
Forklift Propane Tank Leak Test Safety Standard Operating Procedure

1.0 Objective & Intent

The objective of this SOP is to establish a standardized, safe procedure for conducting a propane tank leak test on forklifts used within the cabinet and millwork manufacturing facility. This procedure is designed to mitigate the risk of propane gas leaks, which can lead to fire, explosion, asphyxiation, and serious injury or death. Compliance with WorkSafeBC regulations (OHS Regulation Part 12 – Tools, Machinery and Equipment, and Part 31 – Fire Prevention) is mandatory. This SOP ensures that all leak tests are performed consistently, documented properly, and that any detected leaks are addressed immediately to maintain a safe working environment.

2.0 Operational Scope

This procedure applies to all propane-powered forklifts operating within the cabinet and millwork manufacturing facility, including the main production floor, warehouse, and outdoor loading docks. It is applicable to all maintenance personnel, forklift operators, and any authorized personnel required to perform or witness a propane tank leak test. This SOP covers the inspection of the propane tank, its connections, hoses, and the fuel system up to the engine. It does not cover the replacement of the tank or repair of leaking components, which must be performed by a qualified technician following separate procedures.

3.0 Hazard Identification & Mandatory PPE

- Fire and Explosion: Propane is highly flammable. Any spark or ignition source near a leak can cause a fire or explosion.
- Asphyxiation: Propane is heavier than air and can displace oxygen in confined spaces, leading to suffocation.
- Frostbite: Direct contact with escaping liquid propane can cause severe frostbite on skin or eyes.
- Pinch Points: Tank mounting brackets and valve handles can cause hand injuries if not handled carefully.
- CSA-Approved Safety Glasses with side shields
- CSA-Approved Steel Toed Boots
- Leather or Nitrile Gloves (cut-resistant recommended)
- Flame-Resistant (FR) Coveralls or Lab Coat (if available)
- Hearing Protection (if in a noisy area)

4.0 Required Safety Equipment & Tools

- Lockout/Tagout (LOTO) Kit with personal lock and hasp
- Propane leak detection solution (e.g., Snoop liquid leak detector or soapy water in a spray bottle)
- Approved combustible gas detector (calibrated and bump tested)
- Fire extinguisher (Class B:C rated, minimum 10 lb) located within 10 meters
- Spill containment kit (for any propane liquid or oil leaks)
- Non-sparking tools (e.g., brass or plastic wrenches) for valve adjustments
- Warning signs or barricade tape to cordon off the test area
- Ventilation fan (if testing indoors in a low-lying area)

5.0 Step-by-Step Safety Procedure

1. Notify all personnel in the immediate area that a propane leak test is about to be performed. Ensure no open flames, smoking, or other ignition sources are present within 15 meters of the test area. Post warning signs and barricade the zone.
2. Position the forklift in a well-ventilated area, preferably outdoors or under a canopy with forced air ventilation. If indoors, ensure the area is equipped with a propane gas detection system and that ventilation fans are operating. Shut off the forklift engine and engage the parking brake.
3. Perform a Lockout/Tagout (LOTO) on the forklift's ignition system by removing the key and placing it in a secure location. Apply a personal lock and tag to the steering wheel or control panel to prevent accidental startup. Verify the forklift is inoperable by attempting to start it (the engine should not crank).
4. Inspect the propane tank and its mounting bracket for any visible damage, dents, rust, or corrosion. Check the tank's hydrostatic test date (stamped on the collar) to ensure it is within the required retest period (typically 5 years for ASME tanks, 12 years for DOT cylinders). If the tank is expired or damaged, do not proceed; tag it out and report to the supervisor.
5. Close the propane tank's service valve by turning it clockwise (righty-tighty) until it is fully seated. Do not overtighten. Wait 30 seconds to allow any residual pressure in the fuel line to dissipate. Then, using a non-sparking tool, slowly open the valve one quarter turn counterclockwise to pressurize the system for testing.
6. Using the approved leak detection solution, spray or brush all connections, fittings, hoses, and the valve stem area. Pay special attention to the tank valve outlet, the regulator connection, the hose ends, and any quick-disconnect couplings. Observe for the formation of bubbles, which indicate a leak. Do not use a flame or electronic detector as the primary method; the solution is the standard.
7. If no bubbles are observed after 2 minutes of observation, the system is considered leak-tight. Proceed to close the service valve fully. If bubbles are detected at any point, immediately close the service valve fully, evacuate the area, and report the leak to the supervisor. Do not attempt to repair the leak yourself. Tag the forklift as unsafe and remove it from service.
8. After a successful test (no leaks), close the service valve fully. Use a combustible gas detector to sweep the area around the tank and connections to confirm no residual gas is present. Record the test results on the forklift's daily inspection log or a dedicated propane leak test form, including the date, time, tank serial number, and the name of the person performing the test.
9. Remove the LOTO device and key from the forklift. Reconnect the propane tank if it was disconnected for the test (ensure the service valve is closed before reconnecting). Start the forklift and allow it to run for 2 minutes, then perform a final visual check of all connections for any signs of leakage using the detection solution. If no leaks are found, the forklift is cleared for use.
10. Clean up the work area. Dispose of any used leak detection solution or rags properly. Return all safety equipment to its designated storage location. Ensure the fire extinguisher is still accessible and has not been discharged. Report any issues or near-misses to the safety supervisor immediately.

Regulatory Disclaimer: This document is a generic safety template provided for educational and informational purposes only. It does not constitute professional engineering, legal, or regulatory compliance advice. The end-user assumes all liability for validating all safety protocols against specific machinery manufacturer manuals and local occupational health and safety regulations (e.g., WorkSafeBC, CSA standards) before deployment.