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Extracted from https://codes.iccsafe.org/content/IFC2024P1/appendix-e-hazard-categories

GHS Hazard Pictograms and Names

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https://unece.org/transport/dangerous-goods/ghs-rev10-2023

Exploding Bomb

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Unstable Explosive *(Obsolete)*	**H200**	**Explosives**	Unstable explosives
Danger	Explosive; mass explosion hazard *(Obsolete)*	**H201**	**Explosives**	Div. 1.1
Danger	Explosive; severe projection hazard *(Obsolete)*	**H202**	**Explosives**	Div. 1.2
Danger	Explosive; fire, blast, or projection hazard *(Obsolete)*	**H203**	**Explosives**	Div. 1.3
Warning	Fire or projection hazard	**H204**	**Explosives**	Div. 1.4
	Explosives		**Explosives**	Div. 1.4 G
Danger	May mass explode in fire *(Obsolete)*	**H205**	**Explosives**	Div. 1.5
	(Obsolete)		**Explosives**	Div. 1.6
Danger	Heating may cause an explosion	**H240, Organic Peroxide, Type A**	**Organic peroxide**	UD
Danger	Heating may cause an explosion	**H240, Type A**	**Unstable (reactive)**	4

Exploding Bomb & Flame

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Heating may cause a fire or explosion	**H241, Organic Peroxide, Type B**	**Organic peroxide**	I
Danger	Heating may cause a fire or explosion	**H241, Type B**	**Unstable (reactive)**	3

Flame

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Extremely flammable liquid and vapor	**H224, Category 1**	**Flammable liquid**	IA
Danger	Highly Flammable liquid and vapor	**H225, Category 2**	**Flammable liquid**	IB
Warning	Flammable liquid and vapor	**H226, Category 3**	**Flammable liquid**	IC
Danger or Warning	Flammable solid	**H228, Category 1** or **H228, Category 2**	**Flammable solid**	Flammable solid
Danger	Heating may cause a fire	**H242, Organic Peroxide, Type C** or **H242, Organic Peroxide, Type D**	**Organic peroxide**	II
Warning	Heating may cause a fire	**H242, Organic Peroxide, Type E**	**Organic peroxide**	III
Warning	Heating may cause a fire	**H242, Organic Peroxide, Type F;**	**Organic peroxide**	IV
Danger	Catches fire spontaneously if exposed to air	**H250, Category 1**	**Pyrophoric**	Solid
Danger	Catches fire spontaneously if exposed to air	**H250, Category 1**	**Pyrophoric**	Liquid
Danger	Heating may cause a fire	**H242, Type C** or **H242, Type D**	**Unstable (reactive)**	2
Warning	Heating may cause a fire	**H242, Type E** or **H242, Type F**	**Unstable (reactive)**	1
Warning	Flammable aerosol	**H223, Category 3**	**Aerosol**	Level 1
Warning	Flammable aerosol	**H223, Category 2**	**Aerosol**	Level 2
Danger	Extremely flammable aerosol	**H222, Category 1**	**Aerosol**	Level 3
Danger	In contact with water releases flammable gases which may ignite spontaneously	**H260, Category 1**	**Water reactive**	3
Danger	In contact with water releases flammable gas	**H261, Category 2**	**Water reactive**	2
Warning	Materials that react with water with some release of energy, but not violently.	**H261, Category 3**	**Water reactive**	1

Flame & Gas Cylinder

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Extremely flammable gas Contains refrigerated gas; may cause cryogenic burns or injury	**H220, Category 1A** and **H281**	**Cryogenic - Flammable**	
Danger	Extremely flammable gas and Contains gas under pressure; may explode if heated	**H220, Category 1A** and **H280, compressed gas** or **H280, liquefied gas**	**Pyrophoric**	gas
Danger	Extremely flammable gas	**H220, Category 1A, Category A** or **H220, Category 1A, Category B** and **H280, compressed gas**	**Unstable (reactive)**	gas

Flame Over Circle & Gas Cylinder

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	May cause or intensify fire; oxidizer Contains refrigerated gas; may cause cryogenic burns or injury	**H270, Category 1** **H281**	**Cryogenic - Oxidizing**	
Danger	May cause or intensify fire; oxidizer	**H270, Category 1** and **H280, compressed gas**	**Oxidizing gas**	Gaseous
Danger	May cause or intensify fire; oxidizer	**H270, Category 1** and **H280, liquefied gas**	**Oxidizing gas**	Liquefied

Flame Over Circle

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	May cause fire or explosion; strong Oxidizer	**H271, Category 1**	**Oxidizer**	4
Danger	May cause fire or explosion; strong Oxidizer	**H271, Category 1**	**Oxidizer**	3
Danger	May intensify fire; oxidizer	**H272, Category 2**	**Oxidizer**	2
Warning	May intensify fire; oxidizer	**H272, Category 3**	**Oxidizer**	1

Gas Cylinder

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Warning	Contains gas under pressure; may explode if heated	**H280, compressed gas** or **H280, liquefied gas** or **H280, dissolved gas**	**Compressed gas**	
Warning	Contains refrigerated gas; may cause cryogenic burns or injury	**H281 + no other hazards**	**Cryogenic - Inert**	
Warning	Contains gas under pressure; may explode if heated	**H280, compressed gas + no other hazards**	**Inert gas**	

Corrosion

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Causes severe skin burns and eye damage	**H314, Category 1 (1A, 1B, 1C)**	**Corrosive**	

Skull and Crossbones

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Fatal if swallowed Fatal in contact with skin Fatal if inhaled	**H300, Category 1** or **H300, Category 2** or **H310, Category 1** or **H310, Category 2** or **H330, Category 1**	**Highly Toxic**	any physical state

Skull and Crossbones & Exclamation Mark

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
Danger	Toxic if swallowed or Harmful if swallowed or Toxic in contact with skin or Fatal if inhaled or Toxic if inhaled	**H301, Category 3** or **H302, Category 4** or **H311, Category 3** or **H330, Category 2** or **H331, Category 3**	**Toxic**	any physical state

No Pictograms

Signal Words	Hazard Statement	Code	Fire Code Material	Fire Code Hazard Class
none	Heating may cause a fire	**H242. Organic Peroxide, Type G**	**Organic Peroxide**	V

Fire Code Hazard Class Definitions

Contents

California Fire Code Definitions (2016+)

Physical States of Matter:

Normal Temperature and Pressure (NTP).

A temperature of 70°F (21 C) and a pressure of 1 atmosphere [14.7 psia (101 kPa)].

Solid.

A material that has a melting point and decomposes or sublimes at a temperature greater than 68°F (20 C)

Liquid.

A material that has a melting point that is equal to or less than 68°F (20 C) and a boiling point which is greater than 68°F (20 C) at 14.7 psia (101 kPa). Where not otherwise identified, the term “liquid” includes both flammable and combustible liquids.

Compressed Gas.

A material or mixture of materials that:

1. Is a gas at 68°F (20 C) or less at 14.7 psia (101 kPa) of pressure; and
2. Has a boiling point of 68°F (20 C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gasses which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20 C)

The states of a compressed gas are categorized as follows:

1. Nonliquefied compressed gases are, gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20 C).
2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20 C).
3. Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.

4. Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.

California Fire Code Hazard Classes

Combustible dust

. Finely divided solid material which is 420 microns or less in diameter and which, when dispersed in air in the proper proportions, could be ignited by a flame, spark or other source of ignition. Combustible dust with pass through a U.S. No. 40 standard sieve.

Combustible Fibers

. Readily ignitable and free-burning materials in a fibrous or shredded form, such as cocoa fiber, cloth, cotton, excelsior, hay, hemp, henequen, istle, jute, kapok, oakum, rags, sisal, Spanish moss, straw, tow, wastepaper, certain synthetic fibers or other like materials. This definition does not include densely packed baled cotton.

Combustible Liquid

. A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:

Class II. Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).
Class IIIA. Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).
Class IIIB. Liquids having closed cup flash points at or above 200°F (93°C).

The category of combustible liquids does not include compressed gases or cryogenic fluids.

Fireworks

. Any composition or device for the purpose of producing a visible or an audible effect for entertainment purposes by combustion, deflagration or detonation that meets the definition of 1.4G fireworks or 1.3G fireworks.

Fireworks, 1.4G

. Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visible or audible effects by combustion. Such 1.4G fireworks which comply with the construction, chemical composition and labeling regulations of the DOTn for Fireworks, UN 0336, and the U.S. Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507, are not explosive materials for the purpose of this code.

Flammable Cryogenic Fluid

. A cryogenic fluid that is flammable in its vapor state.

Oxidizing Cryogenic Fluid

. An oxidizing gas in the cryogenic state.

Explosive

. A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord, igniters and display fireworks, 1.3G.

The term “Explosive” includes any material determined to be within the scope of USC Title 18: Chapter 40 and also includes any material classified as an explosive other than consumer fireworks, 1.4G by the hazardous materials regulations of DOTn 49 CFR Parts 100-185.

High explosive. Explosive material, such as dynamite, which can be caused to detonate by means of a No. 8 test blasting cap where unconfined.

Low explosive. Explosive material that will burn or deflagrate when ignited. It is characterized by a rate of reaction that is less than the speed of sound. Examples of low explosives include, but are not limited to, black powder, safety fuse, igniters, igniter cord, fuse lighters, fireworks, 1.3G and propellants, 1.3C.

Mass-detonating explosives. Division 1.1, 1.2 and 1.5 explosives alone or in combination, or loaded into various types of ammunition or containers, most of which can be expected to explode virtually instantaneously when a small portion is subjected to fire, severe concussion, impact, the impulse of an initiating agent or the effect of a considerable discharge of energy from without. Materials that react in this manner represent a mass explosion hazard. Such an explosive will normally cause severe structural damage to adjacent objects. Explosive propagation could occur immediately to other items of ammunition and explosives stored sufficiently close to and not adequately protected from the initially exploding pile with a time interval short enough so that two or more quantities must be considered as one for quantity-distance purposes.

UN/DOTn Class 1 explosives. The former classification system used by DOTn included the terms “high” and “low” explosives as defined herein. The following terms further define explosives under the current system applied by DOTn for all explosive materials defined as hazard Class 1 materials. Compatibility group letters are used in concert with the division to specify further limitations on each division noted (for example, the letter G identifies the material as a pyrotechnic substance or article containing a pyrotechnic substance and similar materials).

Division 1.1. Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.
Division 1.2. Explosives that have a projection hazard but not a mass explosion hazard.
Division 1.3. Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.
Division 1.4. Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. **Division 1.5.** Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.
Division 1.6. Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

Flammable Gas**.** A material which is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which:

1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air; or
2. Has a flammable range at 14.7 psia (101 kPa) with air of not less than 12 percent, regardless of the lower limit.

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E 681.

Flammable Liquefied Gas**.** A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

> Flammable Liquid**.** A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows: **Class IA.** Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C). **Class IB.** Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).
> **Class IC.** Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C). The category of flammable liquids does not include compressed gases or cryogenic fluids.

Flammable Solid**.** A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retained heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.0866 inch (2.2 mm) per second along its major axis.

Inert Gas**.** A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health hazard properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a compressed gas. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.

Organic Peroxide**.** An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

> **Class I.** Describes those formulations that are capable of deflagration but not detonation.
> **Class II.** Describes those formulations that burn very rapidly and that pose a moderate reactivity hazard. **Class III.** Describes those formulations that burn rapidly and that pose a moderate reactivity hazard. **Class IV.** Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.
> **Class V.** Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.
> **Unclassified detonable.** Organic peroxides that are capable of detonation. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.

Oxidizer**.** A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.

Class 4. An oxidizer that can undergo an explosive reaction due to contamination or exposure to thermal or physical shock and that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.
Class 3. An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.
Class 2. An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.
Class 1. An oxidizer that does not moderately increase the burning rate of combustible materials.

Oxidizing Gas**.** A gas that can support and accelerate combustion of other materials more than air does.

Pyrophoric**.** A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54°C).

Unstable (Reactive) Material**.** A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:

Class 4. Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.
Class 3. Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures.
Class 2. Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.
Class 1. Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressure.

Water-Reactive Material**.** A material that explodes; violently reacts; produces flammable, toxic or other hazardous gases; or evolves enough heat to cause autoignition or ignition of combustibles upon exposure to water or moisture. Water-reactive materials are subdivided as follows:

Class 3. Materials that react explosively with water without requiring heat or confinement.
Class 2. Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition or

ignition of combustibles upon exposure to water or moisture.
Class 1. Materials that react with water with some release of energy, but not violently.

Corrosive**.** A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.

Highly Toxic**.** A material which produces a lethal dose or lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD50) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC50) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, might not warrant classification as highly toxic. While this system is basically simple in application, any hazard evaluation that is required for the precise categorization of this type of material shall be performed by experienced, technically competent persons.

Toxic**.** A chemical falling within any of the following categories:

1. A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram, but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.
2. A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
3. A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than 2 milligrams per liter but not more than 20 milligrams per liter of mist, fume or dust, when administered by continuous inhalation for 1 hour (or less if death occurs within 1 hour) to albino rats weighing between 200 and 300 grams each

Extras:

Cryogenic Fluid

A Fluid having a boiling point lower that -130°F (-89.9 C) at 14.7 psia (101 kPa).

Liquefied gas:

*Highly Volatile Liquid***.** A liquefied compressed gas with a boiling point of less than 68°F (20°C).

Liquefied Natural Gas **(LNG).** A fluid in the liquid state composed predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen or other components normally found in natural gas.

Liquefied Petroleum Gas **(LP-gas).** A material which is composed predominantly of the following hydrocarbons or mixtures of them: propane, propylene, butane (normal butane or isobutane) and butylenes.

CFC Additional Hazard Classes (2001)

Irritant. A chemical which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 C.F.R. 1500.41 for four hours' exposure or by other appropriate techniques, it results in an empirical score of 5 or more. A chemical is an eye irritant if so determined under the procedure listed in 16 C.F.R. 1500.42 or other approved techniques.

Explosive is

1. A chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure, or high temperatures, or
2. A material or chemical, other than a blasting agent, that is commonly used or intended to be used for the purpose of producing an explosive effect and is regulated by Article 77.

Explosive Materials are explosives, blasting agents and detonators including, but not limited to, dynamite and other high explosives; slurries, emulsions and water gels; black powder and pellet powder; initiating explosives; detonators and blasting caps; safety fuses; squibs; detonating cord; igniter cord; igniters and fireworks, 1.3G.

Other Health Hazard Material**.** A hazardous material which affects target organs of the body, including, but not limited to, those materials which produce liver damage, kidney damage, damage to the nervous system, act on the blood to decrease hemoglobin function, deprive the body tissue of oxygen, or affect reproductive capabilities, including mutations (chromosomal damage) or teratogens (effects on fetuses).

Sensitizer**.** A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

RISK & SAFETY SOLUTIONS

Approximation of GHS Pictograms & Hazard Statements to Fire Code Hazard Classes

Pict	designation	Signal Word	GHS Hazard Statement	GHS Hcode	GHS 2017 (rev. 7) Classification (H-Code and Category); Hazard statement: Definition	Category	IFC Material	IFC Class	IFC 2021 Definition
					Any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.		Aerosol		A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.
	GHS02	W	Flammable aerosol	**H223, Category 3**	**H223, Category 3**; Pressurized container: May burst if heated: 1) Any aerosol that contains ≤ 1% flammable components (by mass) and that has a heat of combustion < 20 kJ/g; or 2) Any aerosol that contains > 1% (by mass) flammable components or which has a heat of combustion of ≥ 20 kJ/g but which, based on the results of the ignition distance test, the enclosed space ignition test or the aerosol foam flammability test, does not meet the criteria for Category 1 or Category 2		Aerosol	Level 1	Those with a total chemical heat of combustion that is less than or equal to 8,600 Btu/lb (20kJ/g).
	GHS02	W	Flammable aerosol	**H223, Category 2**	**H223, Category 2;** Flammable aerosol. Pressurized container: May burst if heated: 1) Any aerosol that dispenses a spray that, based on the results of the ignition distance test, does not meet the criteria for Category 1, and which has: (a) a heat of combustion of >= 20 kJ/g; (b) a heat of combustion of < 20 kJ/g along with an ignition distance of >= 15 cm; or (c) a heat of combustion of < 20 kJ/g and an ignition distance of < 15 cm along with either, in the enclosed space ignition test a time: (i) - a time equivalent of ≤ 300 s/m3; or (ii) - a deflagration density of ≤ 300 g/m3; or 2) Any aerosol that dispenses a foam that, based on the results of the aerosol foam flammability test, does not meet the criteria for Category 1, and which has a flame height of ≥ 4 cm and a flame duration of ≥ 2 s.		Aerosol	Level 2	Those with a total chemical heat of combustion that is greater than 8,600 Btu/lb (20kJ/g), but less than or equal to 13,000 Btu/lb (30kJ/g).
	GHS02	D	Extremely flammable aerosol	**H222, Category 1**	**H222, Category 1**; Extremely flammable aerosol. Pressurized container: May burst if heated: 1) Any aerosol that contains >= 85% flammable components (by mass) and has a heat of combustion of >= 30 kJ/g; 2) Any aerosol that dispenses a spray that, in the ignition distance test, has an ignition distance of >= 75 cm; or 3) Any aerosol that dispenses a foam that, in the foam flammability test, has: (a) a flame height of >= 20 cm and a flame duration of >= 2 s; or (b) a flame height of >= 4 cm and a flame duration of >= 7 s.		Aerosol	Level 3	Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30kJ/g).

Approximation of GHS Pictograms & Hazard Statements to Fire Code Hazard Classes

					A flammable liquid means a liquid having a flash point of not more than 93°C		Combustible liquid		A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be subdivided as follows:
	GHS02	W	Flammable liquid and vapor	**H226, Category 3**	**H226, Category 3**; Flammable liquid and vapor: Flash point ≥ 23°C and ≤ 60°C		Combustible liquid	II	Liquids having a closed cup flash point at or above 100°F (38°C) and below 140°F (60°C).
	GHS02	W	Combustible liquid	**H227, Category 4**	**H227, Category 4**; Combustible liquid: Flash point > 60°C and ≤ 93°C		Combustible liquid	IIIA	Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).
					N/A		Combustible liquid	IIIB	Liquids having closed cup flash points at or above 200°F (93°C).
	GHS04		Contains gas under pressure; may explode if heated	**H280, compressed gas** or **H280, liquefied gas** or **H280, dissolved gas**	Gases under pressure are gases which are contained in a receptacle at a pressure of 200 kPa (gauge) or more at 20°C, or which are liquefied, or liquefied and refrigerated. **H280, compressed gas**; Contains gas under pressure; May explode if heated: A gas which when under pressure is entirely gaseous at -50°C (-58°F), including all gases with a critical temperature ≤ -50°C (-58°F). **H280, liquefied gas**; Contains gas under pressure; May explode if heated: A gas which when under pressure is partially liquid at temperatures above -50°C (-58°F). **H280, dissolved ga**s; Contains gas under pressure; May explode if heated: A gas which when under pressure is dissolved in a liquid phase solvent.		Compressed gas		A material or mixture of materials that: 1) Is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure, and 2) Has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C). States of compressed gases: 1) Nonliquefied compressed gases are gases, other than those in solution, which are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C). 2) Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C). 3) Compressed gases in solution are nonliquefied gases that are dissolved in a solvent. 4) Compressed gas mixtures consist of a mixture of two or more compressed gases contained in a packaging, the hazard properties of which are represented by the properties of the mixture as a whole.
	GHS05	D	Causes severe skin burns and eye damage	**H314, Category 1 (1A, 1B, 1C)**	**H314, Category 1 (1A, 1B, 1C)**; Causes severe skin burns and eye damage: Skin corrosion refers to the production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture.		Corrosive		A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces
	GHS04	W	Contains refrigerated gas; may cause cryogenic burns or injury	**H281**	**H281, refrigerated liquefied gas;** Contains refrigerated gas; May cause cryogenic burns or injury: A gas which is made partially liquid because of its low temperature.		Cryogenic fluid		A fluid having a boiling point lower than -130°F (-89.9°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101.3 kPa)
	GHS02 GHS04	D	Extremely flammable gas	**H220, Category 1A** and	**H220, Category 1A**; Extremely flammable gas: Gases, which at 20°C and a standard pressure of 101.3 kPa:		Cryogenic - Flammable		A cryogenic fluid that is flammable in its vapor state.

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			Contains refrigerated gas; may cause cryogenic burns or injury	**H281**	(a) are ignitable when in a mixture of 13% or less by volume in air; or (b) have a flammable range with air of at least 12 percentage points regardless of the lower flammability limit unless data show they meet the criteria for Category 1B Category 1A includes Pyrophoric gases and Chemically unstable gases **H281, refrigerated liquefied gas** would also apply				
	GHS04	W	Contains refrigerated gas; may cause cryogenic burns or injury	**H281**	**H281, refrigerated liquefied gas**; Contains refrigerated gas; May cause cryogenic burns or injury: A gas which is made partially liquid because of its low temperature.		Cryogenic - Inert		A cryogenic fluid that is inert.
	GHS03 GHS04	D	May cause or intensify fire; oxidizer Contains refrigerated gas; may cause cryogenic burns or injury	**H270, Category 1** **H281**	**H270, Category 1**; May cause or intensify fire; oxidizer: Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. **H281, refrigerated liquefied gas** would also apply		Cryogenic -Oxidizing		An oxidizing gas in the cryogenic state.
					An explosive substance (or mixture) is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.		Explosives		A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters. The term “Explosive” includes any material determined to be within the scope of USC Title 18: Ch. 40 and also includes any material classified as an explosive other than consumer fireworks, 1.4G by the hazardous materials regulations of DOTn CFR Parts 100-185.
	GHS01	D	Unstable Explosive *(Obsolete)*	**H200**	**H200**; Unstable Explosive: Unstable explosives are those which are thermally unstable and/or too sensitive for normal handling, transport and use. Special precautions are necessary.	Unstable Explosive	Explosives	Unstable explosives	
	GHS01	D	Explosive; mass explosion hazard *(Obsolete)*	**H201**	**H201**; Explosive; mass explosion hazard: Substances, mixtures and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire quantity present virtually instantaneously).	Div 1.1	Explosives	Div. 1.1	Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.
	GHS01	D	Explosive; severe projection hazard *(Obsolete)*	**H202**	**H202**; Explosive; severe projection hazard: Substances, mixtures and articles which have a projection hazard but not a mass explosion hazard.	Div 1.2	Explosives	Div. 1.2	Explosives that have a projection hazard but not a mass explosion hazard.
	GHS01	D	Explosive; fire, blast or projection hazard *(Obsolete)*	**H203**	**H203; Explosive; fire, blast or projection hazard**: Substances, mixtures, and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard: (i)combustion of which gives rise to considerable radiant heat; or (ii)which burn one after another, producing minor blast or projection effects or both;	Div 1.3	Explosives	Div. 1.3	Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.

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	GHS01	W	Fire or projection hazard	**H204**	**H204; Fire or projection hazard**: Substances, mixtures and articles which present no significant hazard: substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.	Category 2B	Explosives	Div. 1.4	Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.
			Explosives		Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visual or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN 0336, and the U.S. Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507.	Category 2C	Explosives	Div. 1.4G	N/A
	GHS01	D	May mass explode in fire *(Obsolete)*	**H205**	**H205; May mass explode in fire: Very insensitive substances or mixtures which have a mass explosion hazard**: substances and mixtures which have a mass explosion hazard but are so insensitive that there is very little probability or initiation or of transition from burning to detonation under normal conditions.	Div 1.5	Explosives	Div. 1.5	Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.
			(Obsolete)		Extremely insensitive articles which do not have a mass explosion hazard: articles which predominantly contain extremely insensitive substances or mixtures and which demonstrate a negligible probability of accidental initiation or propagation.	Div 1.6	Explosives	Div. 1.6	Extremely insensitive articles which do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.
	GHS02 GHS04	D	Extremely flammable gas Contains gas under pressure; may explode if heated	**H220, Category 1A** or **H220, Category 1B** and **H280, compressed gas**	A flammable gas is a gas having a flammable range with air at 20°C and a standard pressure of 101.3kP **H220, Category 1A; Extremely flammable gas**: Gases, which at 20°C and a standard pressure of 101.3 kPa: (c) are ignitable when in a mixture of 13% or less by volume in air; or (d) have a flammable range with air of at least 12 percentage points regardless of the lower flammability limit unless data show they meet the criteria for Category 1B Category 1A includes Pyrophoric gases and Chemically unstable gases **H220, Category 1B; Flammable gas**: Gases which meet the flammability criteria for Category 1A, but which are not pyrophoric, nor chemically unstable, and which have at least either: (a) a lower flammability limit of more than 6% by volume in air; or (b) a fundamental burning velocity of less than 10 cm/s **H280, compressed gas** would also apply	Gaseous	Flammable gas	Gaseous	A material which is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which: 1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13% or less by volume with air; or 2. Has a flammable range at 14.7 psia (101 kPa) with air of not less than 12%, regardless of the lower limit. The limits specified shall be determined at 14.7 psia (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.
	GHS02 GHS04	D	Extremely flammable gas Contains gas under pressure; may	**H220, Category 1A** or	A flammable gas is a gas having a flammable range with air at 20°C and a standard pressure of 101.3kPa **H220, Category 1A; Extremely flammable gas**: Gases, which at 20°C and a standard pressure of 101.3 kPa:	Liquefied gas	Flammable gas	Liquefied gas	A liquefied compressed gas which, under a charged pressure, is partially liquid at a temperature of 68°F (20°C) and which is flammable.

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			explode if heated, liquefied gas	**H220, Category 1B** and **H280, liquefied gas**	(e) are ignitable when in a mixture of 13% or less by volume in air; or (f) have a flammable range with air of at least 12 percentage points regardless of the lower flammability limit unless data show they meet the criteria for Category 1B Category 1A includes Pyrophoric gases and Chemically unstable gases **H220, Category 1B; Flammable gas**: Gases which meet the flammability criteria for Category 1A, but which are not pyrophoric, nor chemically unstable, and which have at least either: (c) a lower flammability limit of more than 6% by volume in air; or (d) a fundamental burning velocity of less than 10 cm/s AND A gas which when packaged under pressure, is partially liquid at temperatures above -50°C. A distinction is made between: (a) High pressure liquefied gas: a gas with a critical temperature between -50°C and +65°C and (b) Low pressure liquefied gas: a gas with a critical temperature above +65°C. Refrigerated liquefied gas A gas which when packaged is made partially liquid because of its low temperature. Dissolved gas A gas which when packaged under pressure is dissolved in a liquid phase solvent. **H280, liquefied gas** would also apply				
					A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:		Flammable liquid		A liquid having a flash point of not more than 93°C. A flammable liquid is classified in one of the four categories for this class according to the following table:
	GHS02	D	Extremely flammable liquid and vapor	**H224, Category 1**	**H224, Category 1; Extremely flammable liquid and vapor**: Flash point < 23°C and initial boiling point <= 35°C	Flammable liquids	Flammable liquid	IA	Liquids having a flash point below 73°F (23°C) and having a boiling point below 100°F (38°C).
	GHS02	D	Highly Flammable liquid and vapor	**H225, Category 2**	**H225, Category 2; Highly flammable liquid and vapor**. Flash point < 23°C and initial boiling point > 35°C	Flammable liquids	Flammable liquid	IB	Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).
	GHS02	W	Flammable liquid and vapor	**H226, Category 3**	**H226, Category 3; Flammable liquid and vapor**. Flash point >= 23°C and <= 60°C	Flammable liquids	Flammable liquid	IC	Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).
	GHS02	D or W	Flammable solid	**H228, Category 1** or **H228, Category 2**	A flammable solid is a solid which is readily combustible, or may cause or contribute to fire through friction. A flammable solid is classified in one of the two categories for this class using method N.1 as described in Part III, sub-section 33.2.1 of the Manual of Tests and Criteria, according to: **H228, Category 1; Flammable solid:** Burning rate test: Substances or mixtures other than metal powders: a) wetted zone does not stop fire; and	Flammable solid	Flammable solid	Flammable solid	A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retaining heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid as determined in accordance with the test method of CPSC 16 CFR Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater

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					b) burning time < 45 s or burning rate > 2.2 mm/s. Metal powders: burning time <=5 min **H228, Category 2; Flammable solid**: Burning rate test: Substances or mixtures other than metal powders: c) wetted zone stops the fire for at least 4 min; and d) burning time < 45 s or burning rate > 2.2 mm/s. Metal powders: burning time > 5 min and <= 10 min				than 0.0866 inch (2.2 mm) per second along its major axis.
	GHS06	D	Fatal if swallowed Fatal in contact with skin Fatal if inhaled	**H300, Category 1** or **H300, Category 2** or **H310, Category 1** or **H310, Category 2** or **H330, Category 1**	Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture. Oral **H300, Category 1; Fatal if swallowed**: LD50 ≤ 5 mg/kg bodyweight **H300, Category 2; Fatal if swallowed**: LD50 > 5 ≤ 50 mg/kg bodyweight Dermal **H310, Category 1; Fatal in contact with skin**: LD50 ≤ 50 mg/kg bodyweight **H310, Category 2; Fatal in contact with skin**: LD50 > 50 ≤ 200 mg/kg bodyweight Inhalation **H330, Category 1; Fatal if inhaled**: Gases: LC50 ≤ 100 ppm (4 hr) ≈ 200 ppm (1 hr) Vapors: LC50 ≤ 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) Dust/mist: LC50 ≤ 0.05 mg/l (4 hr) ≈ 0.2 mg/l (1 hr)	Category 1 or Category 2	Highly Toxic	any physical state	A material which produces a lethal dose or lethal concentration which falls within any of the following categories: 1. A chemical that has a median lethal dose (LD50) of 50 mg or less per kg of body weight when administered orally to albino rats weighing between 200 and 300 g each. 2. A chemical that has a medial lethal dose (LD50) of 200 mg or less per kg of body weight when administered by continuous contact for 24 hrs (or less if death occurs within 24 hrs) with the bare skin of albino rabbits weighing between 2 and 3 kg each. 3. A chemical that has a median lethal concentration (LC50) in air of 200 ppm by volume or less of gas or vapor, or 2 mg/l or less of mist, fume or dust, when administered by continuous inhalation for 1 hr (or less if death occurs within 1 hr) to albino rats weighing between 200 and 300 g.
	GHS04	W	Contains gas under pressure; may explode if heated	**H280, compressed gas + no other hazards**	Gases under pressure are gases which are contained in receptacles at a pressure of 200 kPa (gauge) or more at 20°C or which are liquefied or liquefied and refrigerated. They comprise compressed gases, liquefied gases, dissolved gases, and refrigerated liquefied gases. See compressed gases/Gases under pressure. **H280, compressed gas**		Inert gas		A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health hazard properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a compressed gas. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen, and xenon.
					An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.		Organic peroxide		Organic peroxides are liquid or solid organic substances which contain the bivalent -O-O- structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Organic peroxides are thermally unstable substances or mixtures, which may undergo exothermic self-accelerating decomposition. In addition, they may have one or more of the following properties: (a) be liable to explosive decomposition; (b) burn rapidly;

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								(c) be sensitive to impact or friction; (d) react dangerously with other substances.
	GHS01	D	Heating may cause an explosion	**H240, Organic Peroxide, Type A**	**H240, Organic Peroxide, Type A**; Heating may cause an explosion: (a) Any organic peroxide which, as packaged, can detonate or deflagrate rapidly will be defined as organic peroxide TYPE A;	Type A	Organic peroxide	UD	Organic peroxides that are capable of detonation. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.
	GHS01 GHS02	D	Heating may cause a fire or explosion	**H241, Organic Peroxide, Type B**	**H241, Organic Peroxide, Type B**; Heating may cause a fire or explosion: (b) Any organic peroxide possessing explosive properties and which, as packaged, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package will be defined as organic peroxide TYPE B;	Type B	Organic peroxide	I	Describes those formulations that are capable of deflagration but not detonation.
	GHS02	D	Heating may cause a fire	**H242, Organic Peroxide, Type C** or **H242, Organic Peroxide, Type D**	**H242, Organic Peroxide, Type C**; Heating may cause a fire: (c) Any organic peroxide possessing explosive properties when the substance or mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion will be defined as organic peroxide TYPE C; **H242, Organic Peroxide, Type D**; Heating may cause a fire: (d) Any organic peroxide which in laboratory testing: (i) detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or (ii) does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or (iii) does not detonate or deflagrate at all and shows a medium effect when heated under confinement; will be defined as organic peroxide TYPE D;	Type C, D	Organic peroxide	II	Describes those formulations that burn very rapidly and that pose a moderate reactivity hazard.
	GHS02	W	Heating may cause a fire	**H242, Organic Peroxide, Type E**	**H242, Organic Peroxide, Type E**; Heating may cause a fire: (e) Any organic peroxide which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated under confinement will be defined as organic peroxide TYPE E;	Type E	Organic peroxide	III	Describes those formulations that burn rapidly and that pose a moderate reactivity hazard.
	GHS02	W	Heating may cause a fire	**H242, Organic Peroxide, Type F;**	**H242, Organic Peroxide, Type F;** Heating may cause a fire: (f) Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power will be defined as organic peroxide TYPE F;	Type F	Organic peroxide	IV	Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.
			Heating may cause a fire	**H242, Organic Peroxide, Type G**	**H242, Organic Peroxide, Type G**; Heating may cause a fire: (g) Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C or	Type G	Organic peroxide	V	Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.

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					higher for a 50 kg package), and, for liquid mixtures, a diluent having a boiling point of not less than 150 °C is used for desensitization, will be defined as organic peroxide TYPE G. If the organic peroxide is not thermally stable or a diluent having a boiling point less than 150 °C is used for desensitization, it shall be defined as organic peroxide TYPE F.				
					An oxidizing solid is a solid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material. An oxidizing liquid is a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.		Oxidizer		A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.
	GHS03	D	May cause fire or explosion; strong Oxidizer	**H271, Category 1**	**H271, Category 1**; May cause fire or explosion; strong oxidizer: Criteria for solids (based on Test O.1 or O.3 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture (by mass) of potassium bromate and cellulose. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate greater than the mean burning rate of a 3:1 mixture (by mass) of calcium peroxide and cellulose. Criteria for liquids (based on Test O.2 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Any substance or mixture which, in the 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, spontaneously ignites; or the mean pressure rise time of a 1:1 mixture, by mass, of substance and cellulose is less than that of a 1:1 mixture, by mass, of 50% perchloric acid and cellulose.	Category 1	Oxidizer	4	An oxidizer that can undergo an explosive reaction due to contamination or exposure to a thermal or physical shock that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.
	GHS03	D	May cause fire or explosion; strong Oxidizer	**H271, Category 1**	**H271, Category 1**; May cause fire or explosion; strong oxidizer Criteria for solids (based on Test O.1 or O.3 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture (by mass) of potassium bromate and cellulose. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate greater than the mean burning rate of a 3:1 mixture (by mass) of calcium peroxide and cellulose.	Category 1	Oxidizer	3	An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact

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					Criteria for liquids (based on Test O.2 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Any substance or mixture which, in the 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, spontaneously ignites; or the mean pressure rise time of a 1:1 mixture, by mass, of substance and cellulose is less than that of a 1:1 mixture, by mass, of 50% perchloric acid and cellulose.				
	GHS03	D	May intensify fire; oxidizer	**H272, Category 2**	**H272, Category 2**; May intensify fire, oxidizer Criteria for solids (based on Test O.1 or O.3 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria for Category 1 are not met. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:1 mixture (by mass) of calcium peroxide and cellulose and the criteria for Category 1 are not met. Criteria for liquids (based on Test O.2 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Any substance or mixture which, in the 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of a 40% aqueous sodium chlorate solution and cellulose; and the criteria for Category 1 are not met.	Category 2	Oxidizer	2	An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.
	GHS03	W	May intensify fire; oxidizer	**H272, Category 3**	**H272, Category 3**; May intensify fire, oxidizer Criteria for solids (based on Test O.1 or O.3 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for Categories 1 and 2 are not met. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:2 mixture (by mass) of calcium peroxide and cellulose and the criteria for Categories 1 and 2 are not met. Criteria for liquids (based on Test O.2 in Part III of UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria): Any substance or mixture which, in the 1:1 mixture, by mass, of substance (or	Category 3	Oxidizer	1	An oxidizer that does not moderately increase the burning rate of combustible materials.

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					mixture) and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture, by mass, of a 65% aqueous nitric acid solution and cellulose; and the criteria for Categories 1 and 2 are not met.				
	GHS03 GHS04	D	May cause or intensify fire; oxidizer	**H270, Category 1** and **H280, compressed gas**	Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. **H270, Category 1**; May cause or intensify fire; oxidizer: Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. **H280, compressed gas** would also apply	Category 1	Oxidizing gas	Gaseous	A gas that can support and accelerate combustion of other materials more than air does.
	GHS03 GHS04	D	May cause or intensify fire; oxidizer	**H270, Category 1** and **H280, liquefied gas**	Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. **H270, Category 1**; May cause or intensify fire; oxidizer: Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. **H280, liquefied ga**s would also apply	Category 1	Oxidizing gas	Liquefied	An oxidizing gas that is liquefied (liquefied gases are gases that, in a packaging under the charged pressure, are partially liquid at 68°F (20°C).
							Pyrophoric		A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54 °C).
	GHS02	D	Catches fire spontaneously if exposed to air	**H250, Category 1**	**H250, Category 1**; Pyrophoric solid, Catches fire spontaneously if exposed to air: A pyrophoric solid is a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air. Classification criteria: The solid ignites within 5 min of coming into contact with air.	Category 1	Pyrophoric	Solid	A solid with an autoignition temperature in air, at or below a temperature of 130°F (54 °C).
	GHS02	D	Catches fire spontaneously if exposed to air	**H250, Category 1**	**H250, Category 1**; Pyrophoric liquid, Catches fire spontaneously if exposed to air: A pyrophoric liquid is a liquid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air. Classification criteria: The liquid ignites within 5 min when added to an inert carrier and exposed to air, or it ignites or chars a filter paper on contact with air within 5 min. Testing is performed at 25 ±2°C and 50 ±5% relative humidity.	Category 1	Pyrophoric	Liquid	A liquid with an autoignition temperature in air, at or below a temperature of 130°F (54 °C).
	GHS02 GHS04	D	Extremely flammable gas and Contains gas under pressure; may explode if heated	**H220, Category 1A** and **H280, compressed gas** or **H280, liquefied gas**	**H220, Category 1A**; Extremely flammable gas. May ignite spontaneously if exposed to air: A pyrophoric gas is a flammable gas that is liable to ignite spontaneously in air at a temperature of 54°C or below. **H280**, compressed (or liquefied) gas would also apply.	Category 1A	Pyrophoric	Gas	A gas with an autoignition temperature in air, at or below a temperature of 130°F (54 °C).
	GHS06 GHS07	D	Toxic if swallowed or Harmful if swallowed	**H301, Category 3** or	Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture.	Category 4 or Category 3	Toxic	any physical state	A chemical falling within any of the following categories:

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			or Toxic in contact with skin or Fatal if inhaled or Toxic if inhaled	**H302, Category 4** or **H311, Category 3** or **H330, Category 2** or **H331, Category 3**	Oral **H301, Category 3**; Toxic if swallowed: LD50 > 50 ≤ 300 mg/kg bodyweight **H302, Category 4**; Harmful if swallowed: LD50 > 300 ≤ 2,000 mg/kg bodyweight Dermal **H311, Category 3**, Toxic in contact with skin: LD50 > 200 ≤ 1,000 mg/kg bodyweight Inhalation **H330, Category 2**; Fatal if inhaled: Gases: LC50 > 100 ppm (4 hr) ≈ 200 ppm (1 hr) ≤ 500 ppm (4 hr) ≈ 1,000 ppm (1 hr) Vapors: LC50 > 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) ≤ 2 mg/l (4 hr) ≈ 8 mg/l (1 hr) Dust/mist: LC50 > 0.05 mg/l (4 hr) ≈ 0.2 mg/l (1 hr) ≤ 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) **H331, Category 3;** Toxic if inhaled: Gases: LC50 > 500 ppm (4 hr) ≈ 1,000 ppm (1 hr) ≤ 2,500 ppm (4 hr) ≈ 5,000 ppm (1 hr) Vapors: LC50 > 2 mg/l (4 hr) ≈ 8 mg/l (1 hr) ≤ 10 mg/l (4 hr) ≈ 40 mg/l (1 hr) Dust/mist: LC50 > 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) ≤ 1 mg/l (4 hr) ≈ 4 mg/l (1 hr)	or Category 2			1. A chemical that has a median lethal dose (LD50) of more than 50 mg per kg, but not more than 500 mg per kg of body weight when administered orally to albino rats weighing between 200 and 300 g each. 2. A chemical that has a medial lethal dose (LD50) of more than 200 mg per kg but not more than 1,000 mg per kg of body weight when administered by continuous contact for 24 hrs (or less if death occurs within 24 hrs) with the bare skin of albino rabbits weighing between 2 and 3 kg each. 3. A chemical that has a median lethal concentration (LC50) in air of more than 200 ppm but not more than 2,000 ppm by volume or less of gas or vapor, or more than 2 mg/l but not more than 20 mg/l of mist, fume or dust, when administered by continuous inhalation for 1 hr (or less if death occurs within 1 hr) to albino rats weighing between 200 and 300 g.
					Self-reactive substances or mixtures are thermally unstable liquids or solid substances or mixtures liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances and mixtures classified under the GHS as explosives, organic peroxides or as oxidizing. A self-reactive substance or mixture is regarded as possessing explosive properties when in laboratory testing the formulation is liable to detonate, to deflagrate rapidly or to show a violent effect when heated under confinement.		Unstable (reactive)		A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:
	GHS01	D	Heating may cause an explosion	**H240, Type A**	**H240, Type A**; Heating may cause an explosion: (a) Any self-reactive substance or mixture which can detonate or deflagrate rapidly, as packaged, will be defined as self-reactive substance TYPE A;	Type A	Unstable (reactive)	4	Materials that in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.
	GHS01 GHS02	D	Heating may cause a fire or explosion	**H241, Type B**	**H241, Type B**; Heating may cause a fire or explosion: (b) Any self-reactive substance or mixture possessing explosive properties and which, as packaged, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package will be defined as self-reactive substance TYPE B;	Type B	Unstable (reactive)	3	Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at the elevated temperatures and pressures.
	GHS02	D	Heating may cause a fire	**H242, Type C or H242, Type D**	**H242, Type C**; Heating may cause a fire: (c) Any self-reactive substance or mixture possessing explosive properties when the substance or	Type C or Type D	Unstable (reactive)	2	Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can undergo

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					mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion will be defined as self-reactive substance TYPE C; **H242, Type D**; Heating may cause a fire: (d) Any self-reactive substance or mixture which in laboratory testing: (i) detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or (ii) does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or (iii) does not detonate or deflagrate at all and shows a medium effect when heated under confinement; will be defined as self-reactive substance TYPE D;				chemical change with rapid release of energy at normal temperatures and pressures, and that can undergo violent chemical change at elevated temperatures and pressures.
	GHS02	W	Heating may cause a fire	**H242, Type E** or **H242, Type F**	**H242, Type E**; Heating may cause a fire: (e) Any self-reactive substance or mixture which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated under confinement will be defined as self-reactive substance TYPE E; **H242, Type F**; Heating may cause a fire: (f) Any self-reactive substance or mixture which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power will be defined as self-reactive substance TYPE F; (g) Any self-reactive substance or mixture which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60 °C to 75 °C for a 50 kg package), and, for liquid mixtures, a diluent having a boiling point greater than or equal to 150 °C is used for desensitization will be defined as self-reactive substance TYPE G. If the mixture is not thermally stable or a diluent having a boiling point less than 150°C is used for desensitization, the mixture shall be defined as self- reactive substance TYPE F.	Type E or Type F	Unstable (reactive)	1	Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressures.
	GHS02 GHS04	D	Extremely flammable gas	**H220, Category 1A, Category A** or **H220, Category 1A, Category B** and **H280, compressed gas**	A chemically unstable gas is a flammable gas that is able to react explosively even in the absence of air or oxygen. **H220, Category 1A, Category A**; Extremely flammable gas. May react explosively even in the absence of air: Flammable gases which are chemically unstable at 20°C and a standard pressure of 101.3 kPa. **H220, Category 1A, Category B**; Extremely flammable gas. May react explosively even in the absence of air at elevated pressure and/or temperature: Flammable gases which are chemically unstable at a temperature greater than 20°C and/or a standard pressure greater than 101.3 kPa.	Category 1A, Category A or Category 1A, Category B	Unstable (reactive)	gas	

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					H280, compressed gas would also apply.				
	GHS02	D	In contact with water releases flammable gases which may ignite spontaneously	**H260, Category 1**	**H260, Category 1**; In contact with water releases flammable gases which may ignite spontaneously: Any substance or mixture which reacts vigorously with water at ambient temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 liters per kilogram of substance over any one minute. (UN/DOT test methods: Test N.5, Part III, sub-section 33.4.1.4)	Category 1	Water reactive	3	Materials that react explosively with water without requiring heat or confinement.
	GHS02	D	In contact with water releases flammable gas	**H261, Category 2**	**H261, Category 2**; In contact with water releases flammable gas: Any substance or mixture which reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 20 liters per kilogram of substance per hour, and which does not meet the criteria for Category 1.	Category 2	Water-reactive	2	Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition of combustibles upon exposure to water or moisture.
	GHS02	W	In contact with water releases flammable gas	**H261, Category 3**	**H261, Category 3**; In contact with water releases flammable gas: Any substance or mixture which reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 1 liters per kilogram of substance per hour, and which does not meet the criteria for Categories 1 and 2.	Category 3	Water-reactive	1	Materials that react with water with some release of energy, but not violently.

E104.2GHS hazardous materials definitions comparison table.

Table E104.2 provides a tabular presentation of the various definitions published within the *International Fire Code*. In addition, the table presents corresponding definitions, where available, from the 2012 edition of DOL 29 CFR 1910.1200 along with applicable hazard statement codes. DOL 29 CFR 1910.1200 aligns with the UN's *Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*. The table is not meant to imply perfect alignment between IFC and GHS definitions.

TABLE E104.2 IFC AND GHS HAZARD DEFINITIONS COMPARISON[a]

IFC MATERIAL	IFC CLASS	IFC DEFINITION	GHS 2017 (REV 7) CLASSIFICATION (H-CODE AND CATEGORY); HAZARD STATEMENT; DEFINITION
Aerosol	—	A combination of a container, a propellant and a material that is dispensed. Aerosol products shall be classified by means of the calculation of their chemical heats of combustion and shall be designated Level 1, Level 2 or Level 3.	Any nonrefillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state. H223, Category 3; Pressurized container: May burst if heated.
Aerosol	Level 1	Those with a total chemical heat of combustion that is less than or equal to 8,600 Btu/lb (20 kJ/g).	1. Any aerosol that contains ≤ 1% flammabl components (by mass) and that has a heat c combustion < 20 kJ/g. 2. Any aerosol that contains > 1% (by mass) flammable components or which has a heat of combustion of 20 kJ/g but which, based on the results of the ignitio distance test, the enclosed space ignition test or th aerosol foam flammability test, does not meet th criteria for Category 1 or Category 2.

			the results of the ignition distance test, does not meet the criteria for Category 1, and which has: a. A heat of combustion of ≥ 20 kJ/g. b. A heat of combustion of < 20 kJ/g along with an ignition distance of ≥ 15 cm; or c. A heat of combustion of < 20 kJ/g and an ignition distance of < 15 cm along with either, in the enclosed space ignition test a time: i. A time equivalent of ≤ 300 s/m^3; or ii. A deflagration density of ≤ 300 g/m^3; or 2. Any aerosol that dispenses a foam that, based on the results of the aerosol foam flammability test, does not meet the criteria for Category 1, and which has a flame height of ≥ 4 cm and a flame duration of ≥ 2 s.
Aerosol	Level 2	Those with a total chemical heat of combustion that is less than or equal to 8,600 Btu/lb (20 kJ/g).	H222, Category 1; Extremely flammable aerosol. Pressurized container: May burst if heated: 1. Any aerosol that contains ≥ 85% flammable components (by mass) and has a heat of combustion of ≥ 30 kJ/g. 2. Any aerosol that dispenses a spray that, in th ignition distance test, has an ignition distance of ≥ 7 cm. 3. Any aerosol that dispenses a foam that, in the foar flammability test, has: a. A flame height of ≥ 20 cm and a flame duration ≥ 2 s. b. A flame height of ≥ 4 cm and a flame duration of 7 s.
Aerosol	Level 3	Those with a total chemical heat of combustion that is greater than 13,000 Btu/lb (30 kJ/g).	
Combustible liquid	—	A liquid having a closed cup flash point at or above 100°F (38°C). Combustible liquids shall be	A flammable liquid means a liquid having a flash point of not more than 93°C.

liquid		100°F (38°C) and below 140°F (60°C).	Flash point ≥ 23°C and ≤ 60°C
Combustible liquid	IIIA	Liquids having a closed cup flash point at or above 140°F (60°C) and below 200°F (93°C).	H227, Category 4; Combustible liquid: Flash point > 60°C and ≤ 93°C
Combustible liquid	IIIB	Liquids having closed cup flash points at or above 200°F (93°C).	N/A
Compressed gas	—	A material or mixture of materials that: 1. Is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure, and 2. Has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied or in solution, except those gases that have no other health- or physical-hazard properties are not considered to be compressed until the pressure in the packaging exceeds 41 psia (282 kPa) at 68°F (20°C). States of compressed gases: 1. Nonliquefied compressed gases are gases, other than those in solution, that are in a packaging under the charged pressure and are entirely gaseous at a temperature of 68°F (20°C). 2. Liquefied compressed gases are gases that, in a packaging under the charged pressure, are partially liquid at a temperature of 68°F (20°C). 3. Compressed gases in solution are nonliquefied gases that are dissolved in a solvent.	Gases under pressure are gases which are contained in a receptacle at a pressure of 200 kPa (gauge) or more at 20°C, or which are liquefied, or liquefied and refrigerated. H280, Compressed gas; Contains gas under pressure: May explode if heated. A gas which when under pressure is entirely gaseous at -50°C (-58°F), including all gases with a critical temperature ≤ -50°C (-58°F). H280, Liquefied gas; Contains gas under pressure: May explode if heated. A gas which when under pressure is partially liquid at temperatures above -50°C (-58°F). H280, Dissolved gas; Contains gas under pressure: May explode if heated. A gas which when under pressure is dissolved in a liquid phase solvent.

		properties of which are represented by the properties of the mixture as a whole.	
Corrosive	—	A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the point of contact. A chemical shall be considered corrosive if, when tested on the intact skin of albino rabbits by the method described in DOTn 49 CFR 173.137, such chemical destroys or changes irreversibly the structure of the tissue at the point of contact following an exposure period of 4 hours. This term does not refer to action on inanimate surfaces.	H314, Category 1 (1A, 1B, 1C); Causes severe skin burns and eye damage. Skin corrosion refers to the production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture.
Cryogenic fluid	—	A fluid having a boiling point lower than -130°F (-89.9°C) at 14.7 pounds per square inch atmosphere (psia) (an absolute pressure of 101.3 kPa).	H281, Refrigerated liquefied gas; Contains refrigerated gas: May cause cryogenic burns or injury. A gas which is made partially liquid because of its low temperature.
Cryogenic flammable	—	A cryogenic fluid that is flammable in its vapor state.	H220, Category 1A; Extremely flammable gas. Gases, which at 20°C and a standard pressure of 101.3 kPa: 1. Are ignitable when in a mixture of 13% or less by volume in air; or 2. Have a flammable range with air of at least 1 percentage points, regardless of the lowe flammability limit unless data show they meet th criteria for Category 1B. Category 1A includes pyrophoric gases and chemically unstable gases. H281, refrigerated liquefied gas, would also apply.
Cryogenic—Inert	—	A cryogenic fluid that is inert.	H281, Refrigerated liquefied gas. Contains refrigerated gas: May cause cryogenic burns or injury. A gas which is made partially liquid because of its low temperature.

Cryogenic—Oxidizing	—	An oxidizing gas in the cryogenic state.	
			H281, refrigerated liquefied gas, would also apply.
		A chemical compound, mixture or device, the primary or common purpose of which is to function by explosion. The term includes, but is not limited to, dynamite, black powder, pellet powder, initiating explosives, detonators, safety fuses, squibs, detonating cord, igniter cord and igniters.	
Explosives	—		An explosive substance (or mixture) is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.
		The term “Explosive” includes any material determined to be within the scope of USC Title 18: Ch. 40 and also includes any material classified as an explosive other than consumer fireworks, Division 1.4G Explosives, by the hazardous materials regulations of DOTn 49 CFR Parts 100–185.	
Explosives	Unstable explosives		H200; Unstable explosive. Unstable explosives are those which are thermally unstable and/or too sensitive for normal handling, transport and use. Special precautions are necessary.
Explosives	Division 1.1	Explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.	H201; Explosive; mass explosion hazard. Substances, mixtures and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire quantity present virtually instantaneously).
Explosives	Division 1.2	Explosives that have a projection hazard but not a mass explosion hazard.	H202; Explosive; severe projection hazard. Substances, mixtures and articles which have a projection hazard but not a mass explosion hazard.

Explosives	Division 1.3	Explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.	a mass explosion hazard: 1. Combustion of which gives rise to considerable radiant heat; or 2. Which burn one after another, producing minor blast or projection effects or both.
Explosives	Division 1.4	Explosives that pose a minor explosion hazard. The explosive effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.	H204; Fire or projection hazard: Substances, mixtures and articles which present no significant hazard; substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.
Explosives	Division 1.4G	Small fireworks devices containing restricted amounts of pyrotechnic composition designed primarily to produce visual or audible effects by combustion or deflagration that complies with the construction, chemical composition and labeling regulations of the DOTn for fireworks, UN No. 0336 and the US Consumer Product Safety Commission as set forth in CPSC 16 CFR Parts 1500 and 1507.	N/A
Explosives	Division 1.5	Very insensitive explosives. This division is comprised of substances that have a mass explosion hazard but which are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.	H205; May mass explode in fire. Very insensitive substances o mixtures which have a mass explosion hazard: substances and mixtures which have a mass explosion hazard but are so insensitive that there is very little probability or initiation or of transition from burning to detonation under normal conditions.
Explosives	Division 1.6	Extremely insensitive articles that do not have a mass explosion hazard. This division is comprised of articles that contain only extremely insensitive	Extremely insensitive articles which do not have a mass explosion hazard: articles which predominantly contain extremely insensitive substances or mixtures and which

			A flammable gas is a gas having a flammable range with air at 20°C and a standard pressure of 101.3 kPa.
Flammable gas	Gaseous	A material that is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure [a material that has a boiling point of 68°F (20°C) or less at 14.7 psia (101 kPa)] which: 1. Is ignitable at 14.7 psia (101 kPa) when in a mixture of 13% or less by volume with air; or 2. Has a flammable range at 14.7 psia (101 kPa) with air of not less than 12%, regardless of the lower limit. The limits specified shall be determined at 14.7 psia (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.	H220, Category 1A; Extremely flammable gas. Gases, which at 20°C and a standard pressure of 101.3 kPa: 1. Are ignitable when in a mixture of 13% or less by volume in air; or 2. Have a flammable range with air of at least 12 percentage points regardless of the lower flammability limit unless data show they meet the criteria for Category 1B. Category 1A includes pyrophoric gases and chemically unstable gases. H220, Category 1B; Flammable gas. Gases which meet the flammability criteria for Category 1A, but which are not pyrophoric nor chemically unstable, and which have at least either: 1. A lower flammability limit of more than 6% by volum in air; or 2. A fundamental burning velocity of less than 10 cm/s. H280, compressed gas, would also apply.
Flammable liquid	—	A liquid having a closed cup flash point below 100°F (38°C). Flammable liquids are further categorized into a group known as Class I liquids. The Class I category is subdivided as follows:	A liquid having a flash point of not more than 93°C. A flammable liquid is classified in one of the four categories for this class.

liquid		having a boiling point below 100°F (38°C).	
Flammable liquid	IB	Liquids having a flash point below 73°F (23°C) and having a boiling point at or above 100°F (38°C).	Flash point < 23°C and initial boiling point ≤ 35°C H225, Category 2; Highly flammable liquid and vapor. Flash point < 23°C and initial boiling point > 35°C H226, Category 3; Flammable liquid and vapor.
Flammable liquid	IC	Liquids having a flash point at or above 73°F (23°C) and below 100°F (38°C).	
Flammable solid	—	A solid, other than a blasting agent or explosive, that is capable of causing fire through friction, absorption of moisture, spontaneous chemical change or retaining heat from manufacturing or processing, or which has an ignition temperature below 212°F (100°C) or which burns so vigorously and persistently when ignited as to create a serious hazard. A chemical shall be considered a flammable solid, as determined in accordance with the test method of CPSC 16 CFR Part 1500.44, if it ignites and burns with a self-sustained flame at a rate greater than 0.0866 inch (2.2 mm) per second along its major axis.	Flash point ≥ 23°C and ≤ 60°C A flammable solid is a solid which is readily combustible, or may cause or contribute to fire through friction. A flammable solid is classified in one of the two categories for this class using method N.1 as described in Part III, subsection 33.2.1 of the Manual of Tests and Criteria, according to: H228, Category 1; Flammable solid: Burning rate test: Substances or mixtures other than metal powders: 1. Wetted zone does not stop fire; and 2. Burning time < 45 s or burning rate > 2.2 mm/s. Metal powders: burning time ≤ 5 min

			2. Burning time < 45 s or burning rate > 2.2 mm/s. Metal powders: burning time > 5 min and ≤ 10 min
Highly toxic	—	A material that produces a lethal dose or lethal concentration that falls within any of the following categories: 1. A chemical that has a median lethal dose (LD50) of 50 mg or less per kg of body weight when administered orally to albino rats weighing between 200 and 300 g each. 2. A chemical that has a medial lethal dose (LD50) of 200 mg or less per kg of body weight when administered by continuous contact for 24 hr (or less if death occurs within 24 hr) with the bare skin of albino rabbits weighing between 2 and 3 kg each. 3. A chemical that has a median lethal concentration (LC50) in air of 200 ppm by volume or less of gas or vapor, or 2 mg/l or less of mist, fume or dust, when administered by continuous inhalation for 1 hr (or less if death occurs within 1 hr) to albino rats weighing between 200 and 300 g.	Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture. Oral H300, Category 1; Fatal if swallowed: LD50 ≤ 5 mg/kg bodyweight H300, Category 2; Fatal if swallowed: LD50 > 5 ≤ 50 mg/kg bodyweight Dermal H310, Category 1; Fatal in contact with skin: LD50 ≤ 50 mg/kg bodyweight H310, Category 2; Fatal in contact with skin: LD50 > 50 ≤ 200 mg/kg bodyweight

			H330, Category 1; Fatal if inhaled.
			Gases: LC50 ≤ 100 ppm (4 hr) ≈ 200 ppm (1 hr) Vapors: LC50 ≤ 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) Dust/mist: LC50 ≤ 0.05 mg/l (4 hr) ≈ 0.2 mg/l (1 hr)
Inert gas	—	A gas that is capable of reacting with other materials only under abnormal conditions such as high temperatures, pressures and similar extrinsic physical forces. Within the context of the code, inert gases do not exhibit either physical or health hazard properties as defined (other than acting as a simple asphyxiant) or hazard properties other than those of a compressed gas. Some of the more common inert gases include argon, helium, krypton, neon, nitrogen and xenon.	Gases under pressure are gases which are contained in receptacles at a pressure of 200 kPa (gauge) or more at 20°C or which are liquefied or liquefied and refrigerated. They comprise compressed gases, liquefied gases, dissolved gases and refrigerated liquefied gases.
			See the description of “Compressed gas.”
Organic peroxide	—	An organic compound that contains the bivalent -O-O- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.	Organic peroxides are liquid or solid organic substances which contain the bivalent -O-O- structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Organic peroxides are thermally unstable substances or mixtures, which may undergo exothermic self-accelerating decomposition. In addition, they may have one or more of the following properties: 1. Be liable to explosive decomposition.

Organic peroxide	UD	Organic peroxides that are capable of detonation. These peroxides pose an extremely high-explosion hazard through rapid explosive decomposition.	H240, Organic peroxide, Type A; Heating may cause an explosion. Any organic peroxide which, as packaged, can detonate or deflagrate rapidly will be defined as organic peroxide Type A.
Organic peroxide	I	Describes those formulations that are capable of deflagration but not detonation.	H241, Organic peroxide, Type B; Heating may cause a fire or explosion. Any organic peroxide possessing explosive properties and which, as packaged, neither detonates nor deflagrates rapidly but is liable to undergo a thermal explosion in that package will be defined as organic peroxide Type B.
Organic peroxide	II	Describes those formulations that burn very rapidly and that pose a moderate reactivity hazard.	H242, Organic peroxide, Type C; Heating may cause a fire. Any organic peroxide possessing explosive properties when the substance or mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion will be defined as organic peroxide Type C.
			H242, Organic peroxide, Type D; Heating may cause a fire. Any organic peroxide which in laboratory testing: • Detonates partially, does not deflagrate rapidl and shows no violent effect when heated unde confinement; or • Does not detonate at all, deflagrates slowly an shows no violent effect when heated unde confinement; or • Does not detonate or deflagrate at all and show a medium effect when heated under

			Any organic peroxide which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated under confinement will be defined as organic peroxide Type E.
Organic peroxide	III	Describes those formulations that burn rapidly and that pose a moderate reactivity hazard.	H242, Organic peroxide, Type F; Heating may cause a fire. Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power will be defined as organic peroxide Type F.
Organic peroxide	IV	Describes those formulations that burn in the same manner as ordinary combustibles and that pose a minimal reactivity hazard.	Organic peroxide, Type G. Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C or higher for a 50 kg package), and for liquid mixtures, a diluent having a boiling point of not less than 150°C and used for desensitization will be defined as organic peroxide Type G. If the organi peroxide is not thermally stable or is a diluent having boiling point less than 150°C and is used fo desensitization, it shall be defined as organic peroxid Type F.
Organic peroxide	V	Describes those formulations that burn with less intensity than ordinary combustibles or do not sustain combustion and that pose no reactivity hazard.	
Oxidizer	—	A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.	An oxidizing solid is a solid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

			H271, Category 1; May cause fire or explosion; strong oxidizer.
Oxidizer	4	An oxidizer that can undergo an explosive reaction due to contamination or exposure to a thermal or physical shock that causes a severe increase in the burning rate of combustible materials with which it comes into contact. Additionally, the oxidizer causes a severe increase in the burning rate and can cause spontaneous ignition of combustibles.	Criteria for solids (based on Test O.1 or O.3 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture (by mass) of potassium bromate and cellulose. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate greater than the mean burning rate of a 3:1 mixture (by mass) of calcium peroxide and cellulose. Criteria for liquids (based on Test O.2 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Any substance or mixture which, in the 1:1 mixture (by mass) of substance (or mixture) and cellulose tested spontaneously ignites; or the mean pressure rise tim of a 1:1 mixture (by mass) of substance and cellulos is less than that of a 1:1 mixture (by mass) of 50% perchloric acid and cellulose.
Oxidizer	3	An oxidizer that causes a severe increase in the burning rate of combustible materials with which it comes in contact.	H271, Category 1; May cause fire or explosion; strong oxidizer. Criteria for solids (based on Test O.1 or O.3 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*):

			burning time of a 3:2 mixture (by mass) of potassium bromate and cellulose. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning rate greater than the mean burning rate of a 3:1 mixture (by mass) of calcium peroxide and cellulose. Criteria for liquids (based on Test O.2 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Any substance or mixture which, in the 1:1 mixture (by mass) of substance (or mixture) and cellulose tested, spontaneously ignites; or the mean pressure rise time of a 1:1 mixture (by mass) of substance and cellulose is less than that of a 1:1 mixture (by mass) of 50% perchloric acid and cellulose.
Oxidizer	2	An oxidizer that will cause a moderate increase in the burning rate of combustible materials with which it comes in contact.	H272, Category 2; May intensify fire; oxidizer. Criteria for solids (based on Test O.1 or O.3 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Test O.1—Any substance or mixture which, in the 4: or 1:1 sample-to-cellulose ratio (by mass) tested exhibits a mean burning time equal to or less than th mean burning time of a 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria fo Category 1 are not met. Test O.3—Any substance or mixture which, in the 4: or 1:1 sample-to-cellulose ratio (by mass) tested exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:1 mixture (by mass) of

			Criteria for liquids (based on Test O.2 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Any substance or mixture which, in the 1:1 mixture (by mass) of substance (or mixture) and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a 1:1 mixture (by mass) of a 40% aqueous sodium chlorate solution and cellulose and the criteria for Category 1 are not met.
Oxidizer	1	An oxidizer that does not moderately increase the burning rate of combustible materials.	H272, Category 3; May intensify fire; oxidizer: Criteria for solids (based on Test O.1 or O.3 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Test O.1—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for Categories 1 and 2 are not met. Test O.3—Any substance or mixture which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested exhibits a mean burning rate equal to or greater than the mean burning rate of a 1:2 mixture (by mass) of calcium peroxide and cellulose and the criteria for Categories 1 and 2 are not met. Criteria for liquids (based on Test O.2 in Part III of UN ST/SG/AC.10/11, *Manual of Tests and Criteria*): Any substance or mixture which, in the 1:1 mixture (by mass) of substance (or mixture) and cellulose tested,

			the criteria for Categories 1 and 2 are not met. Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.
Oxidizing gas	Gaseous	A gas that can support and accelerate combustion of other materials more than air does.	H270, Category 1; May cause or intensify fire; oxidizer: Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. H280, compressed gas would also apply. Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.
Oxidizing gas	Liquified	An oxidizing gas that is liquefied [liquefied gases are gases that, in a packaging under the charged pressure, are partially liquid at 68°F (20°C)].	H270, Category 1; May cause or intensify fire; oxidizer. Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. H280, liquefied gas, would also apply.
Pyrophoric	—	A chemical with an autoignition temperature in air, at or below a temperature of 130°F (54°C).	Separate definitions based on physical state; see each category of pyrophoric:
Pyrophoric	Solid	A solid with an autoignition temperature in air, at or below a temperature of 130°F (54°C).	H250, Category 1; Pyrophoric solid; Catches fire spontaneousl if exposed to air. A pyrophoric solid is a solid which, even in small quantities, is liable to ignite within 5 minutes after coming into contact with air.

Pyrophoric	Liquid	A liquid with an autoignition temperature in air, at or below a temperature of 130°F (54°C).	H250, Category 1; Pyrophoric liquid; Catches fire spontaneously if exposed to air: A pyrophoric liquid is a liquid which, even in small quantities, is liable to ignite within 5 minutes after coming into contact with air. Classification criteria: The liquid ignites within 5 minutes when added to an inert carrier and exposed to air, or it ignites or chars a filter paper on contact with air within 5 minutes. Testing is performed at 25 ±2°C and 50 ±5% relative humidity.
Pyrophoric	Gas	A gas with an autoignition temperature in air, at or below a temperature of 130°F (54°C).	H220, Category 1A; Extremely flammable gas. May ignite spontaneously if exposed to air: A pyrophoric gas is a flammable gas that is liable to ignite spontaneously in air at a temperature of 54°C or below. H280, compressed (or liquefied) gas, would also apply.
Toxic	—	A chemical falling within any of the following categories: 1. A chemical that has a median lethal dose (LD50) of more than 50 mg per kg, but not more than 500 mg per kg of body weight when administered orally to albino rats weighing between 200 and 300 g each. 2. A chemical that has a medial lethal dose (LD50) of more than 200 mg per kg but not more than 1,000 mg per kg of body weight when administered by continuous contact for 24 hr (or less if death occurs within 24 hr) with the bare skin of albino	Acute toxicity refers to serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture. Oral H301, Category 3; Toxic if swallowed: LD50 > 50 ≤ 300 mg/kg bodyweight H302, Category 4; Harmful if swallowed: LD50 > 300 ≤ 2,000

concentration (LC50) in air of more than 200 ppm but not more than 2,000 ppm by volume or less of gas or vapor, or more than 2 mg/l but not more than 20 mg/l of mist, fume or dust, when administered by continuous inhalation for 1 hr (or less if death occurs within 1 hr) to albino rats weighing between 200 and 300 g	Dermal	H311, Category 3, Toxic in contact with skin: LD50 > 200 ≤ 1,000 mg/kg bodyweight
	Inhalation	H330, Category 2; Fatal if inhaled: Gases: LC50 > 100 ppm (4 hr) ≈ 200 ppm (1 hr) ≤ 500 ppm (4 hr) ≈ 1,000 ppm (1 hr) Vapours: LC50 > 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) ≤ 2 mg/l (4 hr) ≈ 8 mg/l (1 hr) Dust/mist: LC50 > 0.05 mg/l (4 hr) ≈ 0.2 mg/l (1 hr) ≤ 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr)
		H331, Category 3; Toxic if inhaled: Gases: LC50 > 500 ppm (4 hr) ≈ 1,000 ppm (1 hr) ≤ 2,500 ppm (4 hr) ≈ 5,000 ppm (1 hr)

			Dust/mist: LC50 > 0.5 mg/l (4 hr) ≈ 2 mg/l (1 hr) ≤ 1 mg/l (4 hr) ≈ 4 mg/l (1 hr)
Unstable (reactive)	—	A material, other than an explosive, which in the pure state or as commercially produced, will vigorously polymerize, decompose, condense or become self-reactive and undergo other violent chemical changes, including explosion, when exposed to heat, friction or shock, or in the absence of an inhibitor, or in the presence of contaminants, or in contact with incompatible materials. Unstable (reactive) materials are subdivided as follows:	Self-reactive substances or mixtures are thermally unstable liquids or solid substances or mixtures liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances and mixtures classified under the GHS as explosives, organic peroxides or as oxidizing. A self-reactive substance or mixture is regarded as possessing explosive properties when in laboratory testing the formulation is liable to detonate, to deflagrate rapidly or to show a violent effect when heated under confinement.
Unstable (reactive)	4	Materials that in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. This class includes materials that are sensitive to mechanical or localized thermal shock at normal temperatures and pressures.	H240, Type A; Heating may cause an explosion. Any self-reactive substance or mixture which can detonate or deflagrate rapidly, as packaged, will be defined as self-reactive substance Type A.
Unstable (reactive)	3	Materials that in themselves are capable of detonation or of explosive decomposition or explosive reaction but which require a strong initiating source or which must be heated under confinement before initiation. This class includes materials that are sensitive to thermal or mechanical shock at the elevated temperatures and pressures.	H241, Type B; Heating may cause a fire or explosion. Any self-reactive substance or mixture possessin explosive properties and which, as packaged, neithe detonates nor deflagrates rapidly, but is liable t undergo a thermal explosion in that package will b defined as self-reactive substance Type B.
Unstable (reactive)	2	Materials that in themselves are normally unstable and readily undergo violent chemical change but do not detonate. This class includes materials that can	H242, Type C; Heating may cause a fire. Any self-reactive substance or mixture possessing explosive properties when the substance or mixture as

		elevated temperatures and pressures.	H242, Type D; Heating may cause a fire. Any self-reactive substance or mixture which in laboratory testing: • Detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or • Does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or • Does not detonate or deflagrate at all and shows a medium effect when heated under confinement; will be defined as self-reactive substance Type D; Will be defined as self-reactive substance Type D.
Unstable (reactive)	1	Materials that in themselves are normally stable but which can become unstable at elevated temperatures and pressures.	H242, Type E; Heating may cause a fire. Any self-reactive substance or mixture which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated unde confinement will be defined as self-reactive substanc Type E.
			H242, Type F; Heating may cause a fire. Any self-reactive substance or mixture which, i laboratory testing, neither detonates in the cavitate state nor deflagrates at all and shows only a low or n effect when heated under confinement as well as lo or no explosive power will be defined as self-reactive substance Type F.

		heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C to 75°C for a 50 kg package), and for liquid mixtures, a diluent having a boiling point greater than or equal to 150°C and used for desensitization will be defined as self-reactive substance Type G. If the mixture is not thermally stable or is a diluent having a boiling point less than 150°C and is used for desensitization, the mixture shall be defined as self-reactive substance Type F.
		A chemically unstable gas is a flammable gas that is able to react explosively even in the absence of air or oxygen.
Unstable (reactive) gas	Gaseous	H220, Category 1A, Category A; Extremely flammable gas; May react explosively even in the absence of air. Flammable gases which are chemically unstable at 20°C and a standard pressure of 101.3 kPa.
		H220, Category 1A, Category B; Extremely flammable gas; May react explosively even in the absence of air at elevated pressure and/or temperature. Flammable gases which are chemically unstable at a temperature greater than 20°C and/or a standard pressure greater than 101.3 kPa.
		H280, compressed gas, would also apply.

Water reactive	3	Materials that react explosively with water without requiring heat or confinement.	temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 liters per kilogram of substance over any 1 minute. (UN/DOT test methods: Test N.5, Part III, subsection 33.4.1.4)
Water reactive	2	Materials that react violently with water or have the ability to boil water. Materials that produce flammable, toxic or other hazardous gases, or evolve enough heat to cause autoignition of combustibles upon exposure to water or moisture.	H261, Category 2; Contact with water releases flammable gas. Any substance or mixture which reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 20 liters per kilogram of substance per hour, and which does not meet the criteria for Category 1.
Water reactive	1	Materials that react with water with some release of energy, but not violently.	H261, Category 3; Contact with water releases flammable gas. Any substance or mixture which reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 1 liter per kilogram of substance per hour, and which does not meet the criteria for Categories 1 and 2.

a. The table illustrates that there is not perfect alignment between the IFC and GHS definitions and provides information on similarities and difference between the two classification systems.

Jump to Chapter

(IFC)

About this Title

The 2024 International Codes® (I-Codes®) have undergone substantial formatting changes as part of the digital transformation strategy of the International Code Council® (ICC®) to improve the user experience. The changes, promoting a cleaner, more modern look and enhancing readability and sustainability, include:

- Single column text format and modernized font styles improves readability
- QR Codes replace vertical margin sidebars and arrows to identify code changes more accurately
- Shading for table headers and notes improves locating tables and applicable notes
- Grouping of associated content brings tables and figures immediately after the parent section
- Users have capability to validate authenticity of their book and register it with the ICC to receive incentives.

The 2024 IFC® contains regulations to safeguard life and property from fires and explosion hazards. Topics include general precautions, emergency planning and preparedness, fire department access and water supplies, automatic sprinkler systems, fire alarm systems, special hazards, and the storage and use of hazardous materials. Key changes to the IFC include:

- Energy Storage Systems (ESS). Continued focus on ESS. Now referencing NFPA 855 along with IFC Section 1207 to regulate Energy Storage system. The provisions continue to evolve with technologies
- Lithium-ion batteries. Research, storage, and manufacturing of such technologies are being regulated through active systems including automatic sprinkler systems and detection requirements along with proper overall building design and construction. The IFC contains a specific section to provide tools to manage the collection of lithium-ion batteries.
- Powered micromobility devices. A section dedicated to the hazards associated with charging such devices are addressed in the IFC. This includes a number of requirements focusing on issues such as

- A2L refrigerants. The IFC and IBC now acknowledge the need for the use of A2L (flammable) refrigerants but in a safe and well-regulated way. The code now acknowledges two hazard levels for flammable gases based upon the Global Harmonized Standards (GHS).
- Distilled spirits and wine storage. Fire protection requirements have been further refined based upon data from FM Global.
- Valet trash. Valet trash collection is now permitted only where approved. The owner and valet trash collection service provider are required to comply with the rules and limitations that are established by the jurisdiction. Appendix O has been added to provide requirements for adoption.
- Inflatable amusement devices. Section 3107 has been added to provide requirements for these devices.
- Temporary Heating and Cooking Operations. A new Chapter 41 provides all the requirements, including some relocated from other chapters in the 2021 edition, that address temporary heating and cooking operations.
- Emergency Responder Communications Enhancement System (ERCES). Provisions in Section 510 have been updated to match the latest terminology and technology being used for ERCES. In addition, NFPA 1225-2022 Standard for Emergency Services Communications, is now referenced.

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GHS Classification (Rev.10, 2023) Summary

GHS, the Globally Harmonized System of Classification and Labeling of Chemicals, was developed by the United Nations as a way to bring into agreement the chemical regulations and standards of different countries. GHS includes criteria for the classification of health, physical and environmental hazards, as well as specifying what information should be included on labels of hazardous chemicals as well as safety data sheets. This page summarizes the relationship of GHS hazard statements, pictograms, signal words, hazard classes, categories, and precautionary statements.

References:

1. UNECE GHS (Rev.10, 2023)
2. UNECE GHS (Rev.9, 2021)
3. UNECE GHS (Rev.8, 2019)
4. UNECE GHS (Rev.7, 2017)
5. UNECE GHS (Rev.6, 2015)

Note: This page provides the current GHS summary. Obsolete [(marked as) deleted in GHS Rev.10 2023 PDF document] H-codes and P-codes are also provided, as they are still in use but annotated as obsolete. For more information, please see the References. This is the permanent link to the GHS 2023 (Rev. 10) summary. Please also see the previous GHS 2021 (Rev. 9) summary and GHS 2019 (Rev. 8) summary.
Download: The GHS summary data file (TSV).

Hazard Class Pictograms

 Exploding Bomb Explosives GHS01	 Flame Flammables GHS02	 Flame Over Circle Oxidizers GHS03
Gas Cylinder Compressed Gases	Corrosion Corrosives	Skull and Crossbones Acute Toxicity

 GHS04	 GHS05	 GHS06
 Exclamation Mark Irritant GHS07	 Health Hazard GHS08	 Environment GHS09

Note: All pictograms are shown in svg format in the page. The corresponding gif images are also available, e.g. https://pubchem.ncbi.nlm.nih.gov/images/ghs/GHS08.gif.

GHS Hazard Statements

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H200	(Obsolete) Unstable Explosive	Explosives	Unstable Explosive	-		Danger	P201, P202, P281	P372, P373, P380	P401	P501
H201	(Obsolete) Explosive; mass explosion hazard	Explosives	Div 1.1	-		Danger	P210, P230, P240, P250, P280	P370+P380, P372, P373	P401	P501
H202	(Obsolete) Explosive; severe projection hazard	Explosives	Div 1.2	-		Danger	P210, P230, P240, P250, P280	P370+P380, P372, P373	P401	P501
H203	(Obsolete) Explosive; fire, blast or projection hazard	Explosives	Div 1.3	-		Danger	P210, P230, P240, P250, P280	P370+P380, P372, P373	P401	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H204	Fire or projection hazard	Explosives	Category 2B	Div 1.4		Warning	P203, P210, P230, P234, P236, P240, P250, P280	P370+P372+P380+P373	P401	P503
H204	Fire or projection hazard	Explosives	Category 2C	Div 1.4		Warning	P210, P230, P234, P236, P240, P250, P280	P370+P380+P375	P401	P503
H205	(Obsolete) May mass explode in fire	Explosives	Div 1.5	-		Danger	P210, P230, P240, P250, P280	P370+P380, P372, P373	P401	P501
-	(Obsolete)	Explosives	Div 1.6	-	None	-	-	-	-	-
H206	Fire, blast or projection hazard; increased risk of explosion if desensitizing agent is reduced	Desensitized explosives	Category 1	Class 3 or Div 4.1		Danger	P210, P212, P230, P233, P280	P370+P380+P375	P401	P501
H207	Fire or projection hazard; increased risk of explosion if desensitizing agent is reduced	Desensitized explosives	Category 2	Class 3 or Div 4.1		Danger	P210, P212, P230, P233, P280	P370+P380+P375	P401	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H207	Fire or projection hazard; increased risk of explosion if desensitizing agent is reduced	Desensitized explosives	Category 3	Class 3 or Div 4.1		Warning	P210, P212, P230, P233, P280	P370+P380+P375	P401	P501
H208	Fire hazard; increased risk of explosion if desensitizing agent is reduced	Desensitized explosives	Category 4	Class 3 or Div 4.1		Warning	P210, P212, P230, P233, P280	P371+P380+P375	P401	P501
H209	Explosive	Explosives	Category 1	-		Danger	P230, P210, P240, P250, P280	P370+P372+P380+P373	P401	P503
H209	Explosive	Explosives	Category 2A	Div 1.1, 1.2, 1.3, 1.4, 1.5, 1.6		Danger	P203, P210, P230, P234, P236, P240, P250, P280	P370+P372+P380+P373	P401	P503
H210	Very sensitive	Explosives	Category 1	-		Danger	P230, P210, P240, P250, P280	P370+P372+P380+P373	P401	P503
H211	Maybe sensitive	Explosives	Category 1	-		Danger	P230, P210, P240, P250, P280	P370+P372+P380+P373	P401	P504
H220	Extremely flammable	Flammable gases	1A: Flammable	Div 2.1		Danger	P203, P210, P222, P280	P377, P381	P403	-

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	gas		gas, Pyrophoric gas, Chemically unstable gas A,B							
H221	Flammable gas	Flammable gases	1B	Div 2.1		Danger	P210	P377, P381	P403	-
H221	Flammable gas	Flammable gases	Category 2	-	None	Warning	P210	P377, P381	P403	-
H222	Extremely flammable aerosol	Aerosols	Category 1	Div 2.1		Danger	P210, P211, P251	-	P410+P412	-
H223	Flammable aerosol	Aerosols	Category 2	Div 2.1		Warning	P210, P211, P251	-	P410+P412	-
H224	Extremely flammable liquid and vapor	Flammable liquids	Category 1	Class 3		Danger	P210, P233, P240, P241, P242, P243, P280	P303+P361+P353, P370+P378	P403+P235	P501
H225	Highly Flammable liquid and vapor	Flammable liquids	Category 2	Class 3		Danger	P210, P233, P240, P241, P242, P243, P280	P303+P361+P353, P370+P378	P403+P235	P501
H226	Flammable liquid and vapor	Flammable liquids	Category 3	Class 3		Warning	P210, P233, P240, P241, P242, P243, P280	P303+P361+P353, P370+P378	P403+P235	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H227	Combustible liquid	Flammable liquids	Category 4	-	None	Warning	P210, P280	P370+P378	P403	P501
H228	Flammable solid	Flammable solids	Category 1	Div 4.1		Danger	P210, P240, P241, P280	P370+P378	-	-
H228	Flammable solid	Flammable solids	Category 2	Div 4.1		Warning	P210, P240, P241, P280	P370+P378	-	-
H229	Pressurized container: may burst if heated	Aerosols	Category 1	Div 2.1		Danger	P210, P211, P251	-	P410+P412	-
H229	Pressurized container: may burst if heated	Aerosols	Category 2	Div 2.1		Warning	P210, P211, P251	-	P410+P412	-
H229	Pressurized container: may burst if heated	Aerosols	Category 3	Div 2.2	None	Warning	P210, P251	-	P410+P412	-
H230	May react explosively even in the absence of air	Flammable gases	1A, Chemically unstable gas A	Div 2.1		Danger	P203, P210	P337, P381	P403	-
H231	May react explosively even in the absence of air at elevated pressure	Flammable gases	1A, Chemically unstable gas B	Div 2.1		Danger	P203, P210	P337, P381	P403	-

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	and/or temperature									
H232	May ignite spontaneously if exposed to air	Flammable gases	1A, Pyrophoric gas	Div 2.1		Danger	P210, P222, P280	P377, P381	P403	-
H240	Heating may cause an explosion	Self-reactive substances and mixtures; Organic peroxides	Type A	Div 4.1, 5.2 Type A		Danger	P210, P234, P235, P240, P280	P370+P372+P380+P373	P403, P410, P411, P420	P501
H241	Heating may cause a fire or explosion	Self-reactive substances and mixtures; Organic peroxides	Type B	Div 4.1, 5.2 Type B		Danger	P210, P234, P235, P240, P280	P370+P380+P375[+P378]	P403, P410, P411, P420	P501
H242	Heating may cause a fire	Self-reactive substances and mixtures; Organic peroxides	Type C, D	Div 4.1, 5.2 Type C, D		Danger	P210, P234, P235, P240, P280	P370+P378	P403, P410, P411, P420	P501
H242	Heating may cause a fire	Self-reactive substances and mixtures; Organic peroxides	Type E, F	Div 4.1, 5.2 Type E, F		Warning	P210, P234, P235, P240, P280	P370+P378	P403, P410, P411, P420	P501
-	-	Self-reactive substances and mixtures; Organic peroxides	Type G	-	None	-	-	-	-	-

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H250	Catches fire spontaneously if exposed to air	Pyrophoric liquids	Category 1	Div 4.2		Danger	P210, P222, P231, P233, P280	P302+P334, P370+P378	-	-
H250	Catches fire spontaneously if exposed to air	Pyrophoric solids	Category 1	Div 4.2		Danger	P210, P222, P231, P233, P280	P302+P335+P334, P370+P378	-	-
H251	Self-heating; may catch fire	Self-heating substances and mixtures	Category 1	Div 4.2		Danger	P235, P280	-	P407, P410, P413, P420	-
H252	Self-heating in large quantities; may catch fire	Self-heating substances and mixtures	Category 2	Div 4.2		Warning	P235, P280	-	P407, P410, P413, P420	-
H260	In contact with water releases flammable gases which may ignite spontaneously	Substances and mixtures which in contact with water, emit flammable gases	Category 1	Div 4.3		Danger	P223, P231+P232, P280	P302+P335+P334, P370+P378	P402+P404	P501
H261	In contact with water releases flammable gas	Substances and mixtures which in contact with water, emit flammable gases	Category 2	Div 4.3		Danger	P223, P231+P232, P280	P302+P335+P334, P370+P378	P402+P404	P501
H261	In contact with water	Substances and mixtures which in	Category 3	Div 4.3		Warning	P231+P232, P280	P370+P378	P402+P404	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	releases flammable gas	contact with water, emit flammable gases								
H270	May cause or intensify fire; oxidizer	Oxidizing gases	Category 1	Class 2		Danger	P220, P244	P370+P376	P403	-
H271	May cause fire or explosion; strong Oxidizer	Oxidizing liquids; Oxidizing solids	Category 1	Div 5.1		Danger	P210, P220, P280, P283	P306+P360, P371+P380+P375, P370+P378	P420	P501
H272	May intensify fire; oxidizer	Oxidizing liquids; Oxidizing solids	Category 2	Div 5.1		Danger	P210, P220, P280	P370+P378	-	P501
H272	May intensify fire; oxidizer	Oxidizing liquids; Oxidizing solids	Category 3	Div 5.1		Warning	P210, P220, P280	P370+P378	-	P501
H280	Contains gas under pressure; may explode if heated	Gases under pressure	Compressed gas, Liquefied gas, Dissolved gas	Div 2.2		Warning	-	-	P410+P403	-
H281	Contains refrigerated gas; may cause cryogenic burns or injury	Gases under pressure	Refrigerated liquefied gas	Div 2.2		Warning	P282	P336+P317	P403	-

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H282	Extremely flammable chemical under pressure: may explode if heated	Chemicals under pressure	Category 1	Div 2.1		Danger	P210, P211	P370+P378, P376, P381	P410+P403	-
H283	Flammable chemical under pressure: may explode if heated	Chemicals under pressure	Category 2	Div 2.1		Warning	P210, P211	P370+P378, P376, P381	P410+P403	-
H284	Chemical under pressure: may explode if heated	Chemicals under pressure	Category 3	Div 2.2		Warning	P210	P376	P410+P403	-
H290	May be corrosive to metals	Corrosive to Metals	Category 1	Class 8		Warning	P234	P390	P406	-
H300	Fatal if swallowed	Acute toxicity, oral	Category 1, 2	Div 2.3 or 6.1		Danger	P264, P270	P301+P316, P321, P330	P405	P501
H301	Toxic if swallowed	Acute toxicity, oral	Category 3	Div 2.3 or 6.1		Danger	P264, P270	P301+P316, P321, P330	P405	P501
H302	Harmful if swallowed	Acute toxicity, oral	Category 4	-		Warning	P264, P270	P301+P317, P330	-	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H303	May be harmful if swallowed	Acute toxicity, oral	Category 5	-	None	Warning	-	P301+P317	-	-
H304	May be fatal if swallowed and enters airways	Aspiration hazard	Category 1	-		Danger	-	P301+P316, P331	P405	P501
H305	May be harmful if swallowed and enters airways	Aspiration hazard	Category 2	-		Warning	-	P301+P316, P331	P405	P501
H310	Fatal in contact with skin	Acute toxicity, dermal	Category 1, 2	Div 2.3 or 6.1		Danger	P262, P264, P270, P280	P302+P352, P316, P321, P361+P364	P405	P501
H311	Toxic in contact with skin	Acute toxicity, dermal	Category 3	Div 2.3 or 6.1		Danger	P262, P264, P270, P280	P302+P352, P316, P321, P361+P364	P405	P501
H312	Harmful in contact with skin	Acute toxicity, dermal	Category 4	-		Warning	P280	P302+P352, P317, P321, P362+P364	-	P501
H313	May be harmful in contact with skin	Acute toxicity, dermal	Category 5	-	None	Warning	-	P302+P317	-	-
H314	Causes severe skin burns and eye damage	Skin corrosion/irritation	Category 1, 1A, 1B, 1C	Class 8		Danger	P260, P264, P280	P301+P330+P331, P302+P361+P354, P363, P304+P340, P316, P321, P305+P354+P338	P405	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H315	Causes skin irritation	Skin corrosion/irritation	Category 2	-		Warning	P264, P280	P302+P352, P321, P332+P317, P362+P364	-	-
H316	Causes mild skin irritation	Skin corrosion/irritation	Category 3	-	None	Warning	-	P332+P317	-	-
H317	May cause an allergic skin reaction	Sensitization, Skin	Category 1, 1A, 1B	-		Warning	P261, P272, P280	P302+P352, P333+P317, P321, P362+P364	-	P501
H318	Causes serious eye damage	Serious eye damage/eye irritation	Category 1	-		Danger	P264+P265, P280	P305+P354+P338, P317	-	-
H319	Causes serious eye irritation	Serious eye damage/eye irritation	Category 2A	-		Warning	P264+P265, P280	P305+P351+P338, P337+P317	-	-
H320	Causes eye irritation	Serious eye damage/eye irritation	Category 2B	-	None	Warning	P264+P265	P305+P351+P338, P337+P317	-	-
H330	Fatal if inhaled	Acute toxicity, inhalation	Category 1, 2	Div 2.3 or 6.1		Danger	P260, P271, P284	P304+P340, P316, P320	P403+P233, P405	P501
H331	Toxic if inhaled	Acute toxicity, inhalation	Category 3	Div 2.3 or 6.1		Danger	P261, P271	P304+P340, P316, P321	P403+P233, P405	P501
H332	Harmful if inhaled	Acute toxicity, inhalation	Category 4	-		Warning	P261, P271	P304+P340, P317	-	-
H333	May be harmful if inhaled	Acute toxicity, inhalation	Category 5	-	None	Warning	-	P304+P317	-	-

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled	Sensitization, respiratory	Category 1, 1A, 1B	-		Danger	P233, P260, P271, P284	P304+P340, P342+P316	P403	P501
H335	May cause respiratory irritation	Specific target organ toxicity, single exposure; Respiratory tract irritation	Category 3	-		Warning	P261, P271	P304+P340, P319	P403+P233, P405	P501
H336	May cause drowsiness or dizziness	Specific target organ toxicity, single exposure; Narcotic effects	Category 3	-		Warning	P261, P271	P304+P340, P319	P403+P233, P405	P501
H340	May cause genetic defects	Germ cell mutagenicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H341	Suspected of causing genetic defects	Germ cell mutagenicity	Category 2	-		Warning	P203, P280	P318	P405	P501
H350	May cause cancer	Carcinogenicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H350i	May cause cancer by inhalation	Carcinogenicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H351	Suspected of causing cancer	Carcinogenicity	Category 2	-		Warning	P203, P280	P318	P405	P501
H360	May damage fertility or the unborn child	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H360F	May damage fertility	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H360D	May damage the unborn child	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H360FD	May damage fertility; May damage the unborn child	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H360Fd	May damage fertility; Suspected of damaging the unborn child	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H360Df	May damage the unborn child; Suspected of damaging fertility	Reproductive toxicity	Category 1, 1A, 1B	-		Danger	P203, P280	P318	P405	P501
H361	Suspected of damaging	Reproductive toxicity	Category 2	-		Warning	P203, P280	P318	P405	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	fertility or the unborn child									
H361f	Suspected of damaging fertility	Reproductive toxicity	Category 2	-		Warning	P203, P280	P318	P405	P501
H361d	Suspected of damaging the unborn child	Reproductive toxicity	Category 2	-		Warning	P203, P280	P318	P405	P501
H361fd	Suspected of damaging fertility; Suspected of damaging the unborn child	Reproductive toxicity	Category 2	-		Warning	P203, P280	P318	P405	P501
H362	May cause harm to breast-fed children	Reproductive toxicity, effects on or via lactation	Additional category	-	None	-	P203, P260, P263, P264, P270	P318	-	-
H370	Causes damage to organs	Specific target organ toxicity, single exposure	Category 1	-		Danger	P260, P264, P270	P308+P316, P321	P405	P501
H371	May cause damage to organs	Specific target organ toxicity, single exposure	Category 2	-		Warning	P260, P264, P270	P308+P316	P405	P501
H372	Causes damage to organs through prolonged or	Specific target organ toxicity, repeated exposure	Category 1	-		Danger	P260, P264, P270	P319	-	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	repeated exposure									
H373	May causes damage to organs through prolonged or repeated exposure	Specific target organ toxicity, repeated exposure	Category 2	-		Warning	P260	P319	-	P501
H400	Very toxic to aquatic life	Hazardous to the aquatic environment, acute hazard	Category 1	Class 9		Warning	P273	P391	-	P501
H401	Toxic to aquatic life	Hazardous to the aquatic environment, acute hazard	Category 2	-	None	-	P273	-	-	P501
H402	Harmful to aquatic life	Hazardous to the aquatic environment, acute hazard	Category 3	-	None	-	P273	-	-	P501
H410	Very toxic to aquatic life with long lasting effects	Hazardous to the aquatic environment, long-term hazard	Category 1	Class 9		Warning	P273	P391	-	P501
H411	Toxic to aquatic life with long lasting effects	Hazardous to the aquatic environment, long-term hazard	Category 2	Class 9		-	P273	P391	-	P501

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
H412	Harmful to aquatic life with long lasting effects	Hazardous to the aquatic environment, long-term hazard	Category 3	-	None	-	P273	-	-	P501
H413	May cause long lasting harmful effects to aquatic life	Hazardous to the aquatic environment, long-term hazard	Category 4	-	None	-	P273	-	-	P501
H420	Harms public health and the environment by destroying ozone in the upper atmosphere	Hazardous to the ozone layer	Category 1	-		Warning	-	-	-	P502
H300+H310	Fatal if swallowed or in contact with skin	Acute toxicity, oral; acute toxicity, dermal	Category 1, 2	-		Danger				
H300+H330	Fatal if swallowed or if inhaled	Acute toxicity, oral; acute toxicity, inhalation	Category 1, 2	-		Danger				
H310+H330	Fatal in contact with skin or if inhaled	Acute toxicity, dermal; acute toxicity, inhalation	Category 1, 2	-		Danger				
H300+H310+H330	Fatal if swallowed, in	Acute toxicity, oral; acute toxicity,	Category 1, 2	-		Danger				

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	contact with skin or if inhaled	dermal; acute toxicity, inhalation								
H301+H311	Toxic if swallowed or in contact with skin	Acute toxicity, oral; acute toxicity, dermal	Category 3	-		Danger				
H301+H331	Toxic if swallowed or if inhaled	Acute toxicity, oral; acute toxicity, inhalation	Category 3	-		Danger				
H311+H331	Toxic in contact with skin or if inhaled.	Acute toxicity, dermal; acute toxicity, inhalation	Category 3	-		Danger				
H301+H311+H331	Toxic if swallowed, in contact with skin or if inhaled	Acute toxicity, oral; acute toxicity, dermal; acute toxicity, inhalation	Category 3	-		Danger				
H302+H312	Harmful if swallowed or in contact with skin	Acute toxicity, oral; acute toxicity, dermal	Category 4	-		Warning				
H302+H332	Harmful if swallowed or if inhaled	Acute toxicity, oral; acute toxicity, inhalation	Category 4	-		Warning				
H312+H332	Harmful in contact with	Acute toxicity, dermal; acute toxicity, inhalation	Category 4	-		Warning				

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	skin or if inhaled									
H302+H312+H332	Harmful if swallowed, in contact with skin or if inhaled	Acute toxicity, oral; acute toxicity, dermal; acute toxicity, inhalation	Category 4	-		Warning				
H303+H313	May be harmful if swallowed or in contact with skin	Acute toxicity, oral; acute toxicity, dermal	Category 5	-	None	Warning				
H303+H333	May be harmful if swallowed or if inhaled	Acute toxicity, oral; acute toxicity, inhalation	Category 5	-	None	Warning				
H313+H333	May be harmful in contact with skin or if inhaled	Acute toxicity, dermal; acute toxicity, inhalation	Category 5	-	None	Warning				
H303+H313+H333	May be harmful if swallowed, in contact with skin or if inhaled	Acute toxicity, oral; acute toxicity, dermal; acute toxicity, inhalation	Category 5	-	None	Warning				
H315+H320	Cause skin and eye	Skin corrosion/irritation	Category 2, 2B	-		Warning				

H-Code	Hazard Statements	Hazard Class	Category	UN Model Regulations Class or Division	Pictogram	Signal Word	Precautionary: Prevention	Precautionary: Response	Precautionary: Storage	Precautionary: Disposal
	irritation	and serious eye damage/eye irritation								

Precautionary Statements ☝

General Precautionary Statements

P101: If medical advice is needed, have product container or label at hand.
P102: Keep out of reach of children.
P103: Read carefully and follow all instructions.

Prevention Precautionary Statements

P201: (Obsolete) Obtain special instructions before use.
P202: (Obsolete) Do not handle until all safety precautions have been read and understood.
P203: Obtain, read and follow all safety instructions before use.
P210: Keep away from heat, hot surface, sparks, open flames and other ignition sources. No smoking.
P211: Do not spray on an open flame or other ignition source.
P212: Avoid heating under confinement or reduction of the desensitized agent.
P220: Keep away from clothing and other combustible materials.
P221: (Obsolete) Take any precaution to avoid mixing with combustibles/...
P222: Do not allow contact with air.
P223: Do not allow contact with water.
P230: Keep wetted with ...
P231: Handle and store contents under inert gas/...
P232: Protect from moisture.
P233: Keep container tightly closed.
P234: Keep only in original container.
P235: Keep cool.
P236: Keep only in original packaging; Division .. in the transport configuraion.

P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof [electrical/ventilating/lighting/.../] equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P244: Keep valves and fittings free from oil and grease.
P250: Do not subject to grinding/shock/friction/...
P251: Do not pierce or burn, even after use.
P260: Do not breathe dust/fume/gas/mist/vapors/spray.
P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
P262: Do not get in eyes, on skin, or on clothing.
P263: Avoid contact during pregnancy/while nursing.
P264: Wash hands [and ...] thoroughly after handling.
P265: Do not touch eyes.
P270: Do not eat, drink or smoke when using this product.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P281: (Obsolete)Use personal protective equipment as required.
P282: Wear cold insulating glovesand either face shield or eye protection.
P283: Wear fire resistant or flame retardant clothing.
P284: [In case of inadequate ventilation] Wear respiratory protection.
P285: (Obsolete) In case of inadequate ventilation wear respiratory protection.
P231+P232: Handle and store contents under inert gas/... Protect from moisture.
P264+P265: Wash hands [and ...] thoroughly after handling. Do not touch eyes.
P235+P410: (Obsolete) Keep cool. Protect from sunlight.

Response Precautionary Statements

P301: IF SWALLOWED:
P302: IF ON SKIN:
P303: IF ON SKIN (or hair):
P304: IF INHALED:
P305: IF IN EYES:
P306: IF ON CLOTHING:
P307: (Obsolete) IF exposed:

P308: IF exposed or concerned:
P309: (Obsolete) IF exposed or if you feel unwell
P310: (Obsolete) Immediately call a POISON CENTER or doctor/physician.
P311: (Obsolete) Call a POISON CENTER or doctor/...
P312: (Obsolete) Call a POISON CENTER or doctor/... if you feel unwell.
P313: (Obsolete) Get medical advice/attention.
P314: (Obsolete) Get medical advice/attention if you feel unwell.
P315: (Obsolete) Get immediate medical advice/attention.
P316: Get emergency medical help immediately.
P317: Get emergency medical help.
P318: if exposed or concerned, get medical advice.
P319: Get medical help if you feel unwell.
P320: Specific treatment is urgent (see ... on this label).
P321: Specific treatment (see ... on this label).
P322: (Obsolete) Specific measures (see ...on this label).
P330: Rinse mouth.
P331: Do NOT induce vomiting.
P332: IF SKIN irritation occurs:
P333: If skin irritation or rash occurs:
P334: Immerse in cool water [or wrap in wet bandages].
P335: Brush off loose particles from skin.
P336: Thaw frosted parts with lukewarm water. Do not rub affected area.
P337: If eye irritation persists:
P338: Remove contact lenses, if present and easy to do. Continue rinsing.
P340: Remove person to fresh air and keep comfortable for breathing.
P341: (Obsolete) If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P342: If experiencing respiratory symptoms:
P350: (Obsolete) Gently wash with plenty of soap and water.
P351: Rinse cautiously with water for several minutes.
P352: Wash with plenty of water/...
P353: Rinse skin with water [or shower].
P354: Immediately rinse with water for several minutes.
P360: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P361: Take off immediately all contaminated clothing.
P362: Take off contaminated clothing.
P363: Wash contaminated clothing before reuse.

P364: And wash it before reuse.
P370: In case of fire:
P371: In case of major fire and large quantities:
P372: Explosion risk.
P373: DO NOT fight fire when fire reaches explosives.
P374: (Obsolete) Fight fire with normal precautions from a reasonable distance.
P375: Fight fire remotely due to the risk of explorsion.
P376: Stop leak if safe to do so.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P378: Use ... to extinguish.
P380: Evacuate area.
P381: In case of leakage, eliminate all ignition sources.
P390: Absorb spillage to prevent material damage.
P391: Collect spillage.
P301+P310: (Obsolete) IF SWALLOWED: Immediately call a POISON CENTER/doctor/...
P301+P312: (Obsolete) IF SWALLOWED: call a POISON CENTER/doctor/... IF you feel unwell.
P301+P316: IF SWALLOWED: Get emergency medical help immediately.
P301+P317: IF SWALLOWED: Get medical help.
P301+P330+P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P317: IF ON SKIN: Get medical help.
P302+P334: IF ON SKIN: Immerse in cool water or wrap in wet bandages.
P302+P335+P334: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages].
P302+P350: (Obsolete) IF ON SKIN: Gently wash with plenty of soap and water.
P302+P352: IF ON SKIN: wash with plenty of water/...
P302+P361+P354: IF ON SKIN: Take off Immediately all contaminated clothing. Immediately rinse with water for several minutes.
P303+P361+P353: IF ON SKIN (or hair): Take off Immediately all contaminated clothing. Rinse SKIN with water [or shower].
P304+P312: (Obsolete) IF INHALED: Call a POISON CENTER/doctor/... if you feel unwell.
P304+P317: IF INHALED: Get medical help.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P304+P341: (Obsolete) IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do - continue rinsing.
P305+P354+P338: IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P306+P360: IF ON CLOTHING: Rinse Immediately contaminated CLOTHING and SKIN with plenty of water before removing clothes.
P308+P316: IF exposed or concerned: Get emergency medical help immediately.
P307+P311: (Obsolete) IF exposed: call a POISON CENTER or doctor/physician.
P308+P311: (Obsolete) IF exposed or concerned: Call a POISON CENTER/doctor/...

P308+P313: (Obsolete) IF exposed or concerned: Get medical advice/attention.
P309+P311: (Obsolete) IF exposed or if you feel unwell: call a POISON CENTER or doctor/physician.
P332+P313: (Obsolete) IF SKIN irritation occurs: Get medical advice/attention.
P332+P317: If skin irritation occurs: Get medical help.
P333+P317: If skin irritation or rash occurs: Get medical help.
P336+P317: Immediately thaw frosted parts with lukewarm water. Do not rub affected area. Get medical help.
P337+P317: If eye irritation persists: Get medical help.
P342+P316: If experiencing respiratory symptoms: Get emergence medical help immediately.
P333+P313: (Obsolete) IF SKIN irritation or rash occurs: Get medical advice/attention.
P335+P334: (Obsolete) Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P337+P313: (Obsolete) IF eye irritation persists: Get medical advice/attention.
P342+P311: (Obsolete) IF experiencing respiratory symptoms: Call a POISON CENTER/doctor/...
P361+P364: Take off immediately all contaminated clothing and wash it before reuse.
P362+P364: Take off contaminated clothing and wash it before reuse.
P370+P376: in case of fire: Stop leak if safe to do so.
P370+P378: In case of fire: Use ... to extinguish.
P370+P380: (Obsolete) In case of fire: Evacuate area.
P370+P380+P375: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.
P371+P380+P375: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P370+P372+P380+P373: In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P370+P380+P375[+P378]: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. [Use...to extinguish].]

Storage Precautionary Statements

P401: Store in accordance with ...
P402: Store in a dry place.
P403: Store in a well-ventilated place.
P404: Store in a closed container.
P405: Store locked up.
P406: Store in corrosive resistant/... container with a resistant inner liner.
P407: Maintain air gap between stacks or pallets.
P410: Protect from sunlight.
P411: Store at temperatures not exceeding ... °C/...°F.
P412: Do not expose to temperatures exceeding 50 °C/ 122 °F.
P413: Store bulk masses greater than ... kg/...lbs at temperatures not exceeding ... °C/...°F.
P420: Store separately.

P422: (Obsolete) Store contents under ...
P402+P404: Store in a dry place. Store in a closed container.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P403+P235: Store in a well-ventilated place. Keep cool.
P410+P403: Protect from sunlight. Store in a well-ventilated place.
P410+P412: Protect from sunlight. Do not expose to temperatures exceeding 50 °C/122°F.
P411+P235: (Obsolete) Store at temperatures not exceeding ... °C/...°F. Keep cool.

Disposal Precautionary Statements

P501: Dispose of contents/container to ...
P502: Refer to manufacturer or supplier for information on recovery or recycling
P503: Refer to manufacturer/supplier... for information on disposal/recovery/recycling.