







MAXI-TUBE® IS AN INNOVATIVE ZINC-ALLOY COATED STEEL SECTION WITH A COATING THAT SHOWS HIGH CORROSION RESISTANCE IN AGGRESSIVE ENVIRONMENTS\*





\* Based on coastal outdoor exposure testing – see inside for details

# WHY USE MAXI-TUBE®

## WHAT IS MAXI-TUBE®

MAXI-TUBE<sup>®</sup> is an innovative zinc-alloy coated steel section with a ZM275 coating that shows high corrosion resistance in many aggressive environments with good galvanic protection. The corrosion resistant alloy coating of MAXI-TUBE<sup>®</sup> is comprised of zinc (Zn), aluminium (Al), and magnesium (Mg) and is compliant to AS 1397. It provides maximum durability, maximum efficiency and maximum versatility.

#### **BENEFITS OF MAXI-TUBE®**

- Slower corrosion rate than zinc-coated steel.\*
- Suited for coastal, industrial, intensive farming, food processing and infrastructure applications.
- Has good paint and powder coat adhesion, plus displays a high quality surface finish.
- Lead times may be reduced by eliminating steps from traditional coating processes.
- Achieves life cycle and maintenance cost benefits.
- Available with a defined warranty.
- With a coating 2.5 times\* harder than galvanised steel, MAXI-TUBE<sup>®</sup> delivers superior scratch resistance.
- Aesthetically pleasing mill finish with zero spangle and a smooth satin coating.
- Demonstrates good weldability for ease of fabrication.

## **TYPICAL APPLICATIONS**

MAXI-TUBE® is suitable for coastal environments and industrial applications as well as:

- Building infrastructure, floor framing, remote housing, playgrounds and shade structures.
- Infrastructure and transport projects in semi-marine and severe marine environments.
- Food & beverage processing industries, intensive farming and green houses.



\* Based on testing conducted by Nisshin Steel Co. Ltd

# **MAXI-TUBE® COATING**

### **COATING LAYER MECHANISM<sup>+</sup>**

The metallic alloy coating on MAXI-TUBE<sup>®</sup> provides a tough and adherent protective film that significantly slows the corrosion process. It is available in a ZM275 coating class, which is a total coating mass of 275g/m<sup>2</sup>. The MAXI-TUBE<sup>®</sup> coating complies with AS 1397. For further information on the coating class, refer to AS 1397, Table 3.3.



The aluminium and magnesium in the coating layer of MAXI-TUBE<sup>®</sup> combine with zinc to form a fine, tightly adhered protective film on the coating surface. This protective film provides a barrier that slows further oxidation and is highly resistant to weathering. This ensures high corrosion resistance over long periods. The MAXI-TUBE<sup>®</sup> coating has an aesthetically pleasing, smooth satin finish that develops an appealing surface patina over time.

# **CORROSION RESISTANCE OF TUBE SURFACE<sup>+</sup>**



"Orrcon Steel's MAXI-TUBE<sup>®</sup> is a significant innovation which takes durability performance of pre-coated steel tube and pipe to the next level. The zinc, aluminium, magnesium alloy on the surface provides excellent corrosion resistance due to a better oxide coating layer."

Professor Andy Atrens – Head Division of Materials Engineering – University of Queensland

## SCRATCH RESISTANT PROPERTIES

The MAXI-TUBE<sup>®</sup> surface has a high scratch resistance due to a harder coating. Using the Vickers Hardness measure, it is up to 2.5 times<sup>\*</sup> greater than galvanised steel. The coating displays self-repairing properties for damage up to 6mm wide. This means the adjacent coating diffuses to provide additional protection to the base metal.



+ Original images provided courtesy of Nisshin Steel Co. Ltd



## LEAD TIME REDUCTIONS\*

MAXI-TUBE<sup>®</sup> as an off-the-mill rolled product, offers an alternative to batch coated processes. Transport to and from external processing facilities, batch coating, surface inspections and rework may be eliminated when using MAXI-TUBE<sup>®</sup>. By eliminating these processes, the complexity, time and cost associated with external processing is reduced. These savings may vary by region and local conditions.



*"It is reassuring to know a high quality pre-coated product is available for tube and pipe structural design specifications. I am confident our builder partners will embrace this product due to the potential for reduced lead times and schedule cost savings that the fabricated MAXI-TUBE<sup>®</sup> system can provide."* 

Jason Lenac – BEng Civil – Director – Odyssey Consulting Group

#### **MAXI-TUBE® PRODUCT RANGE**

Orrcon Steel manufactures MAXI-TUBE<sup>®</sup> to comply with AS/NZS 1163 C350L0 in all increments between 1.6mm to 6.0mm wall thickness. The complete range is detailed in the structural tube and pipe section of Orrcon Steel's National Product Catalogue. Non-structural sections (precision product) are available subject to enquiry.

Refer to www.orrconsteel.com.au for further information.

SHS	RHS	CHS	YARD RAIL
20 x 20	50 x 25	20 NB (26.9 OD)	52 x 25
TO	TO	TO	TO
125 x 125	185 x 65	150 NB (165.1 OD)	124 x 42

NOTE: Minimum order quantities and lead times may apply.

"The MAXI-TUBE" coat recommended for weld zones and plate connections ensures the fabricated system can have the same durability as the parent MAXI-TUBE". There are painting advantages associated with MAXI-TUBE". The high quality mill finish means there is no rework of the coating and the painted or powder coated product is aesthetically pleasing."

+ Original images provided courtesy of Nisshin Steel Co. Ltd

# **CORROSION RESISTANCE**

## **OUTDOOR EXPOSURE TESTING IN COASTAL AND RURAL ENVIRONMENTS**



Original graph provided courtesy of Nisshin Steel Co.ltd

coating class specified in AS 1397 ZAM® is a registered trademark of Nisshin Steel Co. Ltd

# SALT SPRAY TESTING

Several 1,000 hour and 3,000 hour neutral salt spray tests have been completed by an independent NATA accredited laboratory (Bureau Veritas). The tests were conducted in accordance with AS 2331.3.1 and assessed with reference to AS 1247. The testing was carried out on MAXI-TUBE<sup>®</sup> with numerous plate connection coatings:

- Welded and screwed connection fittings coated with MAXI-TUBE® Coat Metal Spray.
- Welded connections coated with two part and one part zinc-rich epoxy paint, plus MAXI-TUBE® Grey finish coat.
- Fully painted and powder coated with MAXI-TUBE® Coat Metal Spray at welded connections.



Further testing has been completed in simulated corrosive industrial and construction application environments. Please contact Orrcon Steel for further information.



# WELDING & PAINTING

## WELDING SPECIFICATIONS

MAXI-TUBE<sup>®</sup> has a similar weldability performance as existing zinc coated steel products. The same welding consumables, procedures and guidelines as current zinc coated structural tube and pipe should be followed.

For additional welding information and guidelines refer to www.maxitube.com.au

## WELD ZONE & PLATE CONNECTION COATING SYSTEMS

Salt spray tests show the weld zone and plate connection coating system is equal to the parent MAXI-TUBE<sup>®</sup> coating. The weld repair and plate connection coating systems include:

#### STAINLESS STEEL PLATE

The welding of Stainless Steel plate attachments to MAXI-TUBE<sup>®</sup> ensures a high quality outcome. There is a reduction of surface preparation and protective coatings at connections using this method.

### ZINC RICH EPOXY PAINT

A zinc-rich epoxy base coating system compliant with AS/NZS 2312 can be used for the weld zone and plate connections. The MAXI-TUBE<sup>®</sup> Grey colour match is required over this base coat to match the parent MAXI-TUBE<sup>®</sup> alloy colour.

## MAXI-TUBE® COAT - METAL SPRAY

A MAXI-TUBE<sup>®</sup> Coat Metal Spray coating system compliant with AS/NZS 2312 uses MAXI-TUBE<sup>®</sup> Metal Spray Wire for the weld zone and plate connections. The MAXI-TUBE<sup>®</sup> Grey is required over this base coat to match the parent MAXI-TUBE<sup>®</sup> alloy colour.

For further information on the listed coating systems refer to www.maxitube.com.au

#### PAINTING AND POWDER COATING MAXI-TUBE®

MAXI-TUBE<sup>®</sup> can be painted and powder coated like other zinc coated products, providing a duplex coat. It is manufactured from pre-coated coil which has a spangle free engineered surface providing a smooth and uniform finish for top coating.

The pre-coated surface is produced under precisely controlled conditions and is regarded as an engineered material coating. The passivation of the MAXI-TUBE<sup>®</sup> coating further protects the surface which provides a high quality finish for approved powder coat or paint systems. This ensures high quality adhesion of paint coatings to MAXI-TUBE<sup>®</sup>. Painted or powder coated MAXI-TUBE<sup>®</sup> provides a high durability specification alternative.

For further information on painting MAXI-TUBE® methods refer to www.maxitube.com.au





# LIFE CYCLE BENEFITS & WARRANTY

# LIFE CYCLE BENEFITS

- The high corrosion resistance of MAXI-TUBE<sup>®</sup> provides potential life cycle benefits due to lower maintenance cost.
- The cost of major maintenance can be a large percentage of the original material cost. This expense includes asset income loss, labour, material, access equipment, containment and OH&S costs.
- Paint coatings on MAXI-TUBE<sup>®</sup> demonstrate stability and good adhesion providing additional life cycle benefits.

Note: The life cycle cost saving for MAXI-TUBE® will vary depending on the coating specification it is compared to.

### WARRANTY

For the first time in Australia, a defined warranty is available on pre-coated zinc-alloy structural tube and pipe used in coastal environments and industrial applications.

The availablity and extent of any MAXI-TUBE<sup>®</sup> warranty will depend on the environment and application in which the product is used.

Please contact Orrcon Steel for further information and a copy of applicable terms & conditions.

"MAXI-TUBE<sup>®</sup> is a durable product that encompasses a superb material technology which opens up many new applications for architectural design in tube and pipe. The satin looking surface finish and high performance coating provides improved aesthetics and durability. The warranty is a bonus for Engineers, Architects, Builders and the end client. A warranty will provide more certainty when using steel in harsh environments."

Anne Sulinski – Practice Director – Arkhefield









1300 677 266 www.maxitube.com.au or visit www.orrconsteel.com.au

**Orrco** 

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METALCORP

we'll see it through