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Australian Standard 2624—1983

STEEL PLATE AND STRIP FOR THE CONSTRUCTION OF WELDED STEEL TANKS FOR OIL STORAGE

[Title allocated by Defence Cataloguing Authority: METAL PLATE AND STRIP (Hot-rolled Carbon and Carbon-Manganese Steel; Welded Steel Tanks for Oil Storage)...NSC 9535]

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Australian Institute of Steel Construction Ltd

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Metal Trades Industry Association of Australia

National Association of Australian State Road Authorities

Public Works Department, N.S.W.

Railways of Australia Committee

Steel Reinforcement Promotion Group

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- Steel Structures
- Concrete Structures
- Iron and Steel Standards
- Testing of Metals

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AUSTRALIAN STANDARD

STEEL PLATE AND STRIP FOR THE CONSTRUCTION OF WELDED STEEL TANKS FOR OIL STORAGE

AS 2624—1983

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PREFACE

This standard was prepared by the Association's Committee on Structural Steel.

The standard specifies requirements for steel plate and strip intended for use in the construction of oil storage tanks complying with AS 1692, Steel Tanks for the Storage of Flammable and Combustible Liquids, particularly tanks of Category 6 for which normal commercial quality material may not be suitable.

In the absence of such a standard as this, designers of Category 6 tanks for Australian use have had little alternative but to call up overseas standards such as those included in API 650, Welded Steel Tanks for Oil Storage, or to modify local standards by adding special requirements. These practices have led to a proliferation of individual specifications for materials all fulfilling essentially the same function, with consequent adverse effects on availability and cost.

The purpose of this standard is to provide a range of steel qualities that will be suitable for any Category 6 tank constructed to AS 1692. By utilizing this range designers will not only greatly simplify the task of material selection, but will also help to ensure good general availability.

CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
STEEL PLATE AND STRIP FOR THE CONSTRUCTION OF WELDED STEEL TANKS FOR OIL STORAGE

1 SCOPE. This standard specifies requirements for the production and supply of hot-rolled carbon and carbon-manganese steel plate and strip, of thickness in the range 5 mm to 50 mm inclusive, for use in the construction of welded steel tanks for oil storage.

NOTE: Guidelines for purchasers on information that should be supplied by the purchaser and requirements that should be agreed to at the time of enquiry and/or order are given in Appendix A.

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

AS 1227	General Requirements for the Supply of Hot-rolled Steel Plates, Sections, Piling and Bars for Structural Purposes
AS 1391	Methods for Tensile Testing of Metals
AS 1544	Methods for Impact Tests on Metals Part 2—Charpy V-notch
AS 1710	Method for Ultrasonic Testing of Carbon and Low Alloy Steel Plate, and Classification of Quality
AS 2338	Preferred Dimensions of Wrought Metal Products
ISO 2566/1	Steel—Conversion of Elongation Values Part 1—Carbon and Low Alloy Steels

3 DESIGNATION. The grade of the steel shall be designated as follows:

1st character—S = Structural
2nd and 3rd characters = Minimum yield strength, MPa $\times 10^{-1}$
4th character = Weldability rating* (4 = S1025 type steel)
5th and 6th characters = Impact test required (LO = Charpy V-notch at 0°C)

The grade designations are given in column 1 of Tables 1 and 2.

4 DEFINITIONS. For the purpose of this standard, the definitions given in AS 1227 and the following apply:

4.1 Plate as-produced—a unit plate from a slab, or rolled directly from an ingot, except that when the plate is normalized and is cut into pieces for this purpose, the term refers to each portion of the original plate normalized separately as a piece or batch of pieces. In the case of a normalized batch of pieces from one original plate, the number and location of samples shall be determined in relation to that portion of the original plate from which the pieces are cut.

4.2 Controlled rolled—hot-rolled with precise control of both temperature and rolling reduction to achieve improved toughness.

*Adopted from the Australian Welding Research Association, Technical Bulletin No 1.

TABLE 1
CHEMICAL COMPOSITION

Grade	Analysis type	Analysis, percent									
		C	Si		Mn		P	S	Nb	V	Carbon equivalent*
		max.	min.	max.	min.	max.	max.	max.	max.	max.	max.
S264	Cast	0.23	—	0.40	0.50	—	0.040	0.040	—	—	0.42
	Product	0.27	—	0.45	0.45	—	0.050	0.050	—	—	—
S264LO	Cast	0.20	—	0.40	0.50	1.50	0.040	0.040	—	—	0.42
	Product	0.24	—	0.45	0.45	1.60	0.050	0.050	—	—	—
S365LO†	Cast	0.20	0.15	0.50	0.80	1.60	0.040	0.040	0.050‡	0.10‡	0.45
	Product	0.24	0.10	0.55	0.75	1.70	0.050	0.050	0.060	0.11	—

*Carbon equivalent = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15.
†For grade S365LO, plates ≤ 12 mm thick may be supplied semi-killed, in which case the minimum silicon requirement is not required. For plate > 12 mm thick, the steel must be fully killed and produced to a fine grain practice.
‡Where niobium, vanadium and titanium are used, the total content shall not exceed 0.10 percent for cast analysis.