
Class 1 - Explosives

Division 1.1 - Mass Explosion Hazard - Guide #112
Fire or Explosion:

- May explode and throw fragments 1600 meters (1 Mile) OR MORE IF FIRE REACHES CARGO.


Health:

- Fire may produce irritating, corrosive and/or toxic gases.



Division 1.2 - Projection Hazard - Guide #112

(See Guide. #112 above)



Division 1.3 - Predominantly a Fire Hazard - Guide #112

(See Guide. #112 above)



Division 1.4 - No Significant Blast Hazard - Guide #114
Fire or Explosion:

- May explode and throw fragments 500 meters (1/3 MILE) OR MORE IF FIRE REACHES CARGO


Health:

- Fire may produce irritating, corrosive and/or toxic gases.



Division 1.5 - Very Insensitive Explosives - Guide #112

(See Guide. #112 above)



Guide #112

(See Guide. #112 previous)



Class 2 - Gases

Division 2.1 - Flammable gases - Guide #118
Fire or Explosion:

- EXTREMELY FLAMMABLE
- May be ignited by heat, sparks or flames.
- May form explosive mixtures with air.
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Vapors may travel to source of ignition and flashback.
- Some of these materials may react violently with water.
- Containers may explode when heated.
- Ruptured cylinders may rocket


Health:

- May cause toxic effects if inhaled.
- Vapors are extremely irritating.
- Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

Division 2.2 - Nonflammable gases - Guide #122
Fire or Explosion:

- Substance does not burn but will support combustion.
- Some may react explosively with fuels.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Vapors from liquefied gas are initially heavier than air and spread along ground.
- Runoff may create fire or explosion hazard.
- Containers may explode when heated.
- Ruptured cylinders may rocket.


Health:

- Vapors may cause dizziness or asphyxiation without warning.
- Contact with gas or liquefies gas may cause burns, severe injury and/or frostbite.
- Fire may produce irritating and/or toxic gases.



Division 2.3 - Poison Gases - Guide #153**Health:**

- TOXIC; Inhalation, ingestion, or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

**Fire or Explosion:**

- Combustible materials: may burn but does not ignite readily.
 - When heated, vapors may form explosive mixtures with air: indoors, outdoors, and sewers explosions hazards.
 - Those substances designated with a “P” may polymerize explosively when heated or involved in a fire.
 - Contact with metals may evolve flammable hydrogen gas.
 - Containers may explode when heated.
 - Runoff may pollute waterways.
 - Substance may be transported in a molten form.
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Class 3 - Flammable Liquids

Division 3.1 - Flashpoint below -18C (0 degrees F) - Guide #127

Division 3.2 - Flashpoint -18C to 23C (73F)

Division 3.3 - Flashpoint 23C to 61C (141F)

Fire or Explosion:

- **HIGHLY FLAMMABLE:** Will be easily ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks.)
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designates with a “P” may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

Health:

- Inhalation or contact with material may irritate or burn skin and eyes.
 - Fire may produce irritating, corrosive and/or toxic gases.
 - Vapors may cause dizziness or suffocation.
 - Runoff from fire control may cause pollution.
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Guide #128**Fire or Explosion:**

- Highly Flammable: Will be easily ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source if ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a “P” may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.

Health:

- Inhalation or contact with material may irritate or burn skin and eyes.
 - Fire may produce irritating, corrosive and/or toxic gases.
 - Vapors may cause dizziness or suffocation.
 - Runoff from fire control or dilution water may cause pollution.
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Class 4 – Flammable Solids

Division 4.1 - Flammable Solids Guide #134

Fire or Explosion:

- Flammable/combustible material.
- May be ignited by heat, sparks or flames.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors, and sewers explosion hazards.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.

**Health:**

- TOXIC; inhalation, ingestion, or skin contact with material may cause severe injury or death.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

Division 4.2 - Spontaneously Combustible Guide #136**Fire or Explosion:**

- Extremely flammable; will ignite itself if exposed to air.
- Burns rapidly, releasing dense, white, irritating fumes.
- Substance may be transported in a molten form.
- May re-ignite after fire is extinguished.

**Health:**

- Fire will produce irritating, corrosive and/or toxic gases.
 - TOXIC; ingestion of substance or inhalation of decomposition products will cause severe injury or death.
 - Contact with substance may cause severe burns to skin and eyes.
 - Some effects may be experienced due to skin absorption.
 - Runoff from fire control may be corrosive and/or toxic and cause pollution.
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Division 4.3 - Dangerous When Wet Guide #139**Fire or Explosion:**

- Produce flammable and toxic gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Runoff may create fire or explosion hazard.

**Health:**

- Highly toxic: contact with water produces toxic gas, may be fatal if inhaled.
 - Inhalation or contact with vapors, substance, or decomposition products may cause severe injury or death.
 - May produce corrosive solutions on contact with water
 - Fire will produce irritating, corrosive and/or toxic gases.
 - Runoff from fire control may cause pollution.
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Class 5 - Oxidizers/Organic Peroxides

Division 5.1 - Oxidizers - Guide #143

Fire or Explosion:

- May explode from friction, heat or contamination.
- These substances will accelerate burning when involved in a fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- Some will react explosively with hydrocarbons (fuels).
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**Health:**

- TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns, or death.
- Fire may produce irritating and/or toxic gases.
- Toxic fumes or dust may accumulate in confined areas (basements, tanks, hopper/tank cars, etc.).
- Runoff from fire control or dilution water may cause pollution.

Division 5.2 - Organic Peroxides - Guide #148**Fire or Explosion:**

- May explode from heat, contamination or loss of temperature control.
- These materials are particularly sensitive to temperature rises. Above a given "Control Temperature" the decompose violently and catch fire.
- May ignite combustibles (wood, paper, oil, clothing, etc.).
- May ignite spontaneously if exposed to air.
- May be ignited by heat, sparks or flames.
- May burn rapidly with flare burning effect.
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

**Health:**

- Fire may produce irritating, corrosive and/or toxic gases.
 - Ingestion or contact (skin, eyes) with substance may cause severe injury or burns.
 - Runoff from fire control or dilution water may cause pollution.
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Class 6 - Poisons

Division 6.1 - Poisonous Material - Guide #153

Health:

- TOXIC; inhalation, ingestion, or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.



Fire or Explosion:

- Combustible material: may burn but does not ignite readily.
- When heated, vapors may form explosive mixtures with air: indoors, outdoors, and sewers explosion hazards.
- Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
- Contact with metals may evolve flammable hydrogen gas.
- Containers may explode when heated.
- Runoff may pollute waterways.
- Substance may be transported in a molten form.



Division 6.2 - Etiologic (Infectious) Materials - Guide #158

Health:

- Inhalation or contact with substance may cause infection, disease, or death.
- Runoff from fire control may cause pollution.

Note: Damaged packages containing solid CO₂ as a refrigerant may produce water or frost from condensation of air. Do not touch this liquid as it could be contaminated by the contents of the parcel.

Fire or Explosion:

- Some of these materials may burn, but none ignite readily.
 - Some may be transported in flammable liquids.
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Class 7 - Radioactive

Division 7 - Radioactive - Guide #163

Health:

- Radiation presents minimal risk to transport workers, emergency response personnel, and the public during transportation accidents. Packaging durability increases as potential hazard of radioactive content increases.
- Undamaged packages are safe. Contents of damaged packages may cause higher external radiation exposure, or both external and internal radiation exposure if contents are released.
- Type A packages (cartons, boxes, drums, articles, etc.) identified as “Type A” by marking on packages or by shipping papers contain non-life endangering amounts. Partial releases might be expected if “Type A” packages are damaged in moderately severe accidents.
- Type B packages, and the rarely occurring Type C packages, (large and small, usually metal) contain the most hazardous amounts. They can be identified by package markings or by shipping papers. Life threatening conditions may exist only if contents are released or package shielding fails. Because of design, evaluation, and testing of packages, these conditions would be expected only for accidents of utmost severity.
- The rarely occurring “Special Arrangement” shipments may be of Type A, Type B, Type C packages. Package type will be marked on packages, and shipment details will be on shipping papers.
- Radioactive White-I labels indicate radiation levels outside single, isolated, undamaged packages are very low (less than 0.005mSv/h (0.5 mrem/h)).
- Radioactive Yellow-II and Yellow-III labeled packages have higher radiation levels. The transportation index (TI) on the label identifies the maximum radiation level in mrem/h one meter from a single, isolated, undamaged package.
- Some radioactive materials cannot be detected by commonly available instruments.
- Water from cargo fire may cause pollution.

Fire or Explosion

- Some of these materials may burn, but most do not ignite readily.
- Radioactivity does not change or other properties of materials.
- Type B packages are designed and evaluated to withstand total engulfment in flames at temperatures of 800 degrees C (1475 degrees F) for a period of 30 minutes.



Class 8 - Corrosives

Division 8 - Corrosives - Guide #153

Health:

- TOXIC; Inhalation, ingestion, or skin contact with material may cause severe injury or death.
- Contact with molten substance may cause severe burns to skin and eyes.
- Avoid any skin contact.
- Effects of contact or inhalation may be delayed.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and /or toxic and cause pollution.

**Fire or Explosion**

- Combustible material: may burn but does not ignite readily.
 - When heated, vapors may form explosive mixtures with air: indoors, outdoors, and sewers explosion hazards.
 - Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
 - Contact with metals may evolve flammable hydrogen gas.
 - Containers may explode when heated.
 - Runoff may pollute waterways.
 - Substance may be transported in a molten form.
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Class 9 - Miscellaneous

Division 9 - Miscellaneous Guide #171

Fire or Explosion:

- Some may burn but non ignite readily.
- Those substances designated with a “P” may polymerize explosively when heated or involved in a fire.
- Containers may explode when heated.
- Some may be transported hot.

Health:

- Inhalation of materials may be harmful.
- Contact may cause burns to skin and eyes.
- Inhalation of Asbestos dust may have a damaging effect on the lungs.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.



Guide #111**Fire or Explosion:**

- May explode from heat, shock, friction or contamination.
- May react violently or explosively on contact with air, water or foam.
- May be ignited by heat, sparks or flames.
- Vapors may travel to source of ignition and flash back.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

Health:

- Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death.
- High concentration of gas may cause asphyxiation without warning.
- Contact may cause burns to skin and eyes.
- Fire or contact with water may produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.



Identifying Hazardous Materials

Markings on buildings

Blue - HEALTH HAZARD

- 4 Materials that on very short exposure could cause death or major residual injury.
- 3 Materials that on short exposure could cause serious temporary or residual injury.
- 2 Materials that on intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury.
- 1 Materials that on exposure would cause irritation but only minor residual injury.
- 0 Materials that on exposure under fire conditions would offer no hazard

Red - Fire Hazard

- 4 Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or that are readily dispersed in air and that will burn readily.
- 3 Liquids and solids that can be ignited under almost all ambient temperature conditions.

Yellow- Reactivity (Instability)

- 4 Materials that in themselves are readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.
- 3 Materials that in themselves are capable of detonation or explosive decomposition but require a strong initiating source or which must be heated under confinement before initiation or which react explosively with water.
- 2 Materials that readily undergo violent chemical change at elevated temperatures and pressures or which react violently with water or which may form explosive mixtures with water.
- 1 Materials that in themselves are normally stable, but which become unstable at elevated temperatures and pressures.
- 0 Materials that in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

Identifying Hazardous Materials

Markings on buildings

