

# PROPANE USED AS AN ENGINE FUEL IN EQUIPMENT OTHER THAN MOTOR VEHICLES

**Am I allowed to use my propane-fuelled forklift, propane-fuelled floor maintenance machine, industrial tractor, etc. inside a building?**

Some compliant propane-fuelled pieces of equipment are acceptable for use indoors. While there are some requirements in the National Fire Code – 2019 Alberta Edition (NFC(AE)), the CSA B149.2-15 Propane Storage and Handling Code is also in force in Alberta, and includes requirements regarding propane storage, and operation of propane-fuelled fork lifts (lift truck), industrial tractors, and cleaning/polishing equipment inside buildings.

One of the main points of concern while the equipment is in operation, is a build-up of carbon monoxide inside the building. CSA B149.2-15 sets out the minimum requirements for proper mechanical ventilation rates within a building when a propane-fuelled forklift or industrial tractor is used. It is the responsibility of the equipment supplier (i.e. propane-fuelled forklift or industrial tractor) to inform the user of the mechanical ventilation rate requirements and to ensure the equipment is in safe operating condition at the time of delivery of the equipment.

Propane containers used to fuel equipment can either be removable or permanently mounted to the vehicle. Regardless, there are a number of general safety requirements for the propane containers used to fuel equipment, such as:

- the cylinder shall be firmly secured to the vehicle.
- a cylinder not connected for use shall be stored outdoors.
- a cylinder in storage shall have the cylinder valve closed.
- propane cylinders shall not be stored or installed under any fire escape, stairway, or ramp used as a means of egress from a building.
- it the responsibility of the user to remove from service any propane-fueled vehicle where the equipment or cylinder is damaged or malfunctioning.
- the engine and any appliance or other equipment providing a source of ignition shall be turned off before filling operations.
- an industrial tractor or fork lift equipped with a permanently mounted cylinder shall be filled outdoors, remote from a source of ignition, and with the engine turned off.
- each propane-fueled industrial truck shall be equipped with at least one portable extinguisher having a minimum rating of 2-A:30-B:C.



# SAFETY TIPS

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- fuel-fired industrial trucks that are fueled by replaceable propane cylinders are permitted to have their cylinders replaced indoors provided that:
  - cylinder replacement is done at a safe location that is at least 7.5 m from ignition sources, open pits and underground entrances,
  - the cylinders' valves are closed,
  - an automatic quick-closing coupling that closes in both directions when uncoupled is not provided, the engine is operated until the fuel in the system is consumed.

When it comes to propane-fuelled cleaning and polishing equipment, cylinders must have an excess-flow valve, and not have a capacity exceeding 33-1/3 lb (15 kg). When the cylinder is attached to the cleaning or polishing unit for use, it must be attended by the operator at all times.

CSA B149.2-15 allows for the indoor parking of approved propane-fuelled equipment. However, it should be noted that service rooms are not designed to accommodate propane-fuelled equipment. Service rooms are designed to include boilers, furnaces, incinerators, etc. and parking of propane-fuelled equipment in these service rooms is prohibited.

If a storage room is used to park the equipment, the storage room or area must be separated from the remainder of the building by a fire separation constructed in accordance with the National Building Code -2019 Alberta Edition (NBC(AE)) or the building code of the day in which the building was constructed to. Contact the local authority having jurisdiction (AHJ) – Building Codes department to inquire about the requirements for a storage room to accommodate the parking of a propane-fuelled piece of equipment within your business.

When a cleaning or polishing unit is not in use and stored indoors, the cylinder must be removed and stored in accordance with related Code requirements. The following are some safety requirements that need to be adhered to when parking a propane-fuelled vehicle indoors:

- a propane-fueled vehicle may be parked or serviced indoors, provided that there are no leaks in the propane system and that the cylinder is not filled beyond its maximum permitted filling density.
- a propane cylinder on a vehicle that is parked or being serviced indoors shall not be exposed to temperatures in excess of 100°F (38 °C).
- a propane-fueled vehicle under repair indoors shall have any container shut-off valve closed except when propane is required for engine operation.
- when the propane system on a vehicle is being serviced indoors, the vehicle shall not be parked within 10 ft (3 m) of an open flame, any source of ignition, or an open pit or drain.



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There are specific safety requirements for propane-fueled ice maintenance equipment when they are parked indoors over a pit. In these instances the space shall be:

- vented to the outdoors by mechanical means interlocked with a gas detector. The ventilation rate shall be of a capacity of at least 2 cfm per ft<sup>2</sup> (0.61 m<sup>3</sup>/min per m<sup>2</sup>) of floor area of the enclosure; and
- equipped with a gas detector set to operate at 0.4% propane concentration that has been installed in accordance with the manufacturer's installation instructions. The detector shall be interlocked to shut off any fuel-fired appliances located in the enclosure and shall operate the ventilation fan and audible and visual alarms.

**NOTE:** Please contact the local Authority Having Jurisdiction for any questions regarding this Safety Tip.

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### Contact

#### Community and Technical Support branch of Municipal Affairs:

Hours: 8:15 am to 4:30 pm (open Monday to Friday, closed statutory holidays)

Toll free: 1-866-421-6929

Email: [safety.services@gov.ab.ca](mailto:safety.services@gov.ab.ca)

**Please contact your local Fire Department for any questions regarding this Safety Tip.**

