AS 1627.4-2005

Metal finishing — Preparation and pretreatment of surfaces, Part 4: Abrasive blast cleaning of steel

This Australian Standard was prepared by Committee MT-009, Metal Finishing. It was approved on behalf of the Council of Standards Australia on 22 November 2005.

Published:	23 December 2005
Draft published as:	DR 05292
Reconfirmed:	07 April 2017
History:	Originated as AS CK9.4-1964. Previous edition AS 1627.4-2002. Fourth edition 2005.
Committee:	MT-009
Committee members:	Australian Institute of Metal Finishing Australian Chamber of Commerce and Industry Australian Industry Group Department of Defence Galvanizers Associations of Australia Institute of Materials Engineering Australia The Royal Australian Chemical Institute Society of Automotive Engineers Australia

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

Preface

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee MT-009, Metal Finishing, to supersede AS 1627.4—2002 , *Metal finishing—Preparation and pretreatment of surfaces*, Part 4: *Abrasive blast cleaning*.

After consulting with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this revision is to include additional information on abrasives and to include Class classification, which was deleted in the last edition. This revision was the result of requests from Australian Industry who were not satisfied with the previous adoption of ISO 8504-2:2000 .

This Standard is Part 4 of a series of Standards covering the preparation and pretreatment of metal surfaces used in metal finishing.

During the preparation of this Standard cognizance was taken of ISO 8504-2:2000 , *Preparation of steel substrates before application of paints and related product—Surface preparation methods*, Part 2: *Abrasive blast-cleaning*.

The series comprises the following Parts:

AS 1627.0 , Metal finishing—Preparation and pretreatment of surfaces, Part 0: Method selection guide

AS 1627.1 , Metal finishing—Preparation and pretreatment of surfaces, Part 1: Removal of oil, grease and related contamination

AS 1627.2 , Metal finishing—Preparation and pretreatment of surfaces, Part 2: Power tool cleaning

AS 1627.4 , Metal finishing—Preparation and pretreatment of surfaces, Part 4: Abrasive blast cleaning of steel (this Standard)

AS 1627.5 , Metal finishing—Preparation and pretreatment of surfaces, Part 5: Pickling

AS 1627.6 , Metal finishing—Preparation and pretreatment of surfaces, Part 6: Chemical conversion treatment of metals

AS 1627.9 , Metal finishing—Preparation and pretreatment of surfaces, Part 9: Pictorial surface preparation standards for painting steel surfaces

The term 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

Foreword

Abrasive blast cleaning utilizes a stream of abrasive particles directed onto a metal surface to remove millscale, rust, corrosion products, process scales and foreign particles. The abrasive may be propelled by centrifugal force, or carried in an air or water stream, or both.

Abrasive propelled by centrifugal force using impeller wheels in closed recirculating systems is suited to production line work and other specialized applications. Airborne abrasive is projected through a nozzle and is suitable for open field or on-site conditions, enclosed blasting chambers and portable enclosed circulating systems.

The various forms of wet blasting are carried out with non-metallic abrasives sometimes with a corrosion inhibitor added to the water. The method serves to minimize dust levels. The high velocity of water, with or without abrasive, aids in removal of contaminants such as salts and process fallout, especially so in pitted steel.

There are two general classes of abrasive, i.e. metallic and non-metallic. Practitioners should be aware that a general dust hazard exists for all forms of dry abrasive blast cleaning, and that the use of silica abrasives in dry abrasive blast cleaning represents a specific health hazard to blasters and other people close by as this can cause silicosis. Abrasives containing free silica are therefore banned for dry blasting by many statutory authorities.

The texture and colour of the blasted surface may vary depending upon the type of abrasive and method used.

The surface roughness or profile achieved depends on several factors. These include metal substrate, blasting process, abrasive type, abrasive velocity at impact (affected by distance between the workface and nozzle, or wheel), and angle of the blast stream to the workface.

1 Scope and general

1.1 Scope

This Standard specifies abrasive blast cleaning methods for the preparation of steel surfaces before coating with paints and related products. It also contains information on the effectiveness of the individual methods and their fields of application.

NOTE 1 Information on purchasing guidelines may be found in Appendix A.

NOTE 2 Information on abrasive blasting of surfaces other than steel is discussed in Appendix D.

This Standard is applicable to new and corroded steel surfaces and also to steel surfaces that are uncoated or have been previously coated with paints and related products.

These methods are essentially intended for the surface preparation of hot-rolled steel but could also be used for cold-rolled steel of sufficient thickness to withstand the deformation caused by the impact of abrasive.

Items considered as a part of surface preparation before coating are edge grinding, removal of grease and oil, removal of weld spatter, removal of burrs and other sharp edges, grinding of welds, filling of pits, porosity of welds and other surface imperfections and removal of water-soluble contaminants that may cause premature failure of the coating system (see AS 1627.0 for more information). Such defects cannot be satisfactorily treated by abrasive blast cleaning.

WARNING THE PROCEDURES DESCRIBED IN THIS STANDARD ARE INTENDED TO BE CARRIED OUT BY SUITABLY TRAINED AND SUPERVISED PERSONNEL. THE SUBSTANCES AND PROCEDURES USED IN THESE METHODS MAY BE INJURIOUS TO HEALTH IF ADEQUATE PRECAUTIONS ARE NOT TAKEN. ATTENTION IS DRAWN IN THE TEXT TO CERTAIN SPECIFIC HAZARDS. THIS STANDARD REFERS TO THE TECHNICAL SUITABILITY OF THE METHODS AND DOES NOT ABSOLVE THE USER FROM STATUTORY OBLIGATIONS RELATING TO HEALTH AND SAFETY.

NOTE For guidance on working place hazards refer to Appendix C.

1.2 Referenced documents

The following documents are referred to in this Standard.

AS 1627.0, *Metal finishing—Preparation and pretreatment of surfaces, Part 0: Method selection guide*

AS 1627.1, *Metal finishing—Preparation and pretreatment of surfaces, Part 1: Removal of oil, grease and related contamination*

AS 1627.2, *Metal finishing—Preparation and pretreatment of surfaces, Part 2: Power tool cleaning*

AS 1627.9, *Metal finishing—Preparation and pretreatment of surfaces, Part 9: Pictorial surface preparation standards for painting steel surfaces*

AS 3894.5, *Site testing of protective coatings, Determination of surface profile, Method 5: Determination of surface profile*

AS 3894.6, *Site testing of protective coatings, Determination of surface profile, Method 6: Determination of residual contaminants*

AS 3894.9, *Site testing of protective coatings, Determination of surface profile, Method 9: Determination of adhesion*

AS 4361.1, *Guide to lead paint management, Part 1: Industrial applications*

AS/NZS 1270, *Acoustics—Hearing protectors*

AS/NZS 1336, *Recommended practices for occupational eye protection*

AS/NZS 1715, *Selection, use and maintenance of respiratory protective devices*

AS/NZS 1716, *Respiratory protection devices*

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

AS/NZS 2210.1, *Occupational protective footwear, Part 1: Guide to selection, care and use*

AS/NZS 2312, *Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*

AS/NZS 4501.2, *Occupational protective clothing, Part 2: General requirements*

ISO 11124-2, *Preparation of steel substrates before application of paints and related products—Specifications for metallic blast-cleaning abrasives, Part 2: Chilled-iron grit*

ISO 11124-3, *Preparation of steel substrates before application of paints and related products—Specifications for metallic blast-cleaning abrasives, Part 3: High-carbon cast-steel shot and grit*

ISO 11124-4, *Preparation of steel substrates before application of paints and related products—Specifications for metallic blast-cleaning abrasives, Part 4: Low-carbon cast-steel shot*

ISO 11126-3, *Preparation of steel substrates before application of paints and related products—Specifications for non-metallic blast-cleaning abrasives, Part 3: Copper refinery slag*

ISO 11126-7, *Preparation of steel substrates before application of paints and related products—Specifications for non-metallic blast-cleaning abrasives, Part 7: Fused aluminium oxide*

ISO 11126-9, *Preparation of steel substrates before application of paints and related products—Specifications for non-metallic blast-cleaning abrasives, Part 9: Staurolite*

ISO 11126-10, *Preparation of steel substrates before application of paints and related products—Specifications for non-metallic blast-cleaning abrasives, Part 10: Almandite garnet*

ISO 11127-6, *Preparation of steel substrates before application of paints and related products—Test methods for non-metallic blast-cleaning abrasives, Part 6: Determination of water-soluble contaminants by conductivity measurements*

ISO 14877, *Protective clothing for abrasive blasting operations using granular abrasives*

SSPC-SP, *5/NACE No.1, White metal blast cleaning*

SSPC-SP, *6/NACE No.3, Commercial blast cleaning*

SSPC-SP, *7/NACE No.4, Brush-off blast cleaning*

SSPC-SP, *10/NACE No.2, Near-white blast cleaning*

SSPC-SP, *14/NACE No.8, Industrial blast cleaning*

1.3 Definitions

For the purposes of this Standard the following terms and definitions apply:

1.3.1
abrasive

material which, when projected against a surface at high velocity, will wear and/or roughen the surface

1.3.2
abrasive blast cleaning

the cleaning and roughening of a surface by impingement of the abrasive onto a surface to be prepared

1.3.3
almandite garnet

processed naturally occurring iron and aluminium silicate which is washed, dried and sieved, with or without mechanical crushing, and prepared for use as a blast cleaning abrasive

1.3.4
cast-steel shot

a steel abrasive material that is predominantly spherical in shape produced by a special casting process

1.3.5
chilled-iron grit

a metallic blast-cleaning abrasive obtained by crushing various chilled iron-shot sizes into sharp-edged angular particles

1.3.6
chilled-iron shot

a cast iron abrasive that is predominantly spherical in shape produced by a special casting process

1.3.7
corrosion inhibitor

a chemical added to the water used in wet abrasive cleaning or water blasting to reduce the susceptibility of the surface to flash corrosion

1.3.8
cut steel wire

sharp-edge steel particles used for abrasive blasting, having a length-to-diameter ratio of typically 1:1 cut so that faces are approximately at right angles to the centre-line

1.3.9
embedment

the residual of the abrasive remaining attached to the surface

1.3.10
feathering (feather edging)

tapering the thickness of the edge of a dry paint film

1.3.11
flash rust

flash rust is the development of a thin iron oxide soon after blasting in the presence of high humidity or moisture

1.3.12
foreign matter

any material contamination of the abrasive

1.3.13
fused aluminium oxide

a synthetic mineral blast cleaning abrasive, which is classified as two types, A and WA

type A: This type is mainly composed of crystalline corundum which is brown in colour and consists of a minimum of 94% aluminium oxide and a maximum of 4% titanium dioxide

type WA: This type consists of crystalline corundum which is whitish in colour and contains at least 99% aluminium oxide

1.3.14
grit

particles that are predominantly angular, that have fractured faces and sharp edges and that are less than half-round in shape

1.3.15
high-carbon cast-steel grit

a metallic blast cleaning abrasive obtained by crushing high-carbon cast-steel shot into sharp-edged angular particles

1.3.16
ilmenite

natural occurring mineral sand which is separated, dried and sieved and prepared for use as a blast cleaning abrasive

1.3.17
preparation classes

classification describing the quality of preparation achieved by a method of surface cleaning

1.3.18
profile

see '*Surface profile*'

1.3.19
profile comparator

see '*Surface profile comparator*'

1.3.20
rust grades (initial rust grades)

classification describing the initial amount of mill scale and rust on a steel surface before any surface preparation has taken place

1.3.21
spot (selective) blasting

the abrasive blast cleaning of a previously coated surface to produce areas of bare exposed metal and areas of brush-blasted surface

1.3.22
shot

see '*Cast steel shot*'

1.3.23
slag

a metal silicate abrasive manufactured by granulation in water, drying and sieving, with or without mechanical crushing processes, from slag originating from smelting operations. It is basically iron silicate slag

Note 1 to entry: Slags manufactured by air-cooling instead of granulation in water are generally of a different mineral structure and are therefore not covered by this Standard.

1.3.24
staurolite

natural occurring mineral sand which is separated, dried and sieved and prepared for use as a blast cleaning abrasives

1.3.25
surface profile

the micro-roughness of a surface generally expressed as the height of the major peaks related to the major valleys

Note 1 to entry: Methods of determining maximum profile height are given in AS 3894.5 .

1.3.26
surface profile comparator

a specimen surface, or surface of known average profile, representing a particular abrasive blast cleaning process

1.3.27
sweep (brush) blasting

light abrasive blast cleaning to roughen the surface or remove light rust, foreign particles and outer surface coating

1.3.28
visible rust and millscale

rust or millscale which can be seen without magnification, with normal or corrected vision

1.3.29
water jetting

the method of cleaning a surface by the use of a jet of water under pressure. The jet of water may be accompanied by abrasives

Note 1 to entry: This process is not specified by this Standard.

1.3.30
wet abrasive blast cleaning

abrasive blast cleaning of a surface by compressed air or mechanical means using a mixture of abrasive and water, with or without air mixed into the abrasive stream

1.3.31
whipblast

an abrasive blast of a previous blast cleaned surface to restore a class of surface preparation which has deteriorated with time

2 Abrasives

2.1 Materials and types

A wide variety of natural and synthetic granular materials are used for abrasive blast-cleaning. A range of solid materials commonly in use for the preparation of steel surfaces before coating is given in Table 2.1. Each material provides a characteristic performance and surface finish.

2.2 Requirements

Abrasives shall be dry (except when added to pressurized liquid or slurry blast cleaning systems) and shall be free-flowing to permit consistent metering into the blast stream.

The level of soluble salt contamination in the abrasive can be critical to the performance of a coating system particularly when used to contain fresh water. An upper limit of conductivity shall be 25 mS/m as assessed by ISO 11127-6 .

The effect of salt contamination is more pronounced in hot, humid or fresh water environments.

NOTE For guidance on safety requirements see Appendix C.

2.3 Selection considerations

2.3.1 Abrasives and equipment

Selection of a suitable abrasive, together with an appropriate blast-cleaning method and operating conditions, is necessary to achieve the required standard of surface preparation.

The type of blast cleaning abrasive, i.e. its composition, particle size distribution, shape, hardness, density and impact behaviour (deformation or shatter characteristics), is important in determining the standards of cleanliness, the cleaning rate and the resulting surface profile of the blast cleaned surface.

2.3.2 Preliminary tests

Preliminary blast cleaning tests are recommended to determine the most effective abrasive, blasting parameters, the resulting surface preparation grade, (see Appendix B) and the resulting surface profile, see AS 3894.5 . If recycled abrasive is to be used for the surface preparation work, it is essential that a preliminary test be carried out with the same material, as new abrasive may give misleading results.

The size and shape of the particles may change during use and this may affect the resultant surface profile of the blast-cleaned steel if the abrasive is reused.

Table 2.1 — Physical properties and data on abrasives AS 1627.4

Material	Hardness mohs	Shape	Specific gravity g/cm^3	Bulk density (approx) g/cm^3	Colour (typical)	Free silica %	Degree of dusting	Degree of embedment	Chemical composition	Blast speed/ performance	Ability to recycle or reuse	Size range mm	Source	ISO Standard
NON-METALLIC														
Almandite Garnet-Alluvial	7-8	Subangular	4.0-4.2	2.3	Pink	Nil	Low	Low	Iron/aluminium silicate	High	Med	0.1-1.2	Mineral	ISO 11126-10
Almandite Garnet-Crushed	7-8	Angular	4.0-4.2	2.3	Pink/ brown	Low	Low	Low	Iron/aluminium silicate	High	Low-Med	0.1-1.2	Mineral	ISO 11126-10
Ilmenite	7-8	Subangular	4.3-4.4	2.5	Grey/ black	Low	High	Med	Iron/aluminium oxide	High	Low	0.1-0.5	Mineral	
Slag	7	Angular	3.3-3.9	2.0-2.5	Black	Nil	High	High	Metal silicate mixture	Average	Low	0.2-3.0	Smelter by product	ISO 11126-3
Staurolite	6-7	Subangular	3.3-3.7	2.0-2.5	Black	Low	Med	Low	Iron silicate	Med	Low-Med	0.1-0.6	Mineral	ISO 11126-9
Limestone	3-4	Angular	3.3-3.7	2.0-2.5	White	Med	High	Low	Calcium carbonate	Low	Low	0.5-3.0	Mineral	
Glass-Crushed	5.5	Angular	2.4-2.8	1.6	White/ brown green	Low	High	High	Silicate	Med	Low	0.1-3.0	Waste by product	
Glass-Beads	5.5	Spherical	2.4-2.8	1.6	White	Low	Med	Low	Silicate	Low	Med	0.1-1.2	Manufactured	
Silicon Carbide	9	Angular	3.0-3.5	1.7	Black	Nil	Low	Low	Silicon carbide	High	Med	0.05-3.0	Manufactured	
Fused aluminium Oxide	8	Angular	3.6-4.0	1.9	Brown/white	Nil	Low	Low	Aluminium oxide	High	Med	0.05-3.0	Manufactured	ISO 11126-7
Walnut Shell/ Crushed Stone Fruit Kernels	3	Cubic	1.3	0.7	Natural	Nil	Med	Low	Carbon	Low	Low	1.0-5.0	Waste by product	
METALLIC														
Chilled Iron Grit	≥650/ ≥57	Angular	7.0	4.0	Grey	Nil	V. Low	V. Low	Cast iron	High	High	0.1-2.8	Manufactured	ISO 11124-2
Steel Grit	440.820/ 44.65	Angular	7.0	4.0	Grey	Nil	V. Low	V. Low	Cast steel	Average	High	0.1-2.8	Manufactured	ISO 11124-3
Steel Shot	350.450/ 44.5	Spherical	7.0	4.0	Grey	Nil	V. Low	V. Low	Cast steel	Average	V. High	0.3-2.8	Manufactured	ISO 11124-4
Cut Wire Pellets	500-700/ 50-60	Cylindrical	7.0	4.0	Silver	Nil	V. Low	V. Low	Drawn steel	Average	V. High	0.3-1.5	Manufactured	

2.3.3 Abrasive selection

When selecting an abrasive, the following considerations shall be taken into account:

(a) Metallic abrasives are denser, give a deeper profile for a given particle size and are easily recyclable but are heavy, expensive and difficult to handle. They are often used only in enclosed situations.

(b) Non-metallic abrasives are more versatile for use in site work.

(c) Abrasive shape: angular particles cut faster and give a sharper profile. Shot abrasives tend to give a more rounded profile and create less wear on equipment.

(d) Profile, largely depends on abrasive type and particle size, see Table 2.2.

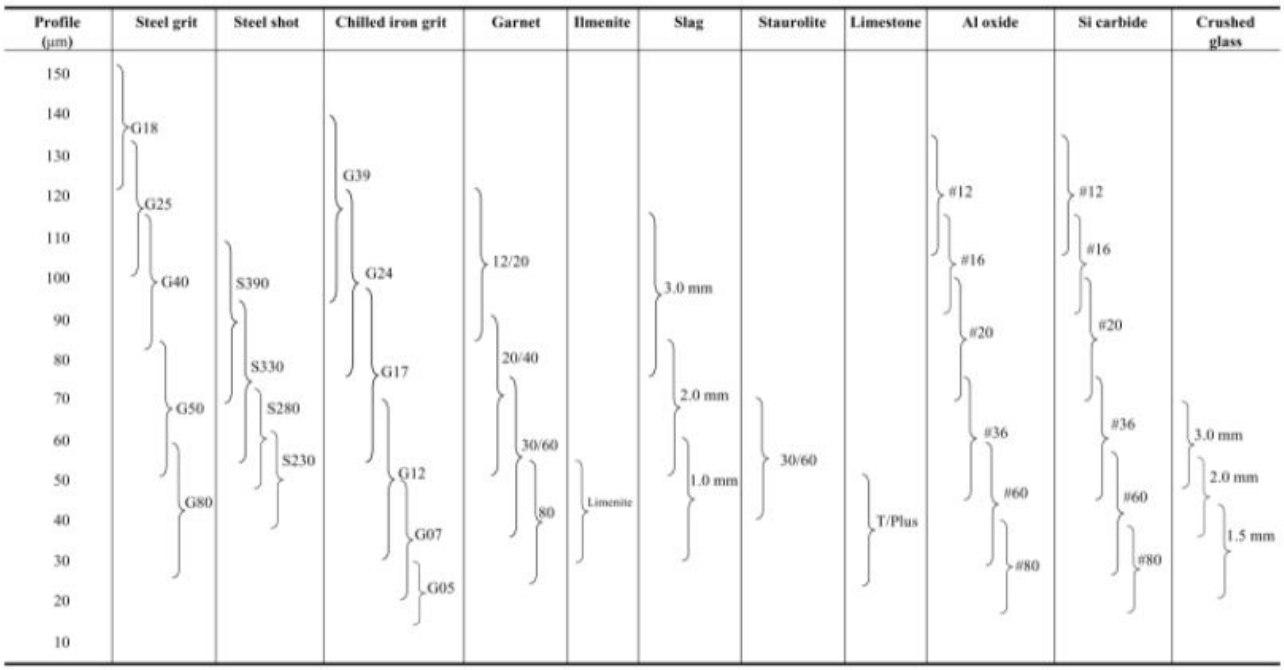
(e) Surface condition: hard dense particles are more effective on mill scale, old pitted steel is more effectively cleaned by smaller abrasives. The abrasive used to remove aged coatings depends on their nature, condition and thickness.

NOTE For lightly abrading galvanized surfaces refer to Appendix D.

(f) Degree of embedment; see Table 2.1.

Economic factors that shall be considered are abrasive consumption, abrasive cost delivery to site, abrasive cleanup and disposal cost, blasting labour cost and cleaning production rate.

Table 2.2 — Resultant surface profile vs abrasive types/sizes



3 Abrasive blast cleaning methods

3.1 Dry abrasive cleaning

3.1.1 Compressed air abrasive blast cleaning

Compressed air abrasive blast cleaning is carried out by incorporating an abrasive or abrasive mixture into an air stream, and directing the resulting high velocity air/abrasive flow through a nozzle onto the work piece. The abrasive is usually injected into the air stream from a pressurized container. The method is suitable for cleaning work of all types, including large structures having variable rust grades, and may be used either continuously or intermittently.

The system can be used in enclosed plants, rooms or cabinets, or on-site, and is able to be designed so that abrasive can be recovered, cleaned and recycled. This method may give rise to dust when used in open areas and its use may be restricted by environment or legislative requirements, in which case dust suppression or collection facilities are required. Compressed air abrasive blast cleaning will not remove oil, grease and related contamination, and will not remove chemicals such as soluble salts. Additional treatment is required if removal of such contaminants is necessary.

NOTE For sweep (brush) blasting see Appendix D.

3.1.2 Vacuum or suction head abrasive blast cleaning

Vacuum or suction head abrasive blast cleaning is similar to compressed air abrasive blast cleaning, but with a blasting nozzle enclosed in a suction head which is sealed to the metal surface and collects spent abrasive and contaminants. Alternatively, the abrasive air stream may be held on to the surface by negative pressure at the suction head. The method is particularly suitable for localized cleaning, and where the dust and debris resulting from unconfined compressed air blast cleaning techniques are unacceptable.

The production rate is slower and generally less effective than other blast cleaning methods, as the velocity of the abrasive is substantially below that of the other methods. It is not recognized as being suitable for cleaning heavily corroded steel, and is not applicable for irregular shapes, due to the necessity of close sealing to the surface, and difficulties in handling the equipment. As with compressed air abrasive blasting, it will not remove oil and grease or chemicals, such as soluble salts.

3.1.3 Centrifugal abrasive blast cleaning

Centrifugal abrasive blast cleaning is carried out in enclosed plants or mobile units in which the abrasive is fed to rotating wheels or impellers positioned to propel the abrasive evenly, and at high velocity, onto the surface to be cleaned.

The method is generally confined to a fixed abrasive blast cleaning station, for continuous blast cleaning of plates, pipes and of structural members before erection. In most cases, the abrasive is circulated in a closed system; the work pieces are either fed through these plants or rotated within them. In certain cases, the equipment may be mobile and may be used for cleaning large uninterrupted surfaces such as ship's decks, tank floors. The centrifugal abrasive blast cleaning equipment has to be carefully designed to achieve an even blast over the total surface area. The method is limited to repetitive work associated with high volume throughput or continuous operation. Surfaces inaccessible by this method are usually blast cleaned manually. Centrifugal abrasive blasting will not remove oil and grease, nor chemicals such as soluble salts.

3.2 Wet abrasive blast cleaning

3.2.1 General

Wet blasting, using a combination of water and abrasive to clean the surface, is usually used for maintenance rather than new work. It has the following advantages over dry abrasive blasting:

(a) It can reduce the level of dust.

(b) It can more readily remove soluble salts and other soluble contamination from a pitted surface.

The disadvantages include:

(i) The surface remains wet, and will flash rust if steps are not taken to prevent it.

(ii) A wet slurry tends to build up on the work surface and surrounds which can be difficult to remove.

(iii) The operation is usually slower than dry blasting.

(iv) It is difficult for operators to work in wet conditions and monitor levels of cleanliness.

(v) Wet blast cleaning cannot be used where water presents a hazard.

(vi) Abrasives are restricted to non-ferrous expendable materials.

The water used for wet abrasive blasting should have a low salt content to avoid surface contamination. Town mains drinking water is normally used. For offshore work, and in remote regions, sea water or salty water may be used, but fresh water shall be used for the final rinse.

The three main categories of wet abrasive blasting are discussed in Clauses 3.2.2 to 3.2.4.

3.2.2 Compressed air wet abrasive blast cleaning

Compressed air wet abrasive blast cleaning is the most common form, and usually uses the same or similar equipment to dry blasting, but water is usually introduced just behind the nozzle so that the water is atomized and accelerated through the nozzle orifice, along with the air and abrasive. A major advantage of compressed air wet abrasive blast cleaning is that operators can independently control air, abrasive and water so they can dry blast, wet blast, wash and dry with air, all with the same equipment.

Water added after the nozzle as a curtain, sometimes called a 'wet head' is a simple process which can cut down dust. However, it has little effect on cleaning efficiency since water does not mix with the abrasive to the same extent.

3.2.3 Slurry blast cleaning

In slurry blast cleaning, the water and abrasive are mixed together in the blast pot. Special units are required which are operated at lower pressures than dry blasting and so produce a fine uniform finish on steel surfaces requiring little or no surface profile. It is less common than wet abrasive blast cleaning.

3.2.4 Water jetting with abrasive injection

High pressure water jetting without abrasive, sometimes called hydroblasting, uses high or ultra-high water pressure to clean the surface. It can remove old paint and rust, as well as soluble contaminants, but may not remove tight mill-scale nor will it create a profile. This process is outside the scope of this Standard. However, abrasive can be introduced into the high pressure water stream to produce a wet abrasive stream through a nozzle. It is slow, gives an uneven finish and can be difficult and dangerous to handle.

3.3 Flash rusting

Flash rusting may occur with any of the processes using water. This thin iron oxide film may need to be removed if considered detrimental to the subsequent coating. The blast cleaned surface will normally be required to dry before application of paint, except for specially formulated surface tolerant primers for damp substrates. If a corrosion inhibitor is used to prevent flash rusting, it shall be compatible with subsequent coatings, and the concentration of the inhibitor solution shall be carefully controlled to the manufacturer's recommendations to prevent water-soluble contamination on the surface. The use of an inhibitor may also require that special disposal procedures be carried out to comply with environmental regulations.

If flash rusting does occur, the surfaces may be dry blasted to the specified class of surface preparation. The surface of existing structures (especially those in an operating environment) have a much greater propensity to flash corrode and become chemically contaminated prior to coating. Application of coatings should be carried out as soon as practicable. Normally, steel structures are coated within the same day or shift.

4 Initial rust grades and classes of blast cleaning

4.1 Initial surface assessment

The surface of hot rolled steel may be defined according to one of four initial rust grades defined and illustrated in AS 1627.9 depending on the relative amounts of mill scale and rust. The worst grade that is evident on the steel surface to be treated shall be recorded.

GRADE A	Steel surface covered completely with adherent mill scale and with little if any rust.
GRADE B	Steel surface, which has begun to rust and from which the mill scale has begun to flake.
GRADE C	Steel surface on which the mill scale has rusted away or from which it can be scraped, but with little pitting visible to the naked eye.
GRADE D	Steel surface on which the mill scale has rusted away and on which considerable pitting is visible to the naked eye.

4.2 Classes of blast cleaning

This Standard defines four classes of surface preparation achievable by abrasive blast cleaning, identical to those described and pictured in AS 1627.9 . The definitions are:

Sa 1	Light blast cleaning. When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and from poorly adhering mill scale, rust, paint coatings and foreign matter. The appearance corresponds to the prints designated Sa 1 in AS 1627.9 . NOTE Mill scale, rust or paint coating is considered to be poorly adhering if it can be removed by lifting with a blunt putty knife.
Sa 2	Thorough blast cleaning. When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and shall be free from most mill scale, rust, paint coatings and foreign matter. Any residual contamination shall be firmly adhering (see note to Sa 1). It corresponds to the appearance of the prints designated Sa 2 in AS 1627.9 .
Sa 2½	Very thorough blast cleaning. When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and shall be free from mill scale, rust, paint coatings and foreign matter. Any remaining contamination shall show only as slight stains in the form of spots or stripes and correspond to the prints designated Sa 2½ in AS 1627.9 .
Sa 3	Blast cleaning to visually clean steel. When viewed without magnification, the surface shall be free from visible oil, grease and dirt, and shall be free from mill scale, rust, paint coating and foreign matter. It shall then have a uniform metallic colour and correspond to the prints designated Sa 3 in AS 1627.9 .

NOTE Further information on the classes of surface preparation, including relationship to classes in the earlier edition of this Standard and in USA Standards, is given in Appendix B.

Record the assessment as the class nearest in appearance to the prepared surface. When recording the standard of cleanliness, the original rust grade and class of preparation shall be noted.

Example

A steel surface originally corresponding to rust grade B, which has been prepared by blast cleaning to preparation grade 2½, is designated B Sa 2½.

4.3 Other assessment requirements

For other assessment requirements see Clause 5.5.

5 Procedure

5.1 General

The requirements for blast cleaning, post blast cleaning and assessment are specified in Clauses 5.2, 5.3, 5.4 and 5.5.

5.2 Preparation before blast cleaning

Surfaces to be abrasive blast cleaned should be checked for the presence of contaminants including soluble iron salts, chlorides, weld spatter release agents and oil. Any surface contaminants present before abrasive blast cleaning shall be removed to a level appropriate to the coating system to be used. Oil, grease and related contamination shall be removed using the methods described in AS 1627.1 . Deposits of soluble salts may be removed by fresh water washing, with or without the addition of salt removal agents. Water jetting may be required to remove some deposits of soluble salts.

It may be advantageous to remove heavy, firmly adhering rust and scale by hand-or power-tool cleaning (see AS 1627.2) prior to abrasive blast cleaning. The preliminary treatment of welds, the removal of weld spatter and the removal of burrs and other sharp edges should also be addressed.

Where spot or brush blast cleaning is to be employed, the soundness of existing coatings shall be assessed by attempting to lift the film with a blunt putty knife, or by determination of adhesion in accordance with AS 3894.9 . Further information regarding the maintenance of existing coatings can be found in Section 10 of AS/NZS 2312.

Any areas which are not to be abrasive blast cleaned shall be masked off to prevent damage.

5.3 Selection of blast cleaning parameters

A typical procedure for blast cleaning is as follows:

(a) The initial rust grade(s) of the workpiece should be assessed (see Clause 4.1) and recorded. If the structure is coated, the type and nature of the coating should be noted as it will also affect the blasting process.

(b) The required class of surface preparation, surface profile and level of contaminants (if required) shall be provided in the specification or other customer-supplied documentation. The classes of surface preparation are given in Clause 4.2, and Table 2.2 shows the profile available with different abrasives and sizes.

(c) The appropriate blast cleaning method can be selected from those described in Section 3.

(d) The appropriate abrasive type and particle size distribution can be selected to provide the required class of surface preparation and surface profile.

5.4 After blast cleaning

After dry abrasive blast cleaning, all loosely adhering dust, debris and blast cleaning abrasive shall be removed by brushing, blowing with clean dry compressed air or by vacuum. When required, residual soluble impurities shall be removed by washing with fresh water, and allowed to dry.

Wet abrasive blast cleaning shall have all surfaces washed down with potable water to remove loosely adhering abrasive and other residues. The water may contain a rust inhibitor, subject to approval by the coating manufacturer. Clean dry compressed air may be used to assist in drying surfaces before application of paint. Any flash rusting on a freshly blast-cleaned surface may need to be removed if considered detrimental to the subsequent coating.

5.5 Assessment of the blast cleaned surface

All cleaned surfaces shall be assessed for compliance with the preparation grade requirements of the contract specification, in accordance with AS 1627.9 .

The relevant clauses of AS 3894.5 shall be used to assess surface profile and AS 3894.6 employed in the assessment of residual contaminants if required. AS 3894.6 may also be used to assess the presence of mill scale, should removal be a requirement of the specification.

In the event of non-compliance, the surface preparation process shall be repeated.

Where spot blasting has been specified, any areas of remaining coating shall be feathered.

Appendix A

(informative)

Purchasing guidelines

A1 General

Australian Standards are intended to include the technical requirements for relevant products, but do not purport to comprise all the necessary provisions of a contract. This Appendix contains advice and recommendations on the information to be supplied by the purchaser or end user at the time of enquiry or order.

A2 Information to be supplied by the purchaser

The purchaser should supply the following information at the time of enquiry or order:

(a) Scope of work.

(b) Presence of any hazardous material, such as lead.

(c) Any contaminant, dust extraction and waste disposal requirements, (if applicable).

(d) Blast cleaning method to be used, (if applicable).

(e) Class of cleaning required.

(f) Requirements for removal of existing coatings.

(g) Surface profile (if required) height, shape, and method of measurement (see AS 3894.5).

(h) Type and grade of abrasive to be used, (if applicable).

(i) Type and concentration of inhibitor, (if applicable).

(j) Acceptable limits for total dissolved salts content for abrasives, (if applicable).

(k) Any preparation required before blast cleaning, such as treatments required for welds and steel defects, (if applicable).

(l) Quality control and inspection requirements.

(m) Special requirements for particular site and weather conditions, (if applicable).

(n) Test reports, (if applicable).

(o) Acceptable level of non-visible contaminants and methods of measurement, see AS 3894.6 , (if applicable).

Appendix B

(informative)

Classes of surface preparation

B1 General

This Appendix covers the four grades of surface preparation after abrasive blast cleaning defined in Section 4, describing the differences between them, where they are used and how the descriptions relate to the earlier version of this Standard and to SSPC and NACE Standards. It also describes some aspects of inspection of blast cleaned surface that should be considered.

Note that the class of visual cleanliness is only one factor in specifying surface preparation. The class of blast does not give any indication of the profile nor of the level of invisible contaminants on the surfaces. If these are critical, they should be separately specified.

B2 Classes of visual cleanliness after blast cleaning

B2.1 General

The four classes of visual cleanliness are given in Clause 4.2. The required class of blasting will usually be given by the coating manufacturer, and the specifier will normally follow this advice. A lower standard should not be specified unless specifically approved by the coating manufacturer. However, the specifier may require a higher standard of cleanliness that that required by the manufacturer in critical applications or for greater durability or both.

B2.2 Light blast cleaning (Sa 1)

Light blast cleaning, previously known as Class 1, is the lowest standard of surface preparation. The required cleaning is such that loose mill scale, loose rust and foreign particles are removed. It will not remove firmly adherent paint, rust or mill scale. The appearance of the surface approximates to Sa 1 in the pictorial surface preparation AS 1627.9 . It is a similar cleanliness standard to SSPC-SP 7/NACE No.4, where it is referred to as 'brush-off' blast cleaning.

This class of surface preparation is a relatively low cost standard of cleaning. The finish produced is not suitable for high quality coatings, for coatings that are subjected to severe service conditions or where long lifetimes are required. Any paints used on such surfaces should have good wetting properties. It can be used where hand and power tool cleaning have been specified. With proper facilities, costs can be less or of the same order as those for hand or power tool cleaning, although generally the overall surface finish is usually better with blast cleaning

B2.3 Thorough blast cleaning (Sa 2)

This class of cleaning, previously referred to as Class 2, is such that mill scale, rust and foreign particles are substantially removed and grey metal is visible. The appearance of the surface approximates to pictorial surface preparation standard Sa 2 of AS 1627.9 . It is a similar standard to SSPC-SP 14/NACE No.8, where it is referred to as 'industrial' blast cleaning. This recently released US standard allows up to 10 percent tightly adherent scale, rust or old coating to remain on the surface. Historically, Sa 2 has been regarded as the equivalent of SSPC-SP 6/NACE No.3, referred to as 'commercial' blast cleaning. This cleanliness standard requires that all rust, scale and old coating are removed, and no more than 33 per cent of every square inch is stained, so is of somewhat higher standard than Sa 2.

Sa 2 surface preparation, sometimes called 'medium' blast cleaning, is used when it is thought that blast cleaning is necessary, but the high cost of more thorough blast cleaning standards rules out their use. This degree of surface preparation will lead to a satisfactory life for "surface tolerant" paint systems, or for conventional coating systems in milder environments.

B2.4 Very thorough blast cleaning (Sa 2½)

This class of surface preparation, previously known as Class 2½ and commonly referred to as 'Near White', is such that mill scale, rust and foreign particles are removed to the extent that only stains remain in the form of spots or stripes. The cleaned surface will show varying shades of grey. The appearance of the surface approximates the pictorial surface preparation Standard Sa 2½ of AS 1627.9 . It is a similar standard to SSPC-SP 10/NACE No.2, where it is referred to as 'near white' blast cleaning.

This class of surface preparation is suitable for most high quality protective coatings and is commonly specified for coating systems applied in atmospheric environments, where it can provide long-term durability. Removal of the small amount of visual contamination left on the surface after a Sa 2½ blast is difficult and expensive. Depending upon the initial condition of the steel, it has been variously estimated that this class of blast cleaning can be carried out at a cost of 10 percent to 35 percent less than that of 'white metal' blast cleaning.

B2.5 Blast cleaning to visually clean steel (Sa 3)

This is the highest standard of the surface preparation, previously known as Class 3 and commonly referred to as 'white metal' blast cleaning.

The surface preparation is such that visible mill scale, rust and foreign particles are entirely removed. The cleaned surface should have a uniform metallic colour but may show varying shades of grey when viewed at different angles. It is therefore important that the surface be viewed at right angles for comparison with the pictorial Standard (AS 1627.9). The appearance of the surface approximates the pictorial surface preparation standard Sa 3 of AS 1627.9 . The appearance is similar to SSPC-SP 5/NACE No.1, where it is referred to as 'white metal' cleaning.

Blast cleaning to white metal is necessary as a preparation for critical coatings or for coatings which will be exposed to a very corrosive atmosphere where a high standard is considered warranted. Blast cleaning to this class will result in maximum performance of coating systems due to the removal of visible foreign matter or contaminants from the surface. This degree of blast cleaning is sometimes required to ensure adhesion of some metallic coatings. Sa 3 blast cleaning requires the surface to be completely clean visually so this degree of cleaning should only be specified when service requirements demand this, instead of the more readily achievable and more economical Sa 2½. In atmospheric environments its use is seldom warranted due to the marginal improvements in coating performance which can be gained over 'near white' class.

The prevention of rust formation after blast cleaning to Sa 3 class is particularly difficult in environments where a rust-free surface is most needed as preparation for coating, such as in humid, chemical or severe marine industrial environments. Sa 3 blast cleaning must be conducted at a time when no contamination or rusting can occur, and when prompt coating is possible. It is also difficult to achieve Sa 3 when the original surface condition shows rust pitting (original condition D), as there will be invisible pockets of contamination in the corrosion pits that will re-rust rapidly. Wet abrasive blasting or water jetting are desirable for preparing original condition D if a long life is required.

Table B1 relates current and former classes of surface preparation by abrasive blasting, along with SSPC and NACE approximations.

Table B1 — Blast cleaning Standards

Blast cleaning class	Description	Former AS 1627.4 designation	SSPC	NACE	SPC/NACE Description
Sa 1	Light	Class 1	SP 7	No.4	Brush-off
Sa 2	Thorough	Class 2	SP 14 SP 6	No.8 No.3	Industrial Commercial
Sa 2½	Very thorough	Class 2½	SP10	No.2	Near white
Sa 3	Visually clean	Class 3	SP 5	No.1	White

B3 Factors influencing blast appearance

Assessment of the surface is by colour, so it should be noted that colour variations of the surface can be influenced by the following:

(a) The type and size of abrasive and whether an angular or round medium was used. The photographs in AS 1627.9 are of a sand blasted surface, which tends to give a brighter and whiter finish than most other abrasives. A surface cleaned with shot abrasive appears grey when compared with the 'white metal' appearance of a grit blasted surface, and may be mistaken for mill scale remaining on the steel surface. The difference in appearance with different abrasives is most noticeable with Sa 3 and Sa 2½ standards of surface preparation. A deeper profile may give a darker appearance than a shallow profile because of a greater degree of shadowing.

(b) Whether wet blasting or dry blasting was used. Flash rusting after wet blasting will discolour the surface.

(c) Angle of viewing of the surface and angle of blast will influence shadow effect and influence appearance.

(d) Condition of lighting. Good diffuse daylight or equivalent artificial illumination should be used when comparing the surface with the photographs. The photographs should be placed close to and in the plane of the steel surface to be assessed.

Determining surface cleanliness can be subjective and requires experience. It is stressed that the class of cleanliness should meet the written description. The photographs are only a guide to supplement the written description and it is essential that they not be used as an absolute indication.

Appendix C

(informative)

Safety considerations and requirements

C1 Health hazards

The nature of the hazards associated with blast cleaning include the following:

(a) Physical danger of the blast stream (including high pressure air and water).

(b) Respirable dust produced by the operation.

NOTE 1 It is important to ensure that adequate instructions are given and that all required precautions are exercised.

NOTE 2 The following should not be used as a blasting medium:

(a) Materials containing more than 1 percent free crystalline silica.

(b) Recycled materials that have not been treated to minimize respirable dust.

(c) Materials containing radioactive substances, refer to Regulation 1961 or the Health (Radioactive substances) Regulation 1994.

(d) Copper and zinc slags that have high levels of heavy metals. Blasting with these materials may produce levels of lead in the air which may exceed limits for occupational, health and safety requirements.

(c) General unsafe conditions existing in the working environment.

(d) Toxic substances in the existing coatings, such as lead or asbestos, should be determined before abrasive blast cleaning. Abrasive blasting of coatings containing such materials is extremely hazardous and should not be carried out without protecting the operator or public. The environment may require specific containment, extraction and disposal procedures in order to comply with statutory requirements, see AS 4361.1 .

State and local government authorities have restricted dry abrasive blast cleaning in some areas while banning it in others, or requiring licensing. The appropriate state authority should be consulted before commencing abrasive blast cleaning.

C2 Control measures

C2.1 Isolation

Abrasive blasting activities should be isolated from other workplace activities to reduce the possibility of workers being struck by particulate matter and exposure to dust. This may be done by using blasting chambers, blasting cabinets, temporary enclosures and exclusion zones.

Abrasive blasting plant may also incorporate guards to reduce the possibility of particulate matter striking the operator.

NOTE The risk of sustaining a serious injury from particulate matter is increased when blasting in a confined space, working in an elevated position and when the operator is out of the line of sight of a pot tender or there is no dedicated pot tender who may provide assistance if required.

C2.2 Self-actuating cut-off devices

Abrasive blasting equipment should be fitted with a fast acting self-actuating cut-off device under the direct control of the nozzle operator.

WARNING USING A BLAST MACHINE WITHOUT A FAST ACTING SELF-ACTUATING CUT-OFF DEVICE UNDER THE DIRECT CONTROL OF THE OPERATOR IS A DANGEROUS PRACTICE THAT MAY RESULT IN SERIOUS INJURY OR DEATH.

The device most commonly used is called a remote control or 'dead man control' which is usually attached to the nozzle. When the nozzle is dropped, the air supply shuts off and prevents the whipping hose injuring the worker and the abrasive material firing at the operator or other people nearby.

C2.3 Whip checks

Hose whip checks or hose coupling safety locks or both should be fitted to hoses.

NOTE 1 To prevent serious injury due to hose or coupling failure, a whip check should be fitted to each hose connection and from equipment to hose. The whip check should be installed in the fully extended position (no slack) for proper safety assurance.

NOTE 2 A regular survey should be carried out of all compressed air power equipment to assess the integrity of the couplings, clamps and hoses and immediate action taken where necessary.

C3 Protective clothing

Each operator should be provided with eye protection (see AS/NZS 1336) protective gloves (canvas or leather see AS/NZS 2161.1), protective footwear (see AS/NZS 2210.1), respiratory equipment and protective clothing (overalls, long trousers, blast suits and aprons, see AS/NZS 4501.2).

C4 Face and eye protection

Workers engaged in abrasive blasting should be supplied with and should wear an air line positive pressure hood or helmet complying with AS/NZS 1716 , fitted with an inner bib and a shoulder cape, jacket or protective suit complying with ISO 14877 . To keep out dust and abrasive grit, protective suits or clothing should also have leather or elastic straps at the wrist and ankles, and overlapping flaps at all suit closures.

C5 Ear protection

C5.1 General

Noise is unwanted sound that may damage a person's hearing. The amount of damage caused by noise depends on the total amount received over time. The degree of risk is affected by the intensity (loudness) and the frequency (pitch) of the noise, as well as the duration and pattern of exposure and the individual's susceptibility to hearing impairment.

Each operator should minimize the risk of exposure to excessive noise.

Excessive noise is defined as a level of noise above—

(a) $L_{Aeq, 8_h}$ of 85 dB(A) that is, an 8 hour equivalent continuous A-weighted sound pressure level of 85 dB(A), referenced to 20 micropascals; or

(b) $L_{c,peak}$ of 140 dB(C) that is, a C-weighted peak sound pressure level of 140 dB(C) referenced to 20 micropascals.

C5.2 Typical noise sources

In the abrasive blasting industry, the main noise source is from the discharge of compressed air at the blast nozzle. For the operator, the next major source is the feed air inside the protective helmet. Small blast cabinets as used by many workplaces in the metal industry are also significant sources of noise exposure for operators. Other sources of noise include air compressors, ventilation systems and air releases during pot blow-down.

An indication of the level of noise experienced in abrasive blasting processes may be obtained from the following noise readings taken at operator ear level:

(a) Air discharge from blast nozzle: 112 to 119 dB(A).

(b) Feed air inside helmet: 94 to 102 dB(A).

(c) Blast cabinets: 90 to 101 dB(A).

C5.3 Above the proscribed level and control measures

Maximum noise levels up to 137 dB(A) and peak levels up to 145 dB(A) have been measured during blasting activities at the operator position when the abrasive runs out.

Operators of small abrasive blasting cabinets are particularly at risk. They may not perceive the noise to be damaging because of the relatively short periods of use. However, average noise levels at operators' ears have been measured between 90 and 101 dB(A). This means that at 101 dB(A), for instance, an exposure of unprotected ears of only 12 minutes is allowed in any 8 hour shift so as not to exceed the exposure limit of 85 dB(A). In addition, other work activities must not contribute to further noise exposure.

Unprotected operators and others close to the blasting process may also be exposed to excessive noise, (see AS/NZS 1270).

C6 Respiratory protection

Air monitoring by trained personnel should be conducted in all abrasive blasting applications as part of the initial risk assessment process. This will enable the appropriate respirator to be selected and will ensure that workers and other people are not exposed to harmful dust concentrations.

The selection, use and maintenance of respiratory devices should be undertaken in accordance with AS/NZS 1715 .

Respirators will only provide a satisfactory level of protection when they are selected, fitted, used and maintained according to the manufacturer's written instructions and other regulatory and advisory guidelines.

Personal protective equipment should be individually fitted and if it is to be shared, it should be disinfected and refitted before use.

An air purifying respirator complying with AS/NZS 1716 should be worn by the pot attendant or any other person within the work area while abrasive blasting is in progress, during maintenance or repair work, where dust from the process is visible or during the clean-up of dust.

C7 Safe working guidelines

NOTE State regulations will generally set standards to be achieved.

C7.1 Scaffolding and harnesses

If working from heights cannot be avoided, physical barriers should be put in place to stop the person from falling, these include:

(a) Edge protection systems e.g. guardrailing with mid rails, containment sheeting, hoarding.

(b) Fall protection covers over holes and openings.

(c) Working platforms e.g. elevating work platforms such as scissor lifts, boom type elevated.

(d) Platforms or mast climbers.

NOTE Scissor lifts and cherry pickers should be fitted with operator's controls and hand and toe rails.

The choice of staging should take account of the operator needs for freedom of movement to complete the task safely.

Extra precautions should be taken when blasting from a scaffold because an air-fed helmet does not allow a full field of vision, so planks should be wide and tightly secured for maximum footing.

Where work is to be undertaken in an elevated position, the level of light should not be less than 200 lux for the working area and 50 lux for stairs or other areas giving access to the work area.

Ensure the operator are able to see the following:

(i) The physical limits of the work platform.

(ii) Any other people in the area.

(iii) All control devices.

NOTE General rules, which should be applied when blasting at heights are:

(a) No one should work below blast operators, (a nozzle or hose dropped may kill or cause severe injury).

(b) Stop frequently to sweep or clean abrasive media from all horizontal surfaces on the staging, (footing may be treacherous on loose abrasive).

(c) Use ropes or other strong attachment methods to secure the blast hose to the staging, (this relieves the operator from the weight of the hose and prevents a dropped hose from falling).

C7.2 Personal fall protective equipment

Personnel fall protection systems are systems which secure a person to a building or structure. They should only be used where it is not possible to use physical barrier systems such as working platforms, edge or fall protection covers. However, personnel fall protection may be used in addition to physical barrier systems.

Personal fall protection equipment includes:

(a) Travel restriction devices which prevent a person falling e.g. industrial access systems and fall-prevention systems.

(b) Fall arrest systems which arrest a person once he or she has fallen, e.g. fall-arrest harness or ladder belts with lanyard assemblies.

NOTE 1 Persons should be properly trained and supervised in the use of this equipment.

NOTE 2 When using a fall-arrest system ensure there are no obstructions in the potential fall path.

C7.3 Static discharge

Static electricity may build up in dry blasting operations. Nozzles should be grounded to protect the operator against electric shocks as well as to prevent explosion of flammable material.

C7.4 Unauthorized personnel

The blasting area should be roped off and signposted, to exclude entry of unauthorized persons.

C8 Work environment

C8.1 General

State regulations for air quality may be in operation. Where this is the case, AS/NZS 1716 is recommended as a guide.

C8.2 Ventilation

Adequate ventilation and purging of flammable gases and vapours should be undertaken.

C8.3 Lighting

Regulations for light intensity have been set in some States, e.g. 200 lux over all parts of a chamber, measured in a horizontal plane at 1 m above the floor.

Appendix D

(informative)

Sweep (brush) blasting cleaning

D1 General

Sweep (brush) blast cleaning is used to clean and lightly abrade weathered but sound paint surfaces or other soft surfaces such as stainless steel, copper or fibreglass.

The purpose of this treatment is to prepare—

(a) existing paints prior to the application of maintenance coatings, where the substrate remains a sound coating; and

(b) galvanized coatings prior to the application of an organic paint system.

D2 Procedure

To produce a suitable surface for painted or galvanized systems for coating, the following procedure should be implemented when sweep blast cleaning:

(a) A fine non-metallic abrasive should be used of a size which will pass through a test sieve of nominal size 80 mesh, e.g. garnet abrasive.

(b) The blast pressure should be less than 275 kPa (40 p.s.i.).

(c) The nozzle should be positioned at least 350 mm from the surface of the work piece.

D3 Surface preparation

It is important that surface preparation is performed carefully to ensure the surface is not damaged. Subsequent coating should be applied before recontamination or reoxidation occurs.