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Metal
Cleaning

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STANDARDS AUSTRALIA~~

AS 1627.0-1977
UDC 621.7.02

SUPERSEDED BY:

Australian Standard

AS 1627.0-1997

1627, Part 0-1977

under Revision see DR 96514

METHOD SELECTION GUIDE

FOR PREPARATION AND PRETREATMENT OF STEEL SURFACES



STANDARDS ASSOCIATION OF AUSTRALIA

Incorporated by Royal Charter



THE FOLLOWING SCIENTIFIC, INDUSTRIAL, AND GOVERNMENTAL organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australasian Corrosion Association
Australian Paint Manufacturers Federation
Country Roads Board, Victoria
Department of the Navy
Department of Main Roads, N.S.W.
Materials Research Laboratories
Oil and Colour Chemists Association
University of New South Wales

Firms specializing in surface preparation equipment and processing, and firms engaging in large scale surface preparation were also represented.

This standard, prepared by Committee CH/18, Preparation and Pre-treatment of Metal Surfaces Prior to Protective Coating, was approved on behalf of the Council of the Standards Association of Australia on 8 March 1977, and was published on 1 September 1977.

In order to keep abreast of progress in the industries concerned, Australian standards are subject to periodical review. Suggestions for improvements, addressed to the head office of the Association, will be welcomed.

This standard was issued in draft form for public review as DR 75031.

AUSTRALIAN STANDARD

**CODE OF PRACTICE FOR THE
PREPARATION AND
PRETREATMENT OF METAL
SURFACES PRIOR TO
PROTECTIVE COATING**

Part 0

**METHOD SELECTION
GUIDE
FOR PREPARATION AND
PRETREATMENT
OF STEEL SURFACES**

AS 1627.0—1977

First published 1977

**PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.**

ISBN 0 7262 1214 8



24 AUG 1977

PREFACE

This standard was prepared by the Association's Committee on Preparation and Pretreatment of Metal Surfaces Prior to Protective Coating, under the direction of the Chemical Standards Board. Its purpose is to provide guidance in the selection and use, with respect to steel surfaces, of the various methods described in the other Parts of this standard, for preparing and treating metal surfaces prior to protective coating.

A brief outline of each of the methods is given together with some comment on Part 9, Pictorial Surface Preparation Standards for Painting Steel Surfaces. The information provided includes reference to the main factors that need to be taken into account in preparing steel surfaces, such as the initial condition of the surface in respect of both new construction and maintenance painting, the relative effectiveness of the available treatments, the type of priming paint and the steel environment.

Eight examples are given of typical specifications for steel surface preparation for a range of situations.

This standard makes reference to the following Australian standards:

| | |
|---------|---|
| AS K145 | Red Lead Based Paint for Structural Steel |
| AS K211 | Zinc Chromate Primers for Structural Steel |
| AS | Code of Practice for the Protection of Steel from Corrosion.* |

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard Code of Practice
for the

PREPARATION AND PRETREATMENT OF METAL
SURFACES PRIOR TO PROTECTIVE COATING

PART 0—METHOD SELECTION GUIDE FOR THE
PREPARATION AND PRETREATMENT OF
STEEL SURFACES

SECTION 1. SCOPE

1. SCOPE. This Part of the Code gives guidance concerning the applicability to steel surfaces of the various methods described in the other Parts of this code, for preparing and treating metal surfaces prior to protective coating. These methods are:

| | |
|------------------------------------|--------|
| Degreasing | Part 1 |
| Power tool cleaning | Part 2 |
| Flame cleaning | Part 3 |
| Abrasive blast cleaning | Part 4 |
| Pickling | Part 5 |
| Phosphate treatment | Part 6 |
| Hand cleaning | Part 7 |
| Wash primer pretreatment | Part 8 |

Additionally, Part 9 provides pictorial guidance on relative levels of surface preparation.

SECTION 2. OUTLINE OF PARTS 1 - 8 OF THE CODE

PART 1. DEGREASING OF METAL SURFACES USING SOLVENT OR ALKALINE SOLUTIONS. Part 1 describes procedures using suitable liquids, other than acids, for the removal of soluble or loosely adherent matter such as oil, grease, wax, dirt, soil, drawing compounds, perspiration and other similar foreign matter.

The procedures described are not suitable for the removal of rust, rust scale or mill scale but may be used to degrease surfaces prior to using other heavier or mechanical methods such as power tool 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 the removal of corrosive salts, including chlorides and sulphates, or of detrimental weld flux which require treatment, according to the degree of contamination, by washing with water (drinking standard) or a phosphate solution, or by power tool or abrasive blast cleaning. Residues deposited by welding electrodes should be removed before painting.

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.

There is a wide range of methods in use and compositions of alkaline cleaning compounds. It is essential that residues of alkaline cleaning compounds are removed. The cleaning is suitable for the 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 can be detrimental to the adhesion of paint.

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 in regard to ventilation, smoking, static electricity, respirators, eye protection, skin contact and disposal of wastes.

PART 2. POWER TOOL CLEANING OF STEEL SURFACES. Part 2 sets out a procedure and the equipment required for the preparation, by the use of power tools, of steel surfaces to which protective coatings are to be subsequently applied. Requirements are specified for the desired level of surface preparation.

Details are given of the use of power tools, either electric or pneumatic, such as rotary wire brushes, sanding machines and sanding discs, abrasive grinders, chipping hammers, scalers, needle guns and rotary descalers for the cleaning of steel. Heavy rust scale is generally removed by hammering or scraping prior to using power tools. Oil and grease are first removed, along with any salts, as specified in Part 1.