Draft

Australian/New Zealand Standard™

Public Comment is invited for:

DR AS/NZS 2210.1:202X, Safety, protective and occupational footwear, Part 1: Guide to selection, care and use

During their development process, Australian/New Zealand Standards are available in draft form during the public consultation period to allow any interests concerned with the application of the proposed Standard to review the draft and submit their comments.

This draft is liable to alteration. It is not to be regarded as an Australian/New Zealand Standard until finally issued as such by Standards Australia/Standards New Zealand.

Upon successful conclusion of the Public Comment period it is proposed to publish this Standard as AS/NZS 2210.1:202X.

NOTE
This public comment draft is for New Zealand consultation, and New Zealand stakeholders only. This draft was previously released for Australian consultation through Standards Australia. Any comments received from stakeholders outside of New Zealand will be marked for future work, unless previously resolved.

STANDARDS Australia

STANDARDS NEW ZEALAND
TE MANA TAUTIKANGA O AOTEAROA

Preface

This Standard was prepared by the joint Australia/New Zealand Standards Committee SF-003, Protective Occupational Footwear, to supersede AS/NZS 2210.1:2010.

The objective of this document is to provide users with advice for recommended practices for the selection, care and use of safety, protective and occupational footwear for use in a wide range of environment and occupations.

The major changes in this edition are as follows:

(a) Incorporation of changes to requirements and terminology relating to occupational footwear in the latest editions of the other parts of the AS/NZS 2210 series.

(b) Deletion of reference to AS/NZS 2210.4.

(c) Update of reference to BS EN 50321-1, *Live working — Footwear for electrical protection, Part 1: Insulating footwear and overboots*.

The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a document, whereas an “informative” appendix or annex is only for information and guidance..

Contents

Australian/New Zealand Standard

Safety, protective and occupational footwear

Part 1: Guide to selection, care and use

Section 1 Scope and general

1.1 Scope

This document sets out the recommended practices for the selection, care and use of safety, protective and occupational footwear. It also includes the hazards associated with the use of such footwear.

1.2 Normative references

There are no normative references in this document.

NOTE Documents referenced for informative purposes are listed in the Bibliography.

1.3 Terms and definitions

For this document, the following terms and definitions apply.

1.3.1
competent person
person who has acquired, through education, training, qualification or experience or a combination of these, the knowledge and skill enabling that person to perform the task required

1.3.2
may
indicates the existence of an option

1.3.3
should
indicates a recommendation

1.4 General principles

In general, safety, protective and occupational footwear should be worn to reduce injuries to feet resulting from —

(a) contact with falling, rolling or cutting objects;

(b) penetration through the sole or uppers;

(c) friction or pressure blistering;

(d) explosions and electrical hazards;

(e) contact with chemicals, heat and molten metals; and

(f) slipping.

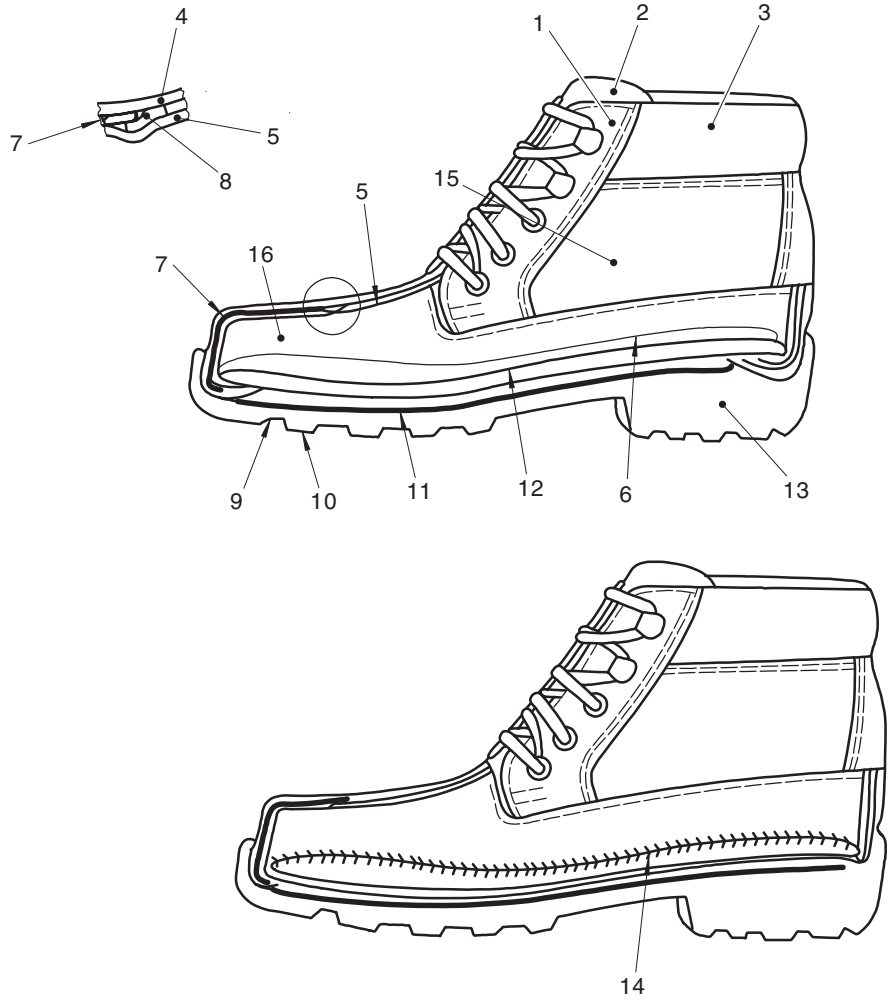
1.5 Design, construction and classification

Construction of safety, protective and occupational footwear is illustrated in Figure 1. Design and classification are addressed in AS 2210.2, AS 2210.3 and AS 2210.5. Classification of footwear is presented in Table 1. Designs of footwear are illustrated in Figure 2.

Protective elements should be incorporated in the footwear in such a way that they cannot be removed without damaging the footwear.

Table 1 — Classification of footwear

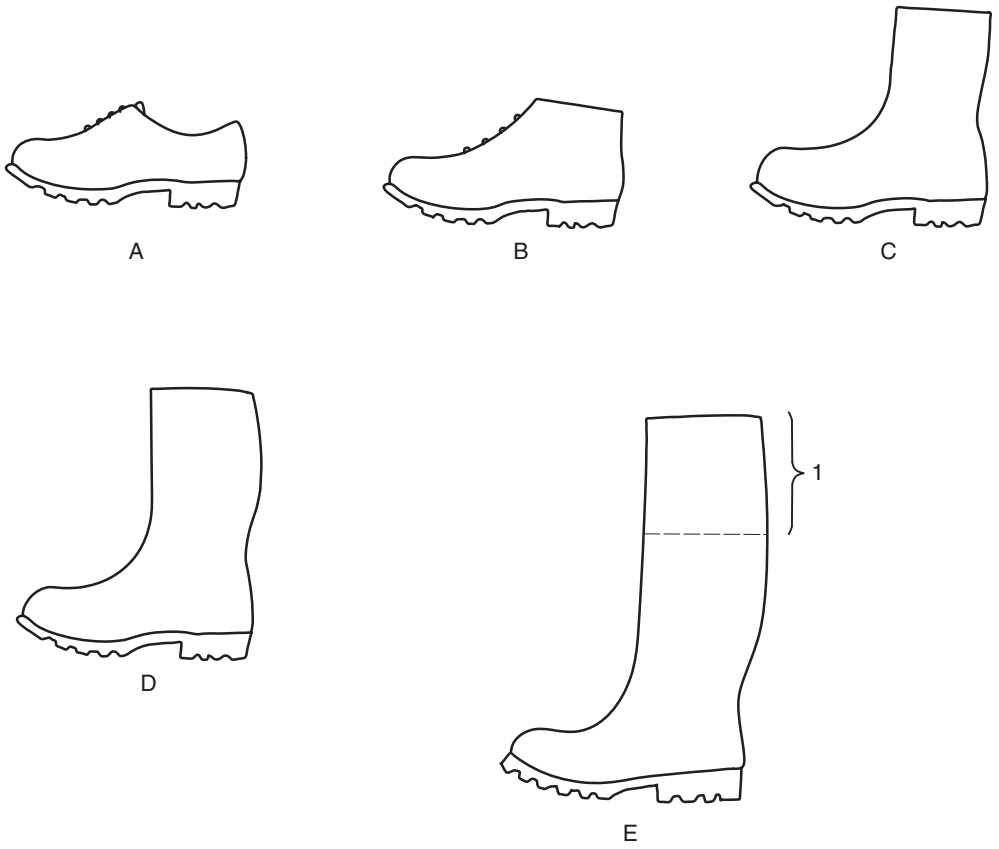
Code designation	Classification
I	Footwear made from leather and other materials, excluding all-rubber or all-polymeric
II	All-rubber (i.e. entirely vulcanized) or all-polymeric (i.e. entirely moulded)



Key

1	Facing	9	Outsole
2	Tongue	10	Cleat
3	Collar	11	Penetration-resistant insert
4	Upper	12	Insole
5	Vamp lining	13	Heel
6	Insock	14	Strobel stitching
7	Toe cap	15	Quarter
8	Foam strip	16	Vamp

Figure 1 — Example of construction of safety, protective and occupational footwear



Key

A	Low shoe
B	Ankle boot
C	Half-knee
D	Knee-high boot
E	Thigh boot
1	Variable extension that can be adapted to the wearer

Figure 2 — Footwear designs

1.6 Footwear categories

1.6.1 Safety footwear

1.6.1.1 Basic features

Safety footwear is fitted with safety toecaps and meets the basic requirements of AS 2210.3:2019 Table 2. It can incorporate one or more additional protective features to protect the wearer from injuries that could arise through accidents in the working sectors for which the footwear is designed. Safety toecaps meet the requirements of —

(a) impact resistance at an energy level of 200 J; and

(b) compression resistance at a compression load of 15 kN.

The marking symbol for basic features is SB.

1.6.1.2 Additional features

Additional protective features are presented in Table 2.

Table 2 — Additional marking symbols for safety, protective and occupational footwear

Protective features	Marking symbol on footwear
Penetration resistance	P
Electrical properties:	
Conductive footwear	C
Antistatic footwear	A
Electrically insulating -footwear	see BS EN 50321-1
Resistance to inimical environments:	
Insulation against heat	HI
Insulation against cold	CI
Energy absorption of seat region	E
Resistance to water	WR
Metatarsal protection	M
Ankle protection	AN
Water penetration and water absorption of upper (footwear of Classification I)	WRU
Cut resistance	CR
Cleated outsole:	
Resistant to hot contact of outsole	HRO
Resistance to fuel oil of outsole (occupational footwear)	FO

1.6.2 Marking of categories of safety footwear

Tables 3 and 4 categorize safety footwear with the most widely used combinations of basic and additional features.

Table 3 — Safety footwear classification I (leather footwear)

Marking symbol	Additional features
SB	(No additional features)
S1	Closed seat region Antistatic footwear Energy absorption of seat region
S2	As S1 plus Water penetration and water absorption
S3	As S2 plus Penetration resistance Cleated outsole

Table 4 — Safety footwear classification II (all-rubber or all-polymeric footwear)

Marking symbol	Additional features
SB	(No additional features)
S4	Antistatic footwear Energy absorption of seat region

Table 4 *(continued)*

Marking symbol	Additional features
S5	As S4 plus Penetration resistance Cleated outsole

1.6.3 Occupational footwear

1.6.3.1 Basic features

Occupational footwear meets the basic requirements of AS 2210.5:2019 Table 2 and should incorporate one or more protective features to protect the wearer from injuries that could arise through accidents in the working sectors for which the footwear is designed.

Additional protective features are presented in Table 2.

NOTE Occupational footwear is not fitted with safety or protective toecaps.

1.6.3.2 Marking of categories of occupational footwear

Tables 5 and 6 categorize protective footwear with the most widely used combinations of basic and additional features.

Table 5 — Occupational footwear classification I (leather footwear)

Marking symbol	Additional features
OB	One or more of the following from Table 2: P, C, A, I, HI, CI, E, WR, AN
O1	Closed seat region Antistatic footwear Energy absorption of seat region
O_2	As O1 plus Water penetration and water absorption
O3	As O_2 plus Penetration resistance Cleated outsole

Table 6 — Occupational footwear classification II (all-rubber or all-polymeric footwear)

Marking symbol	Additional features
OB	One or more of the following from Table 2: P, C, A, I, HI, CI, E, AN
O4	Antistatic footwear Energy absorption of seat region
O5	As O4 plus Penetration resistance Cleated outsole

Section 2 Foot protection

2.1 General

In order for footwear to be effectively worn, an educational program to meet the needs of the user and the specific environment should be developed. Unless people are familiar with the causes of foot injuries and the actions necessary to prevent them, they may not be sufficiently motivated to ensure proper footwear is worn and other risk control measures instituted. An educational program may encourage the cooperation of the employees.

Employees should be aware of their responsibility to —

(a) not wilfully damage or misuse the protective footwear provided;

(b) immediately report any loss or damage affecting the footwear's performance; and

(c) understand the need for care and maintenance to actively ensure continued maximum protection of the footwear.

Information should also be provided to wearers of protective footwear on the need to —

(i) keep feet and footwear clean;

(ii) wash and thoroughly dry feet daily; and

(iii) change socks daily.

2.2 Hazard identification and risk assessment

As protective footwear only provides the wearer with limited protection against hazards in the workplace, it is essential that a hazard analysis study be carried out before implementing a footwear protection program. An example of a hazard identification/risk assessment sheet is shown in Table 7.

Common workplace hazards include —

(a) *slipping* — see Appendix A;

(b) *mechanical* — falling objects, sharp or penetrating objects (puncture/penetration), moving plant, machinery/equipment cutting, crushing/compression machinery/equipment ejecting objects (metatarsal impact);

(c) *hazardous substances* — gas, flammable materials, corrosives, toxic substances, infectious agents (chemically resistant, waterproofing);

(d) *thermal* — extreme cold, extreme heat, splashes of hot or cold materials;

(e) *electrical* — unsafe electrical equipment, e.g. worn cords, water near electrical equipment (electrical insulation); and

(f) *static electricity* — static discharge may cause harm to workers or equipment.

Before selecting protective footwear, a hazard assessment and analysis based on the workplace environment and specific work activities should be conducted.

The following potential hazards should be considered:

(i) Materials handled by the employee during the normal course of their job in order to —

  (A) evaluate the risk of objects falling onto or striking employees' feet;

  (B) consider any material or equipment that might roll over employees' feet; and

(C) consider any sharp or pointed objects that might cut the top of employees' feet.

(ii) Foreign objects that may penetrate the bottom or side of the foot.

(iii) Exposure to corrosive or irritating substances.

(iv) Exposure to explosive atmosphere. Evaluate the risk of static electrical discharges igniting an explosion of fire.

(v) Risk of damage to sensitive electronic components or equipment due to the discharge of static electricity.

NOTE Check with protective footwear suppliers or manufacturers for the level of electrical resistance provided by the footwear.

(vi) Risk of coming into contact with energized conductors.

(vii) Risk to ankles from uneven walking surface or rough terrain (in which case ankle support is required).

2.3 Selection of footwear

The environment in which the footwear is intended to be used should be carefully considered. After a hazard identification (see Table 7), the types of footwear available should be evaluated in order to select the footwear type, sole material, tread design and upper design and materials that is best suited to that environment, see Table 8.

Some specific workplace hazards may fall outside the scope of a product specification.

New materials and technology, such as non-metallic toecaps or midsole protection, may perform differently to traditional materials and may need to be taken into account when selecting footwear.

If slippery surfaces are a common hazard, see Appendix A.

Some working environments, such as forestry work or mining, may require special purpose footwear that incorporate special features (such as cleats or spikes) or be waterproof.

If there is doubt about the selection of suitable protective footwear, advice should be sought from a competent person, the footwear supplier or manufacturer.

Closure systems such as zippers are commonly available in safety footwear. Selection should be based on fitness for purpose. Footwear should be tested against applicable Standards such as AS 2332.

2.4 Ongoing monitoring

Hazard identification and risk assessment should be an on-going activity in the employer's safety program. This will ensure that risks are constantly re-evaluated and that the level of protection is maintained. Assessment should be documented and saved for easy reference.

The effectiveness of protective footwear against workplace hazards should be continually monitored, as hazards may change over time. In addition, the needs of individual workers may change and the working environment may present challenges according to the season or activity.

One way of monitoring effectiveness is to assess incidents involving workers' feet. The limits of protection observed and the types of injuries sustained may provide reliable feedback on the suitability of past footwear choices and the accuracy of the hazard analysis.

Table 7 — Example of a hazard identification and assessment worksheet

Company name:					Date:				
Location:					Name of assessor:				
Type of facility:									
Department area	Toe impact	Metatarsal impact	Puncture/ penetration	Chainsaw cutting	Electric shock	Electrical conduction	Static dissipation	Slip	Recommendations
NOTE This worksheet is provided only as an example. You may wish to reduce or expand the hazard categories according to the conditions in your own workplace.									

Table 8 — Some considerations for the selection of footwear

Hazard	Risk	Minimum design type features	AS 2210 type (depending on risk type)	Marking on footwear (one of the following)
Objects falling on or striking feet	Injury to toes	Toe protection	AS 2210.3 Class I or II	SB, S1, S2, S3, S4, S5
Sharp materials underfoot	May penetrate the bottom or side of the foot	Penetration-resistant midsole	AS 2210.3 Class I or II	P, S3, S5
			AS 2210.5 Class I or II	P, O3, O5
Exposure to wet areas	Exposure to water that may penetrate the footwear causing damage to the foot and footwear	Water-resistant material	AS 2210.3 Class I or II	WR, WRU, S2, S3, S4, S5
			AS 2210.5 Class I or II	WR, WRU, O_2, O3, O4, O5
Exposure to slippery conditions—tiled surface	Falling, tripping or slipping	Slip-resistant sole	AS 2210.3 Class I or II	SRA
			AS 2210.5 Class I or II	
Exposure to slippery conditions — steel	Falling, tripping or slipping	Slip-resistant sole	AS 2210.3 Class I or II	SRB
			AS 2210.5 Class I or II	
Exposure to slippery conditions — steel and tiled surfaces	Falling, tripping or slipping	Slip-resistant sole	AS 2210.3 Class I or II	SRC
			AS 2210.5 Class I or II	
Exposure to corrosive or irritating substances	Exposure to liquids/chemicals that may penetrate footwear causing damage to the foot and footwear	Chemical resistant	AS 2210.3 Class I or II	(No specific marking. Refer to manufacturer or supplier)
			AS 2210.5 Class I or II	
High temperature surfaces	Injury to foot when walking on hot surfaces, above 300°C	Heat-resistant sole	AS 2210.3 Class I or II	HRO
			AS 2210.5 Class I or II	
High temperatures	Foot injury due to exposure to extreme hot environments	Insulate the foot from heat	AS 2210.3 Class I or II	HI
			AS 2210.5 Class I or II	
Low temperature (below –10 °C)	Foot injury due to exposure to extreme cold environments	Insulate the foot from cold	AS 2210.3 Class I or II	CI
			AS 2210.5 Class I or II	
Exposure to fuel oil	Exposure to fuel oil that may penetrate the footwear causing damage to the foot and footwear	Fuel oil resistant	AS 2210.3 Class I or II	
			AS 2210.5 Class I or II	FO
Heel shock	Energy absorption of the seat region	Energy absorbing seat region	AS 2210.3 Class I or II	E, S1, S2, S3, S4, S5
			AS 2210.5 Class I or II	E, O1, O_2, O3, O4, O5
Ladder climbing	Foot slippage off ladder	Defined (not wedge) heel	Any. No heel requirements specified	Not applicable
Static electrical discharges may ignite and explosion or fire, e.g. when handling explosives	Damage to sensitive electronic components or equipment due to the discharge of static electricity	Electrically conducting. i.e. dissipating static charge in shortest possible time	AS 2210.3 Class I or II	C
			AS 2210.5 Class I or II	

Table 8 *(continued)*

Hazard	Risk	Minimum design type features	AS 2210 type (depending on risk type)	Marking on footwear (one of the following)
Static electrical discharges may ignite and explosion or fire	Damage to sensitive electronic components or equipment due to the discharge of static electricity	Antistatic i.e. dissipating static charge in shortest possible time	AS 2210.3 Class I or II	A, S1, S2, S3, S4, S5
			AS 2210.5 Class I or II	A, O1, O_2, O3, O4, O5
Electrical hazards	Coming into contact with energized conductors of low voltage	Electrically non-conducting (known as electrically insulating)	AS 2210.3 Class II only	Class ”0” “00”
			AS 2210.5 Class II only	I
Uneven walking where ankle support is required	Uneven walking surface where ankle support is required	Ankle support	AS 2210.3 Class I or II	AN
			AS 2210.5 Class I or II	
Exposure to rotating or abrasive machinery (e.g. angle grinders)	Cuts to the foot	Metatarsal and toe protection	AS 2210.3 Class I or II	M
Exposure to rotating or abrasive machinery (e.g. chainsaws)	Cuts to the foot	Chainsaw resistant materials	ISO 17249	
Objects rolling or falling onto foot	Damage to instep	Metatarsal protection and toe protection	AS 2210.3 Class I or II	M

Section 3 Additional features of safety footwear

3.1 Penetration resistance

If foot injuries due to penetration of the sole are likely, penetration-resistant midsoles should be used. Such midsoles, when conforming to AS 2210.3, are integral with the construction of the footwear, i.e. cannot be moved without damaging it. Footwear is marked with symbol “P”.

3.2 Protection of metatarsal

If foot injuries due to impact through the top of the foot are likely, metatarsal protectors should be used. Such metatarsal protectors, when conforming to AS 2210.3, are integral with the construction of the footwear, i.e. cannot be removed without damaging it. Footwear is marked with symbol “M”.

3.3 Electrical hazards

3.3.1 Electrically conductive properties

Electrically conductive footwear should be used if necessary to minimize electrostatic charges in the shortest possible time, e.g. when handling explosives.

Electrically conductive footwear should not be used if the risk of shock from any electrical apparatus or live parts has not been completely eliminated. Footwear that is conductive has an upper limit of resistance of 100 kΩ in its new state.

During service, the electrical resistance of footwear (boots and shoes) made from conductive material can change significantly due to flexing and contamination. Therefore, it is necessary that the product is capable of fulfilling its designed function of dissipating electrostatic charges during the whole of its life. If necessary, the user is should establish an in-house test for electrical resistance and should use it at regular intervals.

The test and those specified in Clause 3.3.3 should be a routine part of the workplace accident prevention program.

If footwear is worn in conditions where the soling material becomes contaminated with substances that can increase the electrical resistance of the footwear, wearers should always check the electrical properties of their footwear before entering hazardous areas.

Where conductive footwear is in use, the resistance of the flooring should be such that it does not invalidate the protection against the static electricity provided by the footwear.

In use, no insulating elements should be introduced between the inner sole of the footwear and the foot of the wearer. However, if any insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties. Footwear is marked with symbol “C”.

3.3.2 Antistatic properties

Antistatic footwear should be used if —

(a) it is necessary to minimize electrostatic build-up by dissipating electrostatic charges and thus avoiding the risk of spark ignition of flammable substances and vapours; and

(b) the risk of electric shock from any electrical apparatus or live parts has not been completely eliminated.

However, antistatic footwear cannot guarantee adequate protection against electric shock as it introduces only a resistance between foot and floor. If the risk of electric shock has not been completely eliminated, additional measures to avoid this risk are essential. Such measures, as well as the additional

tests described in Clause 3.3.3, should be a routine part of the accident prevention program at the workplace.

Experience has shown that, for antistatic purposes, the discharge path through a product should have an electrical resistance of less than 1 000 MΩ at any time throughout its useful life. A value of 100 kΩ is specified as the lowest limit of resistance of a product when new in order to provide some limited protection against dangerous electrical shock or ignition in the event of any electrical apparatus becoming defective when operating at voltages of up to 250 V. However, users should be aware that under certain conditions the footwear might provide inadequate protection and additional safeguards should always be taken to protect the wearer.

The electrical resistance of this type of footwear can be changed significantly by flexing, contamination or moisture. This footwear will not perform its intended function if worn in wet conditions.

It is, therefore, necessary that the product be capable of fulfilling its designed function of dissipating electrostatic charges and also of giving some protection during the whole of its life. The user should establish an in-house test for electrical resistance and use it at regular and frequent intervals.

Classification I footwear can absorb moisture if worn for prolonged periods and can become conductive in moist and wet conditions .

If the footwear is worn in conditions where the soling material becomes contaminated, wearers should always check the electrical properties of the footwear before entering a hazard area.

If antistatic footwear is in use, the resistance of the flooring should not invalidate the protection provided by the footwear.

In use, no insulating elements, with the exception of normal hose, should be introduced between the inner sole of the footwear and the foot of the wearer. If any insert is put between the inner sole and the foot, the combination footwear/insert should be checked for its electrical properties.

3.3.3 Electrically non-conductive footwear

Although the term “electrically insulating footwear” is used in BS EN 50321-1, footwear meeting these requirements in Australia and New Zealand is generally known as “electrically non-conductive footwear” as insulation cannot be guaranteed.

Non-conductive footwear may be used to provide additional insulative protection when working in areas of exposed live low voltage (50 V a.c. to 1 000 V a.c.) conductors or where contact with damaged live low voltage equipment or conductors is likely. It should be considered as only part of the overall strategy when entering such hazardous areas.

Non-conductive footwear needs to be tested and conform to Class ”0” or Class “00” footwear requirements of BS EN 50321-1 This is marked with the symbol “I”, see Table 8.

Footwear with non-conductive properties may provide limited insulation to the electrical path of low voltage currents passing through the body. Where other parts of the body are in contact with the earth or other phases, the protection provided by non-conductive footwear will be negated.

Non-conductive footwear has not been tested to withstand electric fault current arc.

Non-conductive footwear will not provide 100 % protection from the hazards of electric shock in all working conditions.

Non-conductive footwear are not be used as a primary insulation against the hazards of electric shock. Persons exposed to live low voltage risk need to have additional measures in place to prevent electric shock.

The insulative properties of non-conductive footwear will be reduced or negated by —

(a) *physical damage* — including nicks, cuts, puncture or embedding of conductive materials, abrasion, also including external exposure of any portion of a metallic protective toe cap; and

(b) *chemical damage* — Any exposure to chemicals, including water, which may permanently or temporarily change the dielectric strength of the footwear materials. Classification I footwear can absorb moisture if worn for prolonged periods and in moist or wet conditions.

Before use each day, the wearer should conduct a thorough examination of the footwear for any evidence of physical damage or chemical contamination. Any footwear showing signs of damage or contamination likely to reduce or negate the insulative properties should be not used within a low voltage hazardous area.

If doubt exists concerning the suitability of individual footwear, additional advice should be sought from the manufacturer or the footwear supplier, and from electrical industry safety practitioners.

Section 4 Fitting and care of footwear

4.1 Fitting

4.1.1 General

The fitting of safety protective or occupational protective footwear is an important part of the foot protection program. People are far more likely to adopt a responsible attitude towards the protection of their feet if the fitting consultant is careful and thorough to provide the best possible fit.

4.1.2 Benefits

The fitting of footwear has two important benefits:

(a) It contributes to the maintenance of foot health.

(b) It helps to prolong the life of footwear.

It is recommended that the fitter be well trained and experienced in the fitting of footwear. In the absence of a qualified fitter, emphasis should be placed on fitting footwear with adequate length, girth and width.

4.1.3 Other considerations

If extra sock liners, arch supports, orthotics, and/or insoles are to be worn with the footwear, it is essential to wear them during the fitting. If any inserted insole is added to the footwear and extended under the protective toecap, it may adversely affect the protector, causing it to no longer meet impact criteria.

Before adding sock liners, arch supports, orthotics, and/or insoles to the footwear, discuss the potential addition with an appropriate medical practitioner to ensure that it is required and/or that the proper insert is applied. The supplier providing the footwear should be advised of any inserts to ensure the proper fitting of footwear.

WARNING — If inserts are added after the purchase of the protective footwear, they may reduce or eliminate the effectiveness of the footwear.

4.1.4 Sizing

Care should be taken when selecting footwear for each gender as lasts for footwear differ greatly worldwide.

Length of fit does not necesarily guarantee joint girth fit or wide foot fitting.

Manufacturers make many options available in fitting sizes for this reason. When selecting footwear, ensure that all areas of foot measurement are catered for.

4.2 Care

4.2.1 Cleaning

It is recommended that protective footwear be cleaned regularly.

In general, leather uppers should be polished or treated with leather preservative; rubber and synthetic-coated leather uppers should be washed and dried; and suede uppers should be cleaned using a dry brush. Soles should be cleaned by brushing and washing to remove contaminants.

Footwear should not be cleaned with solvents.

Refer to the manufacturer's instructions for proper cleaning and care of the footwear.

Zips should be cleaned with a soft bristle brush and soap if required.

4.2.2 Storage

Footwear should be stored in a cool, dry place away from direct sunlight.

Footwear should not be force dried.

The use of some soling materials such as polyurethane may introduce the risk of hydrolysis (the ingression of water from humid environments) which leads to degradation of the material in storage. While such footwear may meet the requirements of laboratory tests, it is important to wipe dry after use and to store in dry well-ventilated conditions in order to prolong life. Footwear should be inspected before use as damage due to hydrolysis may occur during storage.

Refer to the manufacturer's instructions for proper storage.

4.2.3 Alterations

Any unauthorized alterations to footwear, e.g. mechanical stretching, or adding vent holes, should not be made as they may —

(a) render the footwear non-conformant with the relevant part of AS 2210;

(b) void any approval or certification of the footwear; and

(c) reduce the effectiveness of the footwear.

4.2.4 Maintenance

All footwear should be examined for external damage before and after each use. If there are any cracks, breaks in the leather, exposed toecaps or similar damage that reduces the protective qualities of the footwear, the footwear should be replaced. See Appendix B for guidance on assessing wear.

When protective footwear in the workplace is replaced, it is because the original footwear is no longer considered suitable for use. All used footwear which is considered unsafe should be destroyed. It should not be recycled for home use where a danger to feet (e.g. a lawnmower) is present.

4.3 Hygiene

Information should be provided to each wearer of protective footwear for the need to —

(a) keep feet and footwear clean;

(b) wash and thoroughly dry feet daily; and

(c) change socks daily.

Appendix A
(informative)

Selection guide based on slip-resistance characteristics of soling materials

A.1 General

It is impossible to recommend one soling material or design that is effective for all walking and flooring conditions. A soling material effective for one type of walking surface material may not always be effective because of the different factors in the work environment.

Slip resistance is a safety feature available for all footwear (Classification I or II). Footwear should be slip-resistant especially when walking on surfaces contaminated by substances such as oil, detergent or water. Cleated outsoles can decrease slipping outdoors on surfaces. Footwear for outdoor use in cold environment (snow, ice) should be slip-resistant on icy surfaces. Slipping on icy surfaces can be prevented by using anti-slip-devices, e.g. crampons or spikes. Although slip-resistant footwear cannot completely prevent slipping, it can reduce the risk of slipping. Special purpose footwear may be required in some work environments, e.g. logging or mining, sand or sludge. This may incorporate features such as cleats or spikes.

A.2 Sole design factors

Aside from the basic sole material, other aspects of sole design to affect slip resistance include —

(a) the shape of the sole;

(b) tread design;

(c) the shape of the heel; and

(d) the softness/hardness of the sole.

Treads in the sole allow liquid on the walking surface to be dispersed so that the sole can make contact with the underlying surface material. The shape of the heel may be bevelled so that on initial contact a greater heel surface area contacts the ground; this may minimize the chances of slipping. In some instances, soft soling materials may provide better slip resistance.

A.3 Work environment factors

Consider the following work environment factors that may affect slip resistance:

(a) Type of surface material.

(b) Smoothness of walking surface.

(c) Whether it is a dry or wet surface.

(d) The type of liquid on a wet surface.

(e) The temperature of the surface.

(f) The temperature of the air.

NOTE Some soles may have markedly different slip characteristics at sub-zero temperatures.

In general, smooth and/or wet surfaces are more slippery. Be aware also that cold temperatures can affect the soiling materials by making it harder and less slip-resistant.

CAUTION — Safety footwear is only a secondary line of defence. Control foot hazards at their source and work safely.

Appendix B
(informative)

Assessment of footwear

The following list and Figure B.1 are provided to assist in assessing the state of worn footwear.

Footwear should be checked for signs of damage and discarded if any of the following are found:

(a) Beginning of pronounced and deep cracking affecting half of the upper material, see Figure B.1 (a).

(b) Strong abrasion of the upper material, especially if the toe-cap is revealed, see Figure B.1(b).

(c) The upper showing areas with deformations, burns, fusion or bubbles, or split seams in the leg, see Figure B1(c).

(d) The outsole shows cracks greater than 10 mm long and 3 mm deep, see Figure B.1(d).

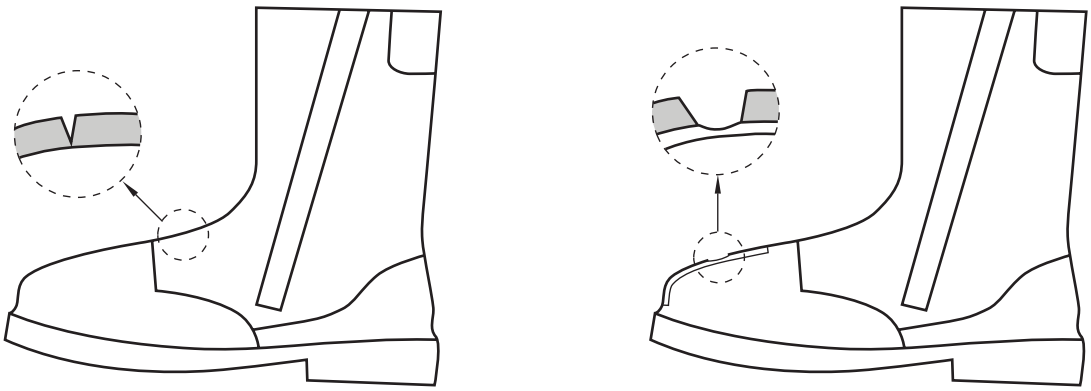
(e) Upper/sole separation of more than 10–15 mm long and 5 mm wide (deep).

(f) Cleat height in the flexing area lower than 1.5 mm, see Figure B.1(e).

(g) Original insock (in any) showing pronounced deformation and crushing, Figure B.1(f).

NOTE Check by inserting arm into boot.

(h) The fastening system is not in good working order (e.g. zip, laces, eyelets, touch and close system).



(a) (b)

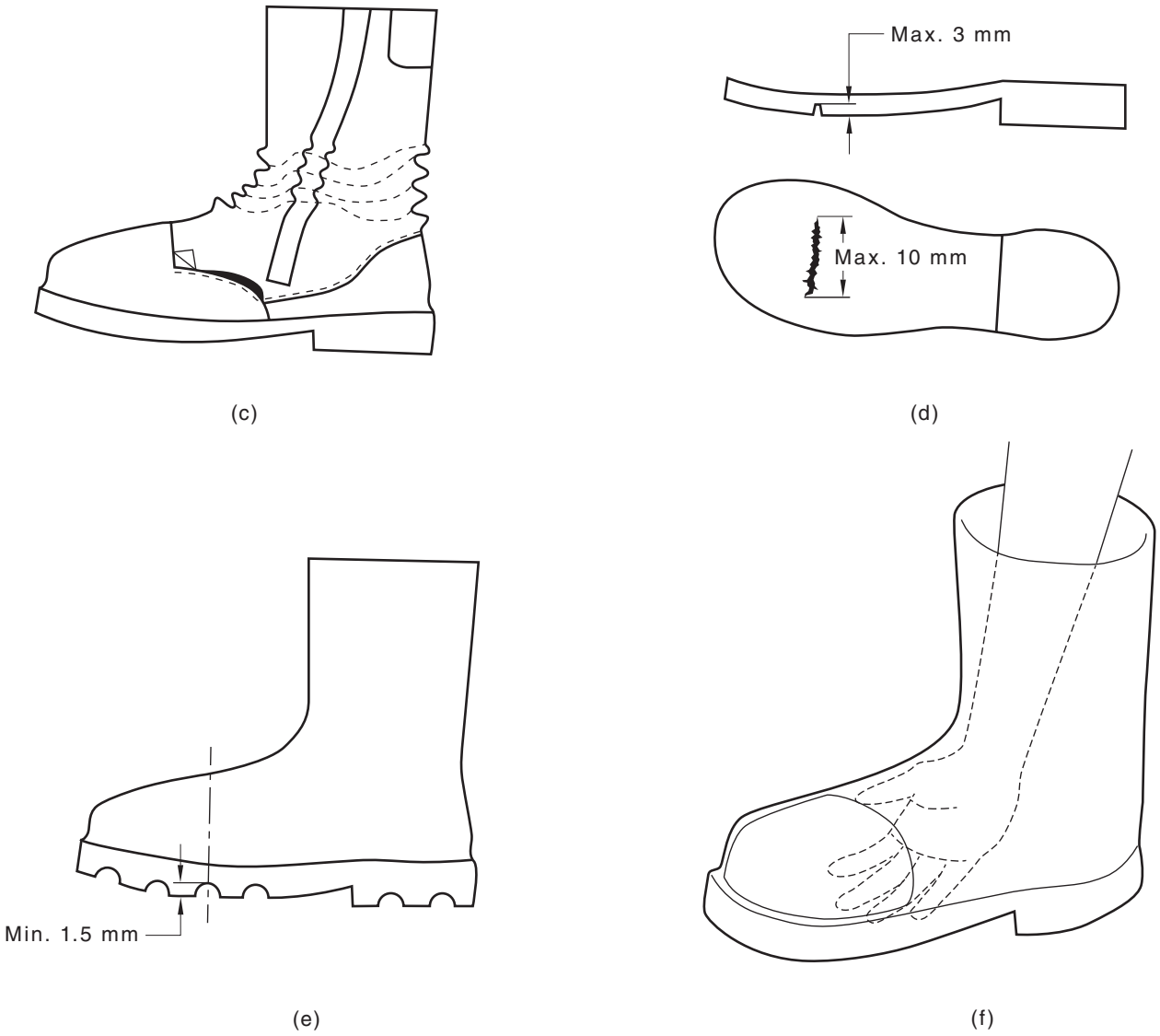


Figure B.1 — Assessment criteria

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