



Murrin Murrin Operations Pty Ltd

TECHNICAL SPECIFICATION

FOR

PACKING AND DOCUMENTATION INSTRUCTIONS

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1. SCOPE

1.1 This specification presents the minimum requirements for the packing of all goods, equipment, and materials to be delivered to Murrin Murrin Operations Pty Ltd (MMO).

2. PURPOSE

2.1 The purpose of this specification is to ensure that all goods delivered to the Murrin Murrin site are received in an “ex-works” condition and adequately preserved and maintained prior to operational commissioning. To this end, the Supplier shall remain responsible for the adequacy of the preservation, protection, and packing of the goods. The Supplier shall also be responsible for providing appropriate storage and pre-operational maintenance instructions to be followed by MMO prior to equipment commissioning.

2.2 Conformance to the requirements of this specification shall not relieve the Supplier’s responsibility for damage or deterioration occurring as a result of faulty or inadequate packing, protection, painting, or preservation.

3. GENERAL

3.1 All equipment preparation, equipment packaging, and pre-operational maintenance instructions shall be designed for six (6) months storage on-site at Murrin Murrin prior to commissioning in addition to a reasonable duration of shipment from equipment origin to final destination.

3.2 It is the Supplier’s responsibility to confirm the shipment method and duration if this is not detailed on the Purchase order or Scope of Work.

4. REFERENCES

4.1 TECHNICAL SPECIFICATIONS

00-30TS-003 Site Data

4.2 INTERNATIONAL STANDARDS

ISPM 15 Guidelines for Regulating Wood Packaging Material in International Trade

ISO 1496 Series 1 Freight Containers

5. PREPARATION FOR PACKING

5.1 Prior to packing, all goods, equipment and materials shall be checked internally and externally to ensure that they are free from all weld spatter, scale, rust, filings, dirt, etc., as well as foreign materials.

5.2 All bright parts and/or machined surfaces liable to rust shall be protected by the application of contact preservatives compatible with the surfaces coated.

5.3 All surfaces shall be painted as specified in the Scope of Work or designated MMO technical specification.

5.4 Critical wearing surfaces shall be cleaned by dipping or brushing with a suitable solvent.

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- 5.5 After equipment hydrostatic, operation, flushing, or performance tests, all fluids (e.g. water, oil, nitrogen, hydraulic fluid, or fuels) shall be expelled from the equipment and the equipment wiped down or blown completely dry. Lint-free cloth shall be used for wiping. Internal metal surfaces shall be sprayed or coated with a suitable rust preventative and/or protected by desiccant. If the Supplier uses desiccant, the equipment shall be clearly noted with the number of desiccant bags used.
- 5.6 Equipment nominated for final inspection by MMO's inspector shall not be packed without approval.
- 5.7 The Supplier shall give early prior warning if any equipment supplied is categorised as HAZARDOUS or has inherent risks, i.e. subject to Mechanical Derangement, Magnetic Interference, etc.

6. PACKING REQUIREMENTS

- 6.1 Packing shall be properly and solidly made to afford the goods protection from any mechanical and/or water damage that may be reasonably expected during ocean, land, or air transport (as appropriate). Equipment sensitive to water damage shall be protected to preserve it in a dry state for up to 6 months during transport, storage and installation when subject to typical high humidity, high rainfall monsoonal conditions.
- 6.2 The minimum packing requirements applicable shall be as detailed in the requirements of ISO 1496 or any subsequent or additional requirements prescribed by the International Organisation for Standardisation.
- 6.3 All wood packaging that is being shipped for export, or that is being shipped domestically for consolidation for export shall be ISPM-15 certified and marked accordingly. This includes dunnage.
- 6.4 The Supplier shall ensure that all wood and timber used for packaging is free of bark and visible signs of insect or fungal attack and for imports to Australia, lumber must comply with ISPM-15.
- 6.5 The Supplier shall further ensure that the wood and timber used for packaging is free of any toxic substances that may be harmful to the health of any person coming into contact with the packaging during handling and disposal. Should the Supplier's packaging contain any toxic substance, the Supplier must inform MMO in writing of the nature of the substance contained.
- 6.6 Equipment containing insulating oils, antifreeze solutions, or other fluids shall be suitably tagged at openings to indicate the nature of the contents along with shipping and storage precautions.
- 6.7 All package designs and constraints shall be developed to withstand the following (as applicable):
 - i. Multiple handling at loading ports and ports of discharge
 - ii. Multiple handling onto and off rail and road transport
 - iii. Significant variations in ambient temperature during ocean carriage
 - iv. Stacking in containers
- 6.8 The packing shall be of such design that damage will not occur to the packed goods by tilting, displacing, swinging, vibrating, lifting, escaping, or by compression by over stowing.
- 6.9 The Supplier shall supply all saddles/support necessary for all phases of transport and

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installation, unless otherwise stated in the purchase order or contract.

- 6.10 Special precautions shall be taken to protect the bearing journals where they rest on wooden or other supports that are likely to become moist.
- 6.11 Ball and roller bearings supporting heavy shafts shall be firmly locked in such a way as to prevent brinelling.
- 6.12 When bearings are not removed and rotors not blocked for transport, appropriate shaft locks shall be provided and fitted. Any damage incurred resulting from inadequate packing, including "brinelling" of bearings, will be rectified at the Supplier's cost.
- 6.13 Motors shall be securely bolted to the base of the crate and an acceptable clamping device to avoid any internal damage. Supplier shall lock each shaft.
- 6.14 Appropriate high visibility label tags shall be fitted to all blocked or locked rotor equipment.
- 6.15 Crates must be reinforced at the ends and in the middle with wooden crosspieces in order to permit easy lifting by slings and handling by forklift trucks.
- 6.16 Boxes or cases used in heavy lifts shall be provided with skids and/or slinging reinforcement. The design shall allow that the boxes/cases can be loaded by crane or forklift truck.
- 6.17 Sturdy materials such as castings and heavy fabricated steel or iron shapes that are not subject to water damage, pilferage or multiple stacking and slinging may be secured to pallets of self-supporting construction.
- 6.18 Items such as hoppers, small tanks, metal frames, ladders and similar materials that are not subject to water damage and cannot be pilfered may be packed in sturdy open crates.
- 6.19 All shipping containers must be tightly packed. Goods transported in containers shall be braced and where voids appear, they shall be filled with cushioning material or blocked off to prevent any movement of contents. The use of hay, straw, flax combinations, palm packing fibre or brown coconut fibre for packing material is not permitted.
- 6.20 All fragile items such as actuators, solenoids, etc. shall be cushioned within the container to prevent damage from shock, vibration, and rough handling. Finished and painted surfaces shall be protected against abrasion.
- 6.21 All material subject to water or moisture damage shall be packed in containers having a laminated paper waterproof liner with all joints and folds sealed.
- 6.22 Precision instruments, office machines, electrical, electromechanical equipment and other calibrated mechanical equipment shall be enclosed within waterproof heat-sealed barrier bags or shrouds, together with suitable quantity of desiccant in order to maintain a low relative humidity within the package. This shall be accomplished before packing the material in the shipping container.
- 6.23 In order to avoid corrosion by contact, the drying agents shall be located in such a way that no direct contact is possible with the packed goods.
- 6.24 The desiccant packs shall be absolutely dust-proof and stable so that they cannot open if dropped.
- 6.25 Contact preservatives and impregnated papers must not be used on any electric or electronic equipment. Waterproof tapes and laminated waterproof paper must be used

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to seal openings of electronic equipment to prevent moisture from entering the equipment.

- 6.26 Consolidation of common items, nesting (Safety permitting) and minor disassembly shall be accomplished, wherever practicable, to result in the least possible volume per consignment.
- 6.27 Pipes/tubes are to be packed in securely tied bundles with their ends protected with suitable caps or in a sealed package for example shrink wrapped in thick clear packaging grade plastic. The Supplier shall protect pipe ends that are threaded or weld prepped.
- 6.28 All flanges faces shall be supplied with securely attached marine grade plywood or UV resistant plastic cut to the outer diameter size, to protect the flange face. The attachment is to be secured by UV resistant cable ties. With flanges having up to 12 bolts requiring 4 equally spaced cable ties, and for flanges over 16 bolts requiring 8 equally spaced cable ties.
- 6.29 All other openings shall be securely covered or plugged to prevent damage and dirt ingress, unless item is contained within a sealed package.
- 6.30 All tapped openings in equipment shall be plugged with either solid steel pipe plugs, Low density polyethylene or natural rubber whichever is most suitable for the application.
- 6.31 Material such as pipe with an outside diameter of less than 200mm, structural steel, heavy conduit, and lumber shall be segregated into common lengths and sizes and then bundled and strapped with steel strapping.
- 6.32 All packing materials, crating, temporary shipping frames, and other hardware shall become the property of MMO upon shipment unless otherwise noted on the purchase order.

7. MARKING INSTRUCTIONS

- 7.1 The shipping marks, in accordance with section 8 of this procedure (at a minimum), must appear on all packages, tags and labels. Lettering should be clear, not less than 25mm in size and should appear on at least three sides, and on top of the package. In the case of loosely packed materials such as pipes or unpacked items, strong labels bearing the shipping marks should be securely tied to the items. For smaller packages, the size of the lettering may be suitably reduced but should not be smaller than 10mm.
- 7.2 Skidded boxes and pallets shall be marked on the two sides from which forks may be inserted.
- 7.3 Metal drums shall be marked on the drumhead.
- 7.4 Bundles and single units, on which direct marking is impossible, shall be identified with waterproof tags each (e.g. at main ties at both ends of the bundle). Tags shall be clearly legible, weatherproof and securely attached.
- 7.5 Bales and bags, on which direct marking is impossible, shall be identified with weatherproof tags that must be securely attached.
- 7.6 On major items of equipment, pipes, and skidded and sheathed crates, centre of balance and sling/lifting marks shall be indicated on the sides of the units or crates.
- 7.7 Pictorial markings on boxes, containers, and rates shall be used at the discretion of the

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supplier to note shipping orientation, breakable contents, and lift points.

- 7.8 One set of shipping documents, including packing lists, must be packed in a weather proof envelope and securely fastened to the outside of each package or break bulk. One further set of shipping documents, including packing lists, must be packed in a weatherproof envelope and placed inside each package for pallets and containers.
- 7.9 MMO or MMO's designated representative reserves the right to inspect the final packing of goods before dispatch ex-works or during consolidation into containers.
- 7.10 Specific transportation limitations (i.e. dimensions and weight) from port of entry to site destination shall be described within the purchase order. Supplier's who will deliver cargo exceeding any of the defined dimensions or masses shall submit to MMO one copy of transportation sketches showing gross weights, all outer dimensions, centre of gravity, positions of saddles/skids, lifting lugs etc. as soon as available but not later than three months ahead (if appropriate) of the scheduled shipping date.
- 7.11 Every case, carton, box, crate, container and each separate item of equipment/material shall be fully and clearly marked in accordance with the Principal Marking Instructions.
- 7.12 Equipment delivered inadequately marked and/or packed, or without appropriate documents, will be stored at MMO's nominated recieval area at the Supplier's risk and expense until identified or rectified by the Supplier. MMO may rectify, and back-charge surplus cost.

8. PRINCIPAL MARKINGS

The Supplier shall have all CASES, PACKAGES OR BREAK BULK ITEMS clearly marked with the following information:

CONSIGNEE Murrin Murrin Operations Pty Ltd

PROJECT Murrin Murrin Nickel Plant

LOCATION Western Australia

PURCHASE ORDER NO _____

GROSS WEIGHT _____ KG

DIMENSIONS _____ CM

COUNTRY OF ORIGIN _____

PORT OF DESPATCH _____ (IF APPLICABLE)

PORT OF ENTRY _____ (IF APPLICABLE)

EQUIPMENT No. _____

CRATE/PACKAGE No. _____ of _____

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DESCRIPTION OF GOODS _____

SUPPLIER _____

CONSISTING OF PO ITEM No's _____

9. PROTECTION OF MATERIAL ON-SITE AT MURRIN MURRIN

9.1 MMO will endeavour to place materials into storage in conformance as soon as possible after arrival at site.

9.2 Details of the site climate are given in specification 00-30TS-003 Site Data.

9.3 Due to limitations of covered storage on-site at Murrin Murrin, permanent storage for bulk materials and spare parts, other than those needing air conditioning, may not be stored in a covered warehouse, where conditions are humid and mildly dusty.

As part of the documentation provided by the Supplier, instructions related to long-term storage (dust protection, humidity control, periodic rotation, etc.) must be clearly described and provided at least three months (if applicable) in advance of shipment.

9.4 Supplier's instructions shall include, but not be limited to, protective measures and maintenance of the following:

- i. Material after removal of protective coatings, boxes or packing furnished by the Supplier.
- ii. Equipment after removal of plugs or seals where the item has been previously dried, filled, or coated with preservative material and depends on complete sealing.
- iii. Material and equipment of all types, including pumps, compressors and motors, not immediately put into operation but installed and left standing in an open, unprotected site.
- iv. Instruments of all types installed in place or stored.
- v. Relief valves, control valves, boiler stop-check valves and all special valves installed in place or stored.
- vi. Materials or equipment requiring maintenance if left undisturbed in shipping containers and stored.
- vii. Items requiring periodic operation, moving or turning to prevent damage to internal parts and/or such effects as permanent deflection of rotating shafts and bearing surfaces.
- viii. Components of equipment that require removal if long "standing time" is detrimental because they cannot be adequately protected in non-operating condition or would be subject to permanent deformation.

9.5 All materials shall be assigned a storage code to clearly identify how the material is to be stored on site. The appropriate storage method shall be clearly noted on shipments by the Supplier, as follows:

- i. Outdoors with cover
- ii. Warehouse
- iii. Controlled environment

10. SHIPPING DOCUMENTATION

10.1 "One" copy of the packing list is required containing the following details:

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- i. Purchase Order Number.
 - ii. Correct description of the outer packaging for goods supplied i.e. crate, case, bundle, drum etc.
 - iii. Reference to Purchase Order, description and quantity of items contained in each package.
 - iv. Gross weight in kilogram and dimensions in centimetre of each package.
- 10.2 Each consignment shall be accompanied by a packing list showing every item contained in each package of the consignment, net and gross weights and the cubic dimensions of each package.
- 10.3 MMO or MMO's designated representative reserves the right to inspect the final packing of goods before dispatch ex-works or during consolidation into containers.
- 10.4 Each consignment of goods to be installed by persons other than the Supplier shall be accompanied by one full set of installation instructions.

11. REQUIREMENT FOR TRANSPORT AND HANDLING OF EXOTIC MATERIALS

For the purpose of this requirement, exotics will be any item or piece of equipment, consisting of the following material:

Stainless Steels	Grades 304L, 316L, 310S, 904L etc.
Duplex Stainless Steels	SAF2205, Ferralium 255 etc.
Super Duplex Stainless Steels	Zeron 100, SAF2507, Uranus 52N etc.
Nickel Alloys	Alloy 20, Alloy 31, Alloy 59, Incoloy 825, Hastelloy C276, Inconel 625 etc.
Titanium	All grades
Tantalum	All grades

Minara requires all consignments that fall in to the above category, to be handled and transported, as per the following guidelines:

- 11.1 No part of the consignment shall come in to contact with carbon steel, at any point during the loading, transport or unloading activities.
- 11.2 Wooden or other non-metallic packing shall be used to separate the consignment from the transport deck.
- 11.3 If lifting by crane, soft non-metallic webbing slings shall be used.
- 11.4 If lifting by forklift, the tines must not come in to direct contact with the item or piece of equipment.
- 11.5 All open ends on pipe work must be capped **NB: Caps/covers must be made of non-metallic material e.g. plastic, wood or corrugated cardboard. The Contractor shall ensure any supplier or fabrication subcontractor complies strictly with this requirement.**
- 11.6 Loads shall be secured with non-metallic, webbing ratchet straps. **Metal chains and binders must not be used under any circumstances.**
- 11.7 Gates should be secured in such a way, that they do not come in to contact with the

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load at any stage during transport.

11.8 Where possible, the load should not be double handled. ***The Contractor shall ensure his transport subcontractor complies strictly with this requirement.***

11.9 All exotic materials shall be handled in a manner to guard against injury to people, and damage to equipment and materials. Including but not limited to scratching, gouging, bending and denting.

12. CONTAMINATION

12.1 No titanium part of the consignment shall come into contact with carbon steel at any time during the loading, transport, shipping or unloading.

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