1. Scope

This Specification describes the minimum requirements for the design, manufacture, supply and delivery of high efficiency, low voltage, three and single phase 50Hz electric motors, complete with all components and ancillary equipment, including all minor items not specifically referred to, but essential for the safe and satisfactory installation, testing, commissioning, operation and maintenance of the motors. The equipment is to be installed by others as part of the Koniambo Nickel Project in New Caledonia.

The scope of supply includes the size, type and quantity of motors listed in the Scope of Supply document: 319000-00000-SR-1691-0011. The schedule of equipment applicable to tender or contract including all required options is referenced in the Scope of Supply document and Low Voltage Motors and Variable Speed Drives Pricing Schedule document: 319000-00000-PS-1691-0001.

The supplier shall advise their capacity to provide service and support to the owner with regard to Installation, Commissioning, Training, Maintenance, Replacement and Repair.

This Specification applies to fixed, multi and variable speed low voltage motors of all frame sizes including motors which form part of packaged plant or equipment. Any exceptions in regard to specific motor sizes are noted in this Specification.

2. Standards and Codes

All equipment shall comply with the requirements of French and New Caledonian Codes and Standards as well as all laws and regulations of local authorities. Where other Codes and Standards are used, they shall also satisfy the French and New Caledonian requirements. In the event of conflicting requirements between Codes and Standards, the French and New Caledonian requirements shall apply.

Motors shall conform with:

NF EN 60034	Rotating electrical machines.
NF EN 60072	Dimensions and output series for rotating electrical machines.
NF EN 60079	Electrical apparatus for explosive gas atmospheres.

All information shall be based on International System (SI) unit of measure.

All equipment presenting a risk or leading to a risk regarding the safety of workers have to comply with French Standards, Codes and regulations. This is mandatory by the NC Deliberation No 51/CP dated 10 May 1989, which technical provisions refer to the European Directive 92/104/EEC.

The current edition of the French Codes shall be used for the design of all components of the project as stipulated by the New Caledonian law (Caledonian decree 1348 of 22 November 1985).

When a Notified Body is required to verify the conformity with the French codes (or IEC codes that have been adopted by the European Union), it shall be the Supplier's responsibility and shall be at Supplier's expense (except when otherwise specified).

The Notified Body that acts as a recognized third party, conversant with French and New Caledonian Codes, shall certify and stamp the certificate of conformity issued and signed by the Supplier or manufacturer.

3. Specification, Data Sheets and Project Documents

The equipment to be supplied shall comply with the latest revisions of the documents listed in the material requisition.

Precedence of documents shall be as following. Meanwhile, in case of conflict, the matter shall be raised for review:

- Equipment Data Sheets and Drawings
- Equipment Specification
- Standard Specifications

Any deviation to documents listed in the material requisition shall officially be forwarded for approval prior to work execution.

4. CE Marking

All equipment shall carry the CE Marking (European Conformity), as per the 'Council of the European Communities' Directive.

The Supplier is responsible for CE Marking conformity.

5. Operating Conditions

Details of the site operating conditions are contained in the Site Criteria document, 319000-00000-JSD-GENG-0001. Refer to Project Electrical Design Criteria document, 319000-00000-JSD-1600-0001, for electrical operating conditions.

6. Design and Construction

6.1 General

The equipment shall be designed and installed to operate continuously at full load for 24 hours per day, 7 days per week at the extremes of temperature, humidity and environmental conditions indicated. The equipment shall have a design life of 20 years without the need for an excessive maintenance regime.

Motors shall be designed for safety, corrosion resistance and ease of access to maintainable components.

Special motor operating conditions (if any) will be individually considered and specified in requirements for those motors. Such conditions include frequent starting, ambient temperature extremes and variable or multi-speed operation.

6.2 Minimum Size for Repair

The minimum motor size that can be repaired at the Supplier's (or supplier's authorised) ATEX certified workshop in New Caledonia. It is intended to replace rather than repair motors below the minimum size for repair. For the project this frame size is Frame 132.

6.3 Voltage Sizing

Motors voltages will be supplied as follows:

System	Nominal Service Voltage
Motors (DOL) = 355 & = 0.75 kW	690 V ± 10%, 3 Phase, 50 Hz, 3 Wire, impedance earthed
Motors (VSD driven) = 1000 & = 0.75 kW	690 V ± 10%, 3 Phase, 50 Hz, 3 Wire, impedance earthed
<0.75kW	230V± 10%, 1 phase, 50Hz, solidly earthed.
Service Power	400 / 230 V ± 10%, 3 Phase, 50 Hz, 4 Wire, solidly earthed

6.4 Service Rating

Motors shall be of high efficiency, class EFF1 in accordance with EU/CEMEP, as applicable.

Motors shall be of Squirrel Cage type. Double cage rotors are unacceptable. The number of motor poles will be specified in the schedule.

Motors shall be designed for continuous running operation at rated power, duty service type S1. Performance and dimensions shall be in accordance with applicable Standards.

Motors shall be capable of withstanding voltage transients caused by switching with vacuum contactors.

6.5 Starting

6.5.1 General

All motors shall be designed and braced for direct on line (DOL) starting, for restarts with full opposite residual voltage under full load conditions.

At any value between 80% and 100% of rated voltage and without exceeding the designed temperature limitations motors shall, as a minimum be capable of the following starting sequence for the prospective equipment load:

- Three successive starts from maximum ambient temperature.
- Two successive starts with the motor already at full load working temperature.

The starting sequence shall be repeatable after a 30 minute cooling period at standstill.

6.5.2 Starting Current

Starting current shall not exceed seven (7) times full load rated current (FLC) for motors above 200kW - including IEC tolerance. For Motors upto & including 200kW, the starting current shall be seven times full load current exclusive of IEC tolerance.

6.5.3 Locked Rotor withstand time

Motors shall have a permissible locked rotor withstand time of not less than two seconds than the starting time of load (i.e time required by the driven equipment to come to full speed) from cold without exceeding the allowable temperature rise. Exact values for safe stall time from hot and cold shall be specified.

6.5.4 Torque

Motors shall be able to deliver sufficient torque so as to accelerate the load to full speed within the time specified for the application, without exceeding the designed tem perature limitations. 05

Motor torque characteristics shall comply with relevant Standards unless higher torque characteristics are specified.

6.6 Mounting

The motor mounting arrangement will be specified in the schedule.

Where specifically requested the Supplier shall supply slide rails consisting of two cast iron rails designed for floor mounting and complete with adjustment and holding down bolts. Galvanised steel slide rails can also be accepted. 05

6.7 Fasteners

Metric Standards shall apply.

All fasteners shall be stainless steel with hexagonal or socket heads. Bolts are to be used for fixing the terminal box to the motor.

6.8 Materials 05

Motor frames, end shields, terminal boxes are to be fabricated from cast iron. For aluminium frame motors, these shall be as per manufacturer's standard.

Motors below 0.75kW may have aluminium frame. Motor fans are to be fabricated from metal alloys/ glass reinforced polymers with a proven track record, and suitably certified for use in hazardous areas. Cast iron or steel can also be employed. Motors below the minimum motor size for repair may have non-metallic fans and sheet metal fan cowls.

Materials are to be selected which prevent / resist corrosion.

6.9 Frame

The stator lamination pack shall be secured in the frame. Castings shall be sound and free of shrink holes, cracks, scale or other defects. End shields shall bolt directly to the motor frame.

Motor frame including bearing supports shall have sufficient strength and rigidity to avoid distortion or increased vibration as a result of external mechanical forces.

Three phase motor frames shall be rationalised in accordance with Cenelec HD 231. Motor frames for motors with an output outside of that specified in HD 231 shall be optimised based on the applicable Standards and performance requirements.

6.10 Degree of Protection 05

Motors shall have a minimum Ingress Protection rating of IP55. For motors used in dust hazard area Zone 21, the IP class shall be IP65. Zone 22 area motors shall be min IP55.

Motors are to be fitted with a breathing vent at the bottom of each end. Motors shall be provided with drain holes, which shall be tapped and fitted with a porous drain plug. When drain plugs are not provided, motors shall be supplied with space heaters.

An approved sealing compound of non-setting material shall be used to weatherproof mating machined surfaces.

6.11 Rotation

Preferred direction of rotation is clockwise from the drive end. Motors shall be suitable, without modification, for rotation in both directions. For Higher frame size motors (2 pde above Frame 355) may be unidirectional to reduce noise levels. The direction of rotation shall be selected in close consultation with driven equipment vendor.

6.12 Noise

The noise level of the motor is not to exceed 80 dB(A) at 1 metre plus IEC tolerance. This is also applicable for motors operating with variable speed drive system over the entire operating range. Silencers shall be used when the noise levels exceed the above specified limits.

6.13 Bearings and Lubrication

6.13.1 General

All machines shall be fitted with heavy duty bearings. All bearings shall be designed for an L10 life of 25000 to 50,000 hours.

Bearings shall be of Standard types enabling replacements to be readily available from recognised bearing manufacturers. Bearings shall be in metric sizes.

Bearings shall be selected to suit the motor load and operational requirements. Motor load requirements will be specified in the data sheet.

Motors of all sizes shall be equipped with metal caged rolling element bearings. Plastic cage bearings are not acceptable. Deep groove ball bearings are also acceptable.

Drive end bearings shall be designed for applications producing radial loading (e.g. VBelt drives). The drive end bearing on flange mounted motors will be to the Supplier's Standard arrangement provided that this design incorporates an oil seal and slinger.

Non drive end bearings shall be secured to the shaft by means of a nut, circlip or other approved means so that the motor can be loaded up to the full axial loading of the bearing.

Shaft end float shall be stated on the nameplate for all motors to enable a check to be made on the end float of the coupling to be supplied with the driven equipment.

All motors shall be fitted with bearing protection from induced currents in the form of a shaft earth or bearing insulation to protect against induced currents.

Insulated bearings maybe provided for motors driven by VSDS as per vendor's standard.

6.13.2 Requirements for 160 Frame Size And Above

Bearing lubrication system required. This shall comprise a full through flush regreasing facility incorporating a pressure relief value that allows the bearing to be purged whilst in operation with the old grease being automatically exhausted from the motor enclosure.

Adequately sized grease discharge ports shall be provided. The grease discharge port shall be located outside the area enclosed by the mounting flange. The fitting of grease relief holes alone is not acceptable. The removal of a exhaust plate/ plug when regreasing is not acceptable.

Each bearing shall be fitted with a V-ring or Labyrinth seal (depending on speed requirements) to prevent contamination through ingress of lubricants, moisture or fine dust. Seals are to be positioned so as not to be liable to mechanical damage.

Grease nipples shall be readily visible and accessible and shall be of 6mm button head type. For motors fitted with a stainless steel dust shield the grease points shall be extended through the dust shield to allow maintenance access. Captive dust caps shall be provided at all lubricating points.

Lubrication points shall be located on the top of the motor at the drive end and non drive end. These shall be positioned so that they are opposite the exhaust port on the grease relief valve. The Location of grease nipples shall be clearly shown in equipment maintenance manuals. 05

Oil lubricating systems will be considered where the grease limiting speed of the bearing is exceeded.

6.14 Windings and Insulation

Windings shall be of high quality copper alloy capable of withstanding 1.2 times the maximum rated speed undamaged.

Winding insulation shall be Class F with Class B temperature rise. Winding insulation of motors to be used with variable speed drives shall be Class H with Class B temperature rise.

Alternately, the class F winding insulation for motors, when proposed to be used with variable speed drives; shall be reinforced to withstand the output voltage of modern VSDS. The low voltage motor Supplier shall consult with the variable speed drive Supplier to ensure the motors and VSDS are compatible. 05

Tropic proofing shall be applied.

The windings shall have their six (6) leads accessible in the terminal box to allow star or delta coupling. Two speed motors shall have separate windings.

6.15 Temperature Sensors

Alarm and trip thermistors or RTD's shall be fitted as standard to all variable speed drive motors rated 55kW and above.

Temperature sensors are to be embedded in the hottest part of each winding.

Temperature sensor leads shall be colour coded and identified by the temperature rating. The Supplier shall specify alarm and trip temperatures for the temperature sensors.

6.16 Cooling

DOL motor enclosures shall be of the totally enclosed fan cooled type (TEFC) to IC411.

Variable speed drive motors shall be of the totally enclosed fan cooled type (TEFC) to IC411 or IC416 (where required).

Shaft driven and auxiliary cooling fans shall be of the bi-directional type and low noise. Motor fan cowl shall be designed so as not to allow insertion of a finger.

In order to reduce noise level on high RPM, higher kW rated motors, uni-directional fans maybe employed based on confirmation of direction of rotation from driven equipment manufacturer.

6.17 Anti-Condensation Heaters

230 VAC anti-condensation heaters shall be installed in all VSDS motor frames 55kW and above. Heater power terminals shall be brought out to a separate terminal box. The heater power supply will be RCD (30mA) protected at the supply point.

Anti-condensation heaters shall be arranged to provide uniform heating of stator and should maintain the temperature of the motor windings approximately 5°C above ambient temperature.

6.18 Dust Shields

As an option, motors with regreasable bearings may require a dust shield. These shields shall be 2mm thick stainless steel and wrap around the motor from one set of mounting feet to the other over the cooling fins. Terminal boxes, grease nipples, lifting lugs etc shall protrude through the dust shield.

6.19 Terminal Boxes

6.19.1 General

Terminal boxes shall be of cast iron and rated at IP55 for all IP55 motors. For IP65 Motors in Zone 21 areas, the terminal box shall also be IP65. 05

A separate terminal box is required for motor power and anti-condensation heaters for VSDS driven motors 55kW and above.

For motors fitted with thermistor/ RTDs a separate terminal box with an M20 entry is required for Thermistor/ RTD connections. 05

6.19.2 Location

Terminal boxes shall be located on top or on the right hand side of the motor when viewed from the drive end. 05

Top mounted Terminal box shall be rotatable.

6.19.3 Segregation and Terminals

Power terminal boxes shall be designed for air termination of copper conductors. There shall be adequate space in power terminal boxes to complete an air insulated termination of a three phase low voltage cable after glanding. Oversized terminal boxes shall be provided to accommodate larger cable sizes.

Power terminal boxes shall be equipped with six fixed stud type terminals to accommodate six winding ends. The studs shall be arranged so that the windings can be linked in either star or delta configuration. The links shall be provided by the Supplier.

Thermistors may share the power terminal box on approval, in such cases these shall be mounted on a separate terminal strip.

Terminal blocks, boards and / or bushings shall be of synthetic resin material, porcelain shall not be acceptable.

6.19.4 Gland Plate

Terminal boxes shall be fitted with a removable, metallic, non magnetic gland plate for cable entry to the cable box. Where Gland Plates are not provided, knock-outs for cable entry as specified on data sheets shall be provided. 05

Terminal boxes and gland plates shall be of adequate size to allow for glanding and air termination of the low voltage cables. Gland plates shall be to the ingress protection rating of the terminal box.

Cables shall be bottom entry.

The design intent is to ensure cables can be removed from the motor without damage to cables or flexible conduits.

6.19.4.1 Earthing

An M10 (or size equivalent to power cable) stainless steel bolted earth stud is to be located inside every terminal box complete with nuts and washers. 05

An additional M10 stainless steel bolted frame earth stud is to be located at the underside of the power terminal box complete with nuts and washers.

6.19.5 Covers

Stainless steel bolts, nuts and spring washers shall be fitted on all terminal box covers. Bolts shall be captive.

Terminal boxes shall be flanged, gasketted and bolted complete with appropriate seals to the specified ingress protection rating.

6.20 Nameplate, Labels and Signage

Nameplates, labels and signage shall be as per the specifications given in the project Equipment Nameplates document 319000-00000-SP-G349-0002. In addition, nameplates, labels and signage shall also comply with the requirements set out in the Electrical Installation document 319000-00000-JSS-1601-0002. 05

6.21 Surface Preparation and Finish

The Supplier's Standard epoxy painting system shall be offered on the provision that it provides protection against all site conditions and complies with applicable standards; otherwise the painting shall be in accordance with the Protective Coatings document: 319000-00000-SP-2300-0001.

Parts of the motor normally shielded by the fan cover and the inside of the fan cover shall, with respect to corrosion protection, be treated in a similar manner as normally exposed parts.

The paint colour for motors shall be as follows:

Non-Hazardous Area Motors	Supplier Standard (Internal) / RAL 7001, Grey (External)
Hazardous Area Motors (Zone 1, Zone 21)	Supplier Standard (Internal) / RAL 5002, Blue (External) 05
Hazardous Area Motors (Zone 2, Zone 22)	Supplier Standard (Internal)/ RAL 1033, Golden Yellow (External)

The Supplier shall advise if there are any significant implications for using the nominated colours as opposed to the Supplier standard colours.

6.22 Vibration Monitoring

All motors with regreaseable bearings shall be equipped with at least one Shocked Pulse Measurement (SPM) transducer adaptor at the drive end and non drive end in an accessible position clear of the motor body to suit a bearing condition analyser.

These shall be positioned so as to detect any vibration on the motor frame

Additional SPM transducer adaptors may be specified for motors with special loading requirements. For motors greased for life, SPM nipples may not be provided 05

6.23 Hazardous Areas

The hazardous area classification of all motors shall be noted in the data sheet. Motors noted as located in a hazardous area shall be ATEX certified for the hazardous area classification (e.g. DIP (dust hazard), EExn, EExd or EExp). 05

6.24 Alternative Designs

Alternative designs may be offered for motors below the minimum size for repair, which may be replaced rather than repaired. Deviation to this Specification, if any, shall be submitted with the tender.

7. Drawings and Data Requirements

For a list of drawings and data to be supplied on this Material Requisition refer to document:

Scope of Supply 319000-00000-SR-1691-0011, Part 2

All preliminary documents for approval or review shall be in English. All final documentation shall be in French and English. Documentation issued during execution of the contract shall be issued in French or English as required by the Owner or Sub-Supplier.

All documentation shall be functionally grouped, bound, labelled and indexed for ease of reference. The Owner reserves the right to request additional documentation and changes to existing documentation where required.

8. Inspection and Testing

The Owner maintains the right to inspect the Supplier's facilities at any time during the execution of the contract. This is required in order to verify compliance with the schedule or to inspect the progress/ quality of the equipment being furnished.

The Low Voltage Motors Inspection and Test Plan document lists the generic inspections, tests and hold points to be complied with during the execution of the contract. These shall be incorporated into the Supplier's Fabrication and Quality Control Plan document.

The Owner will establish and advise the Supplier of the contractual hold points from the Supplier's Fabrication and Quality Control Plan document. Once established, the specific contractual hold points will be captured by the Owner in the Low Voltage Motors Inspection and Test Plan document.

The Motor and VSDS shall be tested together as a single unit. The Owner may witness such combined testing.

The Supplier shall advise the owner of an impending hold point via an Inspection Release Note as per the Scope of Supply document and shall not proceed past the hold point until a course of action is advised by the Owner.

All systems shall be tested before shipping and all shall be operating properly at the time of shipping.

The Supplier shall carry out routine tests on all motors. Copies of routine and type test certificates shall be provided in manuals. Routine tests shall include:

- Withstand Voltage Test.
- Winding Insulation Resistance Measurement.
- Winding Resistance Measurement (Ambient).
- Surge Comparison Test.
- No-load Losses and Current Tests.
- Locked Rotor Current Tests.

9. Packaging for Transport

Heavy duty plastic wrapping and sealing of entries with threaded plugs as a minimum. Exposed shafts shall be wrapped with a protective tape to prevent surface deterioration.

A shaft locking clamp to prevent drive end bearing damage by "Brinelling" during transport shall be fitted prior to shipment. A shaft key shall be supplied with the motor. Shaft locks shall prevent the longitudinal movement and the rotational movement of the rotor and shall be easily removable when the motor is installed. All motors fitted with a shaft lock shall have adequate warning notices displayed in a prominent position on the motor frame.

Motors shall be fitted with lifting lugs or eye bolts to the weight of the motor. Removal of the lifting facilities shall not compromise the degree of protection of the motor. All lifting points are to be clearly identified.

Sea worthy packing shall be employed when advised. 03

ANNEXURE-2 – ECI (SPECIFICATION FOR LV MOTORS)

BHEL -TIRUCHY
FBC&HRSG
ELECTRICALS, CONTROLS & INSTRUMENTATION

REF: FBC&HRSG: CI: 5312:LVM2
Rev:00 (2-Sheets)

Motors shall conform to French Standards. High efficiency energy saving motors are required. All bolts and screws shall be corrosion resistant stainless steel. Only stainless steel shall be used for dust shields or shims etc.
Motors shall be suitable for exposed outdoor use to 40C ambient in a tropical environment that may be dusty, wet, corrosive and subject to spillage of nickel ore, rock, salt water spray, coal or corrosive fluids.
Motors shall preferably be 4-pole foot mounted. However motors of up to 8 poles may be used for Economic or maintenance reasons. Preferred direction of rotation is clockwise from the drive end.
Preferred location of the rotatable terminal box is RHS viewed from the drive end or else top mounted.
All motors shall be provided with stainless plates (in addition to the standard nameplate) engraved with the motor number. These plates shall be attached with stainless steel wire so that the plates can be transferred to replacement motors.
All motors shall be able to start and accelerate connected loads when the voltage at the point of load is 80% of the nominal voltage.

LV Motors

These shall be rated up to 355kW and up to 1000kW if equipped with VSD unit unless otherwise specified and shall be provided with the following features:

- Conform to the relevant standard including frame sizes.
- Cast iron frame, fan cooled.
- Squirrel cage motor, duty type S1 (continuous).
- 690V +10% -6% (steady state), -10% during the starting period of other motor, 3 phase 50 Hz with Variations as noted in clause 'frequency Variation".

The system frequency variations are as follows:

- Steady State 50 Hz ±2%. (1Hz)
- Short term (1 minute) limit 50 Hz ±4%.
- Brief emergency excursion limit (10 seconds) to 54Hz following a major load rejection or 47Hz following a major load application.
- Enclosed frame, IP55, TEFC.
- Stainless steel dust shield wrapped around motor body between mounting feet (option).
- Bi-directional cooling fan - low noise.
- Noise level below 80 dBA at 1m.
- Motor terminal box IP55, with removable nonmagnetic gland plate or cable entry, RHS viewed from drive end or on top.
- Earth stud in terminal box plus external frame earth stud beneath terminal box.
- Motor terminal box oversized to accommodate specific 3C+E cables or large single core cables per cable schedule.
- Winding insulation Class F, with Class B temperature rise as a minimum.
- Method of cooling IC411.
- Rated for 6 starts per hour as a minimum.
- Grease pressure relief anti friction bearings.
- Bearings chosen to suit load type.
- Bearing lubrication system required.
- Bearing current protection fitted (e.g. shaft earth or bearing insulation).
- 230 V AC heaters fitted 55kW and above (VSDs only).
- Thermistors fitted 55kW and above (VSDs only).

ANNEXURE-2 – ECI (SPECIFICATION FOR LV MOTORS)

BHEL -TIRUCHY
FBC&HRSG
ELECTRICALS, CONTROLS & INSTRUMENTATION

REF: FBC&HRSG: CI: 5312:LVM2
Rev:00 (2-Sheets)
PAGE02 OF02

□ Separate junction boxes for power, heaters, and temperature sensors. □ Two pack epoxy paint colored as per section 11, Painting and Identification.
□ Tropic proofed.
□ Rationalized motor sizes to reduce spares.
□ Suitable for use with variable speed controllers or separately driven fan fitted.
□ Motors above 0.75kW to be 3 phase.
□ All bearing housings on motors with reasonable bearing shock pulse movement shall be equipped with SPM transducer adaptors in an accessible position clear of the motor body to suit a bearing condition analyser. Axial, vertical and horizontal SMP studs shall be fitted at DE and NDE.
□ Shipped bolted to a skid frame, wrapped in several layers of heavy duty plastic with shaft clamps fitted and all entries sealed by threaded plugs. Shaft keys shall be taped to the motor shaft.
□ Parallel type drive shafts shall be provided unless required otherwise by the drive application.
□ The sizes of single speed general-purpose three phase motors shall be rationalised in accordance with Cenelec HD 231.

Motor Numbering

In addition to the standard nameplate, all motors shall be provided with a blank 316 stainless steel plates for HT to add their motor number.

Variable Speed Drive Motors

Motors for variable speed drive applications shall be specifically chosen based on the duty and speed range provided on the motor data sheet.
Specific additional requirements for VSD motors are as follows:
□ Class H insulation with class B temperature rise preferred.
□ Bearing current protection fitted (e.g. shaft earth or bearing insulation).
□ Noise within specified limits over speed range specified.
□ Motor temperature sensors fitted (thermistors or RTD) for motors rated 55kW and above.
□ 230V AC heaters fitted for motors rated 55kW and above
□ Separately driven fan or larger frame size motor supplied if standard motor cannot meet service conditions (load and duty over speed range).

	Name	Signature	Date
Prepared	Nitin Menon		26.04.2008
Checked	A.Swaminathan		26.04.2008
Approved	R.J.Narayanan		26.04.2008

ANNEXURE-VII
(Typical BHEL QP format)

1) Manufacturing Quality Plan – 1 Page (BHEL QP Formate)

BHEL QP Format	Bharat Heavy Electricals Ltd. PRODUCT ENGINEERING/FBC & HRSG	MANUFACTURING QUALITY PLAN	For the spec. No.

MANUFACTURER'S NAME AND ADDRESS:	ITEM: SYSTEM:	QP No.: REV No.: DATE: PAGE No.:	PROJECT: CUST NO: PACKAGE: P.O. No.: DATE:

SL No.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	E	AGENCY 11			REMARKS
										VE	M	B	
1	2	3	4	5	6	7	8	9	10				12

MANUFACTURER/SUBCONTRACTOR		**LEGEND** **C OF C:** CERTIFICATE OF CONFORMANCE. **VE:** MANUFACTURER/SUB-CONTRACTOR'S VENDOR. **M:** MANUFACTURER/SUB-CONTRACTOR. **B:** BHEL/NOMINATED INSPECTION AGENCY. **E:** RECORD IDENTIFIED WITH "√" SHALL BE ESSENTIAL INCLUDED BY CONTRACTOR IN QUALITY DOCUMENTATION. **PT:** PENETRATION TEST.	FOR BHEL USE
PREPARED BY	REVIEWED BY		
NANE & SIGNATURE		INDICATE '**P**' PERFORM, '**W**' WITNESS, AND '**V**' VERIFICATION AS APPROPRIATE.	NAME & SIGN. OF APPROVING AUTHORITY & SEAL

ANNEXURE-VIII
(Packing & Shipping Documents)

1) Doc No. 319000 00420 PO 0150 0003 0006 00 - Shipping documentation procedure and guide lines – 15 Pages
2) Doc No 319000-00000-WI-GPCO-0001/Rev 04 - Packing, Marking and shipping instructions – 40 Pages
3) Doc No. ISPM No. 15, Guide lines for regulating Wood packaging material in international trade – 11 Pages

	KPix XXX XXX/XXX XXXXX XXX of XXX I II III IV V Barrel I: Indicates supplies for KONIAMBO PROJECT.. 'i' shall be indicated as 1 to 2 (unit number) . 'x' shall be indicated as S for main supply, M for mandatory spares, C for commissioning & Warranty period spares. **Barrel II:** Indicates short name of system in three characters for which equipment are supplied e.g. BLR- CFB Boiler and BAG-Bag house materials.; PC M-piping materials etc. (Units to develop the barrels nomenclatures and indicate to IO for perusal and control). **Commissioning Spares, mandatory spares to be categorized as CMS/MDS respectively and packed separately and not to be mixed up with main equipment.** ***Such boxes to be identified with Red Colour Markings as described later.*** **Barrel III:** Indicates 7 characters for Unit/Sub-vendor's names in 3 characters each. **If supplies are from the units itself, second portion of the character after / may be retained in XXX form (Units to develop in the barrel sub-vendor's nomenclatures and indicate to IO for perusal and control).** Unit's characters are classified below: TRY: Trichy BPL: Bhopal RPT: Ranipet PPC-piping centre **Barrel IV:** Package numbers in five characters. **No duplication of box numbers is permitted.** Following box numbers will apply: TRY : 00001 to 40000 RPT : 40001 to 60000 BPL : 60001 to 62000 PPC- 62001- 70000 Units to further split the numbers supplier-wise as required and inform IO for perusal and control. **Barrel V:** Permits Number of boxes in a system to be supplied as one lot e.g. Oil Drums, Cable Drums, and Cable Trays etc. **If 100 drums were supplied for 6.6 kV cables, the boxes would be 001 of 100 to 100 of 100.** (This is optional and shall not be used if there no parts)	All Units

Date of Issue: 12.8.08

Bharat Heavy Electricals Limited
International Operations - Projects Division
Integrated Office Complex,
Lodhi Road New Delhi -110003

Sub: KONIAMBO 2X135 MW CFB PROJECT-Shipping documentation procedure and Guidelines

Ref: Contract Reference No. 319000 00420 PO 0150 0003 0006 00

Following dispatch instructions for effecting supplies under the above contract are being issued for compliance by all the units involved in this project.

S. No.	Details	Action By
1.	**Buyer's Name** and Address: M/S KONIAMBO NICKEL SAS SITE DE VAVOUTO, RT1 98833 VOH, NEW CALEDONIA	All Units
2.	**Delivery Terms:** **Delivery site:** Port of Discharge: Noumea Country of Origin: Any Indian/overseas port	For information
3.	**Seller's name and address:** Bharat Heavy Electricals Limited International Operations Division Integrated Office Complex New Delhi –110003, INDIA	For information
4.	**Payment Terms for Equipment Supply:** Units to raise debit on IO a/c koniambo Project ***upon shipment of the materials FOB from India/Third Country***. **Contract Terms:** 20% Advance. 72.50% Milestone based Progressive payment. 7.5% after commissioning **Currency of Payment:** EURO	All units For information only. -Do-
5. 5.1	**Packing Instructions & Inspection Prior to Dispatch by Supplying Units/Sub-Vendors:** Following **Package Numbering System** shall be complied with by the units: Each package/consignment shall have total **25 character numbers in 5 barrels.**	All Units

HATCH Technip		CONSIGNEE - Destinataire		SUPPLIER - Fournisseur	
				Packing list N° Liste de Colisage N°	
REQUISITION N° /Rev N°	P.O. Chrono N°	**PACKING NOTE** ***Bordereau de colis***		Package N° *Colis N°*	
Net Weight *Poids Net* *kg*	Gross Weight *Poids* Brut *kg*	Length *Longueur* *Cm*	Width *Largeur* cm	Height *Hauteur* cm	Volume m^3
ITEM N° TAG N° MR N°	Quantity *Quantité*	Detailed description of the package content *Description détaillée du contenu des colis*			Page .../.....

Appendix E

Position of Shipping Mark

Care Mark

Centre of Gravity Mark

Appendix F

Transportation Drawing

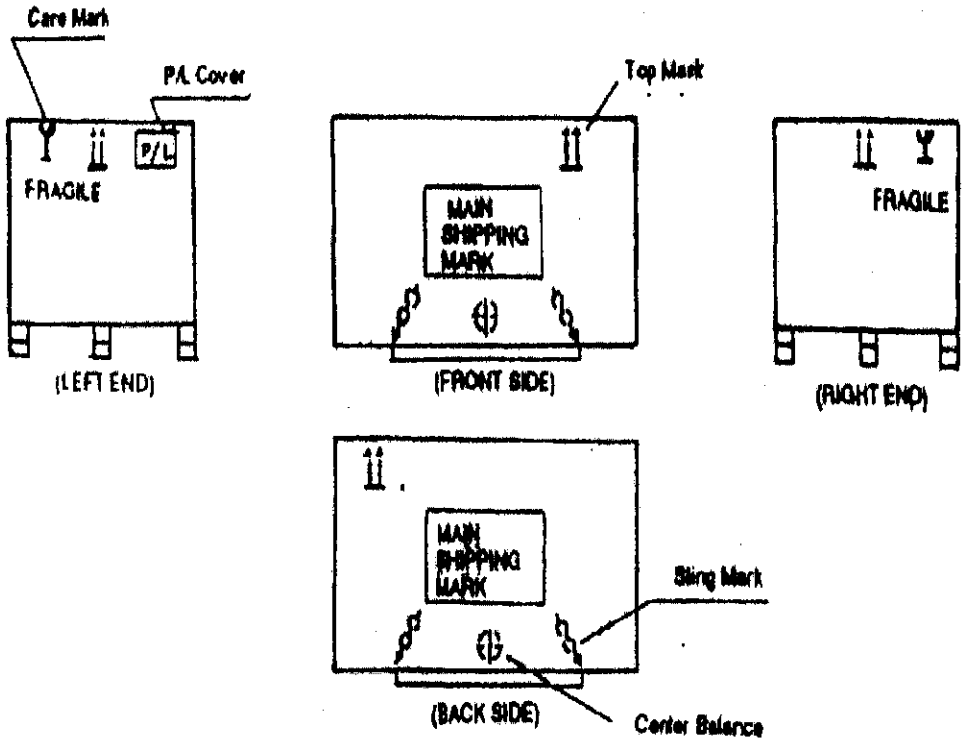
KONIAMBO

PROJET KONIAMBO
l'Usine du Nord
Nouvelle-Calédonie

HATCH Technip

DOCUMENT NO:

POSITION OF SHIPPING MARK – CARE MARK – CENTRE OF GRAVITY MARK



Appendix D

Packing Note

HATCH Technip	KONIAMBO NICKEL PROJECT, NEW CALEDONIA 319000	SUPPLIER - *Fournisseur*	**PACKING LIST** ***Liste de colisage***	PL N°
			N° PO Chrono: PO / Unité-Unite / Code Eng / N°Ordre / Ordre / Amd 0.1	
		Number of Packages *Nombre de colis*	Total Net Weight kg *Poids Net Total* *kg*	Total Gross Weight .....kg *Poids Brut Total* *kg* / Total Volume *Volume Total* m^3

Package N° *Colis N°*	Type of Package *Nature du colis*	Unit weight in kg *Poids unitaire en kg* Net *Net*	Unit weight in kg *Poids unitaire en kg* Gross *Brut*	Measurement (in centimetres) Length x Width x Height *Dimensions (en centimètres) Longueur x Largeur x Hauteur*	Unit volume in m^3 *Volume unitaire en* m^3	ITEM *ITAG N°*	Quantity *Quantities*	Description of Goods *Désignation des marchandises*
To continue – à reporter		0	0		0.000			Country of origin/Paye d' origine:

Appendix C

Packing List

	STORAGE IN AIR CONDITIONED PREMISES	STORAGE IN COVERED OR ENCLOSED PREMISES	STORAGE UNDER TARPAULIN	STORAGE OUTDOOR WITHOUT COVERS
STORAGE CODE	xxxx	xxx	xx	x
REFRACTORY LINING -Refractory liquid, mortar, mixes, ceramic fibres Expanded polystyrene, paper adhesive coatings, paints... -Dense fire bricks, steel parts, insulating fire bricks and blocks		X	X X	
INSULATION -Ceramic fibre and calcium silicate material, metal sheeting -Minerals wool blankets, supporting rings, fasteners,		X X		
PAINTS, THINNERS, etc.. -All materials		X (Separate Warehouse)		
CIVIL -Anchor bolts -Reinforcing steel -Cement (in bags), bricks		X	X	X

- The storage code shall be shown on each package with the appropriate symbol

EQUIPMENT STORAGE CODES

	STORAGE IN AIR CONDITIONED PREMISES	STORAGE IN COVERED OR ENCLOSED PREMISES	STORAGE UNDER TARPAULIN	STORAGE OUTDOOR WITHOUT COVERS
STORAGE CODES	xxxx	xxx	xx	X
STRUCTURAL STEEL				
-Panels, beams, columns, grating				X
- bolting			X	
-Material for civil work				X
EQUIPMENT				
-Towers, vessels, kiln, mills, air coolers,			X	
boilers			X	
-Pumps, compressors, blowers, fans,		X		
mixers, reducers		X		
-Tower and vessels internals		X		
-Bolting and special small items			X	
-Mechanical parts		X		
PIPING				
-Flanges, fittings 6" and smaller than 6"		X		
- valves 6" and smaller than 6"		X		
-Pipe and remaining valves, fittings and				X
flanges		X		
-Gaskets and bolting		X		
-Welding rods		X		
INSTRUMENTATION. LABORATORY				
-Cable tray conduit and support			X	
-Control room panels, racks, cabinets				
and associated instrumentation	X			
-All other items	X			
ELECTRICAL				
-Cable reels, conduit and cable trays			X	
-Electrical motors designed for outdoors			X	
service				
-Electrical motors designed for indoors		X		
service				
-Supporting steel, stanchions, saddles,				X
etc...				
--Lighting equipment	X			
-Panel boards, racks cabinets and	X			
associated electrical				
- transformers	X			
-U.P.S., batteries	X			
-All other materials	X			
Telecommunication Equipment	X			

Appendix B

Equipment Storage Codes

11. Responsibilities and Guarantees

SUPPLIER is responsible for the choice of category for packing according to the transport facilities used, and on the basis of the present document. In case of doubt or disagreement regarding the choice, SUPPLIER must inform HT prior to packing and await HT's approval.

All phases of packaging, marking, loading, etc. will be subject to HT's inspection.

HT reserves the right to reject the packing when the packing does not conform to these instructions and/or when the packing does not ensure perfect protection of the GOODS.

SUPPLIER is responsible for the weights and dimensions declared, and the marking of the packages. The documents must be in strict conformity with the packing contents.

The packing specified in these "Packing, Marking and Shipping Instructions" is guaranteed for a twelve (12) months storage period after delivery on site.

SUPPLIER is responsible for providing storage recommendation adapted to the GOODS. In the event of long storage, SUPPLIER or his designated representative shall be given access to the "packed" equipment where the warranty conditions require pre-operational maintenance (eg turning of motors).

According to this guarantee, SUPPLIER is held responsible in the event of goods becoming useless, damaged or broken, as a result of poor packing and/or stowing, or due to corrosion, subsequent to insufficient or inadequate protection. All direct or indirect costs resulting thereof, will be back-charged to SUPPLIER.

12. Shipping Instructions

12.1 Instructions for Heavy Lift and Over-dimensioned Equipment

12.1.1 Load Distribution

As far as transport drawings issued by SUPPLIER are concerned, SUPPLIER shall control the adequacy of the supports and/or saddles and ensure that load distribution is in compliance with HT's nominated Freight Forwarder's requirements, with respect to road and sea transportation as well as local road regulations, prior to saddle fabrication.

Note: In all cases, the maximum load distribution will never exceed 10 MT/M2

12.1.2 Preparation for Sea Fastening Operations

For any contractual delivery terms stated in the Purchase Order (EX WORKS, FCA, FAS, FOB, as per the Incoterms 2000) , SUPPLIER shall carry out the preparation of sea fastening operations according to the instructions which will be given by the shipping company through HT's Freight Forwarder and as per the following indications :

The unpacked equipment shall be prepared and equipped with:

- Lifting lugs to be calculated, defined and shown on the transport drawings. They will be used for any handling operations onto trucks for road transportation and onto vessels for sea transportation and onto wagon for rail transportation.
- Lashing points to be calculated in order to support all forces crosswise, lengthwise, and so on... They will be clearly marked on the equipment and transport drawings.

Consequently, SUPPLIER shall:

- After technical acceptance of the GOODS by HT, define the expected necessary packing preparation period.
- Prior to scheduled packing inspection date, provide HT Expediting Department with packing lists and packing notes.
- Advise HT's Expediting Department by fax, stating expected date and location of packing inspection to be performed.

After packing acceptance, notified by HT Expediting Department, proceed to:

- Shrink wrapping operation, as well as vacuum sealing, if applicable.
- Closing of cases and/or crates together with incorporation of the appropriate packing lists and packing notes as per article 9.1.

In the event that packing operations are performed by HT's packer, SUPPLIER shall comply with following procedure:

- Packing performed at SUPPLIER'S premises:

With respect to heavy and/or over-sized GOODS, SUPPLIER shall be equipped with suitable cranes (either mobile or travelling cranes) to execute lift on/lift off operations.

SUPPLIER shall ensure free access to a working area within SUPPLIER premises, to allow HT's packer to carry out the packing.

- Packing performed in HT's packer's premises:

SUPPLIER shall load onto HT packer's means of transportation, using his own lifting equipment. Lashing and securing of the GOODS, on to HT's packer's means of transportation, shall be carried out by SUPPLIER.

10. Services

In addition to the packing and shipping documents, SUPPLIER must also carry out the following services, which shall be included in his quotation:

Carriage of SUPPLIER's sub-contracted equipment and material, which must be re-grouped in SUPPLIER's or PACKER's workshops, whilst waiting for packaging.

HT reserves the right to postpone the shipping of the GOODS. In this event, any storage and insurance costs during the first ninety (90) days shall be borne by the SUPPLIER.

Loading, including lifting, securing, lashing, and stowing, of all cases, crates, or packages onto means of transportation such as, but not limited to, trailers, containers, etc.

Stuffing of containers, when required.

Preparation of accurate transport drawings, under the conditions as described in article 12 and Appendix F.

Note:

It is the responsibility of the SUPPLIER to ensure that the cases/crates are stowed, secured and fastened inside the container. The SUPPLIER will take all necessary precautions to conform to the maximum weight allowed and the centre of gravity of the container. The securing and fastening of the cases/crates can be carried out by nailing timbers on the bottom or on the vertical sides of the container.

9. Packing Conformance

9.1 Packing Documentation

9.1.1 Packing List

The packing list will be prepared on HT's standard forms (Appendix C) and will show the summary of the content of each package.

Only one Packing List Number shall be given by HT in due time for each summary of the content of each definite batch of GOODS, corresponding to HT's Release Note for Packing. The Packing List Number is allocated by HT's Expediting Department.

Two (2) copies of the packing list in a waterproof plastic envelope must be securely nailed under a steel sheet, on the outer surface of the first package of the batch with the associated packing note corresponding to the package, as indicated in Appendix E.

9.2 Packing Note

The packing note will be prepared on HT's standard forms (Appendix D) and the description must correspond exactly to the detailed contents of the package. **The designation "accessories for" or "batch of nuts and bolts" for example, are forbidden.**

A copy of the packing note shall be placed in a waterproof plastic envelope inside each package. Another copy, in a waterproof plastic envelope shall be placed on the outside of the package under a steel sheet as indicated in Appendix E.

9.2.1 Important Note:

AS AND WHEN REQUESTED BY HT'S TRAFFIC and LOGISTICS DEPARTMENT, THE ABOVE DOCUMENTS ARE TO BE FURNISHED IN ENGLISH AND FRENCH.

9.3 Packing Inspection - Packing Execution

Packing of equipment may be subject to inspection carried out by HT, prior to cargo dispatch.

Such inspection will be confirmed by HT in due time and shall take place at SUPPLIER' S designated premises, as per the following procedure:

- Cases/crates shall be left open.
- Shrink-wrapped plastic covering or vacuum plastic covering operations to be on stand by, if applicable.
- Packing lists and packing notes to be handed over to HT's inspector:
  - - for marking control.
  - - for examination of contents.

- For GOODS, which are highly sensitive to shock or vibrations, such as computers, electronic instruments, or those of small dimensions and weight.
- For GOODS urgently required at the module yard(s) and/or jobsite.

8.13.2 Type of Packing

Depending on the goods to be packed, SUPPLIER may use one of the following types:

- A triple-corrugated cardboard container made with waterproofed glue and a barrier layer of polyethylene on the outsides to keep out humidity.
- Wooden/cardboard packing cases: the wood being used for the framework and base of the cases, waterproofed triple-corrugated cardboard being used for the sides and top. These cases are of the "Bell" type, and used for material of small or medium dimensions.
- For larger dimensions, plywood cases are acceptable. The timber characteristics, cross-sections and thickness will be systematically determined by the nature of the loads to be packed.

8.13.3 Dimensions

In order to optimize the existing transport facilities (passenger or cargo aircraft), the dimensions of:

- Triple-corrugated containers.
- Wooden/cardboard packing cases.
- Plywood cases.

Are to be adapted to pallets used for air transportation.

8.14 Containerization

As required by HT, the SUPPLIER shall stuff the GOODS into 20 or 40 foot containers (dry, open top, flat racks, etc.).

The maximum inside dimensions of containers are to be considered:

- 40 foot containers: 11.80 m x 2.20 m x 2.05 m
- 20 foot containers: 5.80 m x 2.20 m x 2.05m

The present definition of containerization is valid for sea containers.

8.14.1 Protection of Cases/Crates

Since shipping containers are in general not water tight, packing in contact with the floor of the container shall be raised in order to prevent it from being damaged by the accumulation of water (on pallets, for example).

8.14.2 Mechanical Constraints

The mechanical constraints for "general use" closed containers are of a different nature (height of "stacking" being limited inside the containers), the packing for the GOODS may be of a lighter structure.

However, it is necessary that the packing be appropriate so as to protect the GOODS on site during the storage period, as required in articles 5 and11 of these instructions, after discharging of the GOOD'S from the containers.

MAIN SHIPPING MARK
PLAQUE DE MARQUAGE

Contract / Contrat	:	**KONIAMBO NICKEL PROJECT**
Port of Destination / Port de Destination	:	
Consignee / Destinataire	:	**KONIAMBO NICKEL SAS**
Supplier's Name: Nom du Fournisseur	:	
P.O. / Commande	:	
Requisition No.	:	
Indent Code /Code d'identite (4)	:	
P.L.N°. /Note de Colisage N°	:	
Package Nr. / Colis N°	:	
N. W.....kg / G.W.....kg Poids Net (kg) Poids Brut (kg)	:	
Dimension in cm	:	**L x W x H** Longueur / Largeur/ Hauteur
Storage Code / Code de Stockage	:	

1. Two copies of the Packing Note are to be attached to the outside of each package in waterproof plastic cover underneath a nailed plate. In the event equipment is dispatched unpacked, this plate should be welded on the metal pats (spot welding) or attached permanently to the package in another way depending on the material. One copy of the Packing Note is to be placed in a clearly visible point in the boxes / crates in a waterproof plastic cover.
2. The storage code shall be selected in Appendix B.
3. For complete marking (marking location, type and size of graphics, use of symbols, dangerous items....) please refer to Article 7.
4. Material Track System (Marian) Code defined in the Material Requisition.

1. Deux copies de la liste de Colisage doivent être placées dans une enveloppe plastique étanche à l'extérieur de chaque colis. Dans le cas ou l'équipement est expédié non emballé, la plaque de marquage doit être soudée sur une partie métallique (point de soudure) ou attachée d'une façon permanente au colis d'une façon appropriée. Une copie de la liste de Colisage sous enveloppe plastique étanche dort être placée dans la caisse á un endroit visible.
2. Le code de stockage doit être déterminé selon l'Annexe B.
3. Le marquage doit être complet (localisation de la plaque, type et dimensions de caractères, symboles, etc....) conformément aux spécifications du chapitre 7.
4. Code d'identification Marian (systeme de management du materiel) defini dans la Requisition de Materiel.

Appendix A

Main Shipping Mark

1. Packing list
Five (5) copies. To be prepared on HT's form, as per Appendix C.

2. Packing Note
Five (5) copies. To be prepared on HT's form, as per Appendix D.

3. Pro-forma Invoice
Five (5) copies of SUPPLIER's pro-forma invoice shall be addressed to HT indicating following information:

- consignee
- number of delivered items (complete or partial or balance of Purchase Order scope).
- detailed designation of the GOODS.
- weights/volume.
- unit and total value.
- place and terms of delivery.
- Customs HS Code.

Particular attention shall be given to HAZARDOUS GOODS which shall be identified on a separate invoice and packing list to those for non-hazardous material.

The appropriate hazard class and technical or proper shipping terminology shall identify all hazardous material.

- When applicable, multimodal attestation of transport of hazardous material, safety data sheet and all specific documentation that may be required at origin, during transit and at destination.

  Three (3) copies of such certificates/attestations duly stamped and signed by SUPPLIER, shall be transmitted to HT, with the above requested documents.

- Certificate of origin

  SUPPLIER shall provide HT with a certificate of origin stating the country of origin for all materials manufactured **outside the E.U.**, duly stamped by SUPPLIER's local Chamber of Commerce.

  For materials manufactured **inside the E.U.**, SUPPLIER shall provide HT with an attestation of origin with indication of the manufacturing place.

12.3 Forwarding Agent

HT's designated Freight Forwarder will be nominated at a later date and advised to SUPPLIER accordingly.

The Freight Forwarder will be the sole entity contracted to perform, in the event of EXWORKS, FCA, FAS or FOB delivery terms:

- Call forward of the GOODS ready to be shipped.
- Freight booking's on appropriate means of transport.

When the equipment requires utilization of special tools/equipment, such as lifting beams, slings, etc. for handling operations, **SUPPLIER SHALL INCLUDE SUCH A LIST OF SPECIAL TOOLS/EQUIPMENT IN HIS ORIGINAL PRPOSAL** which will be included in the scope of supply of the Purchase Order.

Non-compliance to the above shall be at SUPPLIER'S sole risk.

12.2 Documentation

12.2.1 Preliminary Packing Lists

Within eight (8) weeks after issuance of the Purchase Order, SUPPLIER shall furnish to HT's Expediting Department:

Three (3) copies of preliminary packing list as per HT forms, including the number of packages with their respective dimensions and weights and indicating the applicable storage code.

Three (3) copies of preliminary transportation drawings for heavy or over dimensional packages where weights and/or dimensions are equal or greater than:

- Weight 20 MT
- Length 13.50 m
- Width 3 m
- Height 3 m

With the following indications:

- Three planes view of equipment.
- Actual position of all nozzles and protruding parts.
- Net and gross weights.
- Position of the centre of gravity on the three planes.
- Accurate size and overall dimensions of cases, crates or packages.
- Slinging points of equipment or package on all planes.
- The mention of presence of nitrogen purging, where applicable.

12.2.2 Transportation Drawing

Eight (8) weeks prior to the contractual delivery date of the GOODS for shipment, SUPPLIER shall confirm to HT's Expediting Department that the transportation drawing(s) are unchanged. In the event that such drawings have been modified, SUPPLIER shall forward three (3) copies of the revised drawings.

12.2.3 Final Packing List

Four (4) weeks prior to the contractual delivery date of the GOODS for shipment, SUPPLIER shall confirm the final packing list and issue, by e-mail to HT's Expediting Department.

12.2.4 Shipping Documents

Prior to date of inspection, if any, the following SUPPLIER's documentation is to be issued to HT's Expediting Department.

8.10 Cable Drum – Packing Category VIII

8.10.1 Type of Equipment

All type of cables, wires, ropes, hoses.

8.10.2 Type of Construction

New or practically new cable drums are to be used. Planking of the cable drums by use of boards, thickness minimum 20 mm, with additional double steel strapping, nailed, and carefully preserved/protected cable ends prior to packing.

8.11 Hazardous Materials – Packing Category IX

8.11.1 Type of Equipment

Hazardous materials according to the law are explosives, compressed gases, liquefied gases dissolved under pressure or deeply refrigerated, flammable liquids, flammable solids: substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases, oxidizing substances, organic peroxides, poisonous (toxic) and infectious substances; radioactive materials, corrosives, miscellaneous dangerous goods.

8.11.2 Type of Construction

Hazardous materials shall always be packed and documented separately from any other material. Selection of packaging materials, execution of packing and marking as well as documentation shall always be in compliance with the applicable laws and regulations. Any certificates required for transportation or for authorities to be supplied before shipment of the GOODS.

8.12 Wooden Floor as a Transport Support – Packing Category X

8.12.1 Type of Equipment

Any materials to be stuffed in containers or on flat racks and that are not stowed on standard pallets or otherwise suitably packed

8.12.2 Type of Construction

- Longitudinal internal square timbers bolted to the front wall runners, longitudinal skid.
- Maximum distance between longitudinal runners 90 cm (middle to middle of the runner).
- Full boarding of the floor.
- Attaching of lifting lugs and/or iron ropes for lifting/pulling the units off the transport equipment.
- If applicable, preservation of the equipment by sealing in polyethylene-foil or aluminium compound foil and the addition of desiccants.

8.13 Air Transport Packing

8.13.1 General

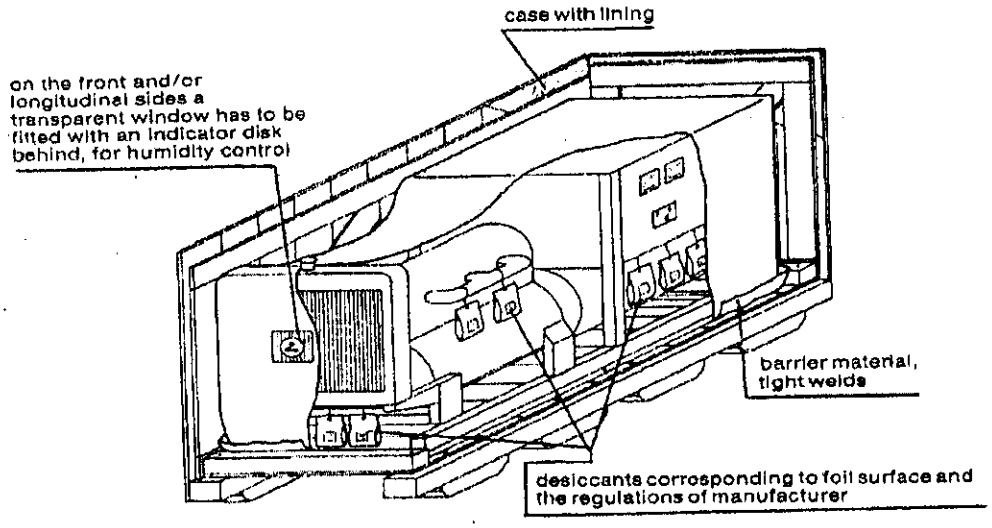
Certain types of material may have to be shipped by air from their country of origin. This means of transport will be exceptional, and will be used only:

Preservation by sealing an aluminium compound foil, with the addition of desiccants. Humidity indicators, if required and installed in the barrier wrapping, shall allow easy control from the outside.

Additional marking:

- Case with desiccants.

Packing Category V/VI



8.9 Double Case – Packing Category VII

8.9.1 Type of Equipment

GOODS which are of high sensitivity to shock, impact and vibration, for instance, special electrical equipment like computers, switchboards, laboratory instruments

8.9.2 Type of Construction

Case construction as indicated in article 8.5.2, with additional floating inner packing (case-in-case principle), padding corresponding to weight and sensitiveness. Preservation by sealing in aluminium compound foil with the addition of desiccants. The inner case has to be made of plywood or equivalent material with a thickness of 8-12 mm, depending on the weight of the GOODS to be packed. The inner buckles and/or frame borders have to be dimensioned so that the full stability of the inside case will be reached and no twisting is possible. The inner sides of the inside case will be lined with bituminous paper on all sides (except bottom).

This mode of packing shall always be agreed with and released by HT's Traffic and Logistics Department, prior to packing.

8.6.2 Cases made of Corrugated Cardboard for Transportation in Container, Overland Transport and Airfreight – Packing Category IV B

8.6.2.1 Type of Equipment

Spare parts, electrical and electronic parts, homogeneous parts

8.6.2.2 Type of Construction

Case made of tested, water-resistant, glued corrugated cardboard, 2-ply and 3-ply, on a one-way pallet; folding of boxes and corrosion protection as per individual instruction.

Type of construction requires individual approval by HT's Traffic and Logistics Department, prior to packing.

8.6.3 Frame Construction with Corrugated Cardboard – Packing Category IV C

Wooden frame construction according to article 8.4.2 with boarding made of 3-ply water resistant and glued cellular cardboard.

Type of construction requires individual approval by HT's Traffic and Logistics Department, prior to packing.

8.7 Case with Barrier Material – Polyethylene Foil – Packing Category V

8.7.1 Type of Equipment

Sensitive equipment, simple electrical equipment, insulation materials, fire-resistant materials, with non-corrosion-guarantee for a period up to twelve (12) months.

8.7.2 Type of Construction

Preservation by welding in polyethylene-foil with addition of desiccants and if necessary, application of non-corrosive contact agents, otherwise, type of construction as indicated in article 8.5.2.

Air ventilation inside the case, according to type of construction as indicated in article 8.5.2.

Additional marking:

- Case with desiccants.

8.8 Case with Barrier Material – Aluminium Compound Foil – Packing Category VI

8.8.1 Type of Equipment

Electrical equipment such as, switchboards, electric motors, sensitive equipment, with non-corrosion-guarantee, for a period up to twelve (12) months.

8.8.2 Type of Construction

Type of construction as indicated in article 8.5.2.

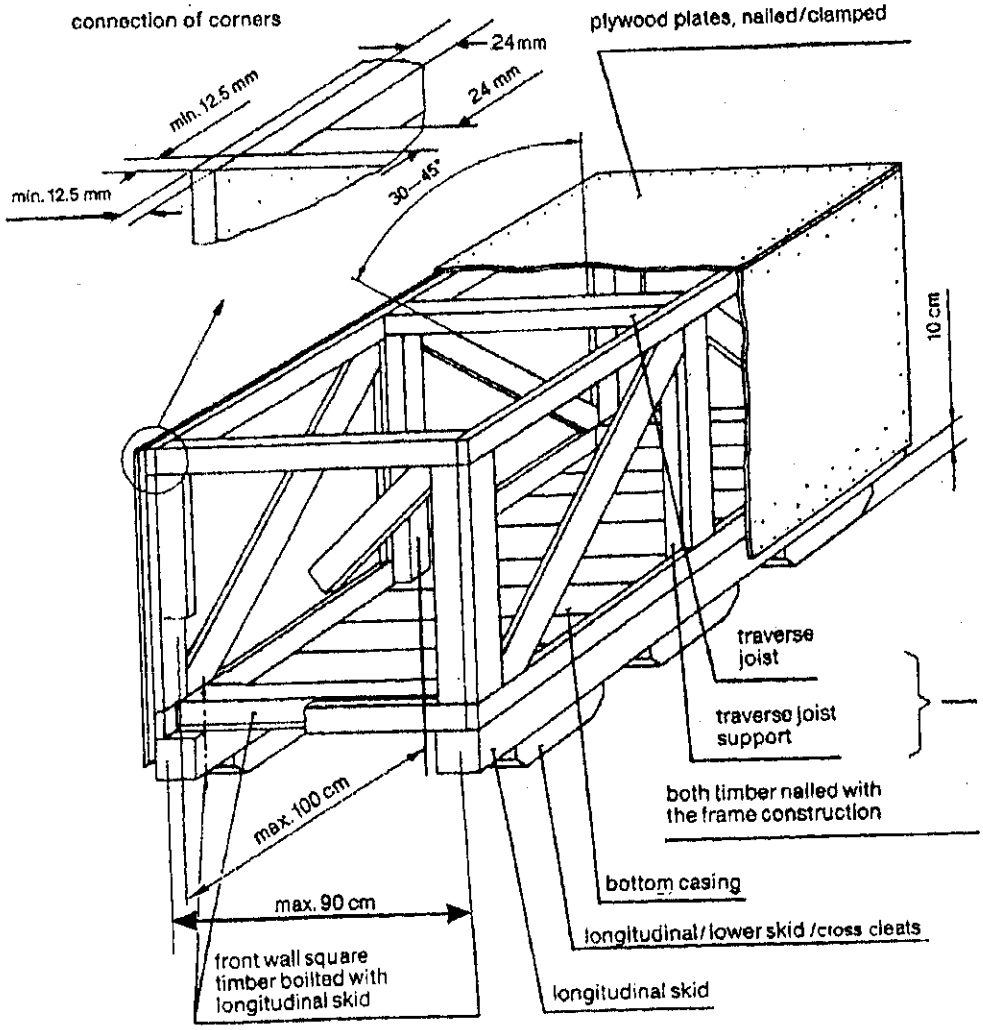
8.6 Cases with Alternative Surface Materials

8.6.1 Plywood Box – Packing Category IV A

Case constructed of 5 layers of watertight, glued plywood with a total thickness of 12.5 mm. The frame must be constructed from minimum 24 mm timber and must be suitable for the weight and nature of the parts to be packed. Planed square timber must be bolted with longitudinal skid and covered with diagonal joists. If applicable, construction of the cover and sides is to include diagonal bracing. Covers consisting of several layers of plywood are to be sealed with durable elastic putty or additional water-resistant sheets to be fixed.

Type of construction, requires approval by HT's Traffic and Logistics Department, prior to packing.

Packing Category IV A



8.5 Cases with Lining – Packing Category IV

8.5.1 Type of Equipment

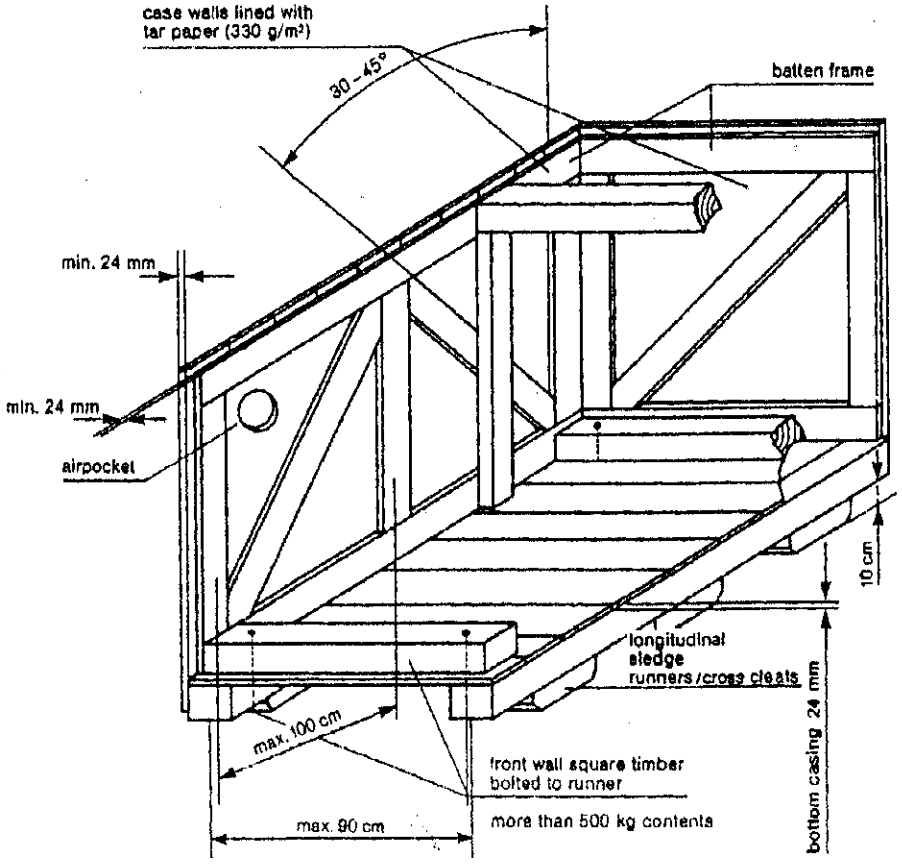
Equipment and mechanical parts

Equipment sensitive to mechanical damage or parts and components that are particularly at risk of theft or loss; pumps, elbows, flanges, fittings, tools, erection materials, etc.

8.5.2 Type of Construction

The same type of construction as article 8.4.2, but with all sides completely boarded without space between the boards. Sides to be provided with waterproof lining; fabric-reinforced waterproof tar paper or polyethylene-foils resistant to ultraviolet rays can be used. Polyethylene-foil shall be fixed under the lid cover to avoid penetration of water. At weights of more than 500 kg the longitudinal runner must be bolted to the front all square timber. For ventilation inside the case, an opening in the waterproof lining must be placed between the diagonal battens and diagonal joists.

Packing Category IV



8.4.2 Type of Construction

Bottom

- Longitudinal runners are required for all shipments and for container stuffing, cross cleats can also be used.
- Bottom boarding to be spaced and nailed.

Sides

- side wall casing vertical, inside battens.
- space between wall boards shall not exceed average width of the boards.

Cover

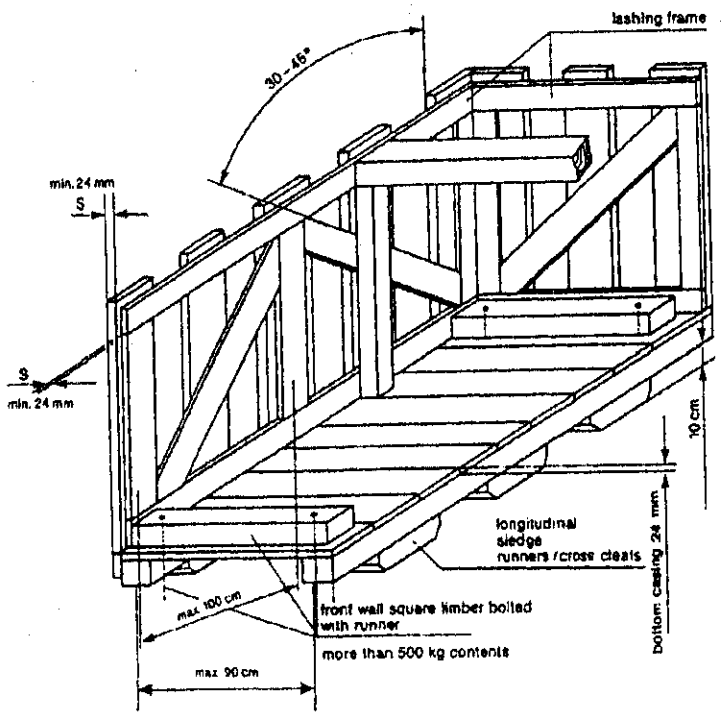
- Longitudinal boarding, diagonal battens, diagonal joists, supported towards the bottom.
- Width of boards 10 -18 cm.

The equipment must be safely fastened to the bottom with bolts, possibly by the runners or to be spread in such a manner that no protruding parts are possible. For parts, sensitive to rainwater and/or debris, a protection has to be made by a foil cap.

If it is possible that single parts could protrude through the front/back side wall, they shall be closed completely. The marking of the package shall be done on plywood plates at the prescribed sides.

The arrangement of the runners and sledge runners can be taken from the sketch.

Packing Category III



8.3 Skids, Square Timber Constructions, Casings – Packing Category II

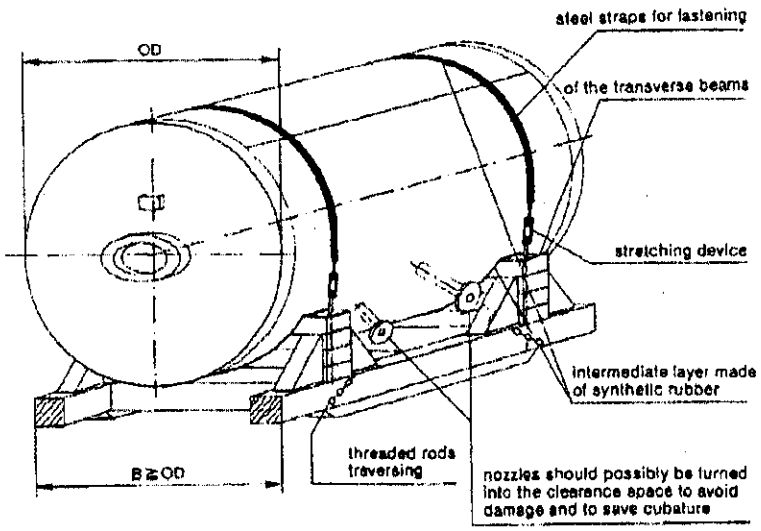
8.3.1 Type of Equipment

Voluminous apparatus, tanks and/or heavy pieces that are not vulnerable to mechanical or corrosive effects.

8.3.2 Type of Construction

- The construction can be made of wood or of metal.
- The fastening of the packages on the skid will be made by steel straps (flat iron) which have to be elastically lined, non-slip and securely bolted onto the skids.
- Flange openings have to be closed with gaskets and blind flanges or, if necessary, provided with cover.
- Skid constructions may not be less than the dimensions of the package in length or in width.
- Tanks and apparatus with their own support cradles must be supplied with an anti-slip lining.

Packing Category II



8.4 Crates – Packing Category III

8.4.1 Type of Equipment

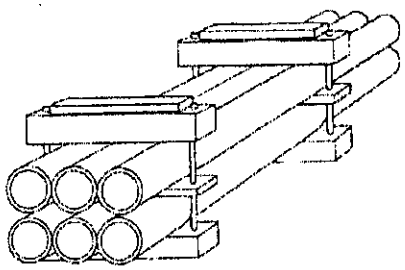
Fabricated equipment, which cannot be transported on cradles; frame-works, prefabricated piping and fittings, mechanical and electrical assemblies.

8.2 Bundling – Packing Category I

8.2.1 Type of Equipment

Equipment which is not subject to damage by corrosion or mechanical effect, i.e. pipes, piping, structural steel.

Packing Category I

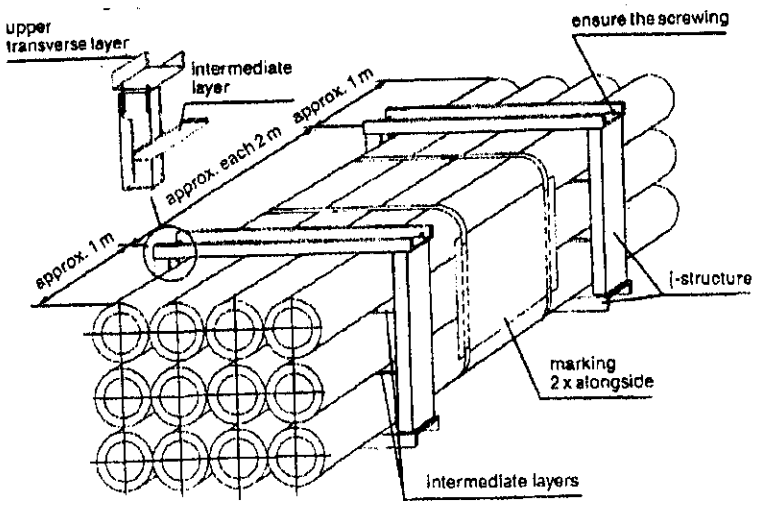


8.2.2 Type of Construction

Bundling has to be effected

- By squared timber and threaded rods.
- With an intermediate layer (threaded on tightening bolts) according to the weight of the package.
- Wedge-shaped timbers must be added at the outer points of lower layer.
- Between the bolts a spacer must be nailed.
- The bolts must be secured (e.g. by locking nut).
- If single parts could protrude, an appropriate protection must be installed (flat iron or plates).
- Bundling with steel straps or PVC straps is not accepted.

Bundling by U-shaped iron – Packing Category I A



8.1.2 Pipe

Where practicable, pipe lengths shall be limited to 11.8 meters.

All pipes 2" included and below shall be packed in crates in accordance with article 8.3. All pipes to be capped and ends sealed with waterproof tape.

Pipes over 2" up to 6", shall be bundled and banded in bundles of uniform length. Bundling is carried out with U-IRON or traversal planks, joined with threaded connecting rods with locknuts. Quantities and strapping positions depend on the lengths, with a 120 cm spacing to prevent distortion. Bundle weight shall not exceed 2,000 kg. All pipes are to be capped and ends sealed with waterproof tape (tape is not necessary if end caps are of the pre-shrunk or self-sealing type).

Pipes larger than 6" shall be shipped as single lengths with the ends capped. End caps are to be of the recessed type to enable the use of soft faced hooks, but still completely sealing the end and also protecting the weld.

All stainless steel piping must be packed separately in wooden crates. Any banding of bundles is to be with the same material.

8.1.3 Pipe Fittings, Flanges and Valves

All pipe fittings, flanges and valves up to 6", are to be packed in cases/crates. For items over 6", these may be fixed securely to a pallet base and enclosed in an open boarded crate, for protection.

Where valves have actuators attached, rigidity must be ensured for the valve and actuator. The vulnerable parts of the actuator are to be completely protected within a wooden crate.

All stainless steel fittings, flanges and valves of all sizes, must be packed separately in wooden crates. Any strapping is to be with the same material.

8.1.4 Structural Steel

Structural Steel, reinforcing rods, bars, etc., should be packed in bundles of uniform length. Refer to above articles 8.1.2 and 8.1.3, for strapping requirements. Bundle weight not normally to exceed 2,000 kg.

Fabricated structures and structural steelwork, etc, should be bundled and packed using wooden beams and long bolting to secure the load.

Machined surfaces are to be protected by the SUPPLIER. Protection of inner faces is the responsibility of SUPPLIER: cleaning, coating, plugging/sealing, lubrication, etc

All items of fragile nature shall be suitably packed with special precaution against risk of breakage. Where GOODS are encased or otherwise completely enclosed, SUPPLIER shall be responsible for suitable inner packing.

Internal immobilization of material: all mobile or overhanging parts situated inside the material must have a support or other adapted type of immobilization put in place by SUPPLIER. The goods are to be secured inside the crates so as to guarantee perfect immobility during transport.

Felt, cellophane paper, polyester cuttings, crepe cellulose and some equally efficient materials may be used for padding or cushioning.

Hay, straw or similar vegetable fibres subject to disease or fungus shall not be used in packing.

Packages of bulk materials shall be kept as small as possible, with gross weight not exceeding 3,000 kg and dimensions corresponding to inside dimensions of containers (see article 8.14 Containerization)

Moreover, cases/crates with a height of 2 meters and above, must have 3 straps around them.

Cases/crates must be equipped with angle-bars at sling points and fastened by means of eye-bolts, appropriate for all packing cases or crates weighing 3,000 kg or over. The traversal battens must have a minimum cross-section of 100 x 100 cm to allow easy handling by forklift trucks.

Plywood may be used instead of sawn timber to make up the packages. The board thickness depends on case/crate dimensions, weight and density of the GOODS and the package type to be used. The plywood is to be moisture resistant and marine type.

In consideration of the above, the following thicknesses are given for guidance:

Gross weight up to 500 kg	6 - 8 mm
Gross weight between 500 kg and 5 MT	10 mm
Gross weight between 5 MT and 10 MT	12 - 15 mm

Metallic parts of packages must be painted or galvanised, particularly for bundles and packages on supports.

Cases/crates weighing more than 136 kg and up to 1,000 kg shall have a raised skid platform or pallet base (40mm thickness) to permit sling or forklift access.

Cases/crates exceeding 1,000 kg shall be provided with skid runners for the number and size will be according to weight of the package.

8.1.1 Pipe, Fittings, Flanges and Valves, Structural Steel

Particular attention should be brought to pipe, fittings, flanges, valves and structural steel.

Packing categories for piping and fittings will differ according to the diameter and wall thickness of these products. SUPPLIER shall comply with the following established practice.

IMPORTANT NOTE:

Depending on the project schedule and availability of ocean vessels, the piping and structural steel may be shipped in containers. In this event, SUPPLIER has to arrange the packages in such a way it allows the stuffing into Open Top in gauge containers.

In the case of packages with a single gross weight totalling 2,000 kg and/or a height of more than 1m, the centre of gravity shall be clearly marked with the symbol on two adjoining sides.

For all items of equipment with an eccentric centre of gravity this symbol shall be marked at the bottom, side and top of the package.

The slinging and lashing points shall be marked with a chain symbol.

When packing in cases/crates, these packages shall also have metal or plastic corners at the slinging points.

All material must also bear appropriate shipping marks completed within a frame, as indicated in Appendix A.

7.2 Storage Code

The type of storage required is specified as follows, it will be shown on each packaging in **RED colour.**

X	Crates or packages to be stored outdoor without covers
XX	Crates or packages to be stored under tarpaulin
XXX	Crates or packages to be stored in covered or enclosed premises
XXXX	Crates or packages which must be stored in air-conditioned premises

Refer to equipment storage codes in Appendix B.

8. Packing Description (Does not apply to Modularisation and Pre-Assembly)

8.1 Packaging for Combined Land and Sea Transportation

Only wood is to be used for making export cases/crates and/or reels; **any other material such as chipboard, fibreboard, cardboard, is strictly prohibited.**

Packing cases/crates are to be designed to ensure the best possible packaging. They must be strong enough to be stacked on **several layers.**

They are to be made of high quality hardwood or softwood, dry and sound, meeting the following general requirements:

- Dryness of about 18 - 20 %.
- Thickness: 18 - 34 + 2 mm depending on the weight of the packed goods and on the dimensions of the cases.
- Free of loose or decayed knots exceeding one third of the board's width.
- Free of cracks or splits longer than 25/30 cm.
- Width of the board used: 12 – 25 cm for crates.
- Ends should be screwed or nailed in a manner where no sharp pieces are exposed.

Prior to packing, the GOODS must be effectively protected against corrosion, and preserved prior to export packing. The protection will be determined more precisely by SUPPLIER according to the type of GOODS and the means of transport actually used, the duration of transport, and storage conditions at the module yard(s) and/or the jobsite.

6.4 Accessories

Accessories for apparatus and vessels (small parts, bolts, nuts, washers, gaskets, etc.) are to be packed in wooden cases/crates, separately for each apparatus or vessel. These wooden cases/crates must be marked with the same Indent Code as the apparatus/vessel to which it belongs.

The packaging for electrical panels and instruments shall be provided with full protection against physical damage and atmospheric attack during transit and possible long storage periods, adverse conditions, at the jobsite, for up to twelve (12) months.

Crates which are transported by sea shall be marked *"STORE IN HOLD"*.

Pipeline/vessel insulation shall be packed in a double waterproof wooden plywood case/crate and secured to pallets (refer to article 8.5).

Drums of insulation mastic and other products shall be shipped on pallets.

7. Marking Instructions and Storage Code

7.1 Marking Instructions

Packages and crates will be marked with indelible black paint, resistant to seawater. Marking must be perfectly legible.

The shipping marks, which will be advised by HT's Traffic and Logistics Department, shall be stencilled on two sides and one end in clear characters at least 5 centimetres high (where crate size permits, otherwise use optimum size for each package dimension).

When the GOODS are to be shipped in containers then marking may be stencilled on one end only. However, packages must be stowed in a manner that shows these marks.

Crates containing fragile articles must be packed with special precaution against risk of breakage and must be stencilled on all sides "FRAGILE - HANDLE WITH CARE". Where crates are not to be overturned, SUPPLIER must show on the crates, clear and readily visible identification, to ensure they are kept in the correct position.

Packages/equipment of 2,000 kg or more must be marked with slinging points on all sides, in addition to the centre of gravity marks.

Metal tags or labels must be stamped or indelibly marked with full shipping marks and must be securely attached using 6 twists of stainless steel wire to all loose bundles, or items. Alternatively, marking boards can be securely strapped to bundles or when the surface of a package is too small to permit stencilling.

Number packages consecutively i.e. 1 of 10, 2 of 10, etc. Do not duplicate package numbers.

SUPPLIER is responsible for any loss or damage caused by incorrect marking.

All cases/crates shall also be marked with the appropriate international standard graphic symbols for handling as shown in Appendix G.

As a minimum, all cases/crates are to be marked clearly on all four sides with:

- "HANDLE WITH CARE"
- "RIGHT SIDE UP"
- "KEEP DRY"

NAME		SUPPLIER
TITLE		SIGNATURE
		TECHNICAL SHIPPING NAME
HAZARDOUS CLASS NR		
UN Number	IMDG Page	Flashpoint (if any)

SUPPLIER shall produce any necessary hazardous cargo certificates, as required by the appropriate Government and International Transportation regulations, for all such shipments.

All GOODS containing hazardous material(s) shall be shipped dry and packed separately. Shipping instructions will be provided with the products.

All GOODS, which are nitrogen purged for transport and storage purposes, are to be clearly identified. The relevant nitrogen hazardous class identification and documentation, is to be provided, by the SUPPLIER, to HT's Traffic and Logistic Department.

6.2 Spare Parts

All spare parts and special tools that are required to be shipped with the GOODS must be packed separately, from the main equipment, Refer to Spare Parts Procedure, 319000-00000-PP-GPCO-0108.

For spare parts the cases/crates, shall be identified respectively:

- CAPITA/CRITICAL SPARE PARTS
- INSTALLATION, PRE-OPERATIONAL TESTING, COMMISSIONING AND PERFORMANCE TESTS
- SPARE PARTS
- START-UP SPARE PARTS
- TWO (2) YEARS SPARE PARTS

With large capital letters, with the relevant Purchase Order number and Equipment number.

Special tools for construction and commissioning are to be packed separately from those required for plant operation. The cases/crates will be marked accordingly:

- SPECIAL TOOLS FOR CONSTRUCTION AND COMMISSIONING
- SPECIAL TOOLS FOR PLANT OPERATION

With large capital letters, with the relevant Purchase Order number and Equipment number.

6.3 Refractory Materials

Firebricks, special tiles and refractory materials shall be crated after sealing in a polyethylene liner. These crates shall be skid mounted. Instructions regarding storage prior to installation shall be stencilled on each crate, with particular reference to adverse weather/temperature/humidity conditions and/or any other storage instructions recommended by the SUPPLIER.

5. General Requirements

The following instructions are intended as minimum requirements, and adherence to these instructions in no way absolves or relieves SUPPLIER of any responsibility or obligation outlined in the Purchase Order. In all circumstances, the packing will be calculated in order to support any strain exerted on the GOODS during transportation. They must be adhered to specifically, in order to permit the delivery of the GOODS to the module yard and/or the jobsite by sea, road or air, in good condition.

GOODS shall be export packed in compliance with the best-established practices for international construction projects, in accordance with the following directives. In the event of any divergence between these instructions and the established practices, these instructions shall govern.

Due to climatic conditions and the complex transport operation(s), it is essential that protection and packing is of the highest standard. Packing means to efficiently protect the GOODS during the total transport operation; from the moment they leave the factory until they are delivered to the module yard(s) and/or the jobsite, including handling operations (loading/unloading) and storage.

When SUPPLIER does not perform the packing and therefore intends to sub-contract, SUPPLIER has to inform HT of the name and address of proposed PACKER(s). HT reserves the right to reject any of these companies.

It is the responsibility of the SUPPLIER to liaise with HT's Traffic & Logistic Department to ensure that the quaranline requirements (refer to ISPM 15 and/or NIMP 15 codes) pertaining to importation of wooden cases/crates at the destination, are known and implemented, before packing has commenced.

Hay, straw or similar vegetable fibres subject to disease or fungus shall not be used in packing.

6. Definition and Selection of Packaging

Packages are to be made according to 10 categories, described in articles 8.2 to 8.12, depending on the type of materials, their fragility and size.

These 10 categories have been established for the protection of equipment and material during multi-modal transports, i.e.: combination of overland and sea transport; containerization, air transportation.

In a general manner, the GOODS have to be packed in such a way that crates, bundles, pallets and the like can be stowed into General Purpose containers, wherever possible.

If SUPPLIER is in any doubt as to the correct method of protection or packing, he should contact HT's Traffic and Logistic Department, in order to mutually agree on the adequate type of packing, to be used

6.1 Hazardous Materials

Hazardous materials shall be packed and identified on a separate packing list to those for non-hazardous material. All hazardous material must be prepared in adherence to the detailed requirement relating to packing, marking and labelling set out in the most recent report of the Board's Standard Advisory Committee on the Carriage of Dangerous Goods in Ships (The Blue Book) for sea freight, and the Restricted Articles Regulations, laid down by the International Air Transport Association for airfreight.

All hazardous material shall be identified, by the appropriate hazard class and technical, or proper shipping name, in accordance with the table below. All packing lists for hazardous material shall contain the following statement: "This is to certify that the above named material is properly classified, described, packaged, marked and labelled, and is in proper condition for transportation according to the appropriate IMDG/ADR/RID/IATA regulations".

1. Purpose

The purpose of these instructions is to describe SUPPLIER's minimum packing requirements for the Koniambo Nickel Project, New Caledonia and also to define marking and shipping requirements.

2. Scope

The scope of these instructions is to define SUPPLIER's responsibilities in terms of:

- Preservation of the GOODS before packing.
- Packing of the GOODS for road, rail, sea and/or air transportation to module yard(s) and/or New Caledonia.
- Marking of cases/crates.
- Services required.

Documents to be submitted to HT, with required schedule.

3. Application

Applies to all SUPPLIER's of GOODS for the Project.

4. Definitions

"HT"	means a Joint Venture formed between hatch and Tehcnip, acting as Owner's Representative with full authority to manage and direct the activities of the SUPPLIER/
"OWNER"	means Koniambo Nickel SAS.
"SUPPLIER"	means Company(ies) to whom the contractor has placed Purchase Order for GOODS.
"GOODS"	means all or part of the articles, material, equipment supplies including technical documentation, as described in the Purchase Order, to be supplied by SUPPLIER.
"PACKER"	means Company to whom SUPPLIER intends to sub-contract the packing.
"FREIGHT FORWARDER"	means the Company responsible for performing freight forwarding activities.
"EXPORTER"	means SUPPLIER, when the GOODS are shipped FCA, FAS or FOB, or means HT when the GOODS are shipped Ex-Works, to the module yards and/or the jobsite.
"IMPORTER	"means Koniambo Nickel SAS.

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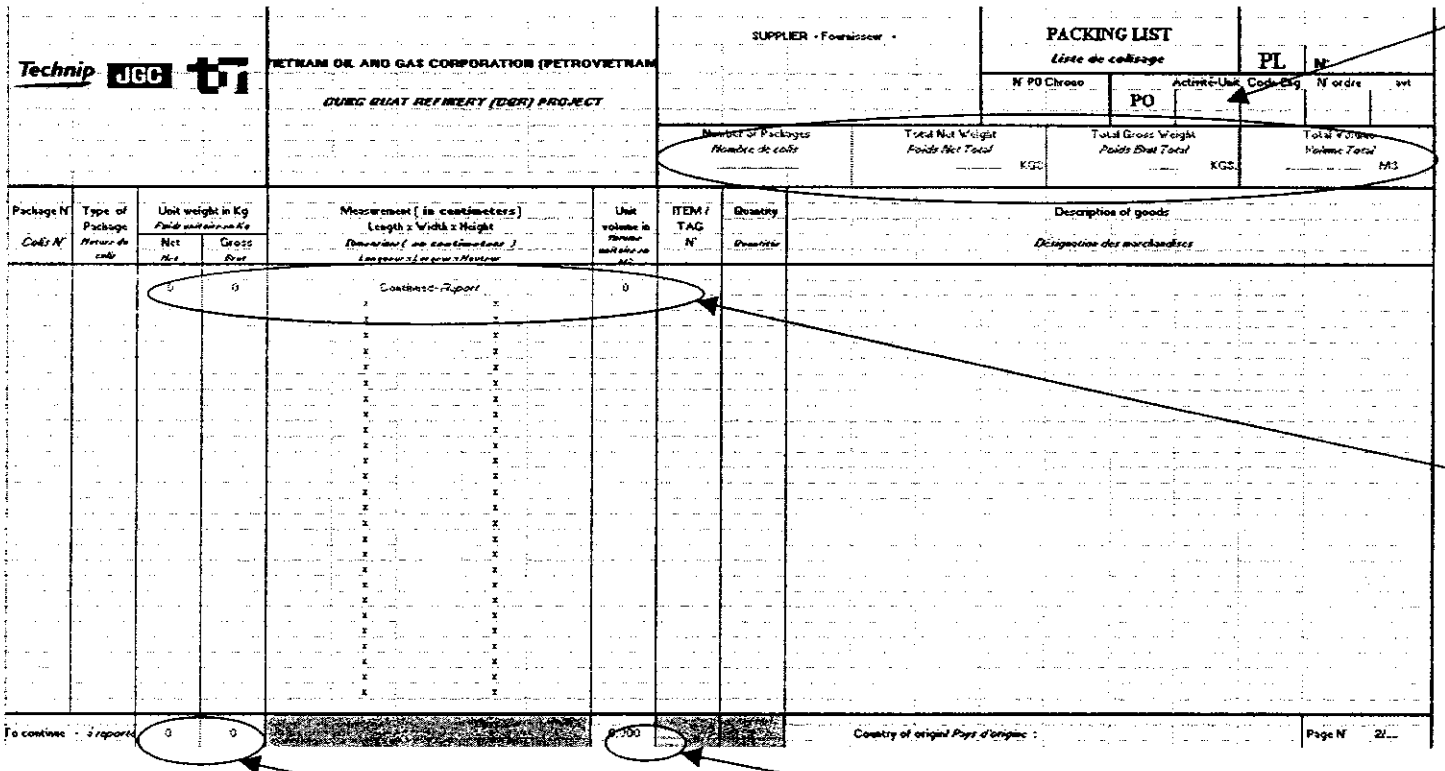
Packing, Marking and Shipping Instructions

Rev.	Date (dd/mmm/yyyy)	Author (Name)	Checked (Name)	Approved (Name)	Approved (Name)	Status
04	13/Aug/2007	B.Turpin	V.Nogewaren	D.Mielcarek		IFE
03	05/Jul/2006	A Pearcey	A Legrand	D.Mielcarek	M. Beaupre	IFE
02	06/Mar/2006	A Pearcey	A Legrand	JP Charneau	M. Beaupre	IFE
01	22/Feb/2006	A Pearcey	A Legrand	JP Charneau	M. Beaupre	Issue for Client Approval
00	30/Nov/2005	A Pearcey	A Legrand	JP Charneau		Issue for Use
0A	11/Nov/2005	A Pearcey	A Legrand	JP Charneau		Issue for Comments
HT					Owner	

2 nd page



Write total packages, total net weight, total gross weight in kgs, total volume (with 3 digits after comma)of the entire packing list. (same totals as in the first page)

Totals of the 1st page are continued on the 2nd page to allow calculation. It is automatic

Sums are calculated automaticcally. For information, total volume is made with rounded numbers (3 digits after comma). Total includes the total of 1st page

Instructions to users- How to fill a packing list with several pages

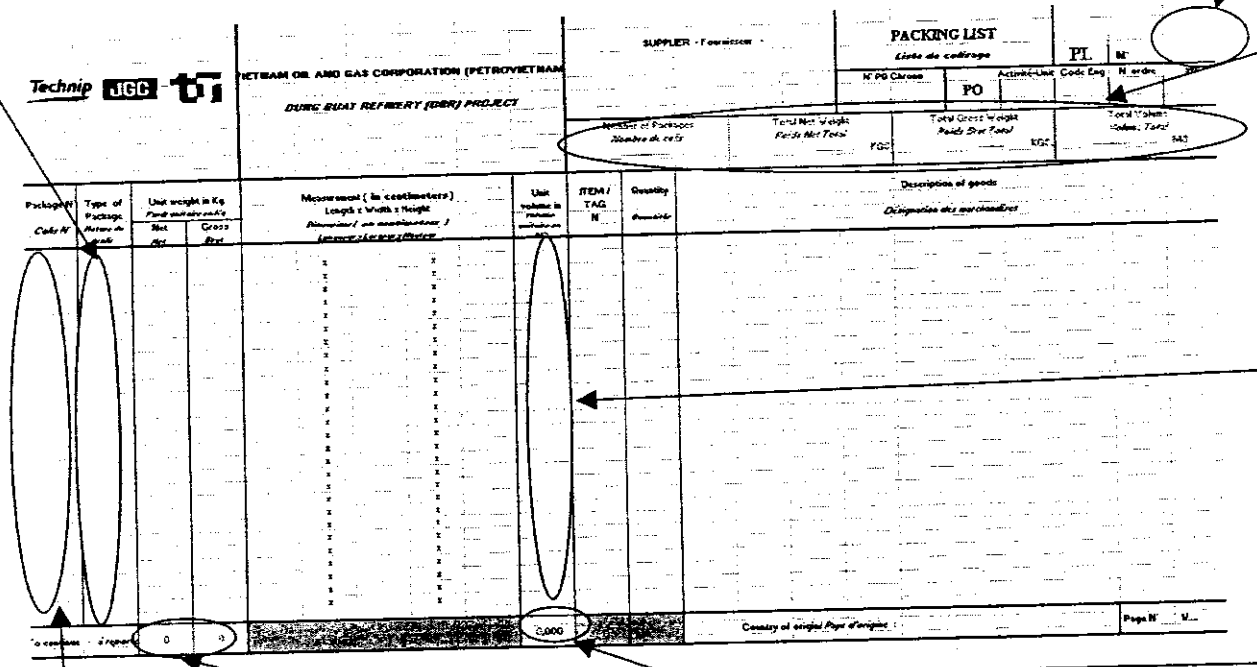
NB : Do not forget to complete other columns and/or boxes, which are self explanatory.

1st page

Write PL number given by Expediting Departement

Write total packages, total net weight, total gross weight in kgs, total volume (with 3 Digits after comma)of the entire packing list.

Write type of packages, according to SEI rules.
Ex : CASE 4C



Volume : Formula is pre-filled. It means with entering (in centimeters) length, width and height, volume is automatically calculated. For information, volume is rounded to 3 digits after comma.

Write package number / total packages.
Example : 1/25, 2/25, etc...

Sums are calculated automaticcally. For information, total volume is made with rounded numbers (3 digits after comma).

HATCH Technip

KONIAMBO NICKEL SAS, NEW CALEDONIA

KONIAMBO NICKEL PROJECT

KONIAMBO

SUPPLIER - Fournisseur -

PACKING LIST

Liste de colisage

PL	N°				
N° P0 Chrono	PO	Activité-Unit	Code Eng	N° ordre	avt

Number of Packages / *Nombre de colis*	Total Net Weight / *Poids Net Total*	Total Gross Weight / *Poids Brut Total*	Total Volume / *Volume Total*
....	.... KGS	.... KGS.	.... M3

Package N° / *Colis N°*	Type of Package / *Nature du colis*	Unit weight in Kg / *Poids unitaire en Kg* — Net / *Net*	Gross / *Brut*	Measurement (in centimeters) Length x Width x Height / *Dimensions (en centimeters) Longueur x Largeur x Hauteur*	Unit volume in M3 / *Volume unitaire en M3*	ITEM / TAG N°	Quantity / *Quantités*	Description of goods / *Désignation des marchandises*
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Annexure-2

12/15

HATCH Technip	KONIAMBO NICKEL SAS, NEW CALEDONIA KONIAMBO NICKEL PROJECT KONIAMBO	SUPPLIER - Fournisseur -	PACKING LIST *Liste de colisage*	PL N°
			N° P0 Chrono / PO / Activité-Unit	Code Eng / N° ordre / avt
		Number of Packages *Nombre de colis*	Total Net Weight *Poids Net Total* .... KGS	Total Gross Weight *Poids Brut Total* .... KGS
				Total Volume *Volume Total* M3

Package N° *Colis N°*	Type of Package *Nature du colis*	Unit weight in Kg (*Poids unitaire en Kg*) Net *Net*	Gross *Brut*	Measurement (in centimeters) Length x Width x Height *Dimensions (en centimeters)* *Longueur x Largeur x Hauteur*	Unit volume in M3 *Volume unitaire en M3*	ITEM / TAG N°	Quantity *Quantités*	Description of goods *Désignation des marchandises*
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ANNEXURE-4

SUPPLIER' S HEADED PAPER

FACTURE / INVOICE

REF A RAPPELER
Ref. to be quoted

Activité - Unité	Index
FTR	XXXX XX

N° xxx

Date XXXXXX

DOIT / Due

Koniambo Nickel SAS
9 Rue D'Austerlitz
BP MGA 08
98802 NOUMEA
New Caledonia

RESPONSABLE / Established by : XXXXXX

V/REF - Your ref.

N/REF - Our ref :

(Name of contract)

MODE DE REGLEMENT / Payment Conditions:

TERMES DE PAIEMENT/Terms of Payment :

DESIGNATION / Description	MONTANT /Amount
(ITEM/TAG) (DESCRIPTION) 'H.S. CODE NO.) (QTY - TYPE OF QTY)	CURRENCY 0.00
	CURRENCY 0.00
	CURRENCY 0.00
	CURRENCY 0.00
(EXPORT VALUE FOR CUSTOMS PURPOSE ONLY)	**TOTAL *(INCOTERM)* VALUE.....** CURRENCY **0.00**

PACKING LIST NR KL XXXX	*(TOTAL VALUE IN LETTERS)*
TOTAL PACKAGES	
TOTAL NET WEIGHT KGS	
TOTAL GROSS WEIGHT KGS	
TOTAL VOLUME M3	
COUNTRY OF ORIGIN	
SIGNATURE AND STAMP	*We hereby certify that this invoice is true and correct an that the equipments represented by this invoice are products and/or manufactures of .....(Country of origin).....*

ANNEXURE-3I

MAIN SHIPPING MARK

Contract / Contrat	:	**KONIAMBO NICKEL PROJECT**
Port of Destination	:	
Consignee	:	**KONIAMBO NICKEL SAS** SITE DE VAVOUTO, RT1, 98833 VOH, NC
Supplier's Name:	:	
P.O.	:	
Requisition No.	:	
Indent Code	:	
P.L.N°. /Note de Colisage N°	:	
Package Nr.	:	
	:	
Dimension in cm	:	**L x W x H**
Storage Code	:	

13.2	**Terms for Deploying Vessel:**	
13.2.1	KNS will make shipping arrangements for shipping cargo from Chennai upto port as per INCOTERMS 2000 .	HT/KNS
13.2.2	Shipping vessels preferably are not to be older than 20 years and would be used only after ensuring that valid certificate of hull of the vessel or handling gears by Lloyds or such other authorized agencies exist.	HT/KNS
13.2.3	For consignments coming under hazardous category, Units have to furnish the DGR declaration and material safety data sheet to ROD and IOP prior to dispatch	
13.2.4	Units to provide necessary information to IO/ROD for GR(Guarantee of Remittance) Waiver for the following two categories. a. Returnable: The items covered are normally like PG test equipment etc for which Units to give undertaking when they want the materials to be returned. Unit has to furnish detailed packing list of such items along with some notional value. IO will take GR waiver from the bank and forward the document to KNS for retiring the cargo. b. Non-returnable category: The items covered are normally chemicals, consumables required for pre commissioning, free replacement items against intact box shortage ,damage etc .units to furnish detailed packing list of such items along with some notional value. IO will take GR waiver from the Bank and forward the document to KNS for retiring the cargo.	
3.2.5	**Payments prior to dispatch:** Kindly ref to the clause 5.1 of Purchase order for payment conditions As per the above, for payment of supply(Mile stone PD1,PD2,PD3,PD4),payment has to be received from Customer before despatching the materials from units. For getting payment, Units have to send the following documents 3 weeks prior to FCAie date of despatch. 1. Proforma Invoice(**as per annex-4**) for materials ready for despatch at works. 2. preliminary packing list for the materilas which are ready for despatch 3.Inspection call for the items where ever applicable. KNS will release payment within 4 days after inspection and acceptance After receipt of payments, units have to despatch the materials up to FOB Chennai.	

12.2	**Customs formalities Period:** Packages arriving at the port shall have a minimum time of 3 working days for customs examination and other related formalities in respect of the cargo under shipment. The goods received after arrival of the ship may not be loaded if either sufficient time does not exist or space available in the ship is booked by the carrier for other exporters due to lack of availability of the goods at the port in time for shipment from BHEL. In cases, where the committed cargo to the carrier based upon information received from all the units does not reach in time of scheduled shipment at the port of dispatch, IO-Projects would be within its right to decide the priority of loading as per the project schedule requirements given the condition that adequate space in the ship is not available to accommodate the cargo.	For information to all Units.
12.10	**Duplicate ARE1 forms for Cancellation of Bonds:** It is necessary that the units **ensure that ARE1 forms are sent in triplicate to ROD Chennai/ Mumbai.** After ROD/Chennai effects the shipment, endorsement of customs on triplicate copy of ARE1 form would be obtained by ROD Chennai and sent to the concerned unit within 6 to 8 weeks for cancellation of the excise bond.	Units/ROD CHENNAI

9.0 9.1 9.2 9.3	**<u>Guidelines for Dispatches from Units/Indian Vendors:</u>** Vehicle drivers shall carry ARE1 in photocopy (3 originals to be sent to ROD). Each consignment carried by the vehicle shall have a separate ARE1 and it must be ensured that materials under one ARE1 get transported in the same truck/trailer. In order to avoid any problems at port of dispatch from the point of view of i) shipping bill preparation and passing thereof, physical examination of cargo by customs, the materials under the same category e.g. a) DEEC cargo b) Free shipping bill cargo c) DEPB (duty entitlement pass book scheme) and d) duty drawback must be sent in the same truck/trailer. ***Units to ensure that ROD is communicated* very *clearly the type of shipping bills to be prepared, well before the materials are dispatched from the works.***	All Units
10.1	**All materials to be dispatched under intimation to:** **For Chennai shipmet:** **Sri Rajasundar** **DGM / Exports** **BHEL/ROD** **1st Floor,Lotus Court** **338(old no 165)** **Thambuchetty street,Chennai 600001** **PH NO:044-25356080** **Fax no: 044-25340787**	All Units
11.1	**<u>Clearing Agents:</u>** All materials to be dispatched **to Chennai on door delivery basis, freight prepaid / to be billed at respective unit** to the following address of the clearing agents	HT to mgive All Units
12..1	**Transportation of Heavy Lifts/ODC Packages** **Keeping in mind the need to avoid multiple handlings of the consignments of the above nature with a view to avoid either ship detention or trailer detention resulting into costs to the company and avoidable inconvenience, the ships availability at the port of dispatch and reaching of the trailers at the port of dispatch has to be synchronized in such a manner that the trailer should reach maximum 48 to 72 hours prior to the berthing of the vessel.**	Units involved. IO- Projects
12. 12.1	**Telephonic Intimation to ROD Chennai FOR Movement of Vehicles:** Vehicle drivers to be instructed by the units to contact of ROD regarding movement of vehicles on daily basis for heavy lifts, especially 2 days before arrival at Chennai so that suitable directives can be given to the driver of the vehicle for further transportation of the goods either to docks or godown.	All Units

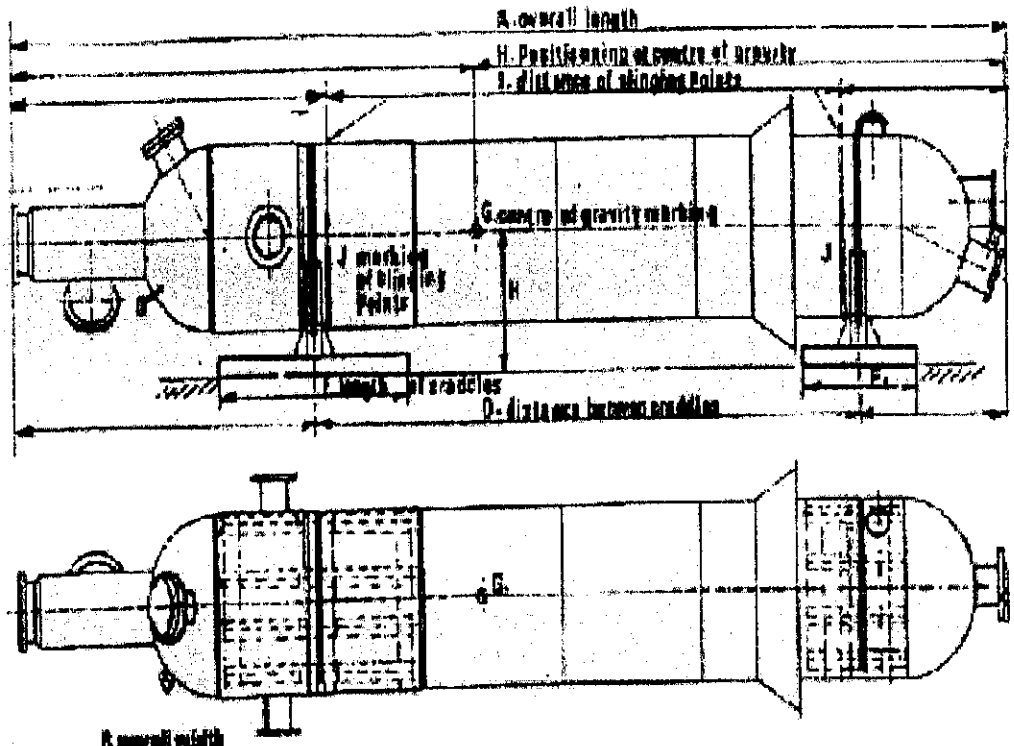
6.2	**Marking for Safe Handling:** To ensure safe handling, packing case will be marked to show the following: • Upright position. • Sling position and Centre of Gravity position. • Storage category • Fragile components **(to be marked properly with a clear warning for safe handling).**	All Units.
7.0	**Insurance Policy:** Units to cover transit Insurance for the items dispatched ex works to Chennai port which is to be covered under common policy taken by corporate for export orders.	UNITS
8.0	**Shipping Documentation including those covered by customs requirements:**	
8.1	Customs Invoices: Values to be allocated by IO-Projects **(Alternatively, Excise attested invoices where the package is sealed and dispatched by the units)**	ROD Chennai/ IO Projects/ Units
8.2	Packing Lists (1 for IOP,1 for ROD)	
8.3	ARE1 forms/Excise Invoice corresponding to Unit invoice values and Delivery challans. (Directly to be sent to ROD)	All Units
8.4	DEEC Original License, wherever duty free facility for import is availed. DEEC book to be retained by ROD Chennai till project supplies are complete.	By Units/Sub-vendors of units
8.5	Chartered Engineer's Certificate, wherever entries in DEEC license is required. **Care should be taken to ensure that usage of the materials shown in C.E. certificate out of DEEC goods is not disproportionate. (4 copies) (directly to be sent to ROD)**	All Units All Units
8.6 Note:	Catalogues/literature/write-up in case of customs endorsement for discharging exports obligation in case of DEEC imports to be made available to ROD before arrival of goods in the city of port of dispatch. **The values appearing in Unit invoice sent with the cargo shall be preferably within ± 10% of IO-Projects shipping invoice value.**	All Units Units/ROD Chennai/

5.7	**Drawings for Heavy Weight/ODC consignment:** Detailed engineering documents (at least 4 sets) for all items of the above category will be furnished by respective units to issue shipment enquiries in a proper manner. This **would include at least Boiler Drum, Ceiling Beam etc. The drawing has to include center of gravity of the item clearly (Units to identify such items and notify I0-Projects group as soon as the engineering documents are released).**	All Units
5.8	**Lifting Beams:** **All heavy lifts for which safe handling is essential at the port of dispatch shall be accompanied by lifting beam wherever applicable on non-returnable basis.**	All Units
5. 9	**Proper Capacity of Trailers for Inland Transport in India:** Unless otherwise contrary arrangements are made (units would be informed in advance in the matter), Units undertaking arrangements for inland transport in India should ensure that the trailers would be **able to carry the actual weight (not designed weight) of the** equipment. **No overhanging of the cases should be permitted. This is essential to avoid any damage to the consignment en-route to the port of dispatch.**	All Units,
5.11	**The truck carrying the cargo shall be covered with a Tarpaulin to meet the weather vagaries in Inland transport Wherever Required.**	All Units
6.0 6.1	**Marking instructions:** **Packages and crates will have to be marked with indelible black paint, resistant to Sea water. The shipping marks shall be stenciled on two sides and one end in clear characters at least 5 centi metres high (where crate size permits, otherwise use optimum size for each package dimension) .When the Goods are to be shipped in containers then marking may be stenciled on one end only. However, packages must be stowed in a manner that shows these marks.** **Crates containing fragile articles must be packed with special precaution against risk of breakage and must be stenciled on all sides " FRAGILE-HANDLE WITH CARE"** **Packages/equipment of 2000 kg or more must be marked with slinging points on all sides ,in addition to center of gravity marks.** **Metal tags or labels must be stamped or indelibly marked with full shipping marks and must be securely attached using 6 twists of stainless steel wire to all loose bundles or items. Alternatively marking boards can be securely strapped to bundles or when the surface of a package is too small to permit stenciling.** **The slinging and lashing points shall be marked with a chain symbol.** **Storage code: The type of storage code as below have to be marked on each packaging in RED colour.** **X Crates or packages to be stored outdoor with out covers** **XX Crates or packages to be stored under tarpaulin** **XXX Crates or packages to be stored in covered or enclosed premises** **XXXX Crates or packages to be stored in air-conditioned premises.** SHIPPING MARKS TO BE STENCILED IN EACH CRATE/PACKAGE AS PER THE ABOVE GUIELINES IS INDICATED **IN ANNEXURE-3**	All Units

5.2.	**Packing note:** The format should correspond to the requirement of export packing which is applicable for each item/package. The format is unified and its completeness with regard to measurement, quantities, item numbers, marks and numbers by the supplying units/their sub-vendors and their inspection agencies has to be ensured prior to packing and authorizing dispatch clearance. **A copy of packing note is attached in annexure -1**	All Units
5.3. 5.3.1	**Completeness of Contents of each packing case:** Concerned CQA/Unit QC will verify the completeness of contents of each package w.r.t packing list both in terms of quality and quantity before authorising dispatch of the consignment.	All Units
5.3.2.	Packing has to be sea-worthy and secure . **As far as possible**, the packing has to be rectangular in shape for optimum space utilization in the ship and economize on shipping costs. **Projections on packages are prohibited.** Wooden packaging must comply with ISPM15 All materials and Equipments (packed or not) must be clean and free of any soil and/or plant species and/or living organisms(such as arthropods)	CQA/All Units
5.3.3.	The packing list has to be checked and certified by the Inspection agency (ies) with due signatures. In case, it is impractical to obtain such signatures for any reason whatsoever, a certificate with regard to the completeness of packing list has to accompany the shipping documents,	CQA/All
5.3.4	**Container, as a means of packing case would only be limited to items which are difficult to pack in a proper manner e.g. cable trays, small structure materials, insulation, electronic and Instrument items..**	Units
5.4	**Packing Lists:** Packing list is an extremely important document, which forms a part of export documentation in connection with the processing of customs formalities. **Packing List as per the format has to be generated by units/Unit vendors and sent to IO-Projects and ROD, Chennai (both at the same time), in advance, for processing and obtaining shipping bills' clearances.** **The copy of packing list is enclosed in the annexure-2**	All Units
5.5	**Advance intimation to ROD, Chennai & IO** All supplying units/vendors will give at least one month advance intimation to ROD, Chennai/ IO along with preliminary packing details indicating the number of packages with their respective dimensions and weights along with pro forma invoice as per the format enclosed for getting payments before actual dispatches to arrange for storage/shipping arrangements by ROD Chennai and customs invoicing by I0-Projects. **Information must be sent to consolidate the details and arrange for shipments in time.**	All Units
5.6	**Provision of Inspection Windows on Packages:** **Unit/Vendors should provide inspection window of size 6" x 4" (glass perplex) for customs examination for all packages (above 1.5 x 1.5 x 1.5 cu m) involving panels of any kind wherever applicable.** Care would be taken to ensure that all packages are properly sealed to avoid ingress of moisture, rodents etc. Packing slip folders to be attached in each box. **Hazardous Materials if any shall be packed and identified on a separate packing list** **Refractory materials shall be crated after sealing in a polyethylene liner. The packaging for electrical panels and instruments shall be provided with full protection against physical damage and atmospheric attack during transit and possible long storage periods.**	All Units

TRANSPORTATION DRAWING

EXAMPLE



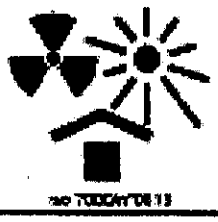
THIS SKECH SHALL BE DRAWN ON A-3 FORMAT

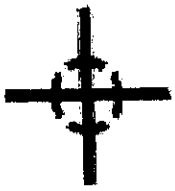
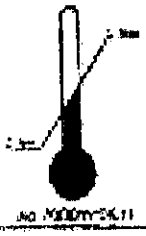
NOTE It is understood that cradles must be built in such a way that they may support transportation constraints including domestic transport - lift on lift off operation - sea transportation - overcarriage transportation up to site

CONTRACT N°	
TRANSPORT DRAWING N°	Rev
EQUIPMENT REF	
NET WEIGHT	
GROSS WEIGHT	

Appendix G

International Standard Graphic Symbols

key	symbol	function
1 fragile handle with care		indicates: a) that the content of the transport packaging is fragile b) that it must be handled with care
2 use no hooks		indicates that hooks may not be used to lift the transport packaging
3 top		indicates correct upright position of transport packaging
4 keep away from heat		indicates that the transport packaging must be kept away from heat
5 keep away from heat and radioactivity		indicates that the content of the packaging may be damaged or made completely unusable by heat or penetrating radiation
6 sling here		shows where slings should be attached to lift the transport packaging

key	symbol	function
7 keep away from moisture		indicates that the transport packaging must be kept in a dry environment
8 centre of gravity		indicates the centre of gravity of the transport packaging
9 do not roll		indicates that the transport packaging must not be rolled
10 no trolley this side		identifies locations on transport packaging where trolleys or trucks must not be placed
11 storage limits		indicates limited storage capability of transport packaging
12 clamp sides		shows where clamps should be placed for handling of transport packaging
13 temperature limits		indicates temperature limits between which transport packaging must be kept

INTERNATIONAL STANDARDS FOR PHYTOSANITARY MEASURES

ISPM No. 15

GUIDELINES FOR REGULATING WOOD PACKAGING MATERIAL IN INTERNATIONAL TRADE

(2002)

with modifications to Annex I (2006)

Produced by the Secretariat of the International Plant Protection Convention

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ENDORSEMENT

This standard was endorsed by the Interim Commission on Phytosanitary Measures in March 2002. Modifications to Annex I were endorsed by the Commission on Phytosanitary Measures in April 2006.

INTRODUCTION

SCOPE

This standard describes phytosanitary measures to reduce the risk of introduction and/or spread of quarantine pests associated with wood packaging material (including dunnage), made of coniferous and non-coniferous raw wood, in use in international trade.

REFERENCES

Agreement on the Application of Sanitary and Phytosanitary Measures, 1994. World Trade Organization, Geneva.
Export certification system, 1997. ISPM No. 7, FAO, Rome.
Glossary of phytosanitary terms, 2001. ISPM No. 5, FAO, Rome.
Guidelines for phytosanitary certificates, 2001. ISPM No. 12, FAO, Rome.
Guidelines on notification of non-compliance and emergency action, 2001. ISPM No. 13, FAO, Rome.
ISO 3166-1-ALPHA-2 CODE ELEMENTS (http://www.din.de/gremien/nas/nabd/iso3166ma/codlstp1/en_listp1.html)
International Plant Protection Convention, 1997. FAO, Rome.
Principles of plant quarantine as related to international trade, 1995. ISPM No. 1, FAO, Rome.

DEFINITIONS

Definitions of phytosanitary terms used in the present standard can be found in ISPM No. 5 (*Glossary of phytosanitary terms*).

OUTLINE OF REQUIREMENTS

Wood packaging material made of unprocessed raw wood is a pathway for the introduction and spread of pests. Because the origin of wood packaging material is often difficult to determine, globally approved measures that significantly reduce the risk of pest spread are described. NPPOs are encouraged to accept wood packaging material that has been subjected to an approved measure without further requirements. Such wood packaging material includes dunnage, but excludes processed wood packaging material.

Procedures to verify that an approved measure, including the application of a globally recognized mark, has been applied should be in place in both exporting and importing countries. Other measures agreed to under a bilateral arrangement are also considered in this standard. Wood packaging material that does not comply with the requirements of this standard should be disposed of in an approved manner.

REGULATORY REQUIREMENTS

1. Basis for Regulating

Wood packaging material is frequently made of raw wood that may not have undergone sufficient processing or treatment to remove or kill pests and therefore becomes a pathway for the introduction and spread of pests. Furthermore, wood packaging material is very often re-used, recycled or re-manufactured (in that packaging received with an imported consignment may be re-used to accompany another consignment for export). The true origin of any piece of wood packaging material is difficult to determine and thus its phytosanitary status cannot be ascertained. Therefore the normal process of undertaking risk analysis to determine if measures are necessary and the strength of such measures is frequently not possible for wood packaging material because its origin and phytosanitary status may not be known. For this reason, this standard describes globally accepted measures that are approved and that may be applied to wood packaging material by all countries to practically eliminate the risk for most quarantine pests and significantly reduce the risk from a number of other pests that may be associated with that material.

Countries should have technical justification for requiring the application of the approved measures as described in this standard for imported wood packaging material. Requiring phytosanitary measures beyond an approved measure as described in this standard also requires technical justification.

2. Regulated Wood Packaging Material

These guidelines are for coniferous and non-coniferous raw wood packaging material that may serve as a pathway for plant pests posing a threat mainly to living trees. They cover wood packaging material such as pallets, dunnage, crating, packing blocks, drums, cases, load boards, pallet collars, and skids which can be present in almost any imported consignment, including consignments which would not normally be the target of phytosanitary inspection.

Wood packaging made wholly of wood-based products such as plywood, particle board, oriented strand board or veneer that have been created using glue, heat and pressure or a combination thereof should be considered sufficiently processed to have eliminated the risk associated with the raw wood. It is unlikely to be infested by raw wood pests during its use and therefore should not be regulated for these pests.

Wood packaging material such as veneer peeler cores[1], sawdust, wood wool, and shavings, and raw wood cut into thin[2] pieces may not be pathways for introduction of quarantine pests and should not be regulated unless technically justified.

3. Measures for Wood Packaging Material

3.1 Approved measures

Any treatment, process, or a combination of these that is significantly effective against most pests should be considered effective in mitigating pest risks associated with wood packaging material used in transport. The choice of a measure for wood packaging material is based on consideration of:

- the range of pests that may be affected
- the efficacy of the measure
- the technical and/or commercial feasibility.

Approved measures should be accepted by all NPPOs as the basis for authorizing the entry of wood packaging material without further requirements except where it is determined through interceptions and/or PRA that specific quarantine pests associated with certain types of wood packaging material from specific sources require more rigorous measures.

Approved measures are specified in Annex I.

Wood packaging material subjected to these approved measures should display a specified mark shown in Annex II.

The use of marks addresses the operational difficulties associated with the verification of compliance with treatment for wood packaging material. A universally recognized, non-language specific mark facilitates verification during inspection at the point of export, at the point of entry or elsewhere.

References for supporting documentation on approved measures are available from the IPPC Secretariat.

[1] Veneer peeler cores are a by-product of veneer production involving high temperatures and comprising the center of a log remaining after the peeling process.

[2] Thin wood is considered to be 6mm thickness or less according to the Customs Harmonized Commodity Description and Coding System (the Harmonized System or HS).

3.2 Measures pending approval

Other treatments or processes for wood packaging material will be approved when it can be demonstrated that they provide an appropriate level of phytosanitary protection (Annex III). The currently measures identified in Annex I continue to be under review, and new research may point, for example, to other temperature/time combinations. New measures may also reduce risk by changing the character of the wood packaging material. NPPOs should be aware that measures may be added or changed and should have sufficiently flexible import requirements for wood packaging to accommodate changes as they are approved.

3.3 Other measures

NPPOs may accept any measures other than those listed in Annex I by arrangement with their trading partners, especially in cases where the measures listed in Annex I cannot be applied or verified in the exporting country. Such measures should be technically justified and respect the principles of transparency, non-discrimination and equivalence.

The NPPOs of importing countries should consider other arrangements for wood packaging material associated with exports from any country (or particular source) where evidence is provided which demonstrates that the pest risk is adequately managed or absent (e.g. areas with similar phytosanitary situations or pest free areas).

Certain movements of wood packaging material (e.g. tropical hardwoods associated with exports to temperate countries) may be considered by the importing NPPO not to carry a phytosanitary risk and thus can be exempted from measures.

Subject to technical justification, countries may require that imported wood packaging material subjected to an approved measure be made from debarked wood and display a mark as shown in Annex II.

3.4 Review of measures

The approved measures specified in Annex I and the list of measures under consideration in Annex III should be reviewed based on new information provided to the Secretariat by NPPOs. This standard should be amended appropriately by the ICPM.

OPERATIONAL REQUIREMENTS

To meet the objective of preventing the spread of pests, both exporting and importing countries should verify that the requirements of this standard have been met.

4. Dunnage

Ideally, dunnage should also be marked in accordance with Annex II of this standard as having been subjected to an approved measure. If not, it requires special consideration and should, as a minimum, be made from bark-free wood that is free from pests and signs of live pests. Otherwise it should be refused entry or immediately disposed of in authorized manner (see section 6).

5. Procedures Used Prior to Export

5.1 Compliance checks on procedures applied prior to export

The NPPO of the exporting country has responsibility for ensuring that systems for exports meet the requirements set out in this standard. It includes monitoring certification and marking systems that verify compliance, and establishing inspection procedures (see also ISPM No. 7: *Export certification system), registration or accreditation and auditing of commercial companies that apply the measures*, etc.

5.2 Transit arrangements

Where consignments moving in transit have exposed wood packaging material that has not met the requirements for approved measures, the NPPOs of the transit countries may require measures in addition to those of the importing country to ensure that wood packaging material does not present an unacceptable risk.

6. Procedures upon Import

The regulation of wood packaging material requires that NPPOs have policies and procedures for other aspects of their responsibilities related to wood packaging material.

Since wood packaging materials are associated with almost all shipments, including those not normally the target of phytosanitary inspections, cooperation with agencies, organizations, etc. not normally involved with meeting phytosanitary export conditions or import requirements is important. For example, cooperation with Customs

organizations should be reviewed to ensure effectiveness in detecting potential non-compliance of wood packaging material. Cooperation with the producers of wood packaging material also needs to be developed.

6.1 Measures for non-compliance at point of entry

Where wood packaging material does not carry the required mark, action may be taken unless other bilateral arrangements are in place. This action may take the form of treatment, disposal or refused entry. The NPPO of the exporting country may be notified (see ISPM No. 13: *Guidelines on notification of non-compliance and emergency action*). Where the wood packaging material does carry the required mark, and evidence of live pests is found, action can be taken. These actions may take the form of treatment, disposal or refused entry. The NPPO of the exporting country should be notified in cases where live pests are found, and may be notified in other cases (see ISPM No. 13: *Guidelines on notification of non-compliance and emergency action*).

6.2 Disposal

Disposal of wood packaging material is a risk management option that may be used by the NPPO of the importing country upon arrival of the wood packaging material where treatment is not available or desirable. The following methods are recommended for the disposal of wood packaging material where this is required. Wood packaging material that requires emergency action should be appropriately safeguarded prior to treatment or disposal to prevent escape of any pest between the time of the detection of the pest posing the threat and the time of treatment or disposal.

Incineration

Complete burning

Burial

Deep burial in sites approved by appropriate authorities. (Note: not a suitable disposal option for wood infested with termites). The depth of the burial may depend on climatic conditions and the pest, but is recommended to be at least 1 metre. The material should be covered immediately after burial and should remain buried.

Processing

Chipping and further processing in a manner approved by the NPPO of the importing country for the elimination of pests of concern (e.g. manufacture of oriented strand board).

Other methods

Procedures endorsed by the NPPO as effective for the pests of concern.

The methods should be applied with the least possible delay.

ANNEX I (modified in 2006)

APPROVED MEASURES ASSOCIATED WITH WOOD PACKAGING MATERIAL

Heat treatment (HT)

Wood packaging material should be heated in accordance with a specific time-temperature schedule that achieves a minimum wood core temperature of 56°C for a minimum of 30 minutes[3].

Kiln-drying (KD), chemical pressure impregnation (CPI), or other treatments may be considered HT treatments to the extent that these meet the HT specifications. For example, CPI may meet the HT specification through the use of steam, hot water, or dry heat.

Heat treatment is indicated by the mark HT. (see Annex II)

Methyl bromide (MB) fumigation for wood packaging material (modified in 2006[4])

The wood packaging material should be fumigated with methyl bromide. The treatment is indicated by the mark MB. The minimum standard for methyl bromide fumigation treatment for wood packaging material is as follows:

Temperature	Dosage (g/m^3)	Minimum concentration (g/m^3) at:			
		2hrs.	4hrs.	12hrs.	24hrs.
21°C or above	48	36	31	28	24
16°C or above	56	42	36	32	28
10°C or above	64	48	42	36	32

The minimum temperature should not be less than 10°C and the minimum exposure time should be 24 hours. Monitoring of concentrations should be carried out at a minimum at 2, 4 and 24 hrs.

List of most significant pests targeted by HT and MB

Members of the following pest groups associated with wood packaging material are practically eliminated by HT and MB treatment in accordance with the specifications listed above:

Pest group
Insects
Anobiidae
Bostrichidae
Buprestidae
Cerambycidae
Curculionidae
Isoptera
Lyctidae (with some exceptions for HT)
Oedemeridae
Scolytidae
Siricidae
Nematodes
Bursaphelenchus xylophilus

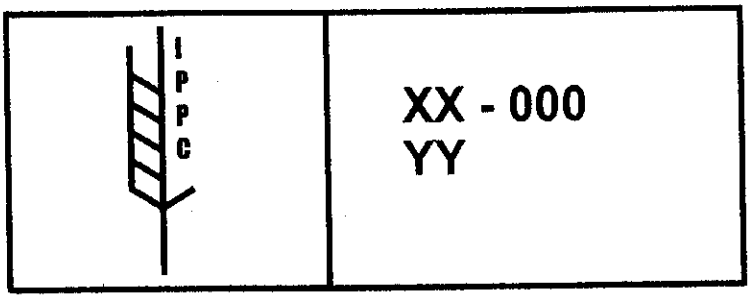
[3] A minimum core temperature of 56° C for a minimum of 30 min. is chosen in consideration of the wide range of pests for which this combination is documented to be lethal and a commercially feasible treatment. Although it is recognized that some pests are known to have a higher thermal tolerance, quarantine pests in this category are managed by NPPOs on a case by case basis.

[4] When a revised schedule is adopted for treatment of wood packaging, material treated under the previous treatment schedule does not need to be retreated, remarked or recertified.

ANNEX II

MARKING FOR APPROVED MEASURES

The mark shown below is to certify that the wood packaging material that bears the mark has been subjected to an approved measure.



The mark should at minimum include the:

- symbol
- ISO two letter country code followed by a unique number assigned by the NPPO to the producer of the wood packaging material, who is responsible for ensuring appropriate wood is used and properly marked
- IPPC abbreviation according to Annex I for the approved measure used (e.g. HT, MB).

NPPOs, producers or suppliers may at their discretion add control numbers or other information used for identifying specific lots. Where debarking is required the letters DB should be added to the abbreviation of the approved measure. Other information may also be included provided it is not confusing, misleading, or deceptive.

Markings should be:

- according to the model shown here
- legible
- permanent and not transferable
- placed in a visible location, preferably on at least two opposite sides of the article being certified.

The use of red or orange should be avoided since these colors are used in the labeling of dangerous goods.

Recycled, remanufactured or repaired wood packaging material should be re-certified and re-marked. All components of such material should have been treated.

Shippers should be encouraged to use appropriately marked wood for dunnage.

ANNEX III

MEASURES BEING CONSIDERED FOR APPROVAL UNDER THIS STANDARD

Treatments[5] being considered and which may be approved when appropriate data becomes available, include but are not limited to:

Fumigation

Phosphine
Sulfuryl fluoride
Carbonyl sulphide

CPI

High-pressure/vacuum process
Double vacuum process
Hot and cold open tank process
Sap displacement method

Irradiation

Gamma radiation
X-rays
Microwaves
Infra red
Electron beam treatment

Controlled atmosphere

[5] Certain treatments such as phosphine fumigation and some CPI treatments are generally believed to be very effective but at present lack experimental data concerning efficacy which would allow them to be approved measures. This present lack of data is specifically in relation to the elimination of raw wood pests present at the time of application of the treatment.