Safety Hazards

Roofing - Residential

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What does a roofer do?

Roofing is part of the construction industry. A roofer is responsible for installing, repairing, and replacing roofs using different applications and methods depending on the type of roof being installed.

What is meant by residential roofing?

Residential roofing refers to constructing and installing roofs on homes or other buildings intended for residential purposes (designed for people to live in).

The main priority of a residential roof is to protect the home from the elements and climate including wind, rain, and snow. A wide range of materials are used such as asphalt shingles, wood, metal, etc. Several factors influence the design of a residential roof, such as aesthetics, the architectural style of the home, the personal preferences of the owner, and the budget.

In comparison, commercial roofing refers to installing roofs on structures typically intended for businesses, warehouses, and other commercial structures, all of which vary in size and purpose. The application and design of the roof vary greatly depending on the intended purpose of the building. Different materials and products may be used for specific applications.

While there are similarities between residential and commercial roofing activities, this document focuses on the health and safety aspects of residential roofing.

What should I know about sloped versus flat roofs?

Flat roofs initially have lower installation and material costs compared to sloped roofs; however, flat roofs require more maintenance over time due to the potential for leaks and water pooling, leading to more frequent repairs. Sloped roofs offer better drainage because water can run off, reducing the likelihood of leaks. Due to the roof design, sloping roofs tend to be more durable and have better ventilation. However, sloped roofs are more susceptible to damage from extreme weather, such as high winds.

Maintenance for flat roofs tends to be a lower level of risk to workers than maintenance for sloped roofs.

What are common methods of roofing?

There are several different types of roofing applications. It is important to select the one that best fits your needs, and that is compatible with the weather in your geographic location. Below are common types of roofing applications used in Canada:

1. **Asphalt Roofs:** Asphalt roofs are the most common type of residential roof in Canada. Asphalt roofs have a lifespan of 10-25 years which results in more frequent repairs and maintenance.
2. **Wood and Cedar Shake Roofs:** Wood Shake roofs have been used for hundreds of years. However, they are generally not fire-resistant and can be subject to mould.
3. **Metal Roofs**: Metal roofs are among the most resistant to weather. The most common metals used are aluminum, copper, galvalume, galvanized steel, pre-finished steel, stainless steel, and zinc. Metal roofs are installed as shingles or large panels. They offer higher protection against extreme weather conditions although they pose a risk due to snow sliding off.

These examples are not an exhaustive list. Many other roofing applications exist and are used. Check your jurisdiction’s building code for any specific requirements. You may also require the expertise of an engineer or architect for roof design recommendations suitable to your needs.

Which occupational health and safety laws apply to roofing?

Most roofing operations fall under provincial or territorial jurisdiction. Review the health and safety acts and regulations, and building codes that apply in your jurisdiction. For contact information, please see the OSH Answers on Canadian Government Departments Responsible for Health and Safety.

What should be done before working on an old roof?

It is important to assess and inspect an old roof before beginning work. Hazardous substances may be present, and the structural integrity may be compromised requiring inspection by a qualified professional. The purpose of this inspection is to identify hazards and put the appropriate controls in place before starting work.

Inspect the roof from inside the building to identify structural issues and determine whether hazardous substances such as lead and asbestos are present before disturbing them.

We recommend checking jurisdictional requirements for regulations on hazardous substances. In the case of asbestos and other designated substances, workplaces may be required to maintain a hazardous material inventory detailing where the substance is located.

What hazards are found in residential roofing?

Fall hazard

- Unprotected edges
- Improper ladder use
- Slippery or sloped surfaces

Weather (heat, wind, storms)

- Heat Stress
- Cold Stress
- High winds
- Rain, especially when lightning is present
- Ultraviolet radiation (UV)
- Dehydration

Material Handling/Ergonomic

- Lifting and carrying equipment and materials
- Awkward posture and movements

- Hoisting and rigging

Tools

- Nail gun injuries, misfire
- Saws

Structural Hazards

- Weak or damaged roof
- Damaged ladder
- Damaged scaffolding

Exposure to hazardous substances

- Hazardous substances that may be present in old roofs (silica, lead, and asbestos)
- Chemical exposure, including solvent-based adhesive, asphalt, bitumen, coal tar pitch, and propane
- Hot tar and kettle processes
- Burns and skin injuries from spills and splashes
- Fume inhalation
- Fire hazards, including using propane
- Material storage

Indoor air quality

- Working inside a roof with poor indoor air quality (IAQ)

Biological Hazard

- Animal and bird droppings, including hantavirus and psittacosis
- Stinging insects, such as bees and wasps

Housekeeping

- Tools and materials falling from the roof or becoming
- Trip hazards

What can an employer do to protect workers from roofing hazards?

Plan before beginning work and have a safe work procedure specific to the job, which addresses all the hazards identified during your hazard identification and risk assessment. When selecting a control, consider the hierarchy of controls.

Working at heights

- Have a fall protection plan specific to your operation
- Use guardrails where possible
- Inspect fall protection equipment
- Identify anchor points or tie-off points
- Provide working at heights training for workers
- Tie and tether tools to reduce the risk of tools falling and striking someone below or creating a tripping hazard.
- Where applicable, have an emergency rescue plan in place

Hot work plan

A hot work plan details work that can pose a fire hazard, such as using a kettle, spark-generating activities, or work requiring an open flame, such as welding and torching. It identifies the hazards and controls. Controls can include inspecting the area for flammable materials, keeping fire extinguishers within an acceptable range, and having a fire watch person. The controls must be suitable for the hazard.

- Develop and implement a fire safety plan.
- Have the appropriate type of fire extinguishers available
- Identify access and egress points
- Select suitable personal protective equipment
- Control plan for welding activities including creating a hot work plan

Maintain housekeeping

- Minimize tripping hazards
- Follow good Housekeeping practices, including workplace housekeeping - checklist for construction sites
- High winds can cause material to become airborne, monitor weather conditions and wind.
- Tether and tie tools where appropriate. Secure materials that can become airborne.
- Stockpile material safely

Emergency Plan

- Establish an emergency plan
- Establish an access and egress plan for the roof
- Have trained first aid responders as part of the crew
- Have spill kits available
- Have fire extinguishers available

Educate workers on products

- Provide and review WHMIS training as needed
- Review Safety Data Sheets (SDS) of products being used
- Check for incompatible materials before beginning work

Select appropriate personal protective equipment (PPE)

- Conduct a hazard assessment on hazards specific to your operation. Please see our OSH Answers on Designing an Effective PPE Program for more information.

Electrical safety

- Maintain a safe distance from powerlines. The Electrical Safety Authority recommends keeping 3 metres away from powerlines; however, refer to your jurisdictions as requirements may vary.
- Inspect electrical cords and tools – Use Ground Fault Interrupter (GFI) or Ground Fault Circuit Interrupter (GFCI) where possible

Please see our OSH Answers on Electrical Safety - Basic Information

Tool safety

- Train workers on the proper use of tools
- Review and follow the manufacturer's instructions
- Powder-actuated tools may require specific training. Please verify your jurisdiction's requirements
- Keep nail guns pointed away from people to avoid any risks of misfire

Weather

- Check the weather before beginning work and monitor throughout the day
- Activate heat stress or cold stress protocols when needed
- Be prepared for extreme working conditions and exposure to sunlight (ultraviolet radiation)

Ergonomics

- Use mechanical aids for material handling to lift and move material where possible such as a hoist or lift
- Educate workers on manual material handling and proper lifting techniques
- Lifting in pairs or teams
- Shovelling snow and clearing the workspace

Chemical exposure

- Review the safety data sheets (SDS) for all products being used
- Select suitable controls for the hazard and use the hierarchy of controls
- Select the appropriate personal protective equipment that is compatible with the hazard
- Identify products with occupational exposure limits and put measures in place to ensure you remain within the acceptable range of exposure. Exposure limits may vary in different jurisdictions. Please refer to the jurisdictional requirements that apply to your operation.

What personal protective equipment should a roofer use?

We have included examples of personal protective equipment roofers may require but those items listed below are not an exhaustive list. It is important to conduct a risk assessment to determine the appropriate personal protective equipment needed for the exact work site and the tasks being done. For more information, see our OSH Answers on Designing an Effective PPE Program and Using Personal Protective Equipment as a Control Measure

- In most jurisdictions, fall protection is required when working at heights above 3 metres (10 feet). This protection may be by guardrails, safety nets, travel restraints, or fall arrest systems.
- Knee pads can help protect the knees from sharp or rough objects when kneeling to work on a roof.
- Hearing protection may be needed when operating equipment loud equipment such as a pneumatic nail gun.
- Skin protection, such as wearing long sleeves, can help control exposure to ultraviolet rays, materials that can adversely affect the skin, and contact with materials that can burn skin (such as tar).
- The consistent use of gloves is advised because they act as a control when handling tools and products

- Safety footwear is generally required on construction projects and is a good control measure because nails and other objects can be found on a roof.
- Eye and face protectors, such as safety glasses and face shields protect against injuries that could result from operating a kettle, bitumen splashes, dust, and debris. It is important to conduct a risk assessment to select the appropriate personal protective equipment.

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