

Australian Standard[®]

SAA PACKAGING CODE

Part 9.1—METAL CONTAINERS
Metal Cans and Tubes

This Australian standard was prepared by Committee PK/25, Packaging Code. It was approved on behalf of the Council of the Standards Association of Australia on 10 January 1984 and published on 1 March 1984.

The following interests are represented on Committee PK/25:

- Agricultural and Veterinary Chemicals Association of Australia
- Adhesives and Sealants Manufacturers Association
- Ansett Airlines of Australia
- Australian Institute of Packaging
- Australian and New Zealand Pulp and Paper Industry Technical Association (Appita)
- Bureau of Steel Manufacturers of Australia
- Canmakers Institute of Australia
- Confederation of Australian Industry
- Department of Defence
- Department of Primary Industry
- Department of Science and Technology
- Glass Packaging Institute of Australia
- Packaging Council of Australia
- Plastics Institute of Australia Incorporated
- Printing and Allied Trades Employers Federation of Australia
- Railways of Australia Committee
- Victorian Sawmillers Association

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which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.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.

First published 1984

This standard was issued in draft form for comment as DR 81242.

PREFACE

This standard was prepared by the Association's Packaging Code Committee under the direction of the Packaging Standards Board.

The purpose of this standard is to provide general information on materials and types of metal cans and tubes for packaging.

It is intended for those who are contemplating the use of metal cans and tubes for the first time or who wish to be introduced to the technology and economics of this industry. For those readers who wish to delve deeper, it will provide a useful basis for communication.

The language has been kept relatively simple but the use of some technical terms is unavoidable. Where explanation of these terms is needed, reference should be made to AS 2400, Part 1—Glossary of Packaging Terms.

The SAA Packaging code has been divided into different parts dealing with specific subjects, as follows:

<i>Part</i>	<i>Title</i>
1	Glossary of Packaging Terms*
2	Basic Principles of Packaging Practice*
3	Mechanical Aids in Package Handling
4	Protection against Spoilage of Packages and their contents by Micro-organisms, Insects, Mites and Rodents*
5	Metal Protection
6	Paper and Board, Wrappers and Containers
7	Timber Containers
8	Textile Bags, Sacks and Wrappings
9	Metal Containers
	9.1 Metal Cans and Tubes*
10	Cushioning Materials
11	Twines and Cords
12	Adhesive Closing and Sealing Tapes
13	Tensional Strapping*
14	Adhesives for Packaging
15	Glass Containers
16	Transparent Cellulose Films, Plastics Films, Metal Foils and Flexible Laminates
17	Packaging in Plastics Containers
18	Use of Desiccants in Packaging*
19	Packaging for Airfreight*
20	Handling of Goods in Freight Containers*
21	Packaging of Dangerous Goods
22	Closures
23	Shrink and Stretch Wrapping*

During the preparation of the SAA Packaging Code, account is being taken of material included in BS 1133, Packaging Code, and the assistance obtained from this source is acknowledged.

* Published.

CONTENTS

	<i>Page</i>
1 SCOPE	5
2 REFERENCED DOCUMENTS	5
3 DEFINITIONS	5
4 MATERIALS	
4.1 Aluminium	5
4.2 Tinplate	5
4.3 Sealing Materials	6
4.4 Coatings	8
5 TECHNOLOGY	
5.1 Technology of Decoration	9
5.2 Can Technology	10
6 TYPES OF METAL CONTAINERS AND THEIR APPLICATION	
6.1 Three-piece Cans	15
6.2 Two-piece Cans	16
6.3 Aerosol Containers	16
6.4 Collapsible Tubes	16
7 FILLING OF CANS	
7.1 General	18
7.2 Hand Filling	18
7.3 Mechanical Filling	18
7.4 Vacuum	20
7.5 Head Space	20
7.6 Closing	20
7.7 Carbonated Beverages	20
8 POINTS FOR DISCUSSION BETWEEN A MANUFACTURER AND PURCHASER OF METAL CANS	
8.1 Common Limitations	21
8.2 Specific Points to be Observed	21

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
SAA PACKAGING CODE

PART 9.1—METAL CONTAINERS—METAL CANS AND TUBES

1 SCOPE. This standard provides general information on materials and types of metal cans and tubes for packaging.

2 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 1199	Sampling Procedures and Tables for Inspection by Attributes
AS 1365	Tolerances for Hot-rolled and Cold-rolled Unalloyed Low Carbon Steels (Coils and Cut Lengths)
AS 1399	Guide to AS 1199, Sampling Procedures and Tables for Inspection by Attributes
AS 1517	Tinplate and Blackplate Part 1—Sheet Part 2—Coil
AS 1524	Cylindrical Tinplate Cans with Friction Closures
AS 1525	Tinplate Cans with Threaded Closures
AS 1834	Tin-lead and Other Tin-based Solder Alloys
AS 1866	Wrought Aluminium and Aluminium Alloy Extruded Rod, Bar, Solid and Hollow Shapes for General Engineering Purposes
AS 2278	Metal Aerosol Containers—Classification, Filling and Testing
AS 2354	Hermetically Sealed Metal Cans for Food and Drinks—Terminology and Determination of Dimensions and Capacity
AS 2355	Hermetically Sealed Round Cylindrical Metal Cans for Food and Drinks—Capacities and Dimensions
AS 2400	SAA Packaging Code Part 1—Glossary of Packaging Terms
AS XXXX	Double Seams for Tinplate Cans for Heat Processed Foods*

3 DEFINITIONS. For the purpose of this standard, the definitions given in AS 2400, Part 1 apply.

4 MATERIALS.

4.1 Aluminium.

4.1.1 General. Aluminium used for metal cans and closure members is normally alloyed with other elements to obtain the desired formability characteristics required in manufacturing cans (see AS 1866).

4.1.2 Alloys. The most common alloys (Aluminium Development Council of Australia description) used are as follows:

- (a) 1000 series, such as 1080 and 1100, high purity for impact extruded cans and collapsible tubes which

require softer metal with a high degree of formability.

- (b) 3000 series, particularly 3004, general purpose work hardening magnesium/manganese alloy used for drawn and ironed cans.
- (c) 5000 series, e.g. 5082 and 5352, magnesium higher strength alloys for can ends and drawn and drawn-redrawn cans.

Work hardening, non heat-treated alloys are available in a series of tempers ranging from the soft or annealed state up to a fully hard temper.

4.1.3 Form and coatings.

- (a) Aluminium for can manufacture is supplied in sheet or coil form and is normally ordered by mass or area in the alloy, thickness and temper.
- (b) Aluminium cans are generally lined internally with an organic coating to protect the metal from corrosion by the product and provide commercially acceptable shelf life.
- (c) An external coating is usually applied for decorative purposes and to improve mobility of the can through high speed filling lines. Such a coating has merit in reducing the risk of loss from secondary spoilage.
- (d) Metal sheet for drawn and drawn-redrawn cans and can ends is coated prior to the forming operation, the coating also acting as a partial lubricant. Drawing and ironing, and impact extrusion on the other hand involve rather severe fabrication which organic coatings have not as yet been formulated to withstand. These cans are coated and decorated after the forming operations.

4.2 Tinplate.

4.2.1 General. Tinplate consists of a cold-reduced, mild (low carbon) steel sheet base, which has been coated with a thin layer of tin on both surfaces.

The only method of tinplate manufacture used in Australia is through the electrodeposition of tin on the blackplate base, hence electrolytic tinplate.

Tinplate is available in various thicknesses, widths, lengths and tin coatings. For specific order dimensions and coatings the supplier should be consulted.

It can be supplied in sheet or coil form and for sheets, lengths range from 460 mm to 1020 mm (see AS 1517, Parts 1 and 2).

4.2.2 Rolling direction. In the manufacture of three-piece can bodies, whether round, square or oblong, it is customary to order tinplate so that the rolling direction is parallel to the can circumference to maintain good body shape and improve flanging. For end stock, rolling direction is immaterial and should not be specified.

* In course of preparation.