

# FIRE CODE CLASSIFICATIONS OF HAZARDOUS MATERIALS

Hazardous materials are classified according to the [International Fire Code](#), which limits quantities of certain chemicals based on physical and health hazards, and sets requirements for storage and use.

## FIRE CODE CLASSIFICATIONS

The fire code defines hazardous materials as those chemicals or substances which are physical hazards or health hazards according to the descriptions below.

Often, a material may exhibit *both* physical and health hazards. For instance, a flammable solvent may also be toxic. Many of these categories are further broken down into classes based on the severity of the hazard.

## HEALTH HAZARDS

### Corrosives

Chemicals that cause irreversible alterations in living tissue by chemical action. The Fire Code does not consider a chemical that is only corrosive to mild metals to be a hazardous material.



**Toxic substances** include chemicals with a lethal dose (LD) within these ranges:

- Oral LD<sub>50</sub> rats of 50-500 mg/kg;
- Skin contact LD<sub>50</sub> of 200 mg/kg - 1 g/kg
- Inhalation LC<sub>50</sub> rats 200 ppm - 2 ppb for 1 hour

**Highly Toxic substances** include chemicals with a lethal dose (LD) within these ranges:

- Oral LD<sub>50</sub> rat of <50 mg/kg
- Skin contact LD<sub>50</sub> rabbits of <200 mg/kg

- Inhalation LC<sub>50</sub> rats of <200 ppm for 1 hour

For more information about highly toxic substances, refer to the [Particularly Hazardous Substances](#) information on the EH&S website.

## PHYSICAL HAZARDS

**Combustible liquid:** A liquid with a flashpoint (FP) at or above 100°F/38°C. Includes the following classes:

- Class 2 FP of 100–140°F/38–60°C.
- Class 3A FP of 141–200°F/60–93°C
- Class 3B FP at or above 200°F/93°C.

The Fire Code does not have an upper limit, so any material that can flash is considered combustible.

**Compressed and liquefied gases:** All compressed or liquefied gases, including inert, are considered hazardous materials under the Fire Code.

**Cryogenic fluids** have a boiling point lower than -130°F/89.9°C. Even inert cryogens can be hazardous, either by displacing oxygen or through contact.

**Explosives:** The Fire Code recognizes U.S. Department of Transportation [definitions for explosive hazardous materials](#). Contact EH&S for additional guidance.



**Flammable liquids** have a flashpoint (FP) less than 100°F/38°C. Includes the following classes:

- Class 1A FP less than 73°F/23°C with a boiling point less than 100°F/38°C.
- Class 1B FP less than 73°F/23°C with a boiling point at or above 100°F/38°C.
- Class 1C FP at or above 73°F/23°C and below 100°F/38°C.

**Flammable solids** readily cause fire through friction, absorption of moisture, or spontaneous chemical change.



**Organic peroxides** are derivatives of hydrogen peroxide, which one or more of the hydrogen atoms have been replaced by organic radicals. These compounds can be explosive, may decompose rapidly and can be shock sensitive.

**Oxidizers** are materials that spontaneously evolve oxygen at room temperature or under slight heating.



**Pyrophoric materials** will ignite spontaneously in air at about 54.4°C.

**Unstable reactive** materials are chemicals other than explosives, will vigorously polymerize, decompose, condense, or become self-reactive and undergo other violent chemical changes or explosion, if exposed to heat, friction, shock or contamination.

**Water reactive** materials react violently with water or moisture to produce flammable or toxic gases; or evolves enough heat to cause self-ignition or ignition of nearby combustibles.

**Please call EH&S at 206.616.5530 for more information about hazardous material classifications.**