

Australian Standard™

Metal finishing—Preparation and pretreatment of surfaces

Part 2: Power tool cleaning

[ISO title: Preparation of steel substrates before applications of paints and related products—Surface preparation methods, Part 3: Hand- and power-tool cleaning]

This Australian Standard was prepared by Committee MT-009, Metal Finishing. It was approved on behalf of the Council of Standards Australia on 28 February 2002 and published on 16 April 2002.

The following interests are represented on Committee MT-009:

Australian Institute of Metal Finishing
Australian Chamber of Commerce and Industry
Australian Industry Group
Department of Defence
Galvanizers Association of Australia
Institute of Materials Engineering Australia
Powder Coaters Association
The Royal Australian Chemical Institute
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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1627.2—2002

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

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Technical Committee MT-009 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Australasian Institute of Surface Finishing
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Galvanizers Association of Australia
Galvanizing Association of New Zealand
New Zealand Metal Roofing Manufacturers

NOTES

Australian Standard™

**Metal finishing—Preparation and
pretreatment of surfaces**

Part 2: Power tool cleaning

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PREFACE

This Standard was prepared by Standards Australia Committee MT-009, Metal Finishing to supersede AS 1627.2—1989, *Metal finishing—Preparation and pretreatment of surfaces, Part 2: Power tool cleaning* and AS 1627.7—1988, *Metal finishing—Preparation and pretreatment of surfaces, Part 7: Hand tool cleaning of metal surfaces*.

This Standard is identical with and has been reproduced from ISO 8504-3:1993, *Preparation of steel substrates before applications of paints and related products—Surface preparation methods, Part 3: Hand- and power-tool cleaning*.

This Standard is Part 2 of a series of Standards covering the preparation and pretreatment of metal surfaces used in metal finishing.

The series comprises the following Parts:

AS

1627	Metal finishing—Preparation and pretreatment of surfaces
1627.0	Part 0 Method selection guide
1627.1	Part 1: Cleaning using liquid solvents or alkaline solutions
1627.2	Part 2: Power tool cleaning
1627.4	Part 4: Abrasive blast cleaning
1627.5	Part 5: Picking, descaling and oxide removal
1627.6	Part 6: Chemical conversion treatment of metals
1627.9	Part 9: Pictorial surface preparation standards for painting steel surfaces

As this Standard is reproduced from an International Standard, the following applies:

- Its number does not appear on each page of text and its identity is shown only on the cover and title page.
- In the source text, 'this part of ISO 8504' should read 'this Australian Standard'.
- A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by Australian Standards, as follows:

<i>Reference to International Standard</i>	<i>Australian Standard</i>
ISO	AS
8501 Preparation of steel substrates before application of paints and related products—Visual assessment of surface cleanliness	1627 Metal finishing—Preparation and pretreatment of surfaces 1627.9 Part 9: Pictorial surface preparation standards for painted steel surfaces
8501-1 Part 1: Rust grades and preparation grades of uncoated substrates and of steel substrates after the removal of previous coatings	
8502 Preparation of steel substrates before application of paints and related products—Tests for the assessment of surface cleanliness	1627.1 Part 1: Cleaning using liquid solvents and alkaline solutions
8502-2 Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings	
8504 Preparation of steel substrates before application of paints and related products—Surface preparation methods	1627.2 Part 2: Power tool cleaning
8504-1 Part 1: General principles	

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INTRODUCTION

The performance of protective coatings of paint and related products applied to steel is significantly affected by the state of the steel surface immediately prior to painting. The principal factors that are known to influence this performance are:

- a) the presence of rust and mill scale;
- b) the presence of surface contaminants, including salts, dust, oils and greases;
- c) the surface profile.

International Standards ISO 8501, ISO 8502 and ISO 8503 have been prepared to provide methods of assessing these factors, while ISO 8504 provides guidance on the preparation methods that are available for cleaning steel substrates, indicating the capabilities of each in attaining specified levels of cleanliness.

These International Standards do not contain recommendations for the protective coating systems to be applied to the steel surface. Neither do they contain recommendations for the surface quality requirements for specific situations even though surface quality can have a direct influence on the choice of protective coating to be applied and on its performance. Such recommendations are found in other documents such as national standards and codes of practice. It will be necessary for the users of these International Standards to ensure that the qualities specified are:

- compatible and appropriate both for the environmental conditions to which the steel will be exposed and for the protective coating system to be used;
- within the capability of the cleaning procedure specified.

The four International Standards referred to above deal with the following aspects of preparation of steel substrates:

ISO 8501 — *Visual assessment of surface cleanliness;*

ISO 8502 — *Tests for the assessment of surface cleanliness;*

ISO 8503 — *Surface roughness characteristics of blast-cleaned steel substrates;*

ISO 8504 — *Surface preparation methods.*

Each of these International Standards is in turn divided into separate parts.

The primary objective of surface preparation is to ensure the removal of deleterious matter and to obtain a surface that permits satisfactory adhesion of the priming paint to the steel. It should also assist in reducing the amounts of contaminants that initiate corrosion.

This part of ISO 8504 describes methods for hand- and power-tool cleaning. It should be read in conjunction with ISO 8504-1.

Hand- and power-tool cleaning are methods of surface preparation that generally provide a surface cleanliness which is inferior to that achieved by abrasive blast-cleaning. When a result similar to that of abrasive blast-cleaning is required, these methods need in most cases the use of more than one type of power tool which makes surface preparation complicated and expensive. It is usually not possible to remove oil, grease and corrosion-stimulating substances such as chlorides and sulfates.

Power-tool cleaning will generally provide a better foundation for the priming paint than hand-tool cleaning, which will result in better paint performance.

Hand- and power-tool cleaning are both suitable methods for surface preparation. Hand-tool cleaning particularly requires the use of priming paints having good surface wetting ability. Power-tool cleaning is appropriate when a higher-quality surface preparation grade is required and when blast-cleaning is not permitted or the interested parties decide that it is not feasible.

Representative photographic examples for St 2, St 3, PSt 2, PSt 3 and PMa are available (see ISO 8501-1 and ISO 8501-2) for assessing some new and previously coated steel surfaces cleaned using hand or power tools. Because of the many different situations that arise in the preparation of surfaces, these photographs may not be sufficient to describe specific instances and it is recommended that special photographs of a treated reference area that are acceptable to the interested parties be produced for use as a basis for further surface preparation procedures.

AUSTRALIAN STANDARD

Metal finishing—Preparation and pretreatment of surfaces

Part 2:

Power tool cleaning

1 Scope

This part of ISO 8504 describes methods for hand-tool and power-tool cleaning of steel substrates before application of paints and related products. It applies both to new steelwork and to steel surfaces that have been coated previously and that show areas of breakdown requiring maintenance painting. It describes the equipment to be used and the procedure to be followed.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 8504. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 8504 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8501-1:1988, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings.*

ISO 8501-2:—¹⁾, *Preparation of steel substrates before application of paints and related products — Visual*

1) To be published.

assessment of surface cleanliness — Part 2: Preparation grades of previously coated steel substrates after localized removal of previous coatings.

ISO 8504-1:1992, *Preparation of steel substrates before application of paints and related products — Surface preparation methods — Part 1: General principles.*

3 Definitions

For the purposes of this part of ISO 8504, the following definitions apply.

3.1 hand-tool cleaning: Method of preparing steel substrates by the use of hand tools, without power assistance.

NOTE 1 Chipping hammers, hand scrapers, hand wire brushes, abrasive papers and plastic fleece with embedded abrasive are generally used. Hand-tool cleaning is sometimes carried out initially in order to remove relatively loose contaminants prior to the use of power tools.

3.2 power-tool cleaning: Method of preparing steel substrates by the use of power-assisted hand tools, but excluding blast-cleaning.

NOTE 2 Rotary de-scalers, rotary wire brushes, sanding machines, sanding discs, rotary abrasive-coated paper wheels (flap wheels), abrasive grinders, plastic fleece with embedded abrasive, chipping hammers and needle guns, driven by electric or pneumatic power, are examples of equipment generally used.