

WORKING AROUND INSULATION

If insulation is disrupted, it can reduce its performance, and the efficiency of a home or building. Trades working around insulation should be mindful of this, and follow the below advice to ensure they do not undermine the integrity of insulation during the course of their work.

Plug the gaps

When working with insulation, it is essential to ensure that **no** gaps are left behind, as gaps can significantly reduce the performance of insulation. Even a small gap can greatly reduce the insulating value¹. The following provides guidance on avoiding gaps and maintaining proper insulation installation, in line with the Australian Standard.

Preventing edge gaps and face gaps: To maintain optimal thermal performance, avoid edge gaps (gaps at the edges) and face gaps (voids created by insulation not touching the surface it's meant to insulate). Both types of gaps can seriously compromise the insulation system's performance.

Proper use of offcuts: Do not rely on damaged or excessive offcut pieces to fill a stud bay in an external wall. Use no more than four offcuts in one space, and ensure that smaller offcuts are positioned at the top of the space being insulated. Full and snug coverage of the external wall, including obstructed areas, is crucial.

Cutting procedure: Use a knife to trim batts and avoid common installation issues. Properly trimmed batts should not be overly compressed, bulging, or too small for the area.



Edge gaps can occur between batts or between batts and building elements. It is essential that insulation covers at least 50mm of the top plate. They also must not touch the roofing material. If this cannot be achieved with batts of specified rating, Perimeter batts should be sourced and installed.

¹ Australian Government – Your Home, [Insulation](#).



To provide proof of satisfactory insulation work, it is recommended to take pictures of the installation before plaster or services such as air-conditioning are added.

Timing of insulation installation: Coordinate insulation installation with other works, such as plumbing or electrical services, to avoid costly errors. Install insulation after all services within the wall cavity have been completed where possible.

Installing wall batts: Place wall batts within the frame without pushing them into pliable building membrane. Batts should not touch brickwork or mortar surfaces and must not bow inwards towards the plaster lining. Cut batts as per the established procedure when fitting them into non-standard openings.

Insulating Around Object Penetrations: For objects penetrating a wall, such as pipes or wiring, neatly cut insulation around the object.

By following this advice, tradespeople can ensure that insulation is installed (or re-positioned after trades work) without gaps, maximising thermal performance and energy efficiency.

Proper insulation installation is crucial for maintaining comfortable indoor temperatures and reducing energy consumption in both residential and commercial buildings.



Align the batt near the object and cut the edge to approximately the centre of the object to fit the required area.

Don't squash it

Bulk insulation relies on the air pockets within it to create thermal resistance. Squashing insulation reduces its effectiveness, compromising the insulation's performance. The following provides guidance on preventing squashed insulation and maintaining its optimal performance.

Selecting the correct batts: Ensure that you have the right batts for your project by checking their R-value, thickness, and fit for the intended application. Remember that ceiling batts should not be used in wall cavities.

Proper cutting of batts: Cut batts neatly and slightly larger than the gap they are meant to fill. This allows them to friction-fit into place without being squashed. Avoid cutting batts too large, as this will require squashing to fit them in the space.

Avoiding voids and face gaps: Prevent voids and face gaps by refraining from bending insulation to force it into a space, or pushing it too far back into a frame. This can result in the insulation not touching the surface it is intended to insulate, thereby reducing its performance.

Choosing the right insulation product: If the insulation you are using does not fit the cavity, consider using a higher-density product that can achieve the desired R-value in less space.



Remember that ceiling batts should not be used in wall cavities.



Avoid squashing insulation to make it fit, as this will compromise its performance.

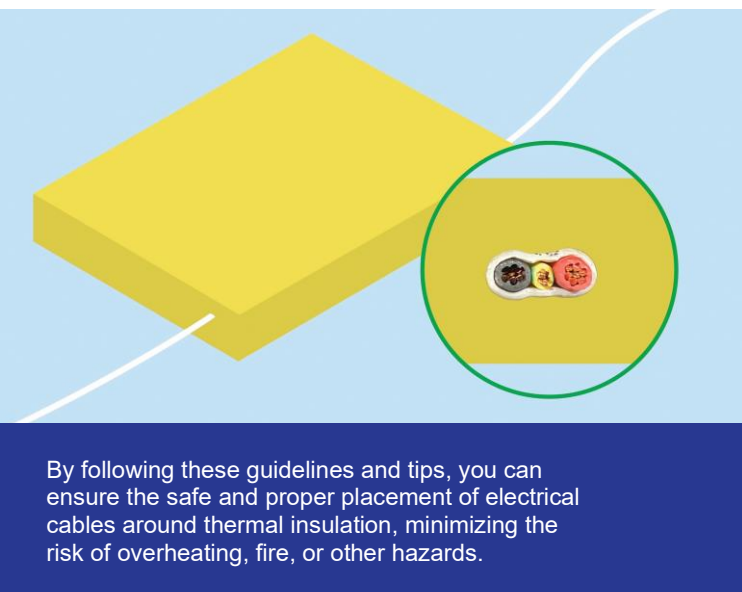
By following this advice, tradespeople can ensure that insulation is installed (or re-positioned after trades work) without being squashed, maintaining its effectiveness and providing optimal thermal performance.

Proper insulation installation is essential for the ongoing comfort, health and energy efficiency of both residential and commercial buildings.

Run cables around insulation

Working with insulation can be challenging, especially when electrical cables are involved. The key is to ensure that the insulation environment aligns with the rating of the electrical cables in the area. The following will provide guidance for tradespeople on the importance of placing electrical cables appropriately around thermal insulation, along with useful tips to follow.

Understand the insulation environment: It's crucial to determine the insulation environment that electrical cables will be subjected to, as this dictates the maximum size of the circuit protection that can be used. Consult a competent person, such as an electrician, to verify the rating of the cables and ensure that insulation is installed to maintain rating.



A licensed electrical contractor or electrical engineer should be consulted for homes wired before 1986.

Types of insulation environments:

Non-Contact Environment: For cables not rated for contact with insulation, avoid having insulation touch the cables at all. No more than 150mm of insulation should come into contact with any point of the circuit.

Partially Surrounded Environment: Cables rated for partial insulation contact can have insulation touching one side only, without passing through insulation on all sides for more than 400mm.

Satisfactory arrangements for partial enclosure include:

- Placing insulation over a cable lying on the surface of a ceiling sheet.
- Placing insulation beside a cable fixed to a structural member, such as a joist.
- A cable lying on top of batt-type ceiling insulation.

Completely Surrounded Environment: Cables rated for complete insulation contact can have insulation touching all sides. Examples of a completely surrounded environment include:

- A cable sandwiched between more than 400mm of batt insulation.
- A cable running between two layers of insulation.
- A cable running through loose-fill insulation for more than 400mm.
- A cable surrounded by spray foam insulation for more than 400mm.

Keep yourself safe when working around electrical cables:

Follow these essential tips while working around electrical cables and insulation:

- Use non-metallic, non-conductive tools.
- Avoid stepping on, abrading, cutting, or crushing cables.
- Do not place cables under tension.
- If a cable is damaged or you aren't sure of its safety, stop work immediately and consult a licensed electrician.



Remember that the 400mm rule applies to the entire circuit, and if total enclosure exceeds this amount, the entire circuit must be considered completely surrounded.

Work safely

Safety is paramount when working with and around insulation. The following will provide guidance for tradespeople on the importance of working safely around thermal insulation, along with useful tips to follow.



Review the Safe Work Method Statement (SWMS) before commencing work to identify and control potential risks.

Adhere to Safety Management Plans and policies: Follow your employer's safety management plans and policies, as well as any specific builder safety policies on-site.

Use appropriate tools and equipment: Ensure that the tools and equipment you use are suitable for the tasks and in good condition. Check for defects and report any issues to your supervisor before starting work.

The following items may be required:

- High-visibility clothing
- Industrial box cutter with a retractable blade and non-conductive handle
- Industrial-strength ladder
- Non-conductive batt poker for positioning batts in inaccessible ceiling locations
- Claw hammer
- P2 dust mask
- Hammer tacker
- Knee pads
- Hand saw
- Tape measure
- Safety eyewear
- Standard-duty gloves
- Independent lighting, e.g., torch and spare batteries or LED headlamp
- Suitable safety shoes for walking across joists
- Sufficient drinking water
- Accessible first aid kit
- Fully charged mobile phone with programmed contact numbers
- Portable fire extinguisher



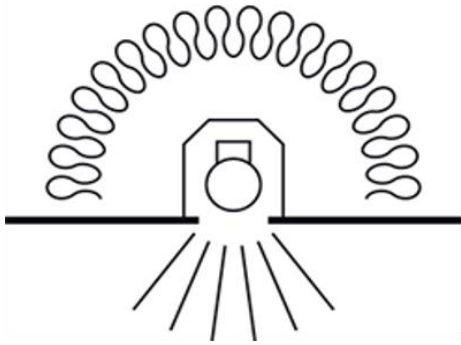
There are a number of items required to work safely.

Safety Tips for Working with Insulation: Follow these essential tips to ensure your safety while working with and around thermal insulation:

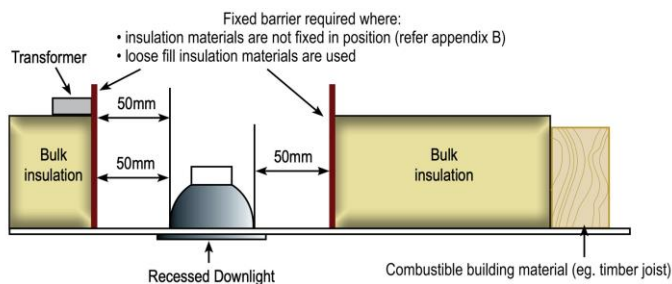
- Wear appropriate personal protective equipment (PPE), such as dust masks, gloves, and safety eyewear
- Use non-conductive tools and equipment, especially when working near electrical cables
- Be cautious when walking on joists, and wear suitable safety shoes
- Stay hydrated and take regular breaks to avoid fatigue
- Keep a first aid kit and fire extinguisher easily accessible in case of emergencies
- Maintain open communication with your supervisor and team members about any safety concerns or issues that arise.

By following these guidelines and tips, you can promote a safe working environment while handling and installing thermal insulation, reducing the risk of accidents and injuries.

IC-4



It is recommended that prior to the installation of insulation, downlights are changed to IC4 classification.



Remember, insulation must never cover a downlight unless it is IC-rated and safe for contact with insulation materials.

Work safely – downlights

When working with insulation in areas containing downlights, it is crucial to follow good safety practices to avoid fire hazards and ensure the proper functioning of the lights. The following will provide guidance on the importance of downlight safety with thermal insulation, along with useful tips to follow.

Before installing thermal insulation in a ceiling with recessed luminaires (downlights), consider the precautions derived from [AS/NZS 3000:2018 - Electrical installations \(known as the Australian/New Zealand Wiring Rules\)](#):

- **Verify luminaire certification:** Ensure the downlight is specifically designed and certified by the manufacturer for contact with combustible materials or enclosure by thermal insulation.
- **Use fireproof enclosures:** Install downlights within suitable fireproof enclosures to prevent direct contact with insulation materials.
- **Follow manufacturer's specifications:** Provide the required clearances from combustible and thermal insulation materials as specified by the downlight manufacturer.
- **Follow default clearances:** In the absence of manufacturer-specific guidelines, adhere to the default clearances from combustible and thermal insulation materials specified in [AS/NZS 3000:2018 - Electrical installations \(known as the Australian/New Zealand Wiring Rules\)](#).

Useful tips for downlight safety:

- **Use IC-Rated downlights:** opt for IC (insulation contact) rated downlights, which are designed to be safe for direct contact with insulation materials.
- **Double-check clearances:** Before installing insulation, double-check the clearances between downlights and insulation to ensure compliance with safety guidelines.
- **Regularly inspect downlights:** Periodically inspect downlights for signs of damage or overheating and address any issues promptly.
- **Consult a licensed electrician:** If you are unsure about the safety or compatibility of downlights with insulation, consult a licensed electrician for guidance.

By following these guidelines and tips, you can promote the safe installation, or re-installation, of thermal insulation around downlights, reducing the risk of fire hazards and maintaining the proper functioning of the lights.

Work safely – electricity

Ensuring electrical safety is a top priority for tradespeople working around insulation. One critical aspect of electrical safety is de-energising power before working with insulation. The following will provide guidance on the importance of de-energising power when working around thermal insulation, along with useful tips to follow.

De-energise power before installing insulation: In existing buildings, this process may require the use of an electrical lockout kit. For new constructions, insulation is typically installed before power is energised, eliminating the need for electrical isolation. Tips for de-energising power include:



It is crucial to disconnect or de-energise electrical power before installing insulation to prevent accidents and injuries.



Remember, always de-energise power before working with insulation to prioritize safety.

- **Verify electrical isolation:** Before beginning any insulation work, always confirm that power has been disconnected or de-energised. Do not assume that power is off without checking.
- **Use lockout/tagout kits:** In existing buildings, use lockout/tagout kits to ensure that electrical circuits are de-energised and cannot be accidentally re-energised while working with insulation. This process involves placing locks and tags on circuit breakers or switches to prevent unauthorised access and inform others that work is being performed.
- **Communicate with team members:** Keep open lines of communication between team members and inform each other when power is being de-energised for insulation work. This helps ensure everyone's safety, and limits the potential for accidents.
- **Beware of live wires:** before commencing insulation work, check for live wires in the area that may not have been, or may not be able, to be de-energised. Examples of such cables are mains supply and some solar cabling.
- **Follow safety precautions:** even after de-energising power, continue to follow safety precautions when working around electrical cables, such as using non-conductive tools and maintaining a safe distance from electrical components.

By following guidelines and tips, you can promote a safe working environment while handling and installing thermal insulation around electrical components, reducing the risk of accidents and injuries.



Always be on the lookout for live wires and hazards.

For more information

Visit <https://insulationcoalition.org/>

Acknowledgement

The AIIC thanks Insulation Council of Australia and New Zealand (ICANZ) for providing many of the materials used in the formulation of this guidance information. For more detailed information on the safe installation of insulation for ceilings, walls and floors, consider reading the [Insulation Handbook – Part 2: Professional Installation Guide – Version 7.](#)