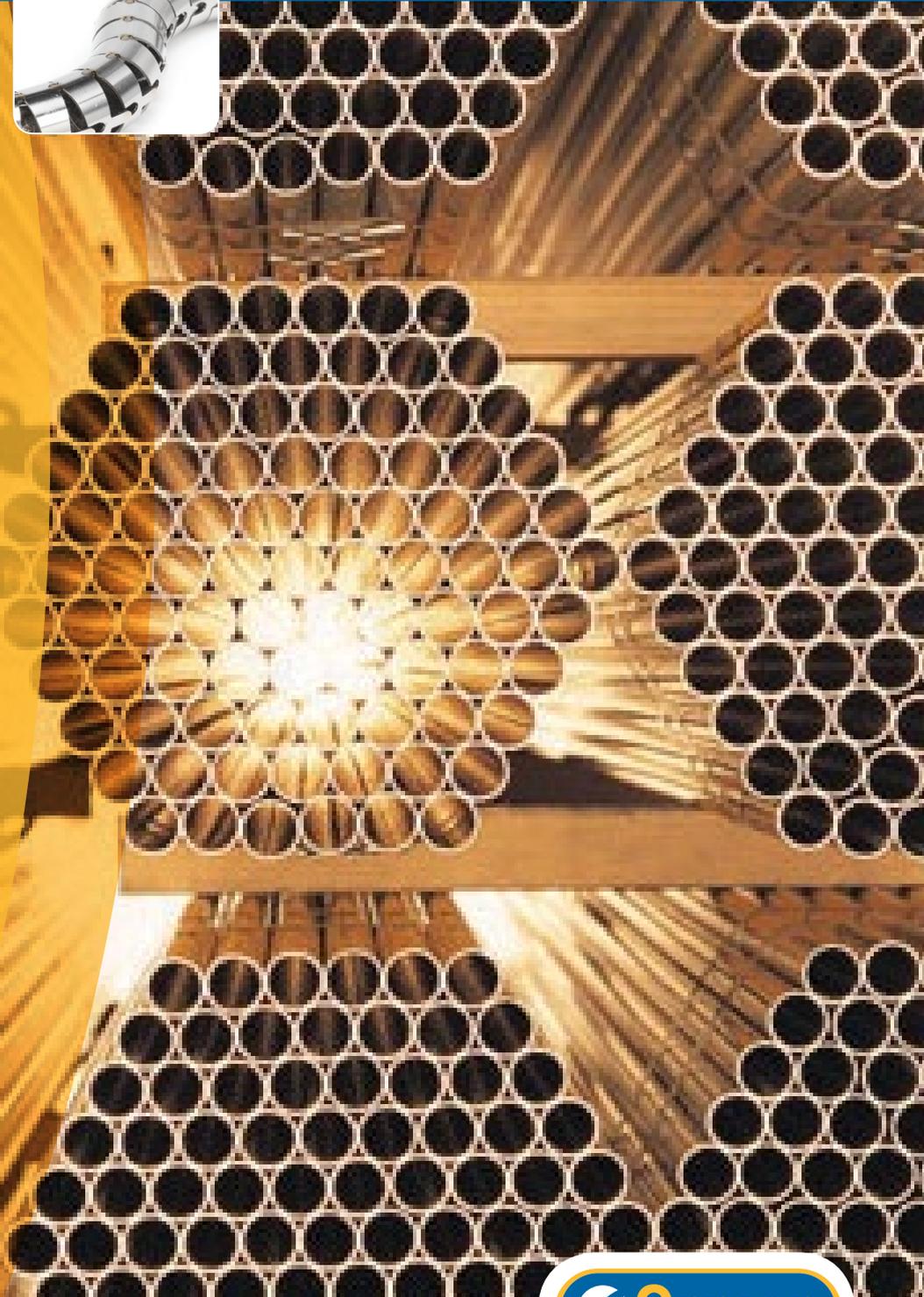


Precision Product Catalogue

Square, Rectangular,
Round & Oval Tube



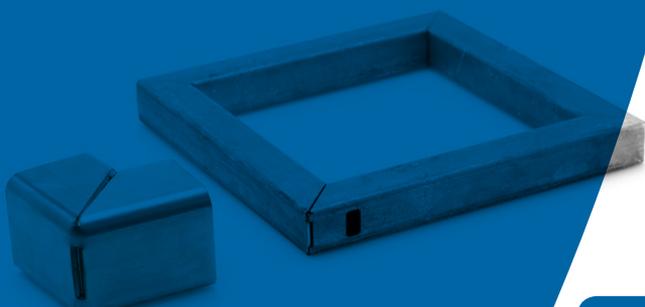
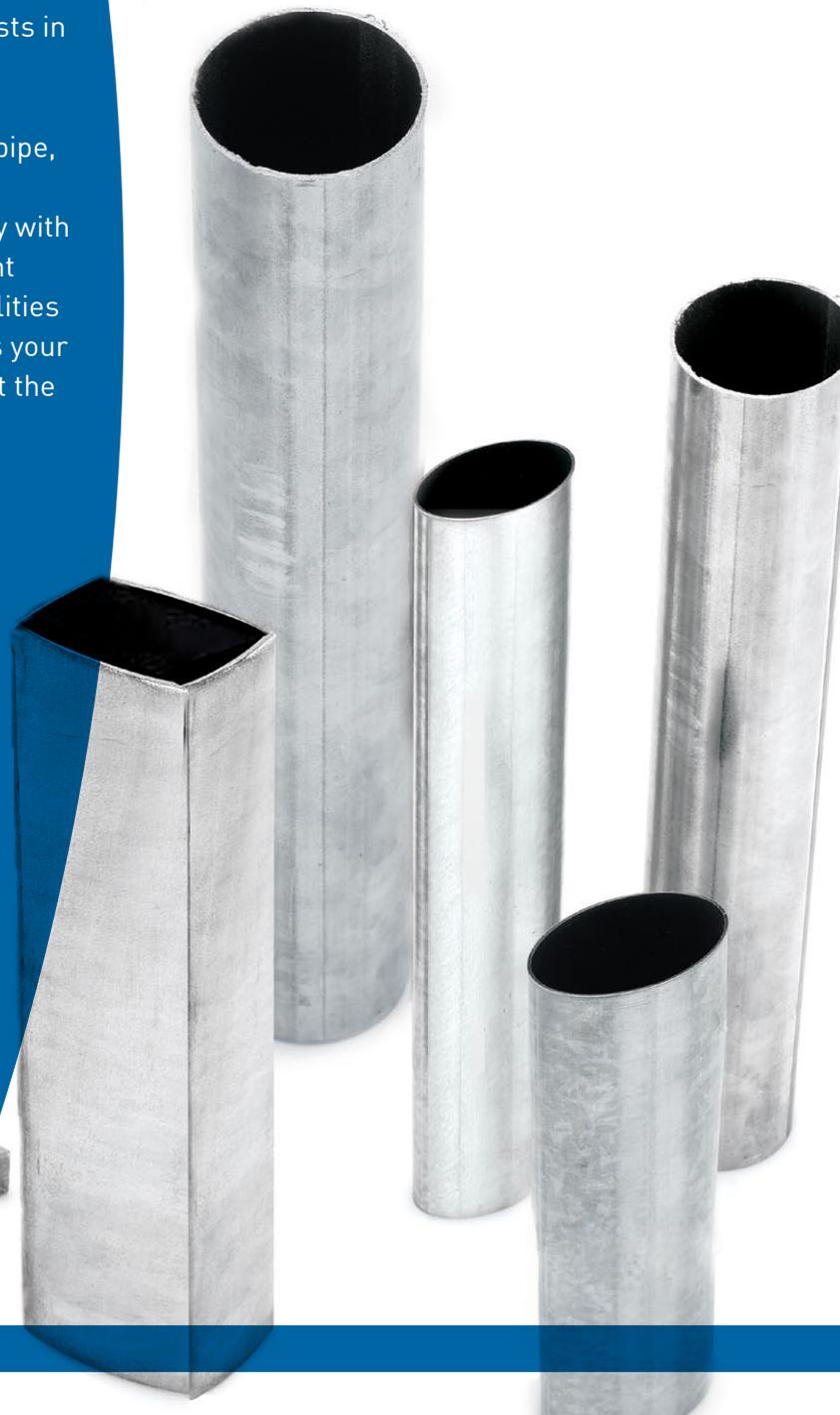
we'll see it through

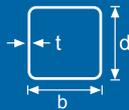




Orrcon Steel is a quality distributor & manufacturer of steel, tube and pipe in Australia. Strategically located in Queensland, New South Wales, Victoria, South Australia and Western Australia, Orrcon Steel offers an extensive spread of distributors and stockists in metropolitan and rural Australia.

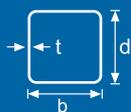
We manufacture and distribute structural pipe, SHS, CHS, RHS and Precision Tube. Orrcon Steel products are manufactured to comply with AS1450. Orrcon Steel's quality management system is certified to ISO9001 and test facilities are NATA certified to ISO/IEC 17025. This is your assurance that Orrcon Steel products meet the highest standards.





SQUARE TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish			Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBL		
12.7 x 12.7	1.2		✓		0.404	400
12.7 x 12.7	1.6	✓			0.506	400
16 x 16	0.9		✓		0.410	256
16 x 16	1.0		✓		0.451	256
16 x 16	1.2		✓		0.529	256
16 x 16	1.6	✓			0.672	256
19 x 19	0.9		✓		0.495	169
19 x 19	1.2	✓			0.642	169
19 x 19	1.4	✓			0.734	169
19 x 19	1.6	✓	✓	✓	0.822	169
19 x 19	2.0	✓			0.987	169
19 x 19	2.5			✓	1.169	169
20 x 20	1.2		✓		0.679	144
20 x 20	1.6	✓	✓		0.873	144
22.2 x 22.2	0.9	✓	✓		0.586	121
22.2 x 22.2	1.2	✓	✓		0.762	121
22.2 x 22.2	1.4	✓			0.875	121
22.2 x 22.2	1.6	✓	✓		0.983	121
25.4 x 25.4	1.2	✓	✓		0.883	100
25.4 x 25.4	1.4	✓			1.015	100
25.4 x 25.4	1.5		✓		1.080	100
25.4 x 25.4	1.6		✓	✓	1.144	100
25.4 x 25.4	2.0			✓	1.389	100
25.4 x 25.4	2.5			✓	1.671	100
25 x 25	1.2	✓			0.868	100
25 x 25	1.4	✓			0.998	100
25 x 25	1.6	✓	✓		1.124	100
30 x 30	1.2	✓	✓		1.056	64
30 x 30	1.5		✓		1.297	64
30 x 30	1.6		✓		1.375	64
31.8 x 31.8	1.2	✓	✓		1.124	64
31.8 x 31.8	1.6		✓	✓	1.465	64
31.8 x 31.8	2.0			✓	1.791	64
31.8 x 31.8	2.5			✓	2.174	64
35 x 35	1.2	✓	✓		1.244	49
35 x 35	1.5		✓		1.532	49
35 x 35	1.6			✓	1.626	49
35 x 35	2.0			✓	1.992	49
38 x 38	1.6	✓	✓	✓	1.777	49
38 x 38	2.0			✓	2.180	49
38 x 38	2.5			✓	2.660	49
40 x 40	1.2		✓		1.433	32

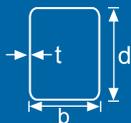


SQUARE TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish			Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBL		
40 x 40	1.5		✓		1.768	32
40 x 40	1.6		✓	✓	1.877	32
40 x 40	2.0		✓		2.306	32
40 x 40	2.5			✓	2.817	32
41 x 41	2.0		✓		2.368	36
45 x 45	1.6		✓	✓	2.129	36
45 x 45	2.5			✓	3.210	36
50 x 50	1.2		✓		1.810	25
50 x 50	1.5		✓		2.239	25
50 x 50	1.6	✓	✓		2.380	25
50 x 50	2.0		✓	✓	2.934	25
50 x 50	2.5			✓	3.602	25
50 x 50	3.0			✓	4.245	25
60 x 60	1.6	✓	✓		2.882	12
65 x 65	1.5		✓		2.945	16
65 x 65	1.6		✓		3.133	16
65 x 65	2.0			✓	3.876	16
65 x 65	2.5		✓		4.780	16

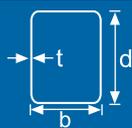
NOTE:

- Standard Lengths are 6100 & 7320. Non standard lengths available by enquiry. Other coatings available include - MSBR, HTGB, HRSB, HRGB.
- The section may be available in these coatings. Please contact Orrcon Steel for availability.
- The products listed are indicative of the range, but you need to check with the local branch for availability & Minimum Order Quantities (MOQ).



RECTANGULAR TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish			Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBL		
12 x 9	1.2	✓			0.395	560
25.4 x 12.7	0.9		✓		0.497	200
25.4 x 12.7	1.0		✓		0.547	200
25.4 x 12.7	1.2	✓			0.643	200
25.4 x 12.7	1.6		✓		0.825	200
30 x 15	0.9		✓		0.594	128
31.8 x 12.7	1.6	✓			0.986	160
35 x 19	1.0		✓	✓	0.796	96
35 x 19	1.2	✓			0.943	96
35 x 19	1.6	✓	✓	✓	1.224	96
35 x 19	2.0			✓	1.489	96
38 x 25.4	1.2		✓		1.120	70
38 x 25.4	1.5		✓		1.377	70
38 x 25.4	1.6		✓	✓	1.460	70
50 x 10	0.9		✓		0.806	85

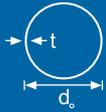


RECTANGULAR TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish			Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBL		
50 x 10	1.2	✓			1.056	85
50 x 10	1.6	✓			1.375	85
50 x 20	1.6	✓			1.626	60
50 x 20	2.0			✓	1.992	60
50 x 25	0.9		✓		1.018	50
50 x 25	1.2		✓		1.339	50
50 x 25	1.6	✓	✓		1.752	50
50 x 25	2.0			✓	2.149	50
50 x 25	2.5			✓	2.621	50
50 x 40	1.6	✓			2.129	30
51 x 31.8	1.6	✓			1.948	40
51 x 31.8	2.0	✓			2.393	40
57 x 35	1.6		✓	✓	2.179	28
57 x 35	2.0			✓	2.682	28
57 x 35	2.5			✓	3.288	28
60 x 30	2.5			✓	3.210	32
60 x 40	1.6	✓			2.380	24
60 x 40	3.0			✓	4.245	24
63.5 x 38	1.6		✓		2.418	28
63.5 x 38	2.0			✓	2.981	28
67 x 29	2.0	✓			2.808	36
70 x 34	2.3	✓			3.482	28
70 x 50	1.2		✓		2.186	20
75 x 25	2.0			✓	2.934	30
76 x 38	1.2		✓		2.073	18
76 x 38	1.6		✓		2.732	18
76 x 38	2.0		✓		3.373	18
80 x 40	1.6		✓	✓	2.882	18
80 x 40	2.5			✓	4.387	18
90 x 40	2.5			✓	4.780	18

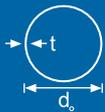
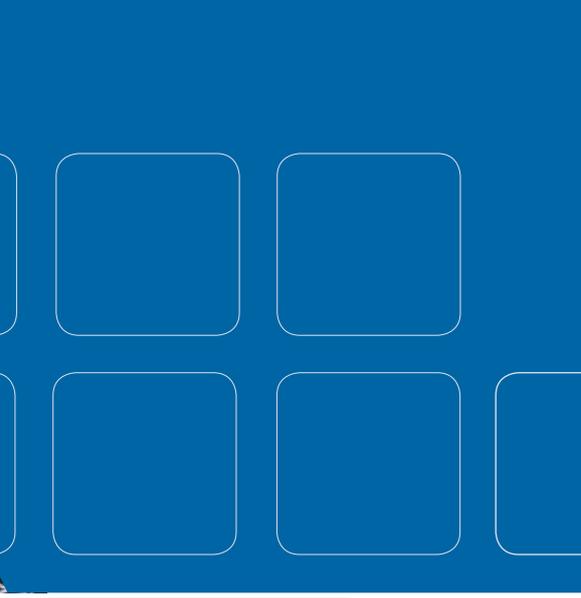
NOTE:

- Standard Lengths are 6100 & 7320. Non standard lengths available by enquiry.
- Other coatings available include - MSBR, HTGB, HRSB, HRGB.
- The section may be available in these coatings. Please contact Orrcon Steel for availability.
- The products listed are indicative of the range, but you need to check with the local branch for availability & Minimum Order Quantities (MOQ).



ROUND TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish					Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBR	MSBL	ACMS		
12.7	0.9		✓	✓			0.262	270
12.7	1.2	✓					0.340	270
12.7	1.6	✓					0.438	270
16	0.9			✓			0.335	217
16	1.2	✓	✓				0.438	217
16	1.6	✓	✓				0.568	217
16	2.0	✓					0.691	217
19	0.9		✓	✓			0.402	169
19	1.2	✓	✓			✓	0.527	169
19	1.4	✓					0.608	169
19	1.6	✓	✓		✓		0.687	169
19	2.0	✓			✓		0.838	169
19	2.5		✓				1.017	169
22.2	0.9	✓	✓				0.473	127
22.2	1.2	✓					0.621	127
22.2	1.4	✓					0.718	127
22.2	1.6	✓					0.813	127
25.4	0.9		✓				0.544	91
25.4	1.0						0.601	91
25.4	1.2	✓		✓			0.716	91
25.4	1.4	✓					0.829	91
25.4	1.6	✓	✓		✓		0.939	91
25.4	2.0	✓	✓		✓		1.154	91
28.6	1.2	✓	✓				0.811	61
28.6	1.6	✓	✓				1.065	61
31.8	1.2	✓					0.906	61
31.8	1.6	✓	✓		✓	✓	1.192	61
31.8	2.0	✓			✓		1.470	61
35	1.2	✓	✓			✓	1.000	61
35	1.6	✓					1.318	61
38	1.2		✓			✓	1.089	61
38	2.0	✓			✓		1.776	37
38	2.5				✓		2.189	37
38	3.0				✓		2.589	37
41.3	1.2	✓	✓				1.187	37
41.3	1.6	✓	✓			✓	1.566	37
44.5	1.2	✓	✓			✓	1.281	68
44.5	1.6	✓	✓			✓	1.693	68
44.5	2.0				✓		2.097	37
44.5	2.5				✓		2.589	37
47.6	1.2	✓					1.373	37
47.6	1.6	✓				✓	1.815	19
47.6	2.0	✓					2.249	19
51	1.2	✓	✓			✓	1.474	19

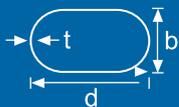


ROUND TUBE Standard: AS 1450

Size dxb (mm)	Gauge	Finish					Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB	MSBR	MSBL	ACMS		
51	1.4	✓					1.712	53
51	1.6	✓	✓		✓	✓	1.949	19
51	2.0	✓	✓				2.417	19
51	2.5		✓		✓		2.990	19
54	1.2		✓				1.562	19
54	1.6	✓				✓	2.068	19
57	1.2	✓	✓				1.651	19
57	1.6	✓	✓			✓	2.186	19
57	2.0	✓			✓	✓	2.713	19
60.3	1.6		✓			✓	2.316	19
63.5	1.6	✓				✓	2.442	19
63.5	2.0	✓			✓	✓	3.033	19
70	1.6	✓					2.698	19
76.2	1.6	✓				✓	2.944	19
76.2	2.0					✓	3.660	19
85	1.6					✓	3.290	7
90	1.6	✓				✓	3.488	7

NOTE:

- Standard Lengths are 6100 & 7320. Non standard lengths available by enquiry.
- Other coatings available include - HTGB, HRSB, HRGB.
- The section may be available in these coatings. Please contact Orrcon Steel for availability.
- The products listed are indicative of the range, but you need to check with the local branch for availability & Minimum Order Quantities (MOQ).



OVAL TUBE Standard: AS 1450

Size dxb (mm)	Flat / Oval Side	Gauge	Finish			Nom. Linear Mass (Kg/m)	Lengths Per Pack
			SEMB	MSGB	MSBR		
30 x 15	OV	2.0	✓			1.152	128
31.8 x 16	FS	1.2			✓	0.740	128
31.8 x 16	FS	1.6			✓	0.998	128
31.8 x 17.5	OV	1.6	✓			0.940	96
31.8 x 17.5	OV	2.0	✓			1.196	120
35 x 15	OV	2.0	✓			1.312	128
37.7 x 20.7	FS	1.6	✓			1.237	84
51 x 16	FS	1.2	✓			1.114	80
51 x 16	FS	1.6	✓			1.476	80
61.8 x 29.6	OV	1.6		✓		1.858	48
75 x 16	FS	1.0		✓		1.334	48

NOTE:

- Standard Lengths are 6100 & 7320. Non standard lengths available by enquiry.
- Other coatings available include - HTGB, HRSB, HRGB.
- The section may be available in these coatings. Please contact Orrcon Steel for availability.
- The products listed are indicative of the range, but you need to check with the local branch for availability & Minimum Order Quantities (MOQ).



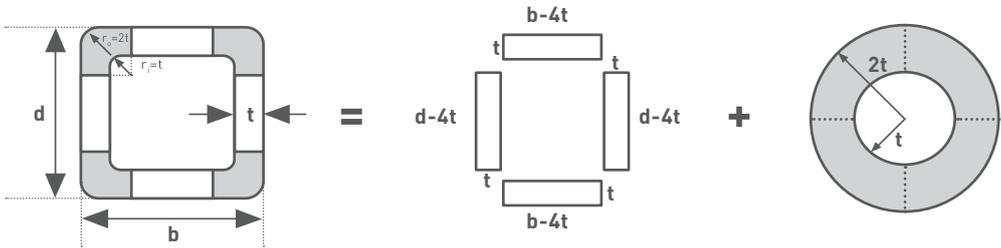
SPECIAL SHAPES Standard: AS 1450

Size dxb (mm)	Gauge	Finish		Nom. Linear Mass (Kg/m)	Lengths Per Pack
		SEMB	MSGB		
50.8 H/RAIL	1.6		✓	1.941	30
50 x 50 30-25	1.6		✓	2.470	25
50 x 50 30-25	2.0	✓		2.907	25
50 x 50 x 68.6	1.6	✓		2.006	25

NOTE:

- Standard Lengths are 6100 & 7320. Non standard lengths available by enquiry.
- Other coatings available include - MSBR, MSBL, HTGB, HRSB, HRGB.
- The section may be available in these coatings. Please contact Orrcon Steel for availability
- The products listed are indicative of the range, but you need to check with the local branch for availability & Minimum Order Quantities (MOQ).

LINEAR MASS CALCULATION



No thinning or stretching of corner radius as a result of the roll forming process is assumed. There is negligible difference due to additional zinc mass of 275g/m² on MSGB compared to SEMB, MSBR & MSBL. There are correction factors that allow for zinc weight if deemed necessary. b, d and t are all nominal dimensions.

Nominal Linear Mass:

Cross-Sectional Area = $2t \times (b + d - 8t) + 3\pi t^2$;

this is based on corner radius of 2t as per schematic above.

Also as per formula in EN10219-2:

Cross-Sectional Area = $2t \times (b + d - 2t) - [4 - \pi] (r_o^2 - r_i^2)$;

this is based on outside corner radius of 2t & inside corner radius of 1t.

Mass per unit length (kg/m) = $7850 \text{ (kg/m}^3\text{)} \times \text{Cross Sectional Area (m}^2\text{/m)}$

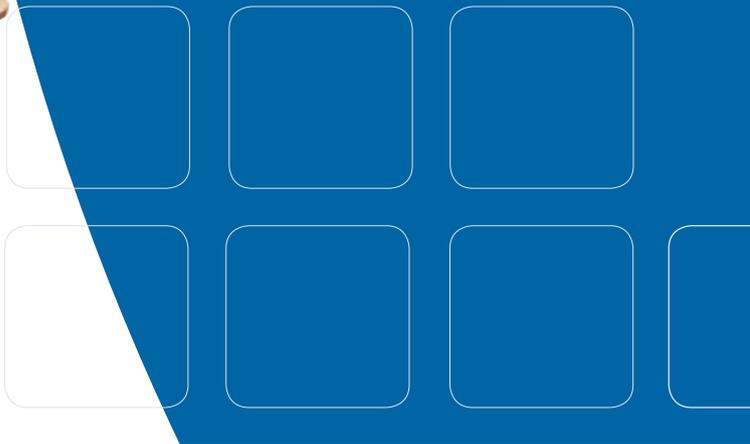
SPECIAL REQUIREMENTS & NON STANDARD PRODUCTS

If you have special requirements which are not in the standard range of Commercial Quality, Zinc Coated or Aluminium Coated products, Orrcon Steel is only too happy to assist. Some of the services we offer include different mill lengths, other section sizes, different grades, chemical composition and mechanical properties, exact-cut lengths, restricted tolerances, multiple surface finishes, variable coating thickness and optional perforating.

MANUFACTURING STANDARDS

Orrcon Steel products are manufactured by cold forming and electric resistance welding and are tested to generally meet the requirements of AS1450: Steel Tubes for Mechanical Purposes. In addition, Orrcon Steel has its own internal manufacturing specification details which are on the following pages.





FLARE TEST

Commercial Quality & Zinc Coated:-

- Outside diameter increase min of 25% over 60° cone without failure of parent metal or the weld.

m Coated:-

- Outside diameter increase min of 35% over 60° cone without failure of parent metal or the weld.

FLATTENING TEST

Circular tube only - capable of being flattened without cracking between two parallel plane surfaces. This is with the weld located at 0° and 90° to the direction of flattening until the distance between surfaces is 0.5D.

BULGING TEST

For circular aluminium coated tube only - capable of being expanded over a segmented mandrel or a parallel punch to increase the outside diameter by 20% without failure of parent metal or the weld.

CERTIFICATES

- Certificates of compliance are available free of charge.
- When full test certificates are required it must be specified at the time of ordering. A charge is made for this service.

STANDARD MANUFACTURING TOLERANCES

STANDARD MECHANICAL PROPERTIES - Commercial Quality & Aluminium Coated				
D/t Ratio	Less than 15	15 to 25	Over 25 to 35	Over 35
Yield Strength MPa (min)	300	275	250	200
Tensile Strength MPa (min)	310	300	290	280
Elongation on $5.65\sqrt{S_0}$ % (min)	15	20	25	30

Where D = outside diameter or equivalent round, and t = nominal wall thickness

STANDARD MECHANICAL PROPERTIES - Zinc Coated	
Yield Strength	300 MPa minimum
Tensile Strength	350 MPa minimum
Elongation on $5.65\sqrt{S_0}$	15% minimum

Thickness $t \leq 1.6 = \pm 0.15\text{mm}$

Corner Radius $r \text{ max } 2t$

$t > 1.6 \text{ and } \leq 2.0 = \pm 0.20\text{mm}$

Length - Some distortion will occur on ends of mill lengths. Unless otherwise specified, the supplied mill length will contain the nominal length on undistorted material.

Circular Tube

O.D. (mm) d	Max. Permissible Variation in O.D. (mm) d
< 25	± 0.15
> 25 and ≤ 50	± 0.20
> 50 and ≤ 75	± 0.25
> 70	± 0.35

Rectangular, Square and other Sections

Dimension (mm) b,d ₁	Max. Permissible Variation in Dimensions (mm) b,d ₁
< 25	± 0.15
> 25 and ≤ 50	± 0.20
> 50 and ≤ 75	± 0.25
> 70	± 0.35



STANDARD MANUFACTURING TOLERANCES

Dimension (mm)	Squareness (mm)	Flatness(mm)	Twist Over 1 metre(mm)
< 25	0.10	0.10	0.25
> 25 and ≤ 40	0.15	0.18	0.35
> 40 and ≤ 50	0.25	0.25	0.40
> 50 and ≤ 65	0.30	0.35	0.45
> 65 and ≤ 80	0.40	0.45	0.55
> 80	0.45	0.55	0.65

Straightness - With the mill length placed against a straight edge and touching on both ends, the maximum measured gap shall not exceed the value shown.

Tube Diameter or Section Dimension	Maximum Measured Gap (mm)
≥ 22.2	Mill length (mm) / 600
< 22.2	Mill length (mm) / 300

Height of Weld Upset

A - Measured Material Thickness	B - Maximum Height of Weld Upset Including Material Thickness (mm)
≤ 1.2	1.5 x Material Thickness
> 1.2	1.4 x Material Thickness

COATINGS AND SURFACE FINISHES

MSBR – Mild Steel Bright

Finish – Has a bright finish and is typically used in the manufacture of products that require a higher grade surface finish such as electroplating or similar critical finish applications.

Typical applications – domestic and commercial furniture, lawn mower handles.

SEMB – Semi Bright

Finish – Typically has a steel grey appearance and suitable surface for general applications. Ideal for where demanding and consistent properties are required.

Typical applications - domestic and commercial furniture, shop fitting equipment.

HRSB – Hot Rolled Semi Bright

Finish - Typically has a steel grey appearance and suitable surface for general applications. Ideal for paint or powder coated products.

Typical applications – racking, shelving, fitness equipment, cargo barriers.

MSBL – Mild Steel Black

Finish - Has a black, mill finish.

Typical applications – ideal for hot dipped galvanised applications such as signs or fence posts.

ACMS – Aluminium Coated Mild Steel

Finish - Rolled from hot dipped aluminium coated steel strip, with aluminium coating both sides.

Typical applications - heat resistant applications, i.e. automotive exhausts, domestic gas heaters.

MSGB – Mild Steel GALVABOND®

Finish - Rolled from hot dipped zinc coated steel strip, with zinc coating both sides.

Typical applications – exterior use such as tubular fencing and outdoor furniture.

HTGB – Hi Tensile GALVABOND®

Finish - High strength tube rolled from hot dipped zinc coated steel strip, with zinc coating both sides.

Typical applications - Outdoor tubular products where greater strength and reduced weight is required. ie playground equipment and shade sail applications.

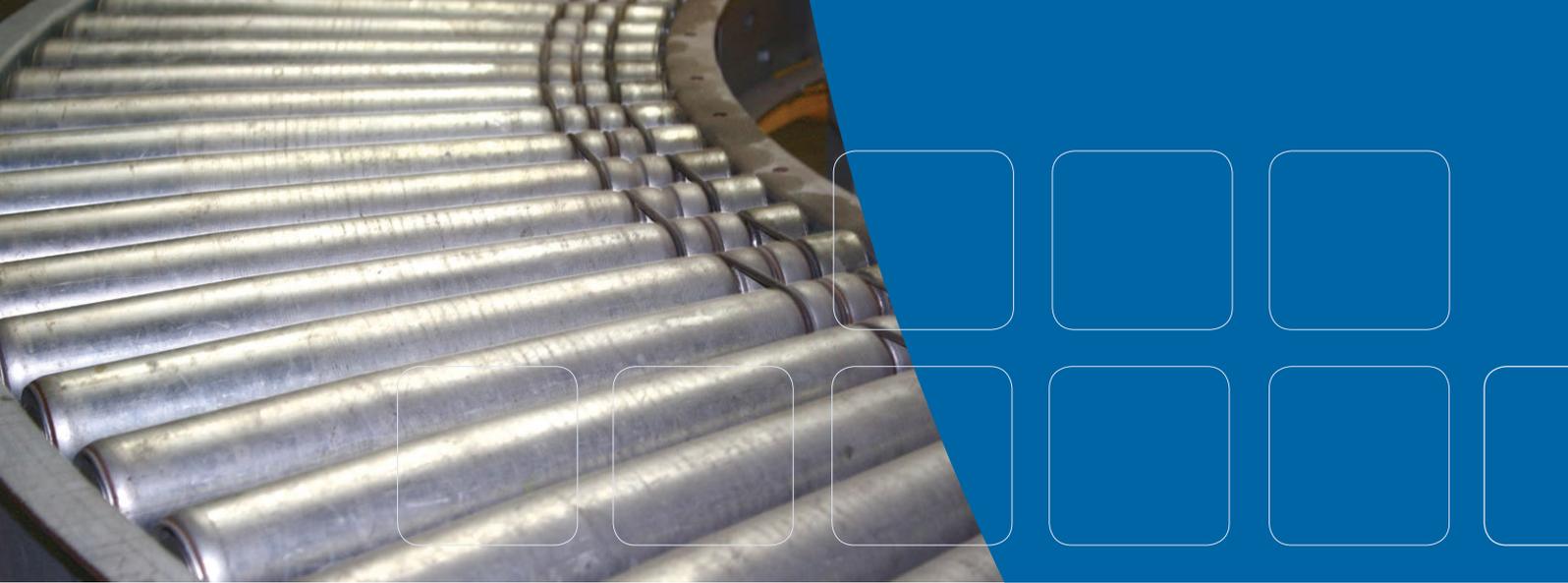
PACKAGING, HANDLING AND STORAGE

Storage and Transport

Store in a stable configuration. Transport in accordance with Government regulations and always ensure load is secure.

When zinc and aluminised products are being handled, care must be taken to protect the coating.

With zinc coating, attention should be paid to the conditions of transport and storage to avoid the possibility of wet-storage stain.



A corrosion known as “white rust” can occur on freshly zinc-coated products that are transported or stored under damp and/or badly ventilated conditions. The attack is frequently superficial, despite the bulkiness of the corrosion. It may be unattractive, but is not usually detrimental to the other properties of the coating.

The packed product should be kept undercover in clean, dry and ventilated conditions. This is especially important for products in the lower size range as their bundle configuration restricts natural ventilation.

Storage under restricted ventilation (eg. tarps) is not recommended.

Products should never be stored in contact with cardboard or paper products, cinders, clinkers, unseasoned timbers or harmful chemicals. If the zinc coating is subject to excessively rough treatment and some damage does occur, small areas may be renovated by the application of one of the following coatings:

- organic zinc-rich primer; or
- inorganic zinc silicate paint; or
- zinc metal spray

These coatings are to be applied in accordance with manufacturers recommendations.

NOTE: GALVABOND® is a registered trademark of Bluescope Steel Pty Ltd.

This information is taken from sources believed to be accurate and correct. Orrcon Steel makes no warranty as to the correctness or the sufficiency of the information supplied, furthermore no warranty is given or implied that under certain conditions additional protective measures may be required.

MATERIAL SAFETY DATA INFORMATION

ERW Tube Identification

Rectangular, Square and Circular Section

Use: Steel Fabricating, Fencing, Furniture, Exhausts etc.

Physical Description / Properties

Appearance: Dull Grey and Silver (Zinc and Aluminium Coated)

Boiling Point: Not Applicable

Melting Point: Base Metal 1535 °C

Fire and Explosive Hazard: Steel products in the solid state present no fire or explosive hazard. Under normal fire conditions decomposition of the metal will not occur, but deformation of the steel member may occur.

Health Hazard Information

Steel products under normal conditions do not present an inhalation, ingestion or contact health hazard. However, operations such as burning, welding, sawing, brazing, grinding etc, which result in the temperature of the product rising above the melting or surface coating, may present health hazards.

Fuming

Zinc and Aluminium coated tube is designed so that weld fume levels are well below the accepted SHORT TERM EXPOSURE LIMITS (STEL) of 10mg/m², when normal welding practices are used.

Spills and Disposal

Recycle scrap steel or dispose of it at an approved site.

Fire/Explosion Hazard: Irritant fumes may be produced during a fire situation. Decomposition products include oxides of carbon.

Effects of Over Exposure

Exposure Limits: The major exposure hazard is the inhalation of fumes or dust. Chronic inhalation of high concentration of iron oxide fumes or dusts may lead to benign pneumoconiosis (Siderosis). Inhalation of high concentration of ferric oxide may increase the risk of lung cancer in persons exposed to pulmonary carcinogens.

Precautions for Use

Metal products are stable under normal conditions of use, storage, handling and transport and require no special precautions. When performing normal metalworking operations, eye and respiratory protection should be used as necessary.

Welding

The following consumables are recommended by AS 1544.1-1985 when welding:

Manual metal-arc (MMAW) E41XX, E48XX

Gas metal-arc (MIG) (GMAW) W50x

For further information on consumables for zinc and aluminum coated product welding please contact Orrcon Steel.

Surface Finish

Tubing designated as Bright is suitable for plating following a light polish. Surface markings on Semi-Bright tube which are evident after a light coat of spray paint shall be deemed unacceptable.

Weldline Location (Non-circular Tube)

Where weldline location is specified appropriate gauging shall be determined by agreement.

Internal Fitments

Where internal fitments are specified appropriate gauging shall be determined by agreement.

Rust Protection

Unless otherwise specified tubing is supplied coated with a rust preventative oil which provides short-term protection against rusting in normal dry warehouse conditions. Rust preventative oil should be re-applied periodically where prolonged storage occurs.

Fabrication

Where leak tightness is a critical requirement of a tubular component that condition needs to be assured after the fabrication or manipulation operation is completed.

Control

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PRECISION TUBE

Although all care has been taken in the preparation of information in this brochure, Orrcon Operations Pty Ltd cannot accept liability for errors or omissions, or for the use of this brochure. You should always satisfy yourself as to the accuracy of the information and applicability to your circumstances.

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