



# **Australian rail Personal protective equipment - Minimum requirements**



Safety Standard



This Australian Standard® AS 7471 Australian rail - Personal protective equipment - Minimum requirements was prepared by a Rail Industry Safety and Standards Board (RISSB) Development Group consisting of representatives from the following organisations:

Australian Rail Track Corporation

Buy2Give

Dakar Risk

Genesee & Wyoming Australia

Metro Trains Melbourne

Sydney Trains

Public Transport Authority of Western Australia

The Standard was approved by the Development Group and the Safety Standing Committee in March, 2019. On March 26, 2019 the RISSB Board approved the Standard for release.

This Standard was issued for public consultation and was independently validated before being approved.

Development of the Standard was undertaken in accordance with RISSB's accredited process. As part of the approval process, the Standing Committee verified that proper process was followed in developing the Standard.

RISSB wishes to acknowledge the positive contribution of subject matter experts in the development of this Standard. Their efforts ranged from membership of the Development Group through to individuals providing comment on a draft of the Standard during the open review.

I commend this Standard to the Australasian rail industry as it represents industry good practice and has been developed through a rigorous process.



**Paul Daly**  
Chief Executive Officer  
Rail Industry Safety and Standards Board

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## AS 7471:2019

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## Document control

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## 1 Introduction

### 1.1 Purpose

This Standard outlines the **minimum** requirements for personal protective equipment (PPE) when accessing in the rail corridor. This Standard aims to establish standardisation of PPE within the Australian rail industry.

### 1.2 Scope

PPE includes any personal clothing or equipment that is used to minimise risk to a persons' health and safety when accessing railway tracks and other areas including yards, workshops and sidings.

This Standard specifies the minimum requirements for the following classes / types of PPE:

- (a) High visibility outer clothing.
- (b) Protective footwear.
- (c) Protective eyewear.
- (d) Sun protection.

This Standard does not specify requirements for specialised PPE.

This Standard applies to all work which involves accessing or undertaking work in the rail corridor. It does not apply to those personnel whose roles do not normally require them to access operational areas. This includes those working in areas accessed by the public and passengers, station and platform personnel such as customer support roles e.g. ticketing, cleaners and similar. (Note: if there is a need to access the operational tracks and/or similar areas in the rail corridor in the course of their duties then these requirements apply)

### 1.3 Compliance

There are two types of control contained within Australian Standards developed by RISSB:

- (a) Requirements.
- (b) Recommendations.

**Requirements** – it is mandatory to follow all requirements to claim full compliance with the Standard.

Requirements are identified within the text by the term 'shall'.

**Recommendations** – do not mention or exclude other possibilities but do offer the one that is preferred.

Recommendations are identified within the text by the term 'should'.

Recommendations recognise that there could be limitations to the universal application of the control, i.e. the identified control cannot be applied, or other controls could be more appropriate or better.

For compliance purposes, where a recommended control is not applied as written in the standard it could be incumbent on the adopter of the standard to demonstrate their actual method of controlling the risk as part of their WHS or Rail Safety National Law obligations.

Similarly, it could also be incumbent on an adopter of the standard to demonstrate their method of controlling the risk to contracting entities, or interfacing organisations where the risk may be shared.

Controls in RISSB standards address known railway hazards as included in an appendix.

## 1.4 Referenced documents

### 1.4.1 Normative references

The following referenced documents are indispensable for the application of this Standard:

- (a) AS 1067 (all parts). Eye and face protection - Sunglasses and fashion spectacles.
- (b) AS 2001.4.B02. Methods of test for textiles Colourfastness tests - Colourfastness to artificial light: Xenon arc fading lamp test.
- (c) AS/NZS 1337.1. Personal eye protection. Eye and face protectors for occupational applications.
- (d) AS/NZS 1337.6. Personal eye protection. Prescription eye protectors against low and medium impact. AS/NZS 2604. Sunscreen products - Evaluation and classification.
- (e) AS/NZS 1906.4. Retroreflective materials and devices for road traffic control purposes. High-visibility materials for safety garments
- (f) AS/NZS 2210.1. Safety, protective and occupational footwear. Guide to selection, care and use.
- (g) AS/NZS 4602.1. High visibility safety garments. Garments for high risk applications.
- (h) AS/NZS 4399 Sun protective clothing – Evaluation and classification
- (i) AS/NZS 2604 Sunscreen products – Evaluation and classification

The current standard should be applied in each case.

In addition, Commonwealth and state based WHS legislation will provide direction in regard to the mandatory PPE requirements.

## 1.5 Definitions

**OH&S:** A generic term to address the requirements covered by the respective laws across Australia pertaining to persons safety at the workplace.

**PPE:** Personal protective equipment.

**Rail corridor:** The land on which a railway is built; comprising all property between property fences, or from the nearest rail in each direction for the distance specified by the Rail Infrastructure Manager.

**Risk assessment:** Risk assessment is a term used to describe the overall process or method where you:

- (a) identify hazards and risk factors that have the potential to cause harm (hazard identification);

- (b) analyse and evaluate the risk associated with that hazard (risk analysis, and risk evaluation);
- (c) determine appropriate ways to eliminate the hazard or control the risk when the hazard cannot be eliminated (risk control).

**Specialised PPE:** PPE designed specifically for roles, tasks, and/ or specific environmental circumstances. Specialised PPE is identified through a risk assessment process.

**UPF:** The Ultraviolet protection factor represents the ratio of sunburn-causing UV without and with the protection of the fabric

**UVR:** Ultraviolet radiation forms part of the electromagnetic spectrum between 100 nm and 400 nm.

## 2 Minimum PPE when accessing the rail corridor

Organisations shall undertake a documented risk assessment of the various tasks performed to identify suitable hazard controls, including PPE (see Figure 1).

The selected PPE shall be risk assessed for suitability to the task. This assessment should consider the role, task, working and environmental conditions within which the PPE is to be used to validly determine if the proposed controls are appropriate and if additional risk controls are required

There are a range of specific roles, tasks or working environments that will require specialised PPE whilst accessing or performing activities in the rail corridor. Specialised PPE should be identified through a risk assessment process and include both high risk roles as well as specific environmental circumstances.

PPE works best when it is used to supplement higher-level control measures. This is illustrated by the Hierarchy of Controls (figure 1) which outlines the hazard controls in order of effectiveness with elimination (physically removing the hazard) as the most effective and PPE as the least effective.



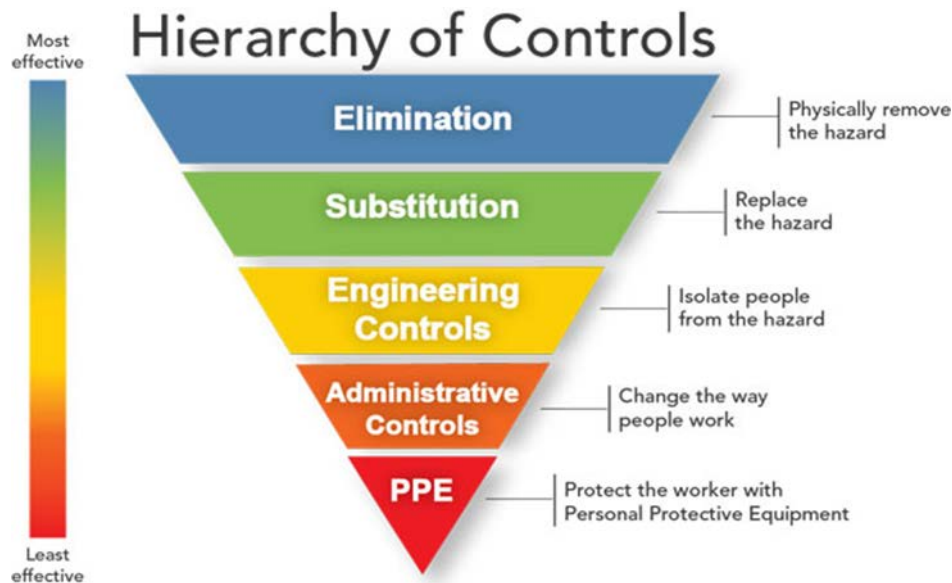


Figure 1: Hierarchy of Controls<sup>1</sup>

This Standard has been developed by the Australian rail industry to specify the minimum requirements for PPE in Australian rail corridors. In addition to this document, it is also important that industry participants must comply with OH&S legislation in relation to identifying PPE requirements.

OH&S legislation states that when PPE is deemed necessary to ensure the health and safety of persons at work, then a number of requirements must be applied, so far as is reasonably practicable.

## 2.1 High visibility outer clothing

High visibility clothing is an essential item of personal protective equipment, increasing visibility of the wearer to train crew, track vehicle drivers and plant operators.

Rail organisations shall require all workers within the rail corridor to wear high visibility outer clothing that meets the requirements of AS 4602. This Standard also references AS/NZS 1906.4 which specifies the colour and chromaticity coordinates required for routine high visibility requirements.

A documented risk assessment for the role and/or task shall be used to identify clothing requirements.

There are three classes of high visibility outer clothing specified in AS 4602:

- **Class D – Day time use ONLY.**  
These garments are intended to ensure that the wearer is highly visible under daylight viewing conditions in outdoor situations. Class D garments designed for outdoor daytime use only, comprising fluorescent (class F) or non-fluorescent (class NF) high visibility material. Class D High Visibility materials shall encircle the

<sup>1</sup> Source: National Institute for Occupational Safety and Health, DART, USA May 2018

upper torso and have a visible area of not less than 0.2 m<sup>2</sup> on both the front and back of the garment.

- Class N – Night time use ONLY.

These garments are intended to ensure that the wearer is highly visible at night when viewed under retro-reflected light, such as by drivers of rollingstock or operators of other plant and machinery. Class N garments are manufactured with retro-reflective strips at least 50 mm wide on an unspecified colour background in specific tape configurations and are designed to make the wearer visible from all angles. These garments rely on light reflected from their surface to be directed back along the path of the incoming light beam. An observer will not gain the benefit of a retroreflective article unless he/she is observing it from a position closely aligned with, usually just behind, the light source.

- Class D/N – suitable for day and night use.

These garments are designed for both day and night use, comprising fluorescent (class F) or non-fluorescent (class NF) high visibility background material and retro-reflective strips at least 50 mm wide on an unspecified colour background in specific tape configurations. Class D/N garments are intended to ensure that the wearer is highly visible under normal daylight and night time (under retro-reflected light) viewing. These garments combine the requirements of both Class D and N.

High visibility outer clothing worn in the rail corridor shall:

- feature a high visibility fluorescent orange which complies with chromaticity coordinates that lie within the colour spaces specified in table 2.1 of AS/NZS 1906.4;
- have a minimum luminance factor in accordance with table 2.2 of AS/NZS 1906.4 for Class F garments and table 2.3 for class NF. (where this luminance factor cannot be met as per this Standard, a risk assessment shall be completed, documented and retained by the RTO to ensure the high visibility clothing item is visible from the same distance, in various conditions, as an item of high visibility clothing which meets the prescribed luminance factor);
- feature colourfastness after UV exposure compliant with AS/NZS 1906.4 tested to AS 2001.4 B02 Method 5 and tested to AS/NZS 1906.4: 2010 Appendix A;
- in low light conditions (such as at dawn, dusk, adverse weather including fog or in enclosed structures such as stations) the clothing shall be day and night compliant to AS/NZS 4602.1;
- be of a suitable size for the individual to cover the entire torso, and, if a vest, extend at least 100 mm below waist level and the back enough to cover the buttocks.

All high visibility outer clothing shall be fitted with retro-reflective strips which:

- meet either requirements of Class R material in AS/NZS 1906.4;
- are positioned on the garment be in accordance with AS/NZS 4602.1
- are at least 50 mm wide.

- (d) are silver in colour.

In extreme heat situations e.g. the Nullarbor, retro-reflective strips can heat up at a higher rate than other materials and become uncomfortable or hot to touch.

Where the colour requirement of retro-reflective strips cannot be met due to extreme heat reasons, operators may substitute high visibility clothing as long as any such substitution is visible from the same distance, in various conditions. Decision to substitute high visibility outer clothing shall be supported by a completed risk assessment, documented and retained by the RTO.

## **2.2 Protective footwear**

Rail organisations shall require all workers within the rail corridor to wear protective footwear.

Protective footwear shall be selected, used and maintained in accordance with AS/NZS 2210.1.

A documented risk assessment for the role and/or task shall be used to identify any specific footwear requirements beyond the basic safety footwear e.g. puncture protection/top of foot/welding, in the rail corridor.

If safety boots are determined to be the appropriate footwear, they shall:

- (a) have protective toes;
- (b) be ankle length or high sided;
- (c) be lace up or have a zip side or a combination of both;
- (d) be water resistant;
- (e) have a protective, slip resistant sole;
- (f) be certified to the standard.

## **2.3 Protective eyewear**

Protective eyewear requirements will depend on the work situation and can include safety glasses, safety goggles and face shields.

A documented risk assessment for the role and/or task shall be used to identify the need for appropriate eyewear.

Safety eyewear or over-glasses shall be worn in the rail corridor.

Safety glasses or over-glasses shall:

- (a) be certified to AS 1337.1;
- (b) include a suitable set of safety frames;
- (c) have side protection or are wrap around.

People with prescription glasses should wear prescription safety glasses or over-glasses.

Prescription safety glasses shall be certified to AS/NZS 1337.6.

## 2.4 Sun protection equipment

### 2.4.1 General

Sun protection equipment includes clothing, hats and helmets, sunscreen, and sunglasses.

Sun protection equipment shall be worn in accordance with advice from the World Health Organisation (WHO) and the Cancer Council of Australia. More information can be found at:

[https://www.who.int/uv/intersunprogramme/activities/uv\\_index/en/](https://www.who.int/uv/intersunprogramme/activities/uv_index/en/)

### 2.4.2 Sun-protective clothing

Where required, sun-protective clothing shall be worn and be rated at UPF 50+ in accordance with AS/NZS 4399.

Sun-protective clothing should include long sleeved shirts and long pants.

When sun protection clothing is worn in the rail corridor, consideration should also be given to other risks such as heat exposure. A risk assessment should be undertaken to determine fit for purpose sun protection PPE suitable to the conditions at the specific location.

### 2.4.3 Hats and helmets

Where required, sun-protective hats or helmets shall be worn.

Sun protective hats and helmets should be of a design which provides maximum shade for the face, head, ears and neck.

Broad brimmed bucket or legionnaire style hats provide the best protection.

Helmets should be fitted with a wide brim and neck flap

Overall protection provided will depend on the material from which the hat or helmet brim and neck flap are made. The ultraviolet protection factor (UPF) rating of the fabric should be checked. The more transparent or loose weave the material is the more UV light will penetrate, hence a close weave is important. As with clothing, hats will carry a swing tag if the material has been tested to determine how effectively it blocks solar UVR (Ultraviolet Radiation).

### 2.4.4 Sunscreen and sunglasses

Sunscreen shall provide broad spectrum protection rated at a minimum of SPF 30+ and comply with AS/NZS 2604.

Sunscreen should be applied as per the manufacturer's instructions.

Where personnel require the use of eye protection from UV, the use of safety eyewear shall meet the requirements of AS1067, Parts 1 and 2.

## 3 Maintenance and care of PPE

PPE shall be properly maintained and regularly inspected by the user before each use. This shall include provision for the appropriate storage, cleaning and servicing of PPE.

PPE shall be serviced and/or replaced in line with manufacturer's guidelines or when there is obvious sign of wear and tear.

PPE should be replaced when:

- (a) the safe working life has expired (as specified by the manufacturer if the equipment);
- (b) it is worn or faded to a point that its function is impaired; and/or
- (c) it is damaged or defective in a way that its function is impaired e.g. footwear soles worn out or split, eye wear lenses scratched or cracked.

PPE should never be shared. It should always be personal issue unless of specialised types which are cleaned and stored after every use or other items that do not involve direct skin contact. This is to prevent any possible cross infection, particularly with footwear.

## Appendix A Hazards addressed by this Standard

The table below identifies the significant hazards listed in the RISSB Hazard Guideline that are addressed in this Standard. In many cases other controls could be required to mitigate the risk SFAIRP and hence the table should be considered as illustrative only.

Source	Related Factors	PPE Standard Reference
5.41 Radiation	5.41.1.19 Sunburn	2.4
6.18 Falls	6.18.1.24 Inappropriate or slippery footwear	2.2
8.4 Injury or Death of an Employee	8.4.1.1 Being struck by rail traffic	2.1
6.5 Harm to Persons	6.5.1.25 Eye Injury	2.3
6.5 Harm to Persons	6.5.1.3 Persons being crushed	2.1 and 2.2

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Once agreed by the Development Groups, Standing Committees and Validator, the drafts are passed to the RISSB Board for approval.

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The Standards Development and Accreditation Committee audits RISSB annually to ensure that RISSB's processes are in accordance with SDAC accreditation requirements.

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