

ROOFING SAFETY

Controlling hot work hazards

Torch-applied Roofs

Torch-applied operations can be hazardous to roofers and the public. Torching can reach temperatures over 1093°C or 2000°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 smoulder out of sight, only to burst into flame later, well after torching is over.

When installing torch-applied roofs, take the following precautions.

- Wear proper personal protective equipment, including hard hats, safety boots, eye protection, and gloves. Clothing should be flame-resistant (cotton or wool—no synthetics).
- Check the roof surface for combustible material. Remove what can be removed. Encapsulate the rest with hot or cold applied membranes, sealing off all intakes and projections to prevent flame from spreading into combustible material.
- Inspect torches before use. Equipment must be in good working order, with fittings, hoses, and head secure and cylinder valves clean.
- Don't use leaking propane equipment. If a leak occurs during operation, stop immediately.
- Store equipment in protective cases.
- When not in use, set torch units in their support leg position with torch head pointing at an upward angle. Don't place torch units over a curb or roof edge.
- Unless you're the torch operator, stay at least two or three metres away from the flame.
- Don't torch directly on cant strips, insulation, wood, grease, lint exhaust, or any other flammable material. Never torch directly at flashing, corners, voids in the roof and roof deck, or behind metal counter-flashings.
- Take extra care when torching near pipes, fresh air vents, and HVAC units since flame could be sucked into the building.
- Do not torch near gas and electrical lines.
- When shutting off the torch, close the propane cylinder valve first. Let the remaining gas in the hose burn off, and then close the torch valve.

- Disconnect the hose at the end of the day.
- Ensure that workers have been adequately trained to install torch-applied modified bitumen roofing systems, including appropriate training in the storage, handling, and use of roofing propane.

Fire Prevention

The roofing contractor's health and safety policy should provide for a fire watch after torching applications.

Cease torching at least three hours before leaving for the day.

Designate a person responsible in the event of fire.

Make sure all workers know the escape route.

Keep the local fire station number handy.

Have at least one fully charged 20-lb dry chemical fire extinguisher within six metres (20 feet) of each worker using a torch.

Inspect the roof for hot spots at the end of work stoppage using an infrared thermometer to take temperature readings.

At the end of the monitoring period, inspect the building interior (with owner's representative) before leaving the site.

Hand-held Torches

Hand-held torches fuelled by 9.1-kg (20-lb) propane cylinders are used for many operations in the roofing industry, such as melting snow and ice, drying roof decks, and heat sealing.

- Never leave torches ignited and unattended.
- Make sure the cylinder is securely braced or tied so that it can't fall or be knocked over.
- Use only approved high-pressure hoses to connect torches to regulators.
- Operate the torch at the manufacturer's recommended pressure.
- Never direct the flame at, near, or toward the cylinder.
- Never use hand-held torches inside a building.

Welding Thermoplastic Roof Membranes

Automatic and manual systems are used in the roofing industry to weld thermoplastic roof membranes. The systems use electricity to heat air that in turn welds the membrane together. Air temperatures may reach 600°C (1100°F). Some automatic systems require up to 220 volts. Burns and electrocution are obvious hazards with this equipment.

- Don't use thermoplastic hot-air welding equipment in the rain or where surfaces may be wet.
- Ensure that the equipment is protected from the weather overnight or when not in use.
- Inspect electrical cables regularly for damage.
- Always use welders along with ground fault circuit interrupters. By law, GFCIs must be used with any portable electrical equipment operated outdoors.
- Don't touch grounded objects such as pipes or scaffolding while operating thermoplastic hot-air welding equipment.
- Don't use the equipment near flammable gases or liquids.
- Don't let the equipment remain stationary with the heat on and the welding nozzle close to any surface.

- Maintain the equipment according to manufacturer's instructions.
- Don't use automatic welding machines on slopes exceeding 20 degrees when welding at right angles and 25 degrees when welding in the direction of the slope. Steeper slopes may cause the machine to tip over, stall, or move too fast.

Fumes from thermoplastic welding may irritate the nose and throat. Stay out of the smoke plume and keep your body upwind whenever possible. Wearing respiratory protection such as a half-mask N95 respirator will reduce exposure.

Don't overheat thermoplastic membranes. At normal welding temperatures, very few harmful chemicals are released. When the thermoplastic is overheated, however, compounds such as hydrogen chloride and vinyl chloride monomer may be produced.

Workers assigned to operate welding equipment must be trained and certified by the thermoplastic roof system manufacturer.

Call Customer Service at 1-800-781-2726 for your free copy of the manual—***Health and Safety Guidelines for Low-Slope Roofing*** (M036). And ask about our roofing courses.