

SYDNEY TRAINS SAFETY MANAGEMENT SYSTEM

GUIDE: PERSONAL PROTECTIVE EQUIPMENT

Purpose

This guide addresses (or sets out) the requirements for the selection, use and maintenance of personal protective equipment (PPE) which is commonly used across Sydney Trains.

Scope

This guide applies to the following:

- high visibility clothing;
- safety footwear;
- hearing protection;
- protective helmets;
- protective gloves;
- eye protection; and
- respiratory protection.

Out of scope

This guide does not address requirements for the use and maintenance of specialised PPE (e.g. protective clothing for electrical workers or welders). These requirements are to be determined by risk assessment and addressed in documented safe work practices refer to [SMS-06-SP-3026 WHS Risk Management](#).

Version Control

Version	Change from previous	Date	Comment
1.0	First release of Sydney Trains SMS	01/07/2013	Launch of Sydney Trains SMS documents
1.1	Issues, Approver name updated. Wording of RailCorp has been replaced by Sydney Trains. Document No. Changed	09/05/2014	Issue no 5145 hyperlink page 5 fixed now completed
1.2	<p>The word "employee" changed to "worker" to align with WHS regulation wording.</p> <p>The wording in the requirement of orange vest changed to Fluorescent Orange Red as per the requirement of Australian Standard AS/NZS 1906.4:2010.</p> <p>Hyperlinks to correct references updated to reflect the current standards and documents.</p> <p>Position titles of document custodian and approver changed to reflect current organisation structure.</p>	14/08/2017	
1.3	<p>Reference to SMS-06-FM-4386 PPE Register in Tools and Guidance section of this Guide was removed as the PPE Register has been removed from the SMS due to limited or no use in the field.</p> <p>References to AS/NZS Standards corrected.</p>	12/03/2018	Reference to SMS-06-FM-4386 PPE Register not removed when form removed from SMS.

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General Requirements

Management of PPE

To be effective as a risk control, the use of PPE requires systematic and active management at the workplace. Line Managers must make sure that the following aspects are managed in accordance with this guide:

- hazard identification and risk assessments;
- selection and purchase;
- registration and distribution;
- use and maintenance;
- inspection and review;
- storage;
- training and instruction; and
- introducing new PPE

Determining PPE requirements through risk assessment

Line Managers are to perform risk assessments for the use of PPE in consultation with workers in accordance with [SMS-06-SP-3026 Risk Management](#).

Risks must be eliminated wherever it is practicable to do so. Where elimination is not practicable, the highest practicable level of risk control must be implemented to reduce the risk So Far As Is Reasonably Practicable (SFAIRP).

Effective risk management requires a combination of strategies and PPE may be an adjunct to higher level controls in order to reduce risk i.e. fume extraction systems or adherence to Network Rules and Procedures for work on or about the track.

Hazard identification forms associated with risk management procedures may assist in identifying PPE needs for hazards relating to:

- the working environment;
- plant;
- manual handling;
- hazardous substances and dangerous goods;
- hazardous materials;
- construction and maintenance;
- working at heights;
- workplace violence;
- hot work; and
- Electrical work.

The risk assessment must state the:

- tasks for which the PPE will be required;
- locations at the workplace where the PPE will be required; and
- Factors which will influence the selection of PPE.

Selection and purchase

1. Selection

Once hazards are identified, risks assessed and higher level controls implemented PPE is to be selected to control remaining (residual) risks.



Note

The risk assessment must consider the limitations of the type of PPE. For example, no one type of glove will provide protection against all chemicals and respiratory protection selection must be in accordance with the type and concentration of the airborne contaminant.

PPE selection for use with chemicals and hazardous substances is to comply with the requirements in Safety Data Sheets.

Line Managers must consult with employees and safety staff to make sure that PPE:

- is appropriate to the work tasks performed;
- fits the individual if it is produced in more than one size; and
- Complies with relevant legislation, Australian Standards, and Codes of Practice.

Additional criteria may be considered such as:

- Special work conditions which may vary with work locations (such as working on slippery surfaces, scaffolding, etc.); and
- personal comfort.

Trials of PPE may be necessary to determine the most suitable type to match the hazard and user requirements such as comfort and effectiveness of fit.

2. Purchase

The majority of PPE required for use within Sydney Trains is available via a catalogue order using the Arriba® Buyer procurement system. If the risk assessment or trial has identified a requirement for other PPE the line manager is to contact the procurement help desk to obtain advice and confirm that the required items are not on an existing catalogue.

If non catalogue procurement is confirmed, Line Managers must:

- develop specifications for the PPE by conducting a pre-procurement safety assessment (in consultation with workgroup safety committee/representative and safety staff) in accordance with [SMS-13-OP-3119 Manage Safety in Procurement - Goods; and](#)
- Purchase PPE which meets the specifications in accordance with procurement procedures.

Registration and distribution

When being distributed to staff, items of PPE are to be logged in a PPE Register or equivalent record. Line Managers are to make sure Sydney Trains workers including Contractors are provided with the necessary PPE before commencing work.



Note

It is not necessary to record issue of items of disposable or consumable PPE which are available in the workplace for use on an "as required by task" basis. For example, disposable respirators, earplugs and sunscreen from a dispenser.

For workers, PPE which comes into contact with the skin is to be issued on a personal basis. Other types of PPE which do not come into skin contact but are required to undertake a core function of the position should also be issued on a personal basis.

Wherever practicable PPE for issue to visitors is to be disposable, where this is not practicable, non-disposable PPE may be issued for the duration of the visit and re-used after cleaning in accordance with the recommendation of the manufacturer/supplier. Items which cannot be cleaned to an unsoiled state are to be discarded.

PPE items which have inspection or maintenance requirements are to be included in Inspection, testing, Calibration and Monitoring Programs in accordance with [SMS-16-SP-3076 Inspection, Testing, Calibration and Monitoring](#). See Section: Specific Requirements for more information on inspection and maintenance requirements for specific items.

Use and maintenance of PPE

1. Employees and contractors

Workers including contractors are to use and care for equipment according to manufacturer's instructions (usually printed on tags on clothing, footwear, belts, harnesses, gloves and helmets). For other PPE such as eyewear, sunscreen, refer to the information on or inside the packaging.

PPE must be maintained correctly and in good condition. For example, contaminated respiratory protection equipment can introduce a risk of infection; a damaged safety helmet might not provide the designed level of head protection.

PPE items are to be wiped clean or dusted off before and after use, to avoid a buildup of grease and grime.

2. Communicating PPE requirements to Contractors

Procurers are to make sure that PPE requirements are communicated to contractors during the contractor procurement process. PPE requirements are to be stated in safety documentation (including SWMS/SWI's) related to the contract.

3. Visitors

PPE is to be made available for visitors to the workplace. Line Managers are to make sure that visitors are provided with PPE appropriate to the risks to which they will be exposed during their visit. Visitors are to be instructed in the need for, and correct use of, the required PPE. Workers who are escorting visitors are to make sure that visitors wear the provided PPE where required.

4. Modifications and repairs

Modification and repair of PPE is to be in accordance with the requirements of the manufacturer/supplier. PPE is not to be altered from its original specification – for example, long sleeved shirts are not to be cut down to be short sleeved or sleeveless.

Inspection and review

Users are to inspect PPE for:

- signs of deterioration, cracks or distortion;
- excessive scratches (on eyewear);
- missing/damaged components;
- modifications or alterations which have not been specified by the manufacturer; and
- expiry date.

Some types of PPE require scheduled inspections and maintenance. Refer to the Specific Requirements section and the manufacturer's instructions for details.

PPE is to be fit for purpose and in serviceable condition. Faulty, damaged or excessively worn PPE is to be:

- withdrawn from use immediately; and
- replaced.

Workers are to report any expired, faulty or sub-standard equipment to their line Manager who is to make sure that a replacement item is provided. Users are also to report any problems they may encounter when using the PPE.

Line Managers are to observe work activities (including visitors to work areas) to make sure correct PPE is being used and it is fit for purpose. They are to consult with Workers to discuss and resolve any issues with protective equipment.

Line Managers are to:

- reorder and replace worn, expired or faulty equipment as necessary;
- make sure that scheduled inspections/maintenance is carried out on PPE where required; and
- brief staff in the correct use of PPE and make sure they are using it for the intended purpose.

Corrective actions are to be managed according to [SMS-18-SP-3078 SER Action Management](#).

Storage

1. General

When not in use, PPE is to be stored in a suitable location and manner to avoid damage or contamination through exposure to:

- moisture, excessive heat or direct sunlight;
- oil, chemicals, dust and corrosive atmospheres; and
- mechanical damage.

Some types of PPE have specific storage requirements. Refer to the Specific Requirements section and the manufacturer's instructions for details.

Storage requirements are to be communicated to users via appropriate means such as team briefs and toolbox talks and included in Safe Work Instructions/Safe Work Method Statements where used.

2. Storage for emergencies

Where necessary, PPE is to be stored in quantities appropriate to emergency situations at the workplace.

Where PPE stored for emergency situations is subject to an expiry period or shelf life it is to be included in workplace inspection activities and replaced as necessary.

Training and Instruction

1. General instruction

PPE requirements are to be incorporated into inductions (for workers including contractors and visitors).

Workers performing work that requires PPE are to be competent in those activities and the selection, fitting, use and maintenance of the required PPE. They are also to understand any additional risks the PPE may introduce and the compensating controls in place at the workplace. For example, the use of hearing protection may limit the person's ability to hear audible warning signals so visual signals are also provided.

2. Task based Instruction

Instruction in the use of PPE for workplace tasks is to be included in staff briefings and pre-work briefs. Types of PPE to be used when performing tasks are to be included in documented work procedures. Instructions are to follow the recommendations of the manufacturer/supplier and cover the following topics:

- why the PPE is required, the nature of the hazard and effects of exposure;
- user inspections;
- correct fitting and adjustment;
- correct use;
- cleaning requirements; and
- storage requirements.

Workers required to use specific or specialised PPE, such as respiratory protective equipment, must be instructed on the correct use of the equipment. Instructions are to be based on the requirements of the manufacturer and Section: Specific Requirements of this guide.

Introducing new PPE

The introduction of new PPE is to be carried out in consultation with the workers who are required to wear it. To aid the correct selection of PPE consideration must be given to the different hazards in the workplace. This will enable an assessment to be carried out on which types of PPE are suitable to protect against the hazards. It may be necessary to obtain advice from specialist sources such as the PPE manufacturer, occupational hygienist or safety professional. The following should be considered when introducing new PPE:

- can the risks be controlled by other means e.g. substitution or engineering?
- is it appropriate for the risks involved and conditions at the place where the exposure may occur?
- does it prevent or adequately control the risks involved without increasing the overall risk?
- does it prevent or adequately control the risks involved without introducing new risks?
- can it be adjusted to fit the wearer correctly?
- what are the needs of the job and the demands placed on the wearer?
- the state of health of those who will be wearing the PPE;
- is it compatible with other items of PPE that are required to be worn?

Specific Requirements

Safety Footwear

Safety footwear is to be selected, used and maintained in accordance with *AS 2210.1:2010 Safety protective and occupational footwear – Guide to selection, care and use*. Selection of types and styles to be used at workplaces is to be determined by risk assessment. A range of types and styles is available from supply agreements to match the nature of the hazard and to allow wearers to obtain the most comfortable fit.

High visibility clothing

1. Rail Corridor

High visibility clothing or vests increase visibility of the wearer to train crew, track vehicle drivers and plant operators.

High visibility clothing which is worn in the rail corridor and maintenance centres is to feature a high visibility colour of orange in accordance with AS/NZS 1906.4:2010 Retro-reflective materials and devices for road traffic control purposes - High visibility materials for safety garments and comply with the requirements of *AS/NZS 4602.1:2011 High visibility safety garments – garments for high risk applications*.

Where used at night or at times of reduced visibility such as fog, low light or whilst in tunnels or underground locations, high visibility clothing must be fitted with retro-reflective strips in accordance with AS/NZS 4602.1:2011 High visibility safety garments and AS/NZS 1906.4:2010 Retro-reflective materials and devices for road traffic control purposes. The pattern of the strips is to be vertical front with crossed strips back as set out in AS/NZS 4602.1:2011.

High visibility vests for use in the rail corridor and maintenance centres are to comply with the requirements of Appendix A and are to be worn as the outermost garment whenever clothing other than high visibility clothing is worn. High visibility vests fitted with retro-reflective strips are also to be worn over non-reflective high visibility clothing at times of reduced visibility such as fog, low light or whilst in tunnels or underground locations.

Selection of an appropriate vest design for use in the workplace is to be based on a risk assessment which is to consider, but not be limited to, the following factors:

- a) entanglement or snagging hazards;
- b) temperature and humidity;
- c) type of work being undertaken; and
- d) opportunity for the vest to be left undone and present entanglement or snagging hazards and/or reduced visibility.

The supply agreement offers a range of designs, as follows:

- a) Poncho style, open on the sides only and joined by fabric hook and loop fastening (such as Velcro®) at the sides and shoulders;
- b) Front opening, fastened by fabric hook and loop fastening (such as Velcro®);and
- c) Front opening, fastened by a non-metallic zipper.

Other designs may also be used subject to risk assessment and compliance with Australian Standards as above.

2. Shunters

Shunters within nominated maintenance centres and yards wear high visibility vests or clothing coloured yellow (also known as lime-yellow) in accordance with AS/NZS 1906.4:2010 to aid train crew in identification of the shunter when in the company of other persons wearing orange vests. Appendix A lists the requirements and colour specifications for high visibility vests for use by shunters within nominated maintenance centres and yards.

3. Sleeve for worksite lookouts

Nominated lookouts for a team working in the danger zone may wear a yellow (also known as lime-yellow) high visibility sleeve to increase visibility of the lookout to train crew and work team members. The colour of the sleeve is to match the requirements for yellow high visibility vests for shunters set out in Appendix A.

4. Crowd control and emergency situations

Workers engaged in crowd control and emergency situations wear vests to aid identification and define roles. Unless worn in the danger zone, the colour of these vests may differ from Orange and need not be of a fluorescent nature. Emergency response procedures may specify particular requirements for vests worn by staff and emergency services personnel.

5. Use and Maintenance

High visibility clothing is not flame retardant unless compliant with International Standard EN 533:1997 Protective clothing – Protection against heat and flame – Limited flame spread materials and material assemblies or EN ISO 14116:2008 Protective clothing – Protection against heat and flame – Limited flame spread materials and material assemblies and clothing. The risks of high visibility clothing compromising safety via burning or melting must be assessed when tasks involving ignition sources, such as welding, are to be performed. Where wearing high visibility clothing would present such a risk, Line Managers must make sure that work methods are put in place which will:

- a) provide protection from hot or burning materials; and
- b) ensure that if there is a reduction in the person's visibility, their safety (or the safety of others) is not compromised.

Users are to wear high visibility clothing in a manner which will provide maximum visibility by fastening the garment and making sure that garments are not torn, fastenings are functional and that material is not soiled or faded to a point where high visibility properties are degraded. To prolong the high visibility properties, high visibility clothing is to be stored out of direct sunlight and laundered in accordance with the recommendations of the manufacturer.

Sunscreen

Sunscreen listed on the supply agreement provides broad spectrum protection and is rated at SPF 30+. Users should be briefed on the manufacturer's requirements for use and be made aware of the factors which vary the level of protection afforded by the sunscreen. The effectiveness of sunscreen products declines over time and users are to make sure that sunscreen issued to them personally is within date prior to use. Line Managers are to make sure sunscreen dispensers and/or stocks of product for personal issue are within date and that storage complies with manufacturer's recommendations.

Hearing Protection

1. Types and use

Workers including visitors in noise hazard areas are to be supplied with, and wear, appropriate hearing protection where engineering and administrative controls do not reduce noise level exposure at a workplace to a level at or below an 8 Hour noise equivalent of 85 dB(A) or there is a peak noise level more than 140 dB(C).

There are many different types of hearing protectors available. Line Managers are to make sure that hearing protectors will provide wearers with adequate protection and are suitable for use in the work environment (refer to AS/NZS 1269.3:2005 (R2016) Occupational Noise Management – Hearing Protector Program).

Earmuffs

Earmuffs comprise cups that fit over the ears and are sealed to the head with soft cushions usually filled with plastic foam or liquid.

Earplugs

Earplugs are hearing protectors that are inserted into the ear canal:

- Pre-moulded earplugs - these are inserted into the ear canal without the need for prior shaping and are available in a range of sizes;
- User formable earplugs – these are generally made from compressible material that is moulded by the user prior to insertion in the ear canal. After insertion the plug expands to form a seal on the walls of the ear canal;
- Custom moulded earplugs – these ear plugs are custom made to fit an individual's ear canal; and
- Banded earplugs – banded earplugs are usually made of soft silicone, rubber or plastic and are suspended on a headband.

Ear canal caps

Ear canal caps seal the entrance to the ear canal without entering it and are held in place by a spring headband.

Acoustic helmets

These cover a large part of the head as well as the ear. As well as providing direct hearing protection they may also reduce bone conduction of the sound to the ear.

Special types

Special types of hearing protector use electronic circuitry, microphones, mechanical techniques and loudspeakers in various ways to achieve noise reduction or noise cancellation. Some are specifically designed to provide voice/signal communication and hearing protection. Examples include:

- Level-dependent protectors – are designed to provide increased protection as the noise level increases;
- Active noise reduction protectors – this type of protector duplicates the noise pattern and inverts it which results in dynamic noise cancellation inside the protector; and

- Communication hearing protectors – these provide hearing protection and earphones that allow messages, signal and alarms to be heard by the user and may be fitted with a microphone connected to a two way radio to facilitate person to person conversation. They can be either wireless or of the plug in type.

2. Selection

Provided that adequate protection is given, the user of hearing protection should be allowed reasonable choice from a selection of hearing protectors. Factors to consider include:

- the degree of protection required. Selection of hearing protection with unnecessarily high attenuation should be avoided;
- suitability for use in the work environment;
- the fit to the wearer;
- compatibility of the hearing protection with other PPE that may be required; and
- the comfort, weight and clamping force of the hearing protection.

3. Storage

Hearing protectors are to be stored in an area outside the designated noise hazard area and kept clean and dry and away from oil, dust and exposure to corrosive chemicals and atmospheres.

4. Service Life

Re-usable earplug and ear canal caps are to be replaced when they show signs of cracking, distortion or the headband (where fitted) becomes damaged or slack. Single use earplugs are to be discarded after use. Earmuffs are to be replaced if the cups become damaged, the headband becomes damaged, slack or replacement parts are unavailable.

Hearing protection is not to be used in a degraded condition as any loss of protection performance may not be noticeable to the wearer.

5. Cleaning, inspection and maintenance

Hearing protectors are to be kept in a clean and hygienic condition and are to be cleaned in accordance with the manufacturers' instructions, where instructions are not available re-usable earplugs and ear canal caps should be washed in soap and water, rinsed and allowed to dry.

Earmuffs are to be wiped clean removing dirt and perspiration from the cups and sealing cushions. Foam inserts, headband and the insides of the cups are to be cleaned as required to maintain them in a hygienic condition. If in continual use the sealing cushions should be washed in soap and water weekly.

Continued use of hearing protectors will require periodic repair or replacement of their components. Repair and/or replacement of parts are to be carried out in accordance with the manufacturers' instructions.

Replacement parts are to be those approved by the manufacturer.

Re-usable hearing protectors are to be inspected:

- before and after each use by the wearer;
- during cleaning; and
- at regular intervals as part of a hearing protector program.

When carrying out inspections on hearing protectors some primary defects to look for are:

- cracks;
- distortion;
- dirt and grease;
- damage or slackening of the headband;
- dirty or old foam inserts;
- hardening of the sealing cushion surface due to perspiration;
- physical damage to the cushion surface;
- deformation of the headband;
- functioning size adjustment mechanism; and
- correct attachment of cups.

Protective Helmets

1. Types and Use

Protective Helmets are worn to reduce the risk or severity of injuries caused by objects falling onto a worker's head or the head striking against a fixed object. Protective helmets must comply with the requirements of AS/NZS 1801 Occupational Protective Helmets.

Bump caps are worn only to protect against scalp lacerations and minimise possible lateral impact when the workers head bumps into an object. They are not required to comply with AS/NZS 1801 and are not to be worn where protection from falling objects is required.

Protective Helmets and bump caps are not to be modified or altered unless done in accordance with the recommendations of the manufacturer/supplier.

2. Storage

Helmets are to be stored in a clean dry location out of direct sunlight, away from heat sources. Stored helmets are to be protected from mechanical damage and exposure to chemicals, particularly when being transported in vehicles.

3. Service Life

Protective helmets are to have the date of issue marked inside the helmet, in addition to the entry made in the PPE Register. Shells of helmets in regular use have a service life of at least three years and harnesses a service life of at least two. Accordingly Line Managers must make sure that helmets in regular use are replaced at maximum intervals of two years.

Helmets which are used infrequently and stored as per above requirements need not be replaced at two yearly intervals – the user must examine the helmet regularly with replacement based on condition.

4. Accessories

Any accessories fitted to a protective helmet (such as chinstrap, earmuffs) must be fitted and used in accordance with the requirements of the manufacturer/supplier of the helmet and accessory. Unless specified by the manufacturer/supplier, modifications are not to be made to enable fitting of accessories.

5. Cleaning, inspection, & maintenance

Helmets and harnesses may be cleaned with warm water and soap or as per the requirements of the manufacturer/supplier.

Protective helmets are to be inspected at weekly intervals by the user. This inspection is to check:

- The shell for damage such as dents, deformation, cracks, excessive discolouration or weathering; and
- The harness for damage such as deformation, stretching, tearing or missing components.

Worn or excessively dirty sweat bands should be replaced as required.

Helmets with damaged shells/harness components or heavily soiled harness components which cannot be cleaned using methods recommended by the manufacturer/supplier must be withdrawn from service and a new helmet issued.

Protective Gloves

1. Types and use

During the course of work employees may be exposed to a range of hazards with the potential to affect hands/arms. Where other means of control are not practical or unsuitable the use of PPE such as gloves may need to be used.

Table 1 contains a guide to the most common hazards and examples of gloves that may be used to protect against them.

Table 1 Guide to the selection of gloves

Hazard	Typical work	Example of suitable glove materials
Radiant Heat	Welding, braising	Leather, pigskin, aramid blends
Abrasion	Brick/block handling, steel fabrication, construction, demolition, quarry work	Leather, pigskin, aramid blends, terrycord, cotton blends
Cut/slice	Sheet metal, salvage work, scrap metal	Aramid blends, neoprene, loopile cotton blends, leather
Puncture	Swarf, wire handling, demolition work, reinforced steel mesh handling	Leather, pigskin, neoprene, nitrile, PVC
Chemical	Cleaning, degreasing, acid/solvent handling, painting, graffiti removal	PVC, PVA, nitrile, neoprene, rubber, vinyl
Electrical shock	Electrical work	In accordance with AS 2225 Insulating gloves for Electrical Purposes and documented rules and procedures
Needle penetration	Cleaning, garbage collection	Whilst no glove material is puncture proof, heavy duty neoprene can provide a degree of protection from penetration
Biological	Cleaning, first aid, rescue work, biological waste handling	Nitrile, rubber, neoprene, vinyl, PVC

2. Selection

Protective gloves are available in a wide range of natural and synthetic materials; however, there is no single glove material, or combination of glove materials, able to provide unlimited protection against all hazards. It is therefore important that hazard identification and risk assessment are conducted in accordance with [SMS-06-SP-3026 WHS Risk Management](#) to identify use and the type of glove likely to suit the work and conditions. Advice should also be sought from the manufacturer of the glove as to its suitability for use in particular applications.

In order for the most suitable glove to be provided the following should be considered:

- identified hazards;
- requirements or recommendations in Safety Data Sheets;
- level of manual dexterity required;
- consultation with employees;
- sizing and style of glove;
- most suitable material to give the required protection;
- does the glove need to be liquid proof;
- what is the minimum breakthrough time required;
- are gloves being considered readily degraded by the chemical;

- could the task for which the glove is being used cause mechanical damage (e.g. punctured, torn, cut) thereby affecting the chemical protective properties; and
- whether wearing protective gloves will introduce any additional hazards.

3. Storage

Gloves must be cleaned of all contaminants before storage. They are to be stored away from direct sunlight and extremes of temperature and in accordance with the manufacturers' recommendations. Moisture and artificial lighting may also have a detrimental effect on some gloves.

4. Service Life

There are many factors that can affect the service life of protective gloves. Gloves tend to be taken off and put on frequently which can result in internal contamination. Gloves used for handling chemicals are only to be re-used where it is within the manufacturers' guidelines to do so. Re-usable gloves are to be inspected prior to each use. Where single use gloves are used they are to be discarded immediately after use.

5. Cleaning, Inspection & Maintenance

Cleaning of gloves should be undertaken in accordance with the manufacturers' recommendations. Gloves used for handling chemicals or cleaning should be rinsed in warm water prior to being taken off to remove any contaminants and dried prior to storage.

Gloves are to be inspected before and after use for signs of defects or wear. Gloves that show signs of:

- wear between the fingers;
- swelling or shrinking;
- cracking, bubbling or pinholes;
- seam failure; and
- rips or tears.

Gloves showing signs of defects are to be withdrawn from use and discarded.

Respiratory Protection

1. Assessment of the hazard

Selection of suitable Respiratory Protection Equipment (RPE) to provide protection from specific contaminants must be based on knowledge of the airborne contaminant which creates the hazard, using measurements undertaken in the workplace. Each hazard has particular characteristics, and the nature, toxicity, physical form and concentration of each contaminant must be included in the assessment.

Table 2 Basic characteristics of airborne contaminants

Hazard	Key points
Gases	Substances present in workplace air which exist as a gas at normal temperature. Gases may be toxic in their own right, such as Hydrogen Sulphide, or displace oxygen to create a risk of asphyxiation
Vapours	Vapours are the gaseous form of a solid or liquid substance formed when evaporation occurs.
Particulates	Tiny particles generated by such processes as grinding, crushing and mixing of compounds, either solid or liquid.
	Dusts – Solid particles produced by grinding, crushing and mixing powder or solids. Airborne fibres, such as asbestos, are a type of dust
	Mists – Tiny liquid droplets caused when a liquid is sprayed, atomised or vigorously mixed or agitated.
	Fumes – Extremely fine solid condensed particles from a thermal process such as welding, brazing or molten metal
	Smoke – Carbon or soot particles or tarry droplets suspended in air which result from the combustion of carbon based material such as paper, wood, coal or oil

2. Types of RPE

Respiratory Protection Devices can be divided into two broad categories – those which purify the air the person breathes (air purifying - the most commonly used), and those which supply air from a separate source (supplied air).

Air Purifying RPE may be powered or non-powered and be used for routine tasks or as self rescue devices for escape purposes. Types available for routine use are set out in Figure 1.

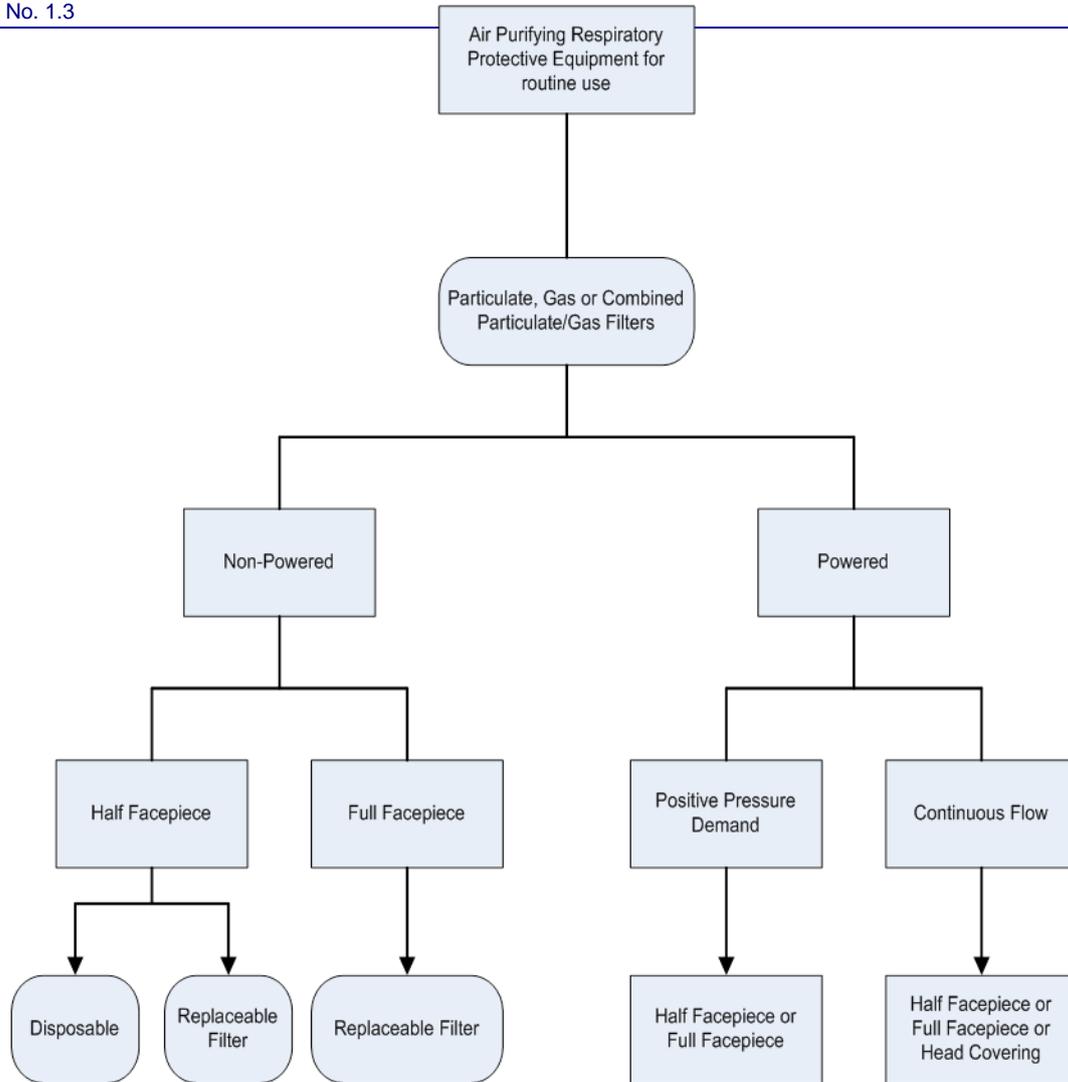


Figure 1 Air Purifying RPE for routine use

Supplied Air RPE provides breathing air from an uncontaminated source and supplies this air to a mask or hood worn by the user. At its most basic form the air can be moved from the uncontaminated source to the user via natural breathing using a large diameter hose. This type has several limitations, and more practical types supply air via a hose from a blower, compressor or from compressed air bottles. Types of supplied air RPE suitable for routine use are set out in Figure 2.

When the bottles are carried by the wearer the RPE is known as Self Contained Breathing Apparatus (SCBA). SCBA is classified by duration of the air supply as suitable for either escape purposes or routine work.



Note

Air purifying equipment for self rescue, Self Contained Breathing Apparatus and Compressed Gas RPE are specialist items for use in specific circumstances and are not covered by this guide. Expert advice on selection, use and maintenance is required.

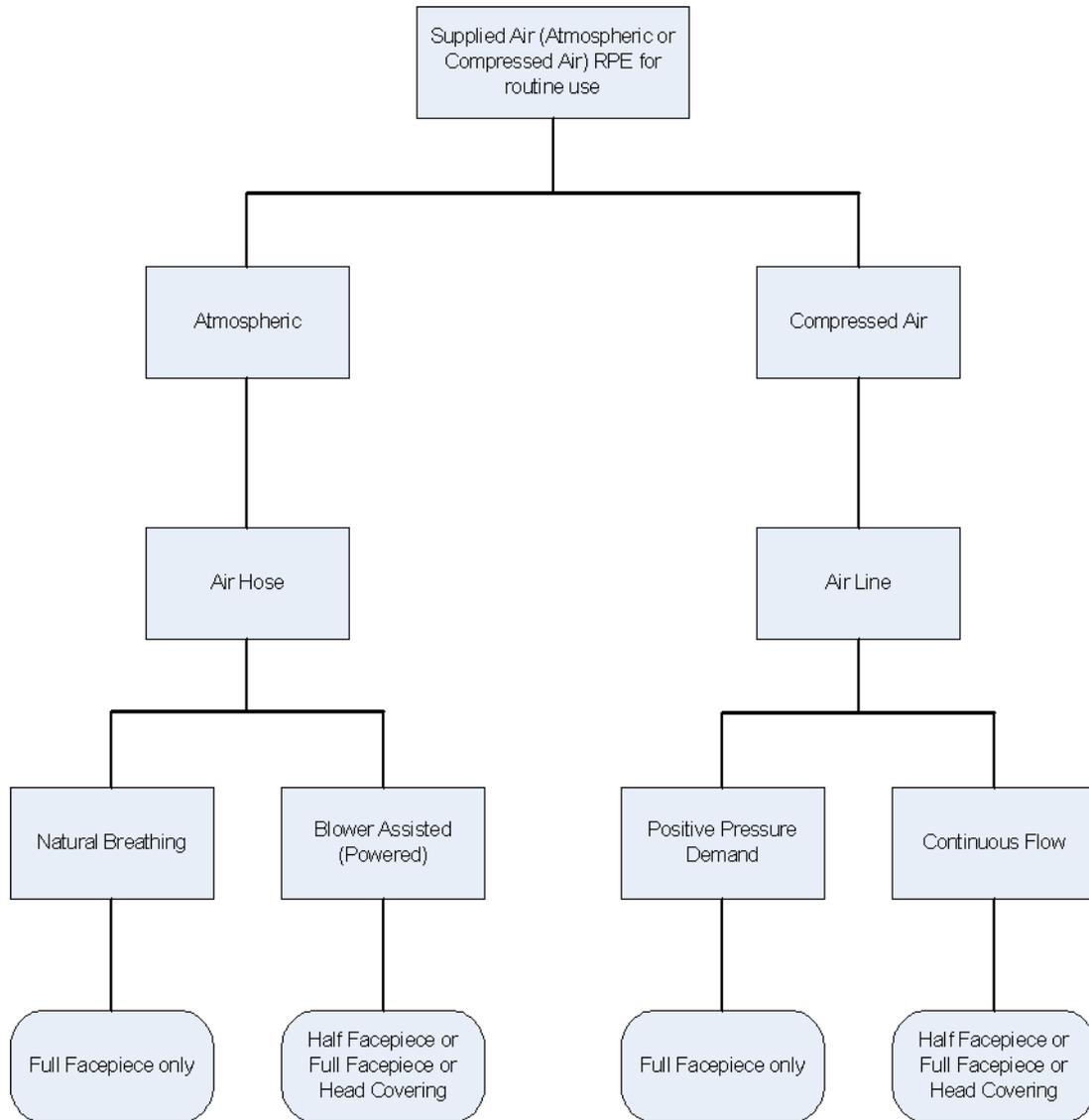


Figure 2 Supplied Air RPE for routine use

3. Selection of RPE – Basic Requirements

Selection of suitable RPE must be determined by risk assessment in accordance with this guide, [SMS-06-SP-3026 WHS Risk Management](#)- and AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment.



Note

A Safety Professional must be included in the assessment of any airborne contaminants or where RPE is being considered as a risk control measure.

Selection must firstly consider the hazard category, which will set some basic RPE requirements as set out in Table 3.

Table 3 Basic RPE requirements

Hazard	Key points
Gases and Vapours	<p>Gas filter cartridges in air purifying respirators can only provide protection against a limited range of gases and vapours at low concentrations, and cannot be used for protection against asphyxiants. Filter cartridges are coded to indicate the gas, gas type or vapour for which protection is provided. Unless stated, gas cartridges do not provide protection against particulates.</p> <p>Supplied air respirators must be used for high concentrations of toxic gas, gases which cannot be filtered by a cartridge, where the gas concentration is unknown or where asphyxiants are present.</p>
Particulates	<p>Particulate filters or cartridges are class rated according to their efficiency.</p> <p>RPE with Class P1 Filters provide protection against mechanically generated particles such as silica and asbestos. P1 filter RPE may be replaceable cartridge type (half facepiece or full facepiece), disposable type or powered type.</p> <p>RPE with Class P2 Filters provide protection against mechanically or thermally generated particles such as metal fumes. P2 filter RPE may be replaceable cartridge type (half facepiece or full facepiece), disposable type or powered type.</p> <p>RPE with Class P3 filters provide protection against highly toxic or highly irritant particles such as beryllium. P3 filter RPE may be full facepiece replaceable cartridge type or powered type (head covering or full facepiece). A half facepiece respirator cannot provide protection to Class P3 - even if fitted with P3 filters.</p>

Further Critical factors which must be considered when selecting suitable respirators are;

4. Selection of RPE – Determining the minimum required protection factor

The protection factor offered by a respirator is the ratio between the concentration of a contaminant outside the respirator to the concentration inside the respirator (the air breathed by the wearer). Air purifying respirators provide the lowest levels of protection factor and supplied air respirators provide the highest. Generally the higher the protection factor the more cumbersome, uncomfortable and complex the equipment becomes and the less likely it will be worn, or worn correctly. This emphasises the importance of applying higher risk control measures (such as forced ventilation) to reduce the contaminant to a concentration such that RPE is (preferably) not required, or needs to provide only a low protection factor.

5. Selection of RPE - Nature of Tasks and wearer

Once the details of the contaminants are known, the nature of the task being undertaken must then be examined. Aspects to consider include:

- whether the device is for regular, emergency or rescue purposes;
- the length of time the wearer will be in the contaminated atmosphere;
- the expected level of activity and mobility required of the wearer;
- the nature of the working environment and its location to a source of air suitable for breathing;
- the need for clear vision and communication;
- whether failure of RPE can result in a situation which is immediately dangerous to life or health;

- the need to wear other PPE, such as eye or skin protection;
- the possibility of the contaminated atmosphere being flammable or explosive;
- physiological considerations matched to the type of RPE;
- facial fit; and
- user acceptance.

A facial fit test which is appropriate to the type of respirator to be used is to be conducted in accordance AS/NZS 1715. These tests must be conducted by a person with knowledge and expertise in selecting and applying a suitable test method.



Note

The supplier of the RPE is to be consulted to determine a suitable method of testing facial fit.

6. Selection of RPE – Consideration of Limitations

All RPE has limitations on its ability to effectively protect the wearer from the contaminant and provide the theoretical protection factor. Limitations must be taken into account in the selection process. The main limitations of air purifying RPE are:

- For disposable and half facepiece respirators
 - A satisfactory seal can be difficult to obtain and maintain due to the variation in face shapes, particularly the nose and chin area. Facial hair, in particular, can compromise the facial seal. Wearers may find difficulty in wearing safety or prescription eyewear and the mask can make understanding speech difficult.
- Full facepiece respirators
 - Facial hair can affect the facial seal as can the side arms of spectacles. These respirators can also become very hot and uncomfortable, particularly if worn while undertaking hard work or in a hot environment.

Line Managers must make sure that only the selected RPE, and cartridge type matched to the hazard, is available for users. Where a range of RPE is required at a workplace Line Managers must make sure that the use applicable for each type is clearly marked.

7. Workplace Exposure Standard

When a contaminant is present in the atmosphere at a level below the Workplace Exposure Standard (WES) RPE may be used as a control measure to minimise exposure to the lowest practicable level and/or remove unpleasant odours. Irrespective of the contaminant concentration, all respirators used within Sydney Trains must comply with AS/NZS 1715 and be managed in accordance with this guide.



Warning

Disposable masks marked as providing protection against “nuisance dusts” or “nuisance odours” do not comply with *AS 1716 Respiratory Protective Devices*. These masks usually have a single strap, making them easily identifiable.

Line Managers must be mindful that workplace exposure standards are not definitive indicators of levels below which no effect can occur. Rather, they represent levels below which, according to current knowledge, the health and comfort of nearly all workers will not be impaired. A very small proportion of workers exposed to levels at or below the WES may exhibit discomfort and/or health effects.

In addition, as more information becomes available on the effects of substances, exposure standards are invariably lowered and standards are established for other substances not currently covered. These factors underpin the principle of ensuring that exposure levels in the workplace are as low as reasonably practicable, not just at or below the WES.

8. Instructions to wearers

Workers who are required to wear RPE are to be instructed in the following aspects:

- the hazards which are present in the work environment, how they are produced and the risks presented;
- steps which have been taken to minimise the risks by higher level controls;
- how the RPE used at the workplace provides protection against the airborne hazard;
- correct use of the RPE, how to wear it correctly and how to check for a good facial seal;
- limitations of the particular RPE;
- how to inspect the RPE for defects;
- how to clean the RPE, the interval for cleaning and the storage requirements;
- how to fit items which are user replaceable (straps, cartridges); and
- the interval for replacement of filter media.

These aspects must be delivered by way of a safety briefing using [SMS-10-TP-4042 Safety Briefing](#). A safety professional or co-ordinator must verify the content of the briefing.

9. Storage

In addition to the general storage requirements at 2.7, particular requirements exist for the storage of RPE.

Cartridges and disposable respirators must be left in the original sealed packing until required for use. This is particularly important for gas and vapour cartridges as the absorbent material in the cartridge will start to absorb contaminants from the air as soon as they are unwrapped and shorten the useable life of the cartridge.

For this reason respirators fitted with cartridges, and filter cartridges which have been fitted to a respirator and are to be re-used, must be stored in an airtight container. The container must be a suitable size to prevent distortion of the facepiece.

10. Service Life

For disposable RPE the service life has expired if:

- the service life replacement interval has been reached or
- the filter media has become contaminated with foreign matter (water, dirt, oil etc) or
- there is any physical damage to the filter, exhalation valve, straps or nose clip.

Disposable RPE is not to be repaired if any of the above conditions are present – it must be replaced.

For half facepiece or full facepiece air purifying or supplied air RPE the service life has expired if any damage has occurred to the facepiece, head straps, valves, filter elements, breathing tube or air supply system which cannot be rectified with replacement parts approved by the manufacturer/supplier. The service life of the air purifying cartridges has expired when the replacement interval is reached.

11. Determination of filter replacement schedule

The filter media of air purifying RPE has a finite life, after which efficiency is impaired and the device cannot provide protection. Factors affecting the replacement interval include:

- concentration and nature of the contaminant in the workplace atmosphere;
- type of filter media; and
- hours and conditions of RPE use.

For particulate filters on natural breathing (non-powered) respirators, breathing resistance does provide some indication that the service life of the respirator (if disposable) or cartridges (if replaceable cartridge type) has been reached. A perceived increase in breathing resistance is sufficient to indicate that replacement is required.

For gas filters no reliable indications are available to the wearer. Whilst detecting an odour of the contaminant certainly indicates that replacement is necessary, this is not to be used as the indicator for determining a replacement schedule as contaminant concentrations may be above the exposure standard before an odour is detected. In addition, some substances have no detectible odour and others do not exhibit a detectible odour at high concentrations.

Determination of filter replacement intervals therefore requires specialist knowledge, and will largely be based on the concentration of contaminant determined during workplace air monitoring

12. Cleaning, Inspection & Maintenance

Line Managers must make sure that an Inspection and maintenance regime is developed and implemented for RPE in accordance with [SMS-16-SP-3076 Inspection, Testing, Calibration and Monitoring](#). For half or full facepiece RPE the person to whom the RPE is issued is to perform regular cleaning of the equipment in accordance with the recommendations of the manufacturer/supplier.

Users are to be instructed in how to clean and maintain the RPE in accordance with 8. Instructions to wearers section in Respiratory Protection.

For supplied air RPE Line Managers must make sure that the maintenance requirements set out by the manufacturer/supplier are fulfilled. The wearer is to be instructed in how to perform user cleaning and maintenance tasks as established by the manufacturer. Line Managers must make sure that cleaning, inspection and maintenance procedures which are not identified as user tasks are performed by the manufacturer or agent.

Eye Protection

1. Types and use

Safety glasses must comply with *AS/NZS 1337.1:2010 Personal eye protection – Eye and face protectors for occupational applications*. For protection against hazards such as dust and small particles a range of safety glasses offering medium impact protection are available from Sydney Trains supply agreements. Various styles are available to match the nature of the hazard and to allow wearers to obtain the most comfortable fit. The glasses are suitable for general use in locations such as maintenance centres, workshops, depots and the rail corridor where use of eye protection is specified.

Both clear and tinted versions are available from supply agreements, the tinted versions provide protection against sun glare and solar ultraviolet radiation equivalent to that of general purpose sunglasses which conform to *AS/NZS 1067 Sunglasses and fashion spectacles*.

Where eye protection is required for specific hazards involving projectiles, such as welding, chipping, grinding or for light sources such as welding, lasers or gas welding/cutting the requirements of *AS/NZS 1336.2014: Eye and face protection – Guidelines* must be followed. For protection against chemical hazards the recommendations of the safety data sheet and *AS/NZS 1336* are to be followed.

Requirements for eye protection for specific hazards are to be stated in written work procedures (SWMS/SWI's) where used. When pre-work briefs are used, the requirement to wear eye protection is to be included in the briefing.

2. Prescription eye protectors

Eye protectors fitted with prescription lenses can provide low or medium impact protection together with prescribed refractive correction of vision based on an individual's visual need. Prescription eye protectors are to comply with the requirements of *AS/NZS 1337.6:2012 Personal Eye Protection - Prescription eye protectors against low and medium impact*.

Where high impact resistance or protection from hazards other than flying particles is required eye protectors which are appropriate to the hazard, comply with *AS/NZS 1337* and cover the prescription eyewear are to be worn.

3. Protective Eyewear for train crew

Train crew may use medium or low impact eye protection to provide added protection against ultraviolet radiation, wind and dust and antisocial behaviour such as thrown objects and spitting. Glasses cannot provide full protection against these hazards but may assist in minimising injury.

4. Protective Eyewear for welding/cutting

Welding and cutting operations using gas or arc methods present hazards to eyes by exposure to ultraviolet and infrared radiation, sparks and flying particles. Filters are to comply with the requirements of AS/NZS 1338.1:2012 Filters for eye protectors - Filters for protection against radiation generated in welding and allied operations. Line Managers must make sure that the level of eye protection provided for these tasks is fit for the purpose and is specified in documented Safe Work Practices.

5. Storage

In addition to the general storage requirements set out at section Storage, individuals issued with safety spectacles are to be issued with a suitable storage case to protect the spectacles from scratches and damage.

6. Service Life

The service life of protective eye wear expires when:

- the lens/visor surface is scratched, abraded or etched such that vision is impaired or mechanical strength may be reduced;
- frames, fittings and straps are worn or broken; and
- for a glass lens, the inside surface is scratched (minute glass particles can be released from a scratch).

Replace protective eyewear used for general protection, which is in frequent use, when two years has elapsed from the date of issue.

7. Cleaning, Inspection and Maintenance

Cleaning and inspection of eye protection is to take place prior to issue and before and after use. Cleaning is to be carried out in accordance with the manufacturers' recommendations. In the absence of specific recommendations eye protectors should be washed thoroughly with non-abrasive soap or detergent and warm water using a soft cloth, rinsed and allowed to dry.

Tools and guidance material

[PR-D-78101 General Requirements for Electrical Work](#)

[SMS-16-SP-3076 Inspection, Testing, Calibration and Monitoring](#)

[SMS-13-OP-3119 Managing Safety in Procurement - Goods](#)

[SMS-06-OP-3038 Manage Risks with Noise](#)

[SMS-18-SP-3078 SEQR Action Management](#)

[SMS-06-SP-3026 WHS Risk Management](#)

AS/NZS 1800:1998 Occupational protective helmets – Selection, care and use

AS/NZS 2161.1:2016 Occupational protective gloves Part 1 Selection, use and maintenance

AS/NZS 1336:2014: Eye and face protection – Guidelines

AS/NZS 1337.1:2010 Personal eye protection – Eye and face protectors for occupational applications

AS/NZS 1337.6:2012 Personal eye protection - Prescription eye protectors against low and medium impact

AS/NZS 1338.1:2012 Filters for eye protectors - Filters for protection against radiation generated in welding and allied operations

AS/NZS 1269.3:2005 (R2016) Occupational noise management - Hearing protector program

AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment

AS/NZS 1906.4:2010 Retro reflective materials and devices for road traffic control purposes - High –visibility materials for safety garments

AS/NZS 2210.1:2010 Safety protective and occupational footwear – Guide to selection, care and use

AS/NZS 4602.1:2011 High visibility safety garments – garments for high risk applications.

Appendix A - Specifications for high visibility vests for use in the rail corridor

Compliance with standards

a) Design

Materials used in the vest construction must be compliant with Australian Standard AS/NZS 4602 High visibility safety garments. High visibility vests must be fitted with retro-reflective strips in accordance with *AS/NZS 1906.4:2010 Retro-reflective materials and devices for road traffic control purposes*. They must also be day and night compliant to *AS/NZS 4602 High visibility safety garments*.

All high visibility vests must cover the entire torso above the waist. The front of the garment must extend at least 100mm below waist level, and the back must cover the buttocks (to improve visibility when bending forward or in a stooped position).

In addition to corporate identification, vests may have lettering on the back and/or front to identify particular roles such as Transit Officer, Investigator, and Operations Standards Manager etc. For the "First Aid" version the words "First Aid" must be printed in reflective letters on the front of the vest and the 'First Aid Symbol' printed on the back (top, centre) in green.

b) Retro Reflective Strips

All high visibility vests must be fitted with retro reflective strips. The strips must be silver in colour (reflects white), not less than 50mm wide and retro reflective to meet the requirements of Class R material in accordance with Australian Standard AS1906.4:2010.

The retro reflective strips must be applied to the vest such that they remain in place and will be serviceable for the life of the garment under normal use and laundering.

Positioning of the strips on garments must be in accordance with the Australian Standard AS4602: 2011, as follows:

- i) One horizontal hoop of retro reflective material must encircle the waist,
- ii) A second horizontal strip must be at the back, below the waist, so as the strip is still visible when the wearer is bending forward or in a stooped position. The minimum gap between the horizontal strips shall be 50mm,
- iii) Two vertical 50mm strips of retro reflective material must join the upper horizontal hoop, straight over each shoulder, and forming an "X" on the back.

c) Colour

- i) Fluorescent Orange Red high visibility Vests

The colour Fluorescent Orange Red must have chromaticity coordinates that lie within the colour spaces specified for 'Fluorescent Orange Red' in Table 2.1 of Australian Standard AS/NZS 1906.4:2010 'Retro Reflective Materials'. The minimum luminance factor must be 0.40 in accordance with Tables 2.2 of Australian Standard AS/NZS 1906.4:2010.

- ii) Yellow high visibility Vests for Shunters

The colour Yellow must have chromaticity coordinates that lie within the colour spaces specified for 'Yellow' in Table 2.1 of Australian Standard AS/NZS 1906.4:2010 'Retro Reflective Materials'. The minimum luminance factor must be 0.70 in accordance with Tables 2.2 of Australian Standard AS/NZS 1906.4:2010.

ID Pockets

Where required, high visibility vests may have a clear ID pocket provided on the breast pocket position. The clear pocket must:

- be approximately 100mm wide and 70mm high, without a flap, and fastened by fabric hook and loop fastening;
- have a clear flexible transparent front for easy viewing of the ID inside;
- have smooth edges all around so as not to cause injury to the wearer and
- be heat resistant to the recommended laundering processes for the garment.