

Class 1 - Explosives

CLASS 1 – EXPLOSIVES SUB-DIVISIONS

Division 1.1: Substances and articles which have a mass explosion hazard

Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard

Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both

Division 1.4: Substances and articles which present no significant hazard; only a small hazard in the event of ignition or initiation during transport with any effects largely confined to the package

Division 1.5: Very insensitive substances which have a mass explosion hazard

Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard

What are Class 1 dangerous goods and why are they classed as dangerous?

Class 1 goods are products that possess the ability to alight or detonate as a consequence of a chemical reaction.

Explosives are classified as a hazardous product for a pretty clear reason – they can explode.

Naturally, goods that are partial to spontaneous combustion during transit if they aren't properly handled are an issue – however, you may be surprised by some of the items that are in this category.

Examples Of Commonly Transported Class 1 Explosive Goods

- Ammunition
- Fireworks
- Flares
- Blasting caps and detonators
- Fuse
- Primers
- Explosive charges such as those used for blasting, demolition, etc.

- Detonating cord
- Air bag inflators
- Igniters
- Rockets
- TNT
- RDX
- PETN

Class 2 - Gases

CLASS 2 – GASES SUB-DIVISIONS

Division 2.1: Flammable gases

Division 2.2: Non-flammable, non-toxic gases

Division 2.3: Toxic gases

What are Class 2 dangerous goods and why are they classed as dangerous?

Class 2 consists of compressed gases, gases in their liquefied form, refrigerated gases, mixtures of gases with other vapours and products charged with gases or aerosols. These are considered hazardous goods for many reasons; often they are flammable, they can oxidize (chemically react with oxygen), act as asphyxiants and be toxic or corrosive.

Although it is a lot easier to identify gases based on their physical states and substances, identifying the most commonly transported gases is still worthwhile.

Examples of Commonly Transported Class 2 Gases

- Aerosols
- Compressed air
- Hydrocarbon gas-powered devices
- Fire extinguishers
- Gas cartridges
- Fertilizer ammoniating solution
- Insecticide gases
- Refrigerant gases

- Lighters
- Acetylene / Oxyacetylene
- Carbon dioxide
- Helium / helium compounds
- Hydrogen / hydrogen compounds
- Oxygen / oxygen compounds
- Nitrogen / nitrogen compounds
- Natural gas
- Oil gas
- Petroleum gases
- Butane
- Propane
- Ethane
- Methane
- Dimethyl ether
- Propene / propylene
- Ethylene

Clss 3 - Flammable Liquids

What are Class 3 dangerous goods and why are they classed as dangerous?

Flammable liquids are liquids, mixtures of liquids or liquids containing solids that require a much lower temperature than others to ignite – often temperatures that may be reached during transportation. Due to this, flammable liquids are very volatile and easily combustible. This means that these goods will need to be transported more carefully and with their individual needs in mind.

Again, some of these products may surprise you, so it's worth perusing the list.

Examples of Commonly Transported Class 3 Flammable Liquids

- Acetone
- Paints, lacquers and varnishes
- Alcohols
- Perfumery products

- Gasoline / Petrol
- Diesel fuel
- Aviation fuel
- Liquid bio-fuels
- Coal tar
- Petroleum crude oil
- Adhesives
- Gas oil
- Shale oil
- Heating oil
- Kerosene
- Resins
- Tars
- Turpentine
- Carbamate insecticides
- Organochlorine pesticides
- Organophosphorus pesticides
- Copper based pesticides
- Esters
- Ethers
- Ethanol
- Benzene
- Methanol
- Octanes

Class 4 - Flammable Solids

CLASS 4 – FLAMMABLE SOLIDS; SUBSTANCES LIABLE TO SPONTANEOUS COMBUSTION;
SUBSTANCES WHICH EMIT FLAMMABLE GASES WHEN IN CONTACT WITH WATER SUB-DIVISIONS

Division 4.1: Flammable solids

Division 4.2: Substances liable to spontaneous combustion

Division 4.3: Substances which, in contact with water, emit flammable gases

What are Class 4 dangerous goods and why are they classed as dangerous?

Flammable solids are classified as products that are easily combustible and likely to cause or contribute to fire under the conditions they'll encounter in transport. This is usually due to a number of factors – some goods are self-reactive and can have strong exothermic reactions, some are liable to spontaneously heat up in normal conditions and some goods even heat up on contact with air. All of these things means that these products are liable to catch alight.

Examples of Commonly Transported Class 4 Flammable Solids

- Alkali metals
- Metal powders
- Aluminium phosphide
- Sodium batteries
- Sodium cells
- Firelighters
- Matches
- Calcium carbide
- Camphor
- Carbon
- Activated carbon
- Celluloid
- Cerium
- Copra
- Seed cake
- Oily cotton waste
- Desensitized explosives
- Oily fabrics
- Oily fibres
- Ferrocerium
- Iron oxide (spent)
- Iron sponge/direct-reduced iron (spent)
- Metaldehyde
- Naphthalene

- Nitrocellulose
- Phosphorus
- Sulphur

Class 5 - Oxidising Substances and Organic Peroxides

CLASS 5 – OXIDIZING SUBSTANCES; ORGANIC PEROXIDES SUB-DIVISIONS

Division 5.1: Oxidizing substances

Division 5.1: Organic peroxides

What are Class 5 dangerous goods and why are they classed as dangerous?

Class 5 goods – AKA oxidizers – are substances that can cause or be party to combustion typically by yielding oxygen as a product of chemical reactions. Although oxidizers are not necessarily combustible individually, the oxygen they yield can cause combustion with other materials.

Organic peroxides, on the other hand, are likely to combust individually. An organic peroxide is a substance formed of organic compounds that are derivative of hydrogen peroxide; in organic peroxide, however, one or more of the hydrogen atoms in the chemical structure is replaced by organic radicals. Due to their nature, organic peroxides are thermally unstable and can give off heat.

“Additionally, organic peroxides may be liable to explosive decomposition, burn rapidly, be sensitive to impact or friction, react dangerously with other substances or cause damage to eyes.”
– Dgiglobal.com

Examples of Commonly Transported Class 5 Oxidizers and Organic Peroxides

- Chemical oxygen generators
- Ammonium nitrate fertilizers
- Chlorates
- Nitrates
- Nitrites
- Perchlorates
- Permanganates
- Persulphates

- Aluminium nitrate
- Ammonium dichromate
- Ammonium nitrate
- Ammonium persulphate
- Calcium hypochlorite
- Calcium nitrate
- Calcium peroxide
- Hydrogen peroxide
- Magnesium peroxide
- Lead nitrate
- Lithium hypochlorite
- Potassium chlorate
- Potassium nitrate
- Potassium chlorate
- Potassium perchlorate
- Potassium permanganate
- Sodium nitrate
- Sodium persulphate

Class 6 - Toxic and Infectious Substances

CLASS 6 – TOXIC SUBSTANCES; INFECTIOUS SUBSTANCES SUB-DIVISIONS

Division 6.1: Toxic substances

Division 6.2: Infectious substances

What are Class 6 dangerous goods and why are they classed as dangerous?

This one's pretty obvious; toxic substances are, well, toxic – they're liable to cause death, serious injury or significant harm to human or animal health if they come into contact. This can be through swallowing, inhalation or skin contact.

Infectious substances are . . . again, reasonably obvious; infectious substances are infectious and are likely to cause disease in humans or animals. These substances are classified as substances

that are known or expected to contain pathogens. (Pathogens are also known as micro-organisms such as bacteria, viruses, parasites or fungi and more.)

The goods in Class 6 pose a large risk to animal and human health, which is why they need to be handled cautiously.

Examples Of Commonly Transported Class 6 Toxic Substances and Infectious Substances

- Medical/Biomedical waste
- Clinical waste
- Biological cultures / samples / specimens
- Medical cultures / samples / specimens
- Tear gas substances
- Motor fuel anti-knock mixture
- Dyes
- Carbamate pesticides
- Alkaloids
- Allyls
- Acids
- Arsenates
- Arsenites
- Cyanides
- Thiols/mercaptans
- Cresols
- Barium compounds
- Arsenics / arsenic compounds
- Beryllium/ beryllium compounds
- Lead compounds
- Mercury compounds
- Nicotine / nicotine compounds
- Selenium compounds
- Antimony
- Ammonium metavanadate
- Adiponitrile

- Chloroform
- Dichloromethane
- Hexachlorophene
- Phenol
- Resorcinol

Class 7 - Radioactive Material

What are Class 7 dangerous goods and why are they classed as dangerous?

Class 7 goods are radioactive materials that emit ionizing radiation when they experience radioactive decay. This presents risks to human health.

Radioactive material is defined as any material that contains radionuclides that exceed certain values on its activity concentration and total activity. Radionuclides are atoms with an unstable nucleus – unstable nuclei release radioactive energy.

Examples Of Commonly Class 7 Transported Radioactive Materials

- Radioactive ores
- Medical isotopes
- Yellowcake
- Density gauges
- Mixed fission products
- Surface contaminated objects
- Caesium radionuclides / isotopes
- Iridium radionuclides / isotopes
- Americium radionuclides / isotopes
- Plutonium radionuclides / isotopes
- Radium radionuclides / isotopes
- Thorium radionuclides / isotopes
- Uranium radionuclides / isotopes
- Depleted uranium / depleted uranium products
- Uranium hexafluoride
- Enriched Uranium

Class 8 - Corrosives

What are Class 8 dangerous goods and why are they classed as dangerous?

Class 8 dangerous goods are defined as dangerous goods because they are corrosive. Due to their nature, corrosive substances cause chemical reactions that degrade or disintegrate other materials when they come into contact with each other.

This can cause severe injury when coming into contact with living tissue – however, in terms of transport, it can also damage and destroy surrounding materials if not transported properly.

Examples of Commonly Transported Class 8 Corrosives

- Acids/acid solutions
- Batteries
- Battery fluid
- Fuel cell cartridges
- Dyes
- Fire extinguisher charges
- Formaldehyde
- Flux
- Paints
- Alkylphenols
- Amines
- Polyamines
- Sulphides
- Polysulphides
- Chlorides
- Chlorosilanes
- Bromine
- Cyclohexylamine
- Phenol / carbolic acid
- Hydrofluoric acid
- Hydrochloric acid
- Sulfuric acid

- Nitric acid
- Sludge acid
- Hydrogen fluoride
- Iodine
- Morpholine

Class 9 - Miscellaneous Dangerous Goods

What are Class 9 dangerous goods and why are they classed as dangerous?

Goods in Class 9 of dangerous goods are simply products that present dangers during transport that haven't been covered in the other classes.

Some of the items this class includes, but is not limited to, include:

“Environmentally hazardous substances, substances that are transported at elevated temperatures, miscellaneous articles and substances, genetically modified organisms and micro-organisms and (depending on the method of transport) magnetized materials and aviation regulated substances.” – Dgiglobal.com

Examples of Commonly Transported Class 9 Miscellaneous Dangerous Goods

- Dry ice / cardice / solid carbon dioxide
- Expandable polymeric beads / polystyrene beads
- Ammonium nitrate fertilizers
- Blue asbestos / crocidolite
- Lithium ion batteries
- Lithium metal batteries
- Battery powered equipment
- Battery powered vehicles
- Fuel cell engines
- Internal combustion engines
- Vehicles
- Magnetized material
- Dangerous goods in apparatus
- Dangerous goods in machinery

- Genetically modified organisms
- Genetically modified micro-organisms
- Chemical kits
- First aid kits
- Life saving appliances
- Air bag modules
- Seatbelt pretensioners
- Plastics moulding compound
- Castor bean plant products
- Polychlorinated biphenyls
- Polychlorinated terphenyls
- Dibromodifluoromethane
- Benzaldehyde