




Use the following DOT Placards and descriptions for identifying the hazardous materials in your lab:

DOT PLACARDS	PLACARD DESCRIPTION
 An orange diamond-shaped placard with a black border. At the top is a black silhouette of an exploding bomb. Below the bomb, the word "EXPLOSIVE" is written in bold black capital letters. At the bottom of the diamond is the number "1".	<p>An EXPLOSIVE (Class 1) means any substance or article, including a device, which is designed to function by explosion (i.e., an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion.</p>
 A red diamond-shaped placard with a white border. At the top is a white silhouette of a flame. Below the flame, the words "FLAMMABLE GAS" are written in bold white capital letters. At the bottom of the diamond is the number "2".	<p>A FLAMMABLE GAS (Division 2.1) means any material which is a gas at 20°C (68°F) or less and 101.3 kPa (14.7 psi) of pressure (a material which has a boiling point of 20°C (68°F) or less at 101.3 kPa (14.7 psi)), which:</p> <ul style="list-style-type: none">(1) Is ignitable at 101.3 kPa (14.7 psi) when in a mixture of 13% or less by volume with air; or(2) Has a flammable range at 101.3 kPa (14.7 psi) with air of at least 12%, regardless of the lower limit.
 A yellow diamond-shaped placard with a black border. At the top is a black silhouette of a flame above a circle. Below this, the word "OXYGEN" is written in bold black capital letters. At the bottom of the diamond is the number "2".	<p>OXYGEN, compressed, in cylinders.</p>

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(NON-FLAMMABLE, non-poisonous compressed gas, including compressed gas, liquefied gas, pressurized cryogenic gas, compressed gas in solution, asphyxiant gas and oxidizing gas).

For the purpose of this subchapter, a non-flammable, nonpoisonous compressed gas (**Division 2.2**) means any material (or mixture), which:

(1) Exerts in the packaging an absolute pressure of 280 kPa (40.6 psia) or greater at 20 °C (68 °F), and

(2) Does not meet the definition of a flammable or poison gas.



A **POISON GAS** (gas poisonous by inhalation) (**Division 2.3**) means a material which is a gas at 20°C (68°F) or less and a pressure of 101.3 kPa (14.7 psi) (a material which has a boiling point of 20°C (68°F) or less at 101.3 kPa (14.7 psi)) and that:

(1) Is known to be so toxic to humans as to pose a hazard to health during transportation, or

(2) In the absence of adequate data on human toxicity, is presumed to be toxic to humans because when tested on laboratory animals it has an LC50 value of not more than 5000 ml/m³.



A **FLAMMABLE LIQUID (Class 3)** means a liquid having a flash point of not more than 60.5°C (141°F).

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A **FLAMMABLE SOLID (Division 4.1)** means any of the following three types of materials:

- (1) Desensitized explosives,
- (2) Self-reactive materials are materials that are thermally unstable and that can undergo a strongly exothermic decomposition even without participation of oxygen (air),
- (3) Readily combustible solids are materials that:
 - (i) Are solids which may cause a fire through friction, such as matches;
 - (ii) Show a burning rate faster than 2.2 mm (0.087 inches) per second when tested in accordance with UN Manual of Tests; and
 - (iii) Any metal powders that can be ignited and react over the whole length of a sample in 10 minutes or less.



A **SPONTANEOUSLY COMBUSTIBLE material (Division 4.2)** means:

- (1) A **pyrophoric material**: A pyrophoric material is a liquid or solid that, even in small quantities and without an external ignition source, can ignite within five (5) minutes after coming in contact with air when tested according to the UN Manual of Tests and Criteria, OR
- (2) A **self-heating material**: A self-heating material is a material that, when in contact with air and without an energy supply, is liable to self-heat. A material of this type which exhibits spontaneous ignition or if the temperature of the sample exceeds 200 °C (392 °F) during a 24-hour test period.

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A **DANGEROUS WHEN WET** material (**Division 4.3**) means a material that, by contact with water, is liable to become spontaneously flammable or to give off flammable or toxic gas at a rate greater than 1 liter per kilogram of the material, per hour.



An **OXIDIZER (Division 5.1)** means a material that may, generally by yielding oxygen, cause or enhance the combustion of other materials.



An **ORGANIC PEROXIDE (Division 5.2)** means any organic compound containing oxygen (O) in the bivalent -O-O- structure and which may be considered a derivative of hydrogen peroxide, where one or more of the hydrogen atoms have been replaced by organic radicals.

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A **POISONOUS** material (**Division 6.1**) means a material, other than a gas, which is known to be so toxic to humans as to afford a hazard to health during transportation, or which, in the absence of adequate data on human toxicity:

(1) Is presumed to be toxic to humans because it falls within any one of the following categories when tested on laboratory animals (whenever possible, animal test data that has been reported in the chemical literature should be used):

(i) **Oral Toxicity:** A liquid with an LD₅₀ for acute oral toxicity of not more than 500 mg/kg or a solid with an LD₅₀ for acute oral toxicity of not more than 200 mg/kg.

(ii) **Dermal Toxicity:** A material with an LD₅₀ for acute dermal toxicity of not more than 1000 mg/kg.

(iii) **Inhalation Toxicity.**

(A) A dust or mist with an LC₅₀ for acute toxicity on inhalation of not more than 10 mg/L; or

(B) A material with a saturated vapor concentration in air at 20 °C (68 °F) of more than one-fifth of the LC₅₀ for acute toxicity on inhalation of vapors and with an LC₅₀ for acute toxicity on inhalation of vapors of not more than 5000 ml/m³;

(2) Is an irritating material, with properties similar to tear gas, which causes extreme irritation, especially in confined spaces.

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A **CORROSIVE** material (**Class 8**) means a liquid or solid that causes full thickness destruction of human skin at the site of contact within a specified period of time; or a liquid that exhibits a corrosion rate on steel or aluminum surfaces exceeding 6.25 mm (0.25 inch) a year at a test temperature of 55°C (130°F).