quantity of Hydrogen				
	MAQ	>MAQ to 300 gal (>170.32 to 1135.5 L)	>300 to 600 gal (>1135.5 to 2271 L)	>600 gal (>2271 L)	
Outdoors	A	A	A	A	
In a detached building	A	A	A	NA	
In a gas room	A	A	NA	NA	
Inside a building (not in a gas room or detached building) and exposed to other occupancies	A	NA	NA	NA	

MAQ: Maximum allowable quantity. A: Allowed. NA: Not allowed.  
[55:Table 11.3.2.1]

Chapter 5 – Performance-Based

Pin Header

**Table 8.3.2.3.1.6(a) Minimum Distance from Outdoor Bulk Liquefied Hydrogen (LH<sub>2</sub>) Systems to Exposures, Up to 75,000 gal (280,000 L) – Typical Inner Diameter (d) 1.5 in. (38.1 mm)**

Maximum Operating Pressure (MOP) (gauge)	<60 psi (<414 kPa)		60 to 120 psi (414 kPa to 827 kPa)		>120 psi (>827 kPa)	
	ft	m	ft	m	ft	m
<b>Exposures Group 1</b>						
1. Lot lines						
2. Air intakes (e.g., HVAC, compressors)	44	13.3	48	14.5	49	14.9
3. Operable openings in buildings and structures						
4. Ignition sources such as open flames and welding						
<b>Exposures Group 2</b>						
5. Exposed persons other than those servicing the system						
6. Parked cars						
7. Buildings of combustible construction						
8. Hazardous materials storage systems above ground or fill/vent openings for belowground storage systems	31	9.4	36	11.1	38	11.6
9. Ordinary combustibles, including fast-burning solids such as ordinary lumber, excelsior, paper, or combustible waste and vegetation other than that found in maintained landscaped areas						
<b>Exposures Group 3</b>						
10. Buildings of noncombustible non-fire-rated construction						
11. Flammable gas storage systems above or below ground						
12. Heavy timber, coal, or other slow-burning combustible solids						
13. Unopenable openings in buildings and structures						
14. Encroachment by overhead utilities (horizontal distance from the vertical plane below the nearest overhead electrical wire of building service)	26	8.0	31	9.5	33	10.0
15. Piping containing other hazardous materials						
16. Flammable gas metering and regulating stations such as natural gas or propane						

<div style="display: flex; justify-content: space-between; align-items: center;"> <span>Pin Header</span> <span>Table 8.3.2.3.1.6(A) Minimum Distance from Bulk Liquefied Hydrogen [LH<sub>2</sub>] Systems to Exposures</span> <span>×</span> </div>						
Type of Exposure	Total Bulk Liquefied Hydrogen [LH <sub>2</sub> ] Storage					
	39.7 gal to 3500 gal		3501 gal to 15,000 gal		15,001 gal to 75,000 gal	56,782 L to 283,906 L
	ft	m	ft	m	ft	m
<b>Group 1</b>						
1. Lot lines	25	7.6	50	15	75	23
2. Air intakes [heating, ventilating, or air-conditioning equipment (HVAC), compressors, other]	75	23	75	23	75	23
3. Wall openings						
Operable openings in buildings and structures	75	23	75	23	75	23
4. Ignition sources such as open flames and welding	50	15	50	15	50	15
<b>Group 2</b>						
5. Places of public assembly	75	23	75	23	75	23
6. Parked cars (distance shall be measured from the container fill connection)	25	7.6	25	7.6	25	7.6
<b>Group 3</b>						
7. Building or structure						
(a) Buildings constructed of noncombustible or limited-combustible materials						
(1) Sprinklered building or structure or unsprinklered building or structure having noncombustible contents	5 <sup>a</sup>	1.5	5 <sup>a</sup>	1.5	5 <sup>a</sup>	1.5

(2) Unsprinklered building or structure	50	15	75	23	100	30.5
8. Flammable gas storage or systems (other than hydrogen) above or below ground	50	15	75	23	75	23
9. Between stationary liquefied hydrogen containers	5	1.5	5	1.5	5	1.5
10. All classes of flammable and combustible liquids (above ground and vent or fill openings if below ground) <sup>c</sup>	50	15	75	23	100	30.5
11. Hazardous materials storage or systems including liquid oxygen storage and other oxidizers, above or below ground	75	23	75	23	75	23
12. Heavy timber, coal, or other slow-burning combustible solids	50	15	75	23	100	30.5
13. Wall openings						
Unopenable openings in buildings and structures	25	7.6	50	15	50	15
14. Inlet to underground sewers	5	1.5	5	1.5	5	1.5
15. Utilities overhead, including electric power, building services, or hazardous materials piping systems						
(a) Horizontal distance from the vertical plane below the nearest overhead wire of an electric trolley, train, or bus line	50	15	50	15	50	15
(b) Horizontal distance from the vertical plane below the nearest overhead electrical wire	25	7.5	25	7.5	25	7.5
(c) Piping containing other hazardous materials	15	4.6	15	4.6	15	4.6
16. Flammable gas metering and regulating stations above grade	15	4.6	15	4.6	15	4.6

<sup>a</sup>Portions of wall less than 10 ft (3.1 m) (measured horizontally) from any part of a system must have a fire resistance rating of not less than 1 hour.

<sup>b</sup>Exclusive of windows and doors.

<sup>c</sup>The separation distances for Class IIIB combustible liquids shall be permitted to be reduced to 15 ft (4.6 m).

[55:Table 11.3.2.2]

**Table 8.3.2.3.1.6(b) Minimum Distance from Outdoor Bulk Liquefied Hydrogen (LH<sub>2</sub>) Systems to Exposures by Inner Diameter (d)**

Maximum Operating Pressure (MOP) (gauge)		<60 psi (<414 kPa)						60 psi to 120 psi (414 kPa to 827 kPa)						>120 psi (>827 kPa)					
		Group 1		Group 2		Group 3		Group 1		Group 2		Group 3		Group 1		Group 2		Group 3	
Inner Diameter (d)		0.34d + 0.24		0.20d + 1.84		0.15d + 2.08		0.37d + 0.53		0.24d + 1.96		0.19d + 2.19		0.38d + 0.57		0.25d + 1.93		0.20d + 2.16	
in.	mm	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m	ft	m
0.5	12.7	15	4.7	14	4.2	13	4.0	18	5.4	16	4.8	15	4.5	18	5.5	16	5.0	15	4.6
1.0	25.4	29	8.9	23	7.0	20	6.1	32	9.7	27	8.1	23	7.1	33	10.0	28	8.5	24	7.5
1.5	38.1	44	13.3	31	9.4	26	8.0	48	14.5	36	11.1	31	9.5	49	14.9	38	11.6	33	10.0
2.0	50.6	58	17.8	38	11.7	32	9.8	63	19.3	45	13.8	38	11.6	65	19.9	48	14.6	41	12.3

(1) Linear interpolation of internal pipe diameters and distances between table entries is allowed.  
 (2) For a list of exposures in each exposure group, see column 1 of Table 8.3.2.3.1.6(a).  
 (3) When calculating the minimum separation distance using the formulas indicated, based on the exposure group and pressure indicated, the inner diameter (d) is entered in millimeters (mm). The calculated distance is returned in units of measure in meters (m). To convert distance to units of measure in feet, multiply the value in meters by 3.2808 and round to the nearest whole foot.

**Table 8.2.2.3.4 Distance to Exposures for Non-Bulk Liquefied Hydrogen [LH<sub>2</sub>]**

Maximum Amount per Storage Area (gal)	Minimum Distance Between Storage Areas (ft)	Minimum Distance to Lot Lines of Property That Can Be Built Upon (ft)	Minimum Distance to Public Streets, Public Alleys, or Public Ways (ft)	Minimum Distance to Buildings on the Same Property		
				Less than 2-Hour Construction	2-Hour Construction	4-Hour Construction
0–39.7	5	5	5	5	0	0
39.8–186.9	10	10	10	10	5	0
187–448.7	10	15	15	20	5	0
448.8–747.8	10	20	20	20	5	0
>747.8	20	25	25	20	5	0

For SI units: 1 ft = 305 mm.  
 Notes:  
 (1) For requirements on minimum distance to air intakes, see 8.2.2.3.4.2.  
 (2) For requirements on minimum distance to building openings including exits, see 8.2.2.3.4.3.  
 (3) When 8.2.2.3.4.1 is used as a means of distance reduction, the configuration of the fire barriers should be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.  
 [55:Table 8.6.3.1]

Table 8.2.2.3.4 Distance to Exposures for Non-Bulk Liquefied Hydrogen LH<sub>2</sub>

Maximum Amount per Storage Area (gal)	Minimum Distance Between Storage Areas (ft)	Minimum Distance to Lot Lines of Property That Can Be Built Upon (ft)	Minimum Distance to Public Streets, Public Alleys, or Public Ways (ft)	Minimum Distance to Buildings on the Same Property		
				Less than 2-Hour Construction	2-Hour Construction	4-Hour Construction
0–39.7	5	5	5	5	0	0
39.8–186.9	10	10	10	10	5	0
187–448.7	10	15	15	20	5	0
448.8–747.8	10	20	20	20	5	0
>747.8	20	25	25	20	5	0

For SI units: 1 ft = 305 mm.  
 Notes:  
 (1) For requirements on minimum distance to air intakes, see 8.2.2.3.4.2.  
 (2) For requirements on minimum distance to building openings including exits, see 8.2.2.3.4.3.  
 (3) When 8.2.2.3.4.1 is used as a means of distance reduction, the configuration of the fire barriers should be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.

Table 8.2.2.3.4 Distance to Exposures for Non-Bulk Liquefied Hydrogen [LH<sub>2</sub>]

Maximum Amount per Storage Area (gal)	Minimum Distance Between Storage Areas (ft)	Minimum Distance to Lot Lines of Property That Can Be Built Upon (ft)	Minimum Distance to Public Streets, Public Alleys, or Public Ways (ft)	Minimum Distance to Buildings on the Same Property		
				Less than 2-Hour Construction	2-Hour Construction	4-Hour Construction
0–39.7	5	5	5	5	0	0
39.8–186.9	10	10	10	10	5	0
187–448.7	10	15	15	20	5	0
448.8–747.8	10	20	20	20	5	0
>747.8	20	25	25	20	5	0

For SI units: 1 ft = 305 mm.  
 Notes:  
 (1) For requirements on minimum distance to air intakes, see 8.2.2.3.4.2.  
 (2) For requirements on minimum distance to building openings including exits, see 8.2.2.3.4.3.  
 (3) When 8.2.2.3.4.1 is used as a means of distance reduction, the configuration of the fire barriers should be designed to allow natural ventilation to prevent the accumulation of hazardous gas concentrations.  
 [55:Table 8.6.3.1]

2023

Table 8.3.1.2.6.1 Electrical Area Classification		
Location	Division	Extent of Classified Area
The bulk liquefied hydrogen system fill connection, pressure relief vent outlets, or other points on the system where hydrogen is vented to the atmosphere under the designed operating conditions	1	Within 3 ft (1 m) measured spherically from system fill connection, system pressure relief vent outlets, other points of release when the system is operating as designed
	2	Between 3 ft (1 m) and 25 ft (7.6 m) measured spherically from the system fill connection, any vent outlet, and within 25 ft (7.6 m) of any portion of the bulk supply system that contains liquefied hydrogen

2020

Table 8.3.1.2.6.1 Electrical Area Classification		
Location	Division	Extent of Classified Area
The bulk liquefied hydrogen system fill connection, pressure relief vent outlets, or other points on the system where hydrogen is vented to the atmosphere under the designed operating conditions	1	Within 3 ft (1 m) measured spherically from system fill connection, system pressure relief vent outlets, other points of release when the system is operating as designed
	2	Between 3 ft (1 m) and 25 ft (7.6 m) measured spherically from the system fill connection, any vent outlet, and within 25 ft (7.6 m) of any portion of the bulk supply system that contains liquefied hydrogen

[55:Table 11.2.6.2]



Chapter 10:

		Required Separation	
System Component	Exposure	ft	m
Dispensing equipment	Nearest important building or line of adjoining property that can be built upon or from any source of ignition	10	3.0
Dispensing equipment	Nearest public street or public sidewalk	10	3.0
Dispensing equipment	Nearest rail of any railroad main track	10	3.0
Point of transfer	Any important building other than buildings of Type I or Type II construction with exterior walls having a fire resistance rating of not less than not less than 2 hours	10	3.0
Point of transfer	Buildings of Type I or II construction with exterior walls having a fire resistance rating of not less than 2 hours or walls constructed of concrete or masonry, or of other material having a fire resistance rating of not less than 2 hours	No limit	No limit
Point of transfer	Storage containers	3	1.0

Pin Header

Table 10.4.6.1 Electrical Installations



Location	Division or Zone	Extent of Classified Area
Outdoor dispenser enclosure – exterior and interior	2	Up to 5 ft (1.5 m) from dispenser
Indoor dispenser enclosure – exterior and interior	2	15 ft (4.6 m) from the point of transfer in accordance with 10.5.3.4.3.4
Outdoor discharge from relief valves or vents	1	5 ft (1.5 m) from source
Outdoor discharge from relief valves or vents	2	15 ft (4.6 m) from source
Discharge from relief valves within 15 degrees of the line of discharge	1	15 ft (4.6 m) from source

## Chapter 11: LH2 Fueling Facilities

Table 11.2.12.1 LH <sub>2</sub> Fueling Facility Electrical Area Classification			
Part	Location	Class I, Group B, Division or Class I, Group IIC, Zone <sup>a</sup>	Extent of Classified Area <sup>b</sup>
A	Pits, trenches, or sumps located in or adjacent to Division 1 or 2 areas	1	Entire pit, trench, or sump
B	Discharge from relief valves, drains	1	Within 5 ft (1.5 m) from point of discharge
		2	Beyond 5 ft (1.5 m) but within 25 ft (7.6 m) in all directions from point of discharge
C	Vehicle/cargo transfer area		
	Outdoors in open air at or above grade	1	Within 3 ft (1 m) of connection
	Points where connections to the hydrogen system are regularly made and disconnected <sup>c</sup>	2	Between 3 ft (1 m) and 25 ft (7.6 m) of connection

Notes:

<sup>a</sup>See Article 100 of NFPA 70 for definitions of classes, groups, divisions, Class I zones, and associated gas groups.

<sup>b</sup>The classified area not to extend beyond an unpierced wall, roof, or solid vaportight partition.

<sup>c</sup>Indoor fueling with LH<sub>2</sub> is not allowed. (See 11.3.2.)

<sup>d</sup>Ventilation is considered adequate when provided in accordance with the provisions of this code.

## Chapter 15: Special Atmosphere Applications

<span>Pin Header</span> <span style="float: right;">×</span>		
<b>Table 15.3.1.2.1 Operating Modes of Class D Vacuum Furnaces [86:Table 4.1.2]</b>		
Mode	Operating Pressure	Special Atmosphere
D-1	Vacuum or negative gauge pressure	None or nonflammable
D-2	Positive gauge pressure	None or nonflammable
D-3	Vacuum or negative gauge pressure	Flammable [Hydrogen]
D-4	Positive gauge pressure	Flammable [Hydrogen]

<span>Pin Header</span> <span style="float: right;">×</span>			
<b>Table 15.3.1.1.10.3 Types of Class C Furnaces</b>			
Furnace Type	Feature	Operating Temperature	Example
Type I	The chamber(s) <1400°F are separated by doors from those operating at >1400°F	One or more zones always >1400°F	Pusher tray (cold chambers at each end, inner and outer doors with and without integral quench)
Type II		Can be <1400°F after introduction of a cold load	Batch integral quench (1 or more cold chambers, integral quench)
Type III	Both inlet and outlet ends of furnace are open and no external doors or covers	At least one zone >1400°F and have no inner doors separating zones > and <1400°F	Belt (both ends open)
Type IV	Only one end of the furnace is open and there are no external doors or covers		Belt (with integral quench, entry end open)
Type V	Outer doors or covers are provided		Box (exterior door)
Type VI		>1400°F before introduction and removal of special [hydrogen] atmosphere gas	
Type VII		Never >1400°F	
Type VIII	A heating cover furnace with an inner cover	A heating cover and inner cover are separated from a base that supports the work being processed	Bell (with or without retort)
Type IX	A heating cover furnace without an inner cover or with a nonsealed inner cover		Car tip-up

For SI units, 1400°F = 760°C.  
[86:Table 13.5.10.3]