

Australian Standard<sup>®</sup>

---

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

**Part 1: Cleaning using liquid  
solvents and alkaline solutions**

---

This Australian Standard was prepared by Committee MT/9. It was approved on behalf of the Council of Standards Australia on 28 November 1988 and published on 13 March 1989.

---

The following interests are represented on Committee MT/9:

Aluminium Development Council  
Australasian Institute of Metal Finishing  
Bureau of Steel Manufacturers of Australia  
Confederation of Australian Industry  
Department of Defence  
Metal Trades Industry Association of Australia  
Society of Automotive Engineers, Australasia  
Telecom Australia  
The Royal Australian Chemical Institute  
University of Queensland

---

**Review of Australian Standards.** To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

---

*This Standard was issued in draft form for comment as DR 86025.*

Australian Standard<sup>®</sup>

---

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

**Part 1: Cleaning using liquid  
solvents and alkaline solutions**

---

First published as AS CK9.1—1965.  
Revised and redesignated AS 1627.1—1974.  
Second edition 1989.

## PREFACE

This Standard was prepared under the direction of the Standards Australia Committee on Metal Finishing to supersede AS 1627.1—1974, *Code of practice for preparation and pretreatment of metal surfaces prior to protective coating, Part 1: Degreasing of metal surfaces using solvent or alkaline solutions*.

This Standard is one in the AS 1627 series of Standards covering the preparation and pretreatment of metal surfaces used in metal finishing. Others in the series are as follows:

AS

- 1627.0 *Method selection guide for preparation and pretreatment of steel surfaces.*
- 1627.2 *Power tool cleaning.*
- 1627.3 *Flame descaling.*
- 1627.4 *Abrasive blast cleaning.*
- 1627.5 *Pickling steel surfaces.*
- 1627.6 *Phosphate treatment of iron and steel surfaces.*
- 1627.7 *Hand tool cleaning of metal surfaces.*
- 1627.8 *Wash primer pretreatment of metal surfaces.*
- 1627.9 *Pictorial surface preparation standards for painting steel surfaces.*
- 1627.10 *Cleaning and preparation of metal surfaces using acid solutions (non-immersion).*

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

## CONTENTS

	<i>Page</i>
FOREWORD .....	4
SECTION 1. SCOPE AND GENERAL	
1.1 SCOPE .....	5
1.2 REFERENCED DOCUMENTS .....	5
1.3 DESIGNATION .....	5
1.4 DEFINITIONS .....	5
1.5 SURFACE REQUIREMENTS .....	5
SECTION 2. SURFACE CLEANING PROCESSES	
2.1 GENERAL .....	6
2.2 ALKALINE PROCESSES .....	6
2.3 SOLVENT PROCESSES .....	7
2.4 EMULSION PROCESSES .....	7
2.5 HIGH PRESSURE CLEANING PROCESSES .....	7
2.6 CORROSION PROTECTION .....	7
2.7 SAFETY PRECAUTIONS .....	7
APPENDICES	
A PURCHASING GUIDELINES .....	8
B GUIDE TO THE SELECTION OF CLEANING PROCESS .....	9

## FOREWORD

The procedures described are not suitable for removal of rust, rust scale or millscale but may be used to degrease surfaces prior to using other heavier or mechanical methods such as power tool cleaning or abrasive blasting. Included in the procedures are simple solvent wiping, immersion in solvent, solvent spray, vapour degreasing, emulsion cleaning and alkaline cleaning.

Solvent cleaning is not a suitable method for removal of corrosive salts including chlorides and sulphates, or of detrimental weld flux. These require treatment, according to the degree of contamination, by washing with aqueous solutions, or by power tools or abrasive blast cleaning.

Liquid solvent cleaning seldom completely removes oil and grease but if the type of cleaning is properly selected and properly performed the residue will be tolerable to most paint systems. If not, then other methods of surface preparation will be necessary.

A wide range of methods is in use as well as a wide range of compositions of alkaline cleaning compounds. The nature of the final coating must be taken into account as this may be affected by the method used in alkaline cleaning. It is essential that residues of alkaline cleaning compounds are removed. Cleaning is suitable for removal of dirt, perspiration, light deposits of oil and grease and other water wettable or water soluble contaminants.

Certain detergents used to remove oil and grease may leave residues which can be detrimental to the adhesion of some coatings.

In the cleaning operation care must be exercised to use the solvent properly, as some solvents are toxic or highly flammable or both. With many of the materials mentioned, special safety precautions must be followed for ventilation, smoking, static electricity, respirators, eye protection, skin contact and disposal of wastes.

## STANDARDS AUSTRALIA

## Australian Standard

## Metal Finishing—Preparation and Pretreatment of surfaces

## Part 1: Cleaning using liquid solvents and alkaline solutions

## SECTION 1. SCOPE AND GENERAL

**1.1 SCOPE.** This Standard describes procedures for cleaning metal surfaces of loosely adhering matter, oil, grease, wax, dirt and perspiration, by treatment with liquid solvents and alkaline solutions.

## NOTES:

- Appendix A contains advice and recommendations on information which should be supplied by the purchaser at the time of inquiry or order.
- Guidance on the selection of cleaning processes is given in Appendix B.

**1.2 REFERENCED DOCUMENTS.** The documents below are referred to in this Standard.

AS	
1337	Eye protectors for industrial applications
1627	Code of practice for preparation and pretreatment of metal surfaces prior to protective coating
1627.5	Part 5: Pickling steel surfaces
1715	Selection, use and maintenance of respiratory protective devices
1716	Respiratory protective devices
2661	Vapour degreasing plant—Design, installation and operation—Safety requirements
K178	Glossary of terms used in electroplating

**1.3 DESIGNATION.** The designations adopted for the various types of cleaning processes given in Table 2.1 are listed below:

- (a) *Alkaline degreasing process (A)*
- AS . . . . . Alkaline process—spray process  
 AD . . . . . Alkaline process—dip or soak process  
 ADM . . . . . AD process with mechanical agitation  
 AL . . . . . Alkaline degreasing process—electrolytic
- (b) *Solvent degreasing process (S)*
- SS . . . . . Solvent degreasing process—spray process  
 SD . . . . . Solvent degreasing process—cold dip process  
 SW . . . . . Solvent degreasing process—hand wipe  
 SVD . . . . . Solvent vapour degrease

(c) *Emulsion degreasing process (EM)*

- EMS . . . . . Emulsion degreasing process—spray process  
 EMD . . . . . Emulsion degreasing process—dip process

(d) *High pressure cleaning (P)*

- PWJ . . . . . Hot water jet—spray process or cold water jet—spray process

**1.4 DEFINITIONS.** For the purpose of this Standard the definitions in AS K178 and those below apply.

**1.4.1 Solvent cleaning**—solution of oils and greases assisted by mechanical displacement such as wiping, agitation and spraying, and run-off of degreasing solvent.

**1.4.2 Vapour degreasing**—removal of oil, grease and dirt by condensation and run-off of degreasing solvent.

**1.4.3 Solvent—emulsion cleaning**—removal of oil, grease and dirt by emulsification and solution.

**1.4.4 Alkaline cleaning (includes detergent cleaning)**—removal of oil, grease and dirt by a water solution containing alkaline cleaning components and detergents.

**1.4.5 High pressure cleaning**—removal of oil, grease and dirt by solution, emulsion and displacement with high pressure hot or cold water containing appropriate cleaning compounds.

**1.4.6 Dirt (soil)**—unwanted particles of matter which will interfere with a subsequent metal finishing operation (process) if not removed.

NOTE: Dirt and soil in metal finishing may be deemed to be any one or a number of materials, such as oils, greases, lubricants, coolants, pigmented metal drawing compounds (including chlorinated and resulfurized oils), impacted or caked on oils and compounds, shop dirt, abrasive grains, metal dust and chips from metal surface, and free graphite carbon smut.

**1.5 SURFACE REQUIREMENTS.** The metal surface shall be free from moisture, oil, grease, wax, dirt, perspiration and other soluble and loosely adherent matter to ensure its suitability for the selected subsequent treatment.