

# RiskTopics

## Risks of using propane torches in flammable environments

### Zurich Resilience Solutions - Risk Engineering

Propane torches used in flammable environments potentially lead to fire hazards and explosions.

#### Introduction

Torches attached to small propane tanks are a common tool used in construction, manufacturing, roofing and road work for many different reasons, including heating mastics when adhering edges of roofing materials, killing weeds and grass on road surfaces and heating edges of asphalt at “cold joints” when marrying multiple joints during repaving projects. Another common application for this setup is for “unclogging” petroleum emulsions at emulsion and hot mix asphalt plants.

#### Discussion

The propane torch tool is used in asphalt plants by heating the clogged piping with the propane torch until the proper flow is restored. The problem with this application is that these plants are used for large scale storage of flammable petroleum materials, which are used in making the asphalt mix and can catch fire or explode when exposed to open flames. This is also a violation of OSHA standard 29 CFR 1910.106(b)(6) “Sources of ignition.”<sup>1</sup>

In locations where flammable vapors may be present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition. Sources of ignition may include open flames, lightning, smoking, cutting, and welding, hot surfaces, frictional heat, sparks (static, electrical, and mechanical), spontaneous ignition, chemical and physical-chemical reactions, and radiant heat. In cases where petroleum piping is clogged at an asphalt or emulsion plant, non-flammable alternatives should be used, such as heat tracing the piping with non-sparking, electric lines or using pumps to mechanically move the materials instead of relying on gravity fed systems. If using propane torches, the user should have a fire extinguisher of at least 10B for use in the area as per NFPA 10 Section 5.5.1.1.<sup>2</sup>

#### Guidance

Consider these steps for use by employees and employers involved in similar operations:

- The employee and supervisor should be given training on the recognized and associated hazards for the work that is to be performed.
- Provide training on what equipment is needed for the job and how to use this equipment.
- Provide training on what personal protective equipment (PPE) is needed for compliance with OSHA regulations including fire extinguisher requirements, proper use and storage of the equipment and PPE requirements.

- Supervisors should determine that employees are using properly assigned equipment.
- Provide training on the critical parts of the propane tank and how they are protected from danger. Inspect the tank, valve, hoses and torch for any signs of damage prior to each use. Tag out any damaged items until they can be repaired or properly discarded.
- The competent person should have knowledge of the environment around the area where the torch will be used.
- Keep combustible materials, packaging, debris, etc. away from the torch and regularly remove debris and keep the area clean.
- At least a 20 lb. fire extinguisher is recommended within 25 feet of the work area.
- Follow all OSHA regulations and NFPA 58<sup>3</sup> Standards (Standard for the Storage and Handling of Liquefied Petroleum Gases) concerning handling and storage of propane or other burner fuel sources. Propane storage is not allowed within a building.
- Turn off propane tank valves and disconnect the hose whenever the torch assembly is not in immediate use.
- Maintain a 60-minute fire watch after torches are turned off each day.
- Use a daily Hot Work Permit procedure to monitor and control fire hazards and to keep all parties informed as to when a propane torch is in operation.

## Conclusion

The use of propane torches to heat materials to improve their viscosity should be considered a high hazard activity. Before work is performed, it is important to pre-plan the work and make sure all unnecessary hazards and risks were identified and eliminated prior to the start of the heating and to perform routine equipment and work area inspections during heating operations. All hazards should be reviewed, and specific procedures should be developed which take into account any site-specific considerations. These procedures should be reviewed with all involved and affected site personnel prior to the start of work.

For more information on Zurich's extensive Risk Engineering and Sustainability services, please contact your Risk Engineer or visit us at [Risk Engineering and Sustainability Services | Zurich Resilience Solutions](#).

## References

<sup>1</sup> "UNITED STATES DEPARTMENT OF LABOR." Occupational Safety and Health Administration, [www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=9752&p\\_table=STANDARDS](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9752&p_table=STANDARDS).

<sup>2</sup> "NFPA 10." NFPA 10: Standard for Portable Fire Extinguishers, [www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=58](http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=58). Accessed 08 August 2023

<sup>3</sup> "NFPA 58." NFPA 58: Liquefied Petroleum Gas Code, [www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=58](http://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=58). Accessed 25 July 2023.

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