

# Safeguarding Roofing Operations

Allianz Risk Consulting

## Introduction

Roofing operations involving open flames or hot processes present a significant fire hazard. Ignition sources include heated kettles of tar and asphalt, open flame torches and hot-air guns. The installation of torch-applied roofing systems can be particularly hazardous. Torching can reach temperatures over 1000°C (1800°F). Roofers may suffer serious burns from the torch or the hot modified bitumen they are applying. In addition, temperatures generated by torching applications have been known to start fires that may smolder out of sight, only to burst into flame later, well after torching is over.



*Torch-Applied Roofing Operations*

## ARC Recommendations

The project-specific local safety requirements along with the fire prevention practices listed below should be confirmed with the roofing contractor prior to the start of work:

1. Whenever possible, the best practice is to locate the tar kettle, asphalt and fuels at grade (minimum 3 m (10 ft) from the building and any egress paths or exits) and pump material to the roof.
2. The kettle should be attended at all times (within eyesight and 7.6 m (25 ft) of kettle). The kettle operator should remain on the same level as the kettle.
3. The kettle operator should be knowledgeable of the material's temperature limits and kettle features to prevent heating above the flash point.
4. Working and flash point temperatures should be readily available on keg packaging or sheets. Never heat contents above working temperature to improve workability at application point, which is a common practice in colder weather.
5. The kettle or operator must have a functional, readable thermometer.
6. Keep combustible materials, packaging, debris, etc., at least 5 m (16 ft) from the kettle; require daily removal of roofing debris and product packaging.
7. At least two 10 kg (20 lb) multipurpose dry chemical fire extinguishers are recommended within 7.6 m (25 ft) of the kettle and at least one additional fire extinguisher on the roof being covered. All kettle operators and roof installers should be trained in the use of fire extinguishers. Note: do not place any fire extinguishers within 1.5 m (5 ft) of the kettle since access to the fire extinguisher could be prevented by a fire at the kettle.
8. Keep propane cylinders greater than 0.5 kg (1 lb) at least 3 m (10 ft) away from the kettle, secure cylinders at all times and limit the quantities to a two day supply.

9. Follow all local regulations concerning handling and storage of propane or other burner fuel sources.
  10. Store all cleaning solvents away from the kettle and fuel cylinders.
  11. The kettle should have a tight fitting, metal cover capable of smothering a potential fire.
  12. Ensure the kettle outlet has a quick-closing valve. An extension handle is necessary as well for access to the valve in the event of a kettle fire.
  13. Follow all applicable hot work procedures and safety precautions, including inspecting the area before work begins, issuing a hot work permit and maintaining a fire watch during and at least 2 hours after all kettles and torches are turned off each day. During some roofing operations, it may be necessary to maintain a fire watch under the roof paying attention to areas being heated by torches, such as around flashing.
  14. Do not attempt to move or relocate kettle while it is at operating temperature.
  15. Whenever possible, transfer hot asphalt/tar in wheeled carts instead of hand-held buckets; pump product to upper or lower roof levels instead of using ladders to carry or hoist product.
  16. Prohibit smoking on the roof during any roofing activity.
- b) Verify weight of full kettle and asphalt/tar kegs do not exceed structural capacity of roof.
  - c) Locate kettle and fuels at least 5 m (16 ft) from egress paths and roof exits and at least than 3 m (10 ft) from roof edges unless suitable guardrails are in place.
  - d) Locate kettle at least 3 m (10 ft) from walls and roof mounted equipment. Locate kettle at least 5 m (16 ft) from walls with combustible construction (or use a fire resistive barrier if adequate spacing is not possible).
  - e) Place the kettle on a non-combustible base.
  - f) Consider spill containment means in the event of tank or hose leak to ensure liquid asphalt/tar cannot flow into a floor opening or over the roof edge exposing workers and materials below.
  - g) Any mops and rags must be safely disposed of and not left in buckets or unattended on the roof. Buckets or buggies must not leak.
  - h) Make sure kettle wheels are chocked or locked to prevent rolling or movement from bumping. The kettle must be leveled prior to operation.



*Fire caused by roofing operations*

17. If the placement of the kettle on the roof is unavoidable, these additional fire safety considerations should be followed:
  - a) Notify the fire department whenever an asphalt/tar kettle and fuels will be located on the roof.

## References

NFPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*, 2013 Edition

ARC Hot Work Management

## Questions or comments? Please contact:

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