

Australian Standard™

**Tubes (stainless steel) and tube fittings  
for the food industry**

**Part 1: Tubes**



**S t a n d a r d s** Australia

This Australian Standard was prepared by Committee FT-012, Dairy Factory Equipment. It was approved on behalf of the Council of Standards Australia on 30 December 2000 and published on 13 March 2001.

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The following interests are represented on Committee FT-012:

Australian Chamber of Commerce and Industry  
Australian Dairy Products Federation  
Australian Stainless Steel Development Association  
Dairy Food Safety, Victoria  
Dairy Industry Association of Australia  
Dairy Industry Authority of Western Australia  
Dairy Process Engineering Centre  
Safe Food Production, N.S.W.  
Queensland Dairy Authority

Additional interests participating in the preparation of this Standard:

Stainless Steel Tube Manufacturers

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**Tubes (stainless steel) and tube fittings  
for the food industry**

**Part 1: Tubes**

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## PREFACE

This Standard was prepared by the Standards Australia Committee FT-012, Dairy Factory Equipment, to supersede AS 1528.1—1973.

This is Part 1 of a series of Standards for tubes (stainless steel) and tube fittings for the food industry. The other Standards in the series are as follows:

AS

1528 Tubes (stainless steel) and tube fittings for the food industry

1528.2 Part 2: Screwed couplings

1528.3 Part 3: Butt weld tube fittings

1528.4 Part 4: Clamp liners with gaskets

Industry dissatisfaction with the applicability and relevance of AS 1528 series has resulted in a reassessment of the Standards and this revision. Of particular concern has been the exclusion of fittings designed to meet the requirements of changing process conditions and practices.

Manufacturing and purchasing practices have also deviated from the Standards and, in the case of tubes for example, are now divided between American Standards: ASTM A269 *Seamless and welded austenitic stainless steel tubing for general service*; A554 *Welded stainless steel mechanical tubing*; and ASTM A270 *Seamless and welded austenitic stainless steel sanitary tubing*, and none of these Standards have in all cases met the needs of the *Australian* food industry.

The Committee reviewed ISO 2037:1992, *Stainless steel tubes for the food industry*, for adoption.

The following two important safety requirements for tubes are not covered by the ISO Standard:

- (a) The flaring test (for seamless tubes) and non-destructive testing (for welded tubes) and their limits.
- (b) The test pressure limits for each tube dimension.

In addition to the safety requirements, the ISO Standard is impracticable for use in Australia, as the Standard is lacking the following requirements:

- (i) A large number of tube dimensions (nine sizes), used in the Australian food industry equipment.
- (ii) The requirements on tube lengths, straightness and ovality.
- (iii) The requirements on heat treatment, process of manufacture and condition of delivery.
- (iv) The requirements on visual inspection, packaging and marking requirements for identification.

The Committee did not recommend the ISO Standard for adoption because the Standard did not meet the requirements of the industry.

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.

## CONTENTS

	<i>Page</i>
1 SCOPE.....	4
2 REFERENCED DOCUMENTS.....	4
3 MATERIAL.....	4
4 PROCESS OF MANUFACTURE.....	4
5 CONDITION OF DELIVERY.....	4
6 DIMENSIONS AND TOLERANCES.....	4
7 WELDED TUBING.....	5
8 SURFACE FINISH.....	5
9 HYGIENIC REQUIREMENTS.....	6
10 HEAT TREATMENT.....	6
11 TESTING.....	6
12 VISUAL INSPECTION.....	6
13 PACKAGING.....	6
14 IDENTIFICATION MARKING.....	7
15 CERTIFICATION.....	7
APPENDIX A INFORMATION TO BE SUPPLIED BY THE PURCHASER.....	8

**STANDARDS AUSTRALIA****Australian Standard****Tubes (stainless steel) and tube fittings for the food industry****Part 1: Tubes****1 SCOPE**

This Standard applies to seamless and welded austenitic and duplex stainless steel tubes for general use in the food processing industry.

NOTE: Information to be supplied by the purchaser is given in Appendix A.

This Standard excludes the operational requirements of the product.

**2 REFERENCED DOCUMENTS**

The following documents are referred to in this Standard:

ASTM

A240M Heat-resisting chromium and chromium-nickel stainless steel plate, sheet and strip for pressure vessels

A269 Seamless and welded austenitic stainless steel tubing for general service

BS EN

10204 Metallic products—Types of inspection documents

**3 MATERIAL**

The tubes shall be made from an austenitic or duplex stainless steel complying with the requirements specified for the relevant grade in ASTM A240M.

**4 PROCESS OF MANUFACTURE**

The tubes shall be either seamless, or welded by an inert gas protected fusion process without the use of a filler rod.

**5 CONDITION OF DELIVERY**

The tubes shall be supplied in either the cold worked, or in the cold worked solution annealed condition, as specified by the purchaser. Cold work of the weld only is acceptable.

NOTE: Tubes 12.7 mm to 25.4 mm are not cold worked. For critical applications seamless or hammer swaged tube may be required.

**6 DIMENSIONS AND TOLERANCES****6.1 Outside diameter and wall thickness**

The outside diameter, wall thickness and tolerances on these dimensions shall be as given in Table 1. Wall thicknesses other than those indicated can be negotiated between purchaser and supplier.

**6.2 Length**

The tube lengths shall be standard six metre mill lengths or a length nominated by the purchaser.