

## Safety Precautions and Test Procedure When Entering a Ceiling Space

### Objective

To identify safety precautions that may need to be implemented when entering a ceiling space containing foil insulation or metallic building elements. These safety precautions must be used each time a ceiling is accessed regardless of previous test results.

### Method

Working in a ceiling space containing foil insulation is deemed to be high risk electrical work. In order to ensure the safety of all involved a written risk assessment will be undertaken and mandatory safety precautions will be used. Optional safety precautions may be relevant depending on the work situation.

### **IMPORTANT:** TEST BEFORE YOU TOUCH

Under no circumstances is anyone to enter a ceiling containing foil insulation until the electrical cables in the ceiling are electrically isolated. Touch voltage tests are to be performed before entering the ceiling and as a final test when work is completed and the ceiling is vacated.

### Risk Assessment

The foil insulation is to be considered live until proven safe. A written risk assessment will be completed using the Take 5 electrical safety form before work commences.

The following factors may need to be considered:

- electric shock hazard from potentially live foil or metallic building elements
- type/condition of wiring
- excessive heat in roof space
- poor/low lighting levels.

### Mandatory controls

- ensure that rubber insulating gloves are worn until the site is proven electrical safe - this includes when the access cover is being removed, as there may be foil insulation installed, or damaged electrical cables which may be accessible
- isolate the electrical supply to the residence or building, including the mains before entering the ceiling space
- fibreglass ladder
- a safety observer.

### Optional controls

- Rubber mat/s
- Non-flammable long sleeve shirt and long pants
- Safety glasses
- Hard hat
- Isolate supply to all circuits within ceiling space.

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## Testing requirements

### Visual inspection

- All isolators, circuit breakers and fuses are on
- Check for alternate power supplies – (Generator, Solar and UPS)
- Location of aerial service to premises (if applicable)
- Check / count, down lights, exhaust fans and/or heat lamp/fan combinations
- Where down lights, exhaust fans, etc. have been installed, ensure mandatory clearances to building structures and insulation have been verified as per requirements of AS/NZS 3000 Clause 4.5.2.3
- Refer BEMSPRAC009 Visual Electrical Safety Inspections

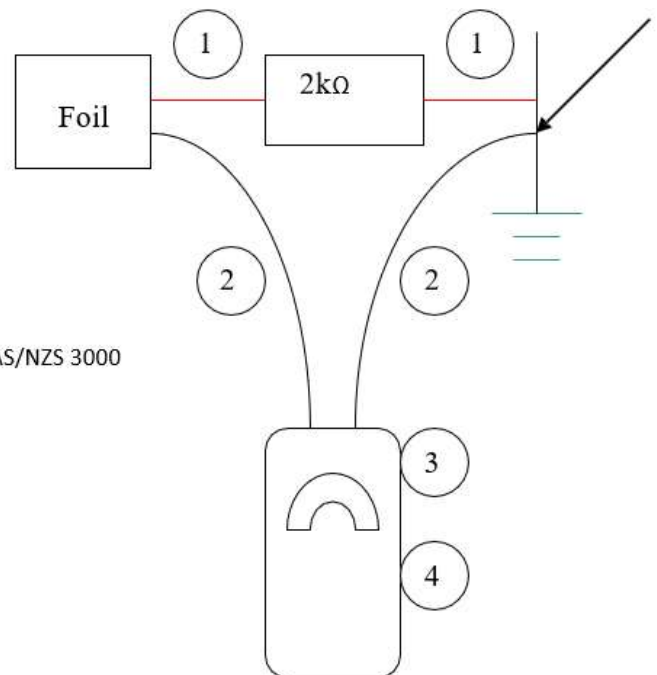
### Voltage test (supply is required for this test)

Before entering roof space conduct a touch voltage test between the foil insulation in vicinity of the ceiling access point and the mass of earth using an independent earth electrode. This will identify if the voltage is induced or is a direct fault – active to earth.

#### Test sequence

- 1 Connect resistor leads to independent earth and foil
- 2 Connect voltmeter test leads to independent earth and foil
- 3 Test results should be within touch voltage limits specified in AS/NZS 3000
- 4 Disconnect resistor and test equipment

Voltmeter



#### Note –

1. A 2kΩ resistor is used to simulate the body resistance of a typical person.
2. The severity of an electric shock is dependent on the magnitude of voltage across the body, or part thereof, and time it is present.
3. The touch voltage shall not exceed 50 V a.c. or 120 V ripple free d.c. as specified in AS/NZS 3000 Clause 1.5.5.3 (b).

### Insulation resistance test (supply shall be isolated for this test)

- Insulation resistance test as per requirements of 10E - Testing an Electrical Installation (Electricians).
- Before entering the roof space repeat the VOLTAGE TEST on the foil as a precautionary measure.
- Enter roof space to the extent necessary to perform test.
- Measure the insulation resistance between all active conductors and each sheet of foil and record.
- Measure the insulation resistance between all neutral conductors and each sheet of foil and record.

- If measurements are below the minimum requirement of 1 MΩ then a Form 3 must be completed and fault is to rectified, removed or isolated from supply.

### Reporting requirements

- If foil insulation is installed in the ceiling space, a Form 3 is to be filled out and sent to your Work Coordinator.
- Work Coordinators are to send the Form 3 to the BEMS Manager with a written recommendation that the foil insulation be replaced with a non conductive insulation.
- This is to be reported to clients as a WH&S add hoc defect.

### Completion of work

When all work in the ceiling has been completed, ensure MEN connection is re-instated, reconnect supply and then perform a final voltage test before leaving site.

A certificate of test is to be issued with all test results attached.

### Referenced practices:

- BEMSPRAC003 Before Use Inspection of Electrical Test Equipment
- BEMSPRAC004 Before use inspection of safety equipment
- BEMSPRAC005 Safety Precautions When Working on Electrical Equipment
- BEMSPRAC006 Lock Out and Tag Out
- BEMSPRAC007 Risk Assessment Testing and Fault Finding
- BEMSPRAC009 Visual Electrical Safety Inspections
- BEMSPRAC010 Testing an Electrical Installation