

## How to Work Safely with

# How to Work Safely with - Hazardous Products using the "Flame Over Circle" Pictogram

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## What does this pictogram mean?

The symbol within the pictogram shows an "o" with flames on top of it and a line underneath it. The "o" is for oxygen and the flames indicate that hazardous products with this pictogram present a fire or explosion hazard if they are not stored and handled properly.



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## Which hazard classes use the flame over circle pictogram?

This pictogram is used for three WHMIS 2015 physical hazard classes:

- Oxidizing gases – Category 1

- Oxidizing liquids – Category 1, Category 2, and Category 3
- Oxidizing solids – Category 1, Category 2, and Category 3

The three oxidizer hazard classes have different physical states, but all pose fire and/or explosion hazards if appropriate handling and storage precautions are not followed.

## What are the hazards of products that have the flame over circle pictogram?

The flame over circle pictogram is only used for hazardous products that are oxidizing solids, liquids or gases.

The basic components for a fire are a source of fuel (such as combustible materials), a source of oxygen, and a spark or other source of ignition. With most fires, the source of oxygen is air (air has about 21% oxygen). Oxidizing solids, liquids or gases readily release oxygen or another oxidizing substance (such as bromine, chlorine, or fluorine). Therefore, these products pose a severe fire hazard. Oxidizers do not burn themselves, but oxidizers can:

- greatly increase the rate that a fire develops and make the fire more intense (that is, the fire burns hotter and faster than it normally would),
- cause substances that do not normally burn in air to burn rapidly,
- cause some combustible materials to burn spontaneously without the presence of obvious ignition sources such as a spark or flame.

## What signal words and hazard statements are used?

The WHMIS 2015 signal words and hazard statements for oxidizing gases, liquids and solids are:

<b>Hazard Class and Category</b>	<b>Signal Word</b>	<b>Hazard Statement</b>
Oxidizing gases – Category 1	Danger	May cause or intensify fire; oxidizer
Oxidizing liquids – Category 1 Oxidizing solids – Category 1	Danger	May cause fire or explosion; strong oxidizer
Oxidizing liquids – Category 2 Oxidizing solids - Category 2	Danger	May intensify fire; oxidizer
Oxidizing liquids – Category 3 Oxidizing solids - Category 3	Warning	May intensify fire; oxidizer

## Are there other hazards associated with products that have the flame over circle pictogram?

In addition to the specific hazards identified by the flame over circle pictogram, it is important to remember that the product may have other hazards, for example:

- **health hazards** such as acute toxicity, skin corrosion or irritation, carcinogenicity or specific target organ toxicity – repeated or single exposure.
- other **physical hazards** such as corrosive to metals
- **react with many other materials** – check Section 10 (Stability and Reactivity) of the Safety Data Sheet (SDS) for incompatible materials. Keep the oxidizing product away from these materials.

ALWAYS check the SDS and label for the product that you are working with to ensure that you know what is being used and all of the hazards and precautions associated with the product. Ask questions if you are not sure.

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## How can products with the flame over circle pictogram be handled safely?

- ALWAYS Check the SDS for information about ALL of the hazards and the necessary precautions for the product being used. Ask questions if you are not sure.
- If it is not possible to eliminate use of the hazardous product in your workplace, evaluate whether it is possible to [substitute](#) it with a less hazardous product.
- For liquids and solids, keep away from heat, hot surfaces, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials.
- For gases, keep valves and fittings free from oil and grease.
- Use only in [well-ventilated](#) areas.
- Avoid contact with your skin or clothing.
- Wear protective gloves, protective clothing, eye protection and/or face protection, if required.
- Wear fire resistant or flame retardant clothing, if required.
- If personal protective equipment is required, workers must be thoroughly trained in its selection, fit, use and maintenance.
- Promptly remove combustible wastes, including wood, paper and rags from work areas.
- Keep away from incompatible materials - particularly greases, lubricants, cleaning solvents, paints, or thinners.

- Be very cautious about mixing oxidizers with water. Follow the supplier's directions. Some oxidizers will generate large amounts of heat when they are mixed with water.
- Never return unused product to the original container, even if it does not appear to be contaminated.
- Keep containers tightly closed when not in use, unless the supplier instructs otherwise.
- If applicable, check vent caps regularly to ensure they are working properly. Keep vented containers in the upright position. Never stack vented containers on top of each other.
- Avoid spilling product. Immediately report leaks, spills or failures of the safety equipment (e.g., ventilation system). In the event of a spill or leak, exit the area immediately.
- Keep work areas clean and tidy. Wipe up spills and keep surfaces clean to prevent contact with skin or incompatibles. Prevent accumulation of dust or other residues on ledges or other surfaces.
- Do not smoke, eat or drink in work areas. Wash hands thoroughly after handling. Wash hands before eating, drinking, smoking, or going to the toilet.
- Inform maintenance personnel of the product hazards, and any special procedures and precautions needed before work begins.

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## How can products with the flame over circle pictogram be stored safely?

- Follow any special instructions for storage provided on the SDS (e.g., maximum quantities and recommended temperature conditions).
- Store product in containers that the supplier recommends. Normally these are the same containers in which the product was shipped.
- Store away from incompatible materials listed on the SDS.
- Store gases in a well-ventilated place.
- Store oxidizing liquids or solids separately.
- Store in a cool, dry area away from direct sunlight and exit paths. Post warning signs.
- Store away from ignition sources such as heat, sparks or open flames. Prohibit smoking in or near the storage area.
- Avoid storing large quantities, if possible.
- Inspect storage area and containers for signs of leakage or damage regularly. Contain spills or leaks by storing product containers in trays made from compatible materials.
- Empty containers may contain hazardous residue. Store separately. Keep closed.

- Do not use wooden pallets or other combustible pallets for storing containers of oxidizing products. Walls, floors, shelving, and fittings in storage areas should be constructed of non-combustible materials.
  - Ensure that appropriate fire-fighting and spill clean-up equipment is readily available.
  - Follow all applicable health and safety regulations, fire and building codes.
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## What should I do in case of an emergency?

- Understand and practice emergency procedures so that you know what to do if it becomes necessary.
  - Ensure that appropriate fire extinguishers are available for use in case of a fire involving liquids or solids. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion
  - For gases, in case of fire, stop leak if safe to do so.
  - Be aware of at least two different exit paths in the event of fire.
  - Ensure that eyewash and emergency shower are readily available in the immediate work area. These devices must be tested regularly.
  - Have spill control procedures and equipment ready (e.g., absorbent spill control materials, personal protective equipment, non-sparking tools, etc.). Avoid using combustible or reactive materials (such as paper towels or sawdust) to clean up or absorb spills.
  - Immediately report leaks to your supervisor, warn people in the area, and move to a safe location, if necessary.
  - In case of contact, follow the first aid instructions listed on the SDS or label.
  - Remove contaminated clothing, shoes or boots. If the product is not water-reactive, immediately and thoroughly wash contaminated items in water before re-wearing or discarding.
  - IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
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Fact sheet first published: 2017-10-20

Fact sheet last revised: 2017-10-20

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