

Chemical Profiles

Gasoline

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What are other names or identifying information for gasoline?

CAS Registry No.: 8006-61-9

Other Names: Automotive gasoline, Petrol, Unleaded gasoline, motor fuel, motor spirits

Main Uses: Fuel, industrial solvent

Appearance: Clear colourless - amber volatile liquid.

Odour: Gasoline-like

Canadian TDG: UN1203

What is the WHMIS classification?

According to the Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), [gasoline](#) can be classified as:

Flammable liquids - Category 2



Germ cell mutagenicity - Category 1B



Carcinogenicity - Category 2



Specific target organ toxicity - single exposure (narcotic effects) - Category 3 - Narcotic effect



Aspiration hazard - Category 1



The signal word is danger.

The hazard statements are:

- Highly flammable liquid and vapour
- May cause genetic defects
- Suspected of causing cancer
- May cause drowsiness or dizziness
- May be fatal if swallowed and enters airways

Please note that this classification was retrieved from the CNESST site on February 22, 2023 and was established by CNESST personnel to the best of their knowledge based on data obtained from scientific literature and it incorporates the criteria contained in the Hazardous Products Regulations (SOR/2015-17). It does not replace the supplier's classification which can be found on its Safety Data Sheet.

What are the most important things to know about gasoline in an emergency?

Emergency Overview: Clear colourless - amber volatile liquid. Gasoline-like odour. HIGHLY FLAMMABLE LIQUID AND VAPOUR. Distant ignition and flashback are possible. Can accumulate static charge. Can float on water and spread fire. CONFINED SPACE HAZARD. Can accumulate in hazardous amounts in low-lying areas especially inside confined spaces. May cause drowsiness and dizziness. SUSPECT CANCER HAZARD. Suspected of causing cancer. ASPIRATION hazard. May be fatal if swallowed and enters airways.

What are the potential health effects of gasoline?

Main Routes of Exposure: Inhalation. Skin contact. Eye contact.

- **Inhalation:** Can irritate the nose and throat. Can harm the nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness.
- **Skin Contact:** May cause mild irritation. Repeated or prolonged exposure can irritate the skin. Not expected to be absorbed through the skin. Any skin contact will also involve significant inhalation exposure.
- **Eye Contact:** Not irritating.
- **Ingestion:** Can irritate the mouth, throat and stomach. Can cause effects as described for inhalation. Aspiration hazard. May be drawn into the lungs if swallowed or vomited, causing severe lung damage. Death can result.
- **Effects of Long-Term (Chronic) Exposure:** Can cause dry, red, cracked skin (dermatitis) following skin contact. Gasoline is a complex mixture containing as many as 250 separate hydrocarbons including several with well-established toxicity (e.g., benzene, toluene, xylenes, and n-hexane). However, there is little information available regarding the potential effects from long-term occupational exposure to gasoline itself. Most of the information available relates to neurotoxic effects from intentional long-term abuse or "sniffing" of gasoline. These extreme exposures are not relevant to occupational exposures. Effects on the blood, which have been seen in some studies, are most likely from the presence of benzene or lead in the gasoline.

- **Carcinogenicity:** Possible carcinogen. May cause cancer based on animal information. Has been associated with: cancer of the blood or blood system, kidney cancer.
 - International Agency for Research on Cancer (IARC): Group 2B - Possibly carcinogenic to humans.
 - American Conference for Governmental Industrial Hygienists (ACGIH): A3 - Confirmed animal carcinogen.
 - **Teratogenicity / Embryotoxicity:** Not known to harm the unborn child.
 - **Reproductive Toxicity:** Not known to be a reproductive hazard.
 - **Mutagenicity:** Conclusions cannot be drawn from the limited studies available. Gasoline contains variable amounts of benzene, a known mutagen.
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What are first aid measures for gasoline?

Inhalation: Take precautions to prevent a fire (e.g., remove sources of ignition). Take precautions to ensure your own safety before attempting rescue (e.g., wear appropriate protective equipment). Move victim to fresh air. Get medical attention if the victim feels unwell.

Skin Contact: Immediately remove contaminated clothing, shoes and leather goods (e.g., watchbands, belts). Quickly and gently blot or brush away excess chemical. Wash gently and thoroughly with gently flowing water and non-abrasive soap. Get medical attention if irritation continues. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact: Quickly and gently blot or brush chemical off the face. Immediately flush the contaminated eye(s) with gently flowing water occasionally lifting the upper and lower eyelids. If irritation or pain persists, get medical attention.

Ingestion: Have victim rinse mouth with water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Get medical attention immediately.

First Aid Comments: All first aid procedures should be periodically reviewed by a medical professional familiar with the chemical and its conditions of use in the workplace.

What are fire hazards and extinguishing media for gasoline?

Flammable Properties: HIGHLY FLAMMABLE LIQUID. Can ignite at room temperature. Releases vapour that can form an explosive mixture with air. Can be ignited by static discharge.

Suitable Extinguishing Media: Carbon dioxide, dry chemical powder, appropriate foam, water spray or fog. Foam manufacturers should be consulted for recommendations regarding types of foams and application rates.

Specific Hazards Arising from the Chemical: Liquid can float on water and may travel to distant locations and spread the fire. Liquid can accumulate static charge by flow, splashing or agitation. Vapour may travel a considerable distance to a source of ignition and flash back to a leak or open container. Vapour may accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a toxicity hazard. Closed containers may rupture violently when heated releasing contents. Thermal decomposition and combustion products are highly dependent on combustion conditions and the type of additives and impurities present. In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide; corrosive, oxidizing nitrogen oxides; very toxic polycyclic aromatic hydrocarbons; corrosive sulfur oxides; and other chemicals.

What are the stability and reactivity hazards of gasoline?

- **Chemical Stability:** Normally stable.
 - **Conditions to Avoid:** Open flames, sparks, static discharge, heat and other ignition sources.
 - **Incompatible Materials:** Increased risk of fire and explosion on contact with: oxidizing agents (e.g., peroxides). Not corrosive to metals.
 - **Hazardous Decomposition Products:** None known.
 - **Possibility of Hazardous Reactions:** None known.
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What are unintentional release measures for gasoline?

Personal Precautions: Eliminate all ignition sources. Use grounded, explosion-proof equipment. Use personal protective equipment as required.

Methods for Containment and Clean-up: Stop or reduce a leak if safe to do so. Small spills or leaks: contain and soak up spill with absorbent that does not react with spilled product. Do NOT use combustible materials such as sawdust. Flush spill area. Large spills or leaks: contact emergency services and manufacturer/supplier for advice.

What handling and storage practices should be used when working with gasoline?

Handling: Immediately report leaks, spills or failures of the safety equipment (e.g., ventilation system). Eliminate heat and ignition sources such as sparks, open flames, hot surfaces and static discharge. Post "No Smoking" signs. Do not use near welding operations or other high energy sources. Electrically bond and ground equipment. Ground clips must contact bare metal. Prevent unintentional contact with incompatible chemicals.

Storage: Store in an area that is: cool, dry, well-ventilated, out of direct sunlight and away from heat and ignition sources, secure and separate from work areas. Electrically bond and ground containers. Ground clips must contact bare metal. Keep the amount in storage to a minimum.

What is the American Conference of Governmental Industrial Hygienists (ACGIH®) recommended exposure limit for gasoline?

ACGIH® TLV® - TWA: 300 ppm A3

ACGIH® TLV® - STEL [C]: 500 ppm A3

Exposure Guideline Comments: TLV® = Threshold Limit Value. TWA = Time-Weighted Average. STEL = Short-term Exposure Limit. C = Ceiling limit. A3 = Animal carcinogen.

Adapted from: 2022 TLVs® and BEIs® - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati: American Conference of Governmental Industrial Hygienists (ACGIH)

NOTE: In many (but not all) Canadian jurisdictions, the exposure limits are similar to the ACGIH® TLVs®. Since legislation varies by jurisdiction, contact your local jurisdiction for exact details. A list is available in the OSH Answers on [Canadian Governmental Occupational Health & Safety Departments](#).

A list of which acts and regulations that cover [exposure limits to chemical and biological agents](#) is available on our website. Please note that while you can see the list of legislation for free, you will need a subscription to view the actual documentation.

What are the engineering controls for gasoline?

Engineering Controls: Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored. Control static electricity discharges which includes bonding of equipment to ground.

What Personal Protective Equipment (PPE) is needed when working with gasoline?

Eye/Face Protection: Not required but it is good practice to wear safety glasses or chemical safety goggles.

Skin Protection: Wear chemical protective clothing e.g. gloves, aprons, boots. [Suitable materials](#) for gasoline (unleaded) include: nitrile rubber, Viton®, Viton®/Butyl rubber, AlphaTec® (02-100, 4000), Kemblok®, Chemprotex® 300, Frontline® 500, Zytron® (300, 500). Recommendations are NOT valid for very thin nitrile rubber gloves (0.3 mm or less).

Not recommended: butyl rubber, natural rubber, neoprene rubber, polyvinylchloride – PVC, Saranex®.

Respiratory Protection:

At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode; or Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

The NIOSH Recommended Exposure Limit (REL) for gasoline has not been established.

APF = Assigned Protection Factor

Recommendations apply only to National Institute for Occupational Safety and Health (NIOSH) approved respirators. Refer to the [NIOSH Pocket Guide to Chemical Hazards](#) for more information.

NOTE: NIOSH has classified this substance as a potential occupational carcinogen, according to specific NIOSH criteria. This classification is reflected in these recommendations for respiratory protection, which specify that only the most reliable and protective respirators be worn at any detectable concentration. The requirements in Canadian jurisdictions may vary.

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