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PACKING SPECIFICATION

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APPENDIX

- A- Cleanliness Requirements**
- B- International Symbols**
- C- Packing Test Certificate**



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1. SCOPE

Scope of the present specification is to provide minimum requirements for packing to be strictly followed by **VENDOR** in order to guarantee suitable and adequate packing protection in accordance with the transportation methods, environmental and storage conditions at site.

This specification provides a series of standard and minimum requirements (unless otherwise provided for in the Purchase Order) to be followed by the **VENDOR** for packing purposes.

Any products of which packing is not described herein shall be packed in case, unless otherwise agreed in writing with **TECNIMONT**.

In case of conflict between this specification and Project Packing Specification, the more restrictive has to be applied.

VENDOR remains the sole responsible for the correct application of this specification and the proper and adequate packing of goods and to guarantee a seaworthy packing, stackable and suitable for repeated handling, loading and unloading.

VENDOR shall verify if special cleanliness requirements are applicable to the supply as per MR requirements and in this case packing must comply with APPENDIX A.

This specification doesn't cover lifting procedure; please refer to dedicated operation manual (if any).

2. DEVIATIONS

Any deviation shall be requested in advance in writing and formal written approval by **Technimont** shall be obtained prior to proceed.

Replacement of this specification with a **VENDOR** standard shall not be accepted unless approved by **Technimont** and indicated in Purchase Order.

3. REFERENCES

When applicable, regulation UE 189/2013 shall be applied in case of air shipment.

4. VENDOR RESPONSIBILITY

The **VENDOR** is responsible for compliance with this specification and the selection of type of packing, according to the nature of the goods, origin/site climatic conditions, way of transportation (truck or container or break bulk vessel), and storage at site (indoor or outdoor).

VENDOR guarantee that the packing is adequate for long term storage at site for minimum **12 months** against all adverse environments, such as: humidity, moisture, rain, dust, dirt, sand, mud, salt air, sea water and vermin or other foreign bodies.

TECNIMONT reserves the right to inspect the packing at any time, and to reject it when it does not meet the packing requirements; upon rejection **VENDOR** shall replace/repair the packaging at his own care and cost. The time for this replacement shall not constitute cause of justified delay.

The **VENDOR** shall be responsible for any loss or damage caused by incorrect packing and marking.

5. GENERAL NOTES

5.1 Size, dimension and weight

Packing shall be designed to reduce size, dimension and weight of number of packages, always in conformity with specification and project requirements.

Where possible packages have to fit into standard containers.

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5.2 Materials & tolerances

Packing shall be made of wood in all parts with the exception of side panels and top cover, which can be, where permitted by this procedure, made of plywood or OSB (Oriented Strand Board) type 3 panels (UNI EN 300).

Wooden beams and boards shall be made of wood with admissible bending stress not less than 100 kg/m² and humidity less than 20%. Beams and boards shall not have passing or connected knots nor big fissures; knots and partial fissures shall be sealed with suitable products.

Following tolerances apply:

- wooden/phenolic plywood or OSB type 3 panels: ± 1 mm.
- other wooden parts: ± 3 mm for thickness up to 50 mm; ± 5 mm for higher thickness.

Use of asbestos or asbestos containing material in any form (granular, powder, fiber or plates) is strictly forbidden.

5.3 Joints

In the construction of cases, crates or pallets, if it is not possible to get the longitudinal bottom beams from a single wooden part, one joint only of two pieces of equal section is allowed in the point of the beam where the lowest stress is expected. VENDOR shall be responsible for joints selection and guarantee that are suitable to transport to site.

5.4 Stackable load

Cases and crates shall support a load placed on the cover as per following table (values are in kg/m² of cover surface) except cases and crates as per paragraph 13.2.1 & 13.2.2 (small size). Maximum permissible load shall be indelibly written on four case and crate walls - in the upper right corner.

If it is not possible to respect the required values, the maximum stackable load that is guaranteed shall be indelibly written. Anyway, the cover shall always be walkable.

PACKAGE	TRANSPORT	DISTRIBUTED LOAD (kg/m ²)	POINT LOAD (kg/m ²)
Case / Crate	Road / Direct railway	500	250
Case	Sea	1.000	500
Crate	Sea	500	250

5.5 Technical documentation

Two (2) copies of the technical documentation as per project requirements (packed in a waterproof envelope) must always be put into an identified package (normally inside case n.1 of each shipment lot) and clearly indicated in the packing list (i.e. "technical documentation included").

When final approved copy of technical documents is not available, a preliminary set must be included.

5.6 Assistance to packager

VENDOR shall monitor that packing is suitable and fit for purpose and that is carried out by experienced people.

If packing is included into TECNIMONT scope of works and packing is done at VENDOR facilities, VENDOR shall make available to packer areas, lifting devices, facility etc. that are necessary for proper packing.

5.7 One-way containers

In case of utilization of used one-way containers, the CSC (Container Safety Convention) plate homologation certified by RINA or LLOYD Register of shipping or any other naval register is required.

In case of expired date, the homologation has to be re-certified prior to use.

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6. GUIDELINE FOR SELECTION OF PACKAGE TYPE

6.1 Group of goods (type of products)

Products are classified into 7 groups of goods (GG) as follow; VENDOR has to identify the group of goods whom his product belongs to:

- I. EQUIPMENTS
- II. MACHINERY
- III. PACKAGES
- IV. INSTRUMENTATION, LABORATORY AND ELECTRIC EQUIPMENT - *sensitive to dust or humidity*
- V. INSTRUMENTATION, LABORATORY AND ELECTRIC EQUIPMENT - *insensitive to dust or humidity*
- VI. PIPING, STEEL STRUCTURES, PLATES
- VII. HAZARDOUS OR POISONOUS GOODS OR FOOD

GG	PRODUCTS
I	EQUIPMENT <ul style="list-style-type: none"> • Steel vessels and heaters • Glass fiber reinforced plastic or plastic items • Chimneys & stacks • Cyclones • Hoppers and bins • Ejectors • Static filters • Reactors • Heat exchangers (Shell and Tube) • Separators • Tanks and vessels (cylindrical and/or spherical, prefabricated or not) • Silos (prefabricated or not) • Blenders • Column • Cooling towers (internals included) • Air coolers • Electric heaters • Internals (columns, reactors) • Random packing (refer to para n.13.10)
II	MACHINERY (rotating, operating, hoisting and handling machines) <ul style="list-style-type: none"> • Mixers & Agitators • Centrifuges • Mills • Air or steam generators • Pumps • Lift trucks • Screens • Cranes and Hoists • Noise control cabins

GG	PRODUCTS
III	<p>PACKAGES (plants installed on skid or single units to be assembled on site)</p> <ul style="list-style-type: none"> • Turbines • Compressors • Generating sets • Furnaces Fans • Bag filters • Boilers • Alternators and generators • Extruders • Palletizers • Pneumatic haulage units • Water treatment units • Lifts and Goods lifts • Refrigerating groups • Air conditioning systems • Fire fighting systems • Electric transformers
IV	<p>INSTRUMENTATION, LABORATORY AND ELECTRIC EQUIPMENT <u>sensitive to dust or humidity</u></p> <ul style="list-style-type: none"> • Various items of laboratory equipment • Analyzers • Weight instruments • Battery Chargers • Electric boxes with or without terminal blocks • Converters • Sensors • Fire Extinguishers • Instrumental / Electric panels/MCC/LV MV HV switchgear • Power transformers, dry type or not • Consumables and welding material • Electric motors • Instrumental and electric components with terminals/contacts (switches, transmitters, thermostats, circuit breakers, etc.) • Distributed Control Systems (DCS), Programmable Logic Controllers (PLC), computers and various microprocessor systems etc. • Thermometers • Pressure gauges • Level indicators • Instrument valves with electrical/pneumatic accessories • Transformer accessories and spare parts • Tubing • Rupture discs with electrical accessories • Analyzer shelter • Commissioning & start-up apparatus • GPR instrument protection/heating boxes with electrical accessories • Cable glands

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GG	PRODUCTS
V	INSTRUMENTATION, LABORATORY AND ELECTRIC EQUIPMENT <u>insensitive to dust or humidity</u> <ul style="list-style-type: none"> • Electric and instrumental fiber optical cables • Orifice and rupture discs without electrical accessories • Electric insulators • Cable trays • Instrument valves without electrical/pneumatic accessories • Oil transformer • GRP instrument protection/heating boxes without electrical accessories
VI	PIPING, STEEL STRUCTURES, AUXILIARY STRUCTURES, STEEL PLATES <ul style="list-style-type: none"> • Quick couplings • Bolts and tie rods • Steel structures • Steel structural works • Auxiliary structures (stairs, ladders, handrails, gangways, steps, gratings - whether shaped or not) • Expansion bends • Flat and/or machined plates • Flanges • Gaskets • Stainless and special steel rolled sections and structural shapes • Steel Fittings • Piping valves in general and relevant accessories) • Supports • Steel pipe • Coated steel pipes • Non-metallic pipe and fittings • Lugs • Manifolds • Fire-fighting systems (distribution network only) • Pre-fabricated piping • Insulation (i.e. rockwool)
VII	HAZARDOUS OR POISONOUS GOODS OR FOOD such as <ul style="list-style-type: none"> • Chemicals, whether dangerous or not • Varnishes, paints and solvents • Refractory materials, gravel, sand, and cement • Compressed or liquefied gas cylinders • Epoxy resins • Lube oils and greases • Pesticides and fertilisers • Selected seeds and seeds in genera • Food industry products in general

According to the selected GG, **VENDOR** shall identify in the table at following point 8 the package type (case / crate / saddle / bundle etc.).

If a material is not listed into above tables, **VENDOR shall propose a selection to Tecnimont approval.**

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6.2 Mandatory requirements

6.2.1 Group of goods I - Equipment

If vessel or equipment filled with inert gases is required to be packed, the outside of the case/crate shall have clear identification of the gas type, pressure, precautions of use. Warning tags saying "Depressurize before opening" shall be attached on every opening.

6.2.2 Group of goods II, III - Machinery & packages

Any machinery or packages parts that require to be internally lubricated shall be shipped empty but protected inside by adequate lubricant in order to prevent corrosion.

On those parts in addition a label "to be filled before start up" shall be applied.

6.2.3 Group of goods VI - Pipe and fittings

Stainless Steel and Carbon Steel pipes cannot be packed together.

Metal pipe and fitting nesting is not allowed.

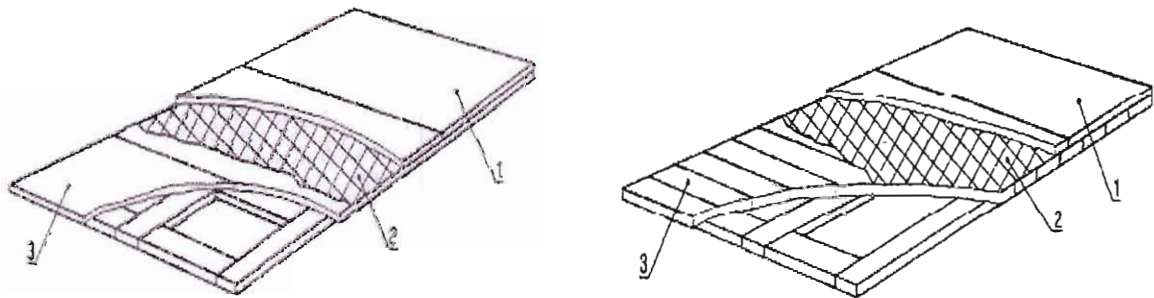
6.2.4 Group of goods II, III, IV, V, VI, VII

A polyethylene film shall be fitted to the cover so as to protect the material from the falling rain. The polyethylene used for the cover shall withstand temperature and humidity drops and the effect of light for at least 12 months without losing its mechanical and protective properties.

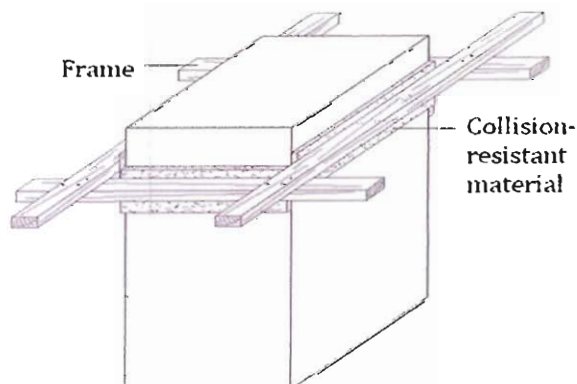
The film shall be installed as described below:

Legend:

- 1- multi-layer panels or other wooden panels
- 2- polyethylene film
- 3- planking



With high items (i.e. electric panels) and anyway when necessary, items have to be fixed into the case by ties, interposing damper material between the item and frames as per drawing here below in order to avoid damages caused by incomplete securing.



6.3 Plugging

This part does not apply to item subject to cleanliness. If an item is subject to cleanliness requirements it shall be indicated in the Tecnimont Purchase Order or Supply Specification or Material Requisition (please refer to APPENDIX A of this specification).

If not differently specified, nozzles, pipe ends or other openings shall be appropriately plugged.

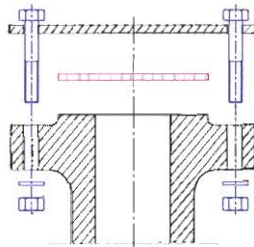
Flanged nozzles of group of goods I, II and III shall be plugged as it is shown in the drawing here below (rubber plain full gasket + plywood or metallic disc, all closed by a suitable number of bolts).

Openings on goods packed in cases or in crates shall be always plugged by plastic plugs or plywood discs, secured with linen tape.

Pipes end packed in bundles shall be plugged by plastic plugs.

Fitting that are not shipped into cases secured to pallet by strapping shall be wrapped as a whole, by a double polyethylene film coating (0,1 mm min. thick) fixed by tape.

Flanged spools shall be plugged by plastic plugs or, for large diameters, by wooden plugs connected to flanges.



6.4 Seal bag

It consists of a double layer of weldable polyethylene and aluminium-cloth with the possibility of creating a vacuum allowing the material packaged inside to withstand the action of atmospheric agents and of thermal drops.

It is requested to cover sharp edges with soft material to avoid any tearing of seal bag.

It is mandatory to put an amount of dehydrating agents inside the thermo-sealed wrapping (e.g. silica gel bags) sufficient to keep the relative humidity ratio below 50% for the whole envisaged period (1Kg of silica gel or 32 DIN/MIL units or 2 NFH units per 1m³ approximately for 12 months). Antifriction material shall be inserted between the container bottom and the seal bag to prevent wrapping shearing due to the possible friction caused by vibrations during transport.

If a storage period longer than 12 months is envisaged, the thermo-sealed bags shall have to be fitted with a humidity detector (hygrometer) externally visible.

If it is necessary to perforate the seal bag to allow passage of fastening bolts, the bag integrity shall be restored with suitable gaskets.

Type of seal bag, of dehydrating agents and of the anticorrosive plastic films shall be also marked externally to make possible to recognize the type of material used.



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6.5 Corrosion inhibitor (rust prevention)

Unless differently reported in the project specification relevant to storage and preservation the following requirement shall be applied.

Vapor Corrosion Inhibitors (VCI) or Vapor Space Inhibitors (VSI) are generic terms to indicate corrosion preventive products, that contain environmentally safe chemicals.

All metal commodity, equipments and components subjected to corrosion (rust) or that need to be protected from atmosphere shall be processed with a suitable preservation in accordance with manufacturer's specifications.

Preservation shall be easily applied to all kinds of metal surfaces by a variety of methods and shall coat the surface with a sufficiently thick film to exclude moisture and air. This film shall remain in position for an indefinite period of time and needs to be easily removable.

Preservation himself shall have no corrosive action of any kind on metal.

Following methods apply:

- Wrapping in Vapour Corrosion Inhibitor (VCI) wraps (films or emitters) sealing with linen tape.
- Packing in totally closed wooden boxes coated with plastic film or other waterproof preservation impregnated with VCI.
- For machined part, Vendor's preservation specification can be applied.

When it is impractical to protect equipment by VCI products, external and internal metal unpainted surfaces that do not require sandblasting and painting on site shall be protected as follow:

- External non-painted surfaces, except air cooler finned tubing, including bolting and flange faces, have to be thoroughly cleaned and coated with suitable removable preservation (i.e. Tectyl, Ensis, Fluid) that can prevent corrosion for minimum 12 month.
- Exposed shafts and shaft couplings shall be coated with adequate removable preservation (Tectyl or equivalent product) that can prevent corrosion for minimum 12 months and protected with nylon plastic net. Shafts rotation shall be possible.
- All the internal parts of rotating equipment (i.e. pumps, steam turbines, centrifugal compressor) shall be protected by suitable oil (Tectyl or VSI) easily removable before start up.
- Oil lubricated pump bearing housings, equipment cases, stuffing boxes and gearboxes shall be filled from 10 to 50% of the internal volume with VSI circulating Oil and then all openings shall be tightly sealed.

Important note:

- Items in leather, mica, rubber, plastic and similar material, have not to be coated with VCI or VSI to avoid damaging.
- Austenitic stainless steel equipment or piping, if agreed with Tecnimont, may be protected with a waterproof wrap to prevent any chloride contamination; the wrap has to be chloride free.

6.5.1 Vapor Corrosion Inhibitor (VCI) Products

VCI papers (*)

VCI Vapor Seal is a Kraft paper that is coated with a rust inhibiting chemical. It is supplied in rolls, sheets and strips. It offers excellent protection for up to two years if applied correctly.

VCI papers give off invisible vapor that prevents oxygen in moisture from combining with iron to form rust. Materials protected with these papers shall be stored in dry, cool or shaded area. Packages may be opened briefly for inspection without loss of protection, but they shall be immediately resealed after the check.

VCI emitters (*)

VCI Emitters are sponges that have been treated with Vapor Corrosion Inhibitor. Generally they have an adhesive backing for attachment to the surface to be protected. These emitters are convenient and are an acceptable alternative to porous pouches of VCI.

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VCI powder

VCI is a powder and is used to protect exposed metal surfaces; excellent protection is given to ferrous metals, most nonferrous metals and non-metallic materials.

VCI reaches the metal surfaces in the vapor phase and is absorbed on the metal to form an invisible film which prevents corrosion. VCI assures constant protection for as long as two years.

VCI can be applied dry by use of suitable guns or other devices. Application must be executed in accordance with manufacturer's instructions.

(*) Consider to position VCI like in the nodes of a three-dimensional net, each 50 cm (estimated operation area of each VCI product), to fill the entire volume of packing.

6.5.2 Vapor Space Inhibiting (VSI) circulating oil

VSI circulating oil contains an oil soluble, volatile anti-rust compound. This corrosion inhibitor evaporates to form a preventive barrier towards the oxygen that is present in the moisture and in the atmosphere. VSI oil is available in several viscosity grades and is suitable to protect hydraulic components, turbines and lubricating systems.

6.6 Impact, tilt, temperature, humidity indicators and recorders

Vendor shall provide packages with suitable impact, tilt, temperature, humidity indicators if deemed necessary and in any case when marking includes symbols showing certain applicable precautions (please refer to APPENDIX B of this specification).

If indicators are put inside packages or not visible, then marking shall include warning that device is present inside.

In particular conditions, if deemed necessary by Vendor or required by Technimont, recorders shall be used instead of indicators.



7. PACKAGE TYPE

According to the table described in this paragraph, **VENDOR** shall define the suitable package for all items of each Group of Goods.

These requirements are as minimum.

GG	Description	Remarks	Dehydrating agent	HDPE Plastic foil	Seal bag	Pallets	Case	Crate	End caps/plugs	Saddle	Saddle on slides	Double saddle	Bundle	Reel	Homologated Package	Notes	
I	With insulation or instrument installed	no limit of volume					X										
	Without insulation or instrument installed	volume > 5 m ³								X	X					(1)	
	Without insulation or instrument installed	volume ≤ 5 m ³						X			X					(1)	
	Non-metallic vessel/tank	fit into container								X							
	Non-metallic vessel/tank	do not fit into container						X									
	Stack	no limit								X							
	Tanks walls/plates	no limit				X											(14)
	Electric heaters				X	X											(8)
	Silos and blenders	fit into container															(14)
	Silos and blenders	do not fit into container		X				X									(14)
	Internals	no limit					X										
II	All machinery	no limit	X		X	X	X	X								(4) (8)	
III	All packages	no limit	X		X	X	X	X								(4) (8)	
IV	All instrumental equipment	no limit	X		X	X										(4) (8)	
V	Instruments & accessories	no limit			X	X		X								(7) (8)	
	Cable	reels		X										X		(5)	
	Cable tray	painted or hot deep galvanized						X								(6)	
	Instruments valves without electrical/pneumatic accessories	all			X	X		X								(7) (8)	
VI	Raw fittings	≤3"				X											
	Raw fittings	>3" ≤12"						X									
	Raw fittings	>12"			X	X										(2)	

GG	Description	Remarks	Dehydrating agent	HDPE Plastic foil	Seal bag	Pallets	Case	Crate	End caps/plugs	Saddle	Saddle on slides	Double saddle	Bundle	Reel	Homologated Package	Notes	
VI	Flanges	≤24"					X										
	Flanges	>24"				X		X								(2)	
	Valves	≤2"					X	X									
	Valves	>3" ≤12"					X	X									
	Valves	>12"						X	X								
	Joints	all					X	X									
	C.S. Raw piping	≤1½"						X	X							(7) (9)	
	C.S. Raw piping	1½" < d ≤ 14"							X				X			(7)	
	C.S. Raw piping	>14"							X			X				(7)	
	S.S. Raw piping	≤6"					X	X								(7) (8)	
	S.S. Raw piping	>6"						X	X							(7) (8)	
	External coated pipes	≤22"							X	X			X			(7) (10)	
	External coated pipes	>24"							X			X				(7)	
	Spool								X							(7) (11)	
	Steel structures	fit into containers												X			(12) (16)
		do not fit into containers							X					X			(12) (15) (17)
	Auxiliary steel structures (handrail, stairs, gratings, ladders)	fit into container												X			(12) (16)
		do not fit into container							X								(15)
	Insulation				X	X											
	Supports						X										
Bolts, coupling , tie rods							X										
Gaskets							X										
Plates	all type					X										(13)	
VII	Not hazardous goods pre-packed	shipped by truck or sea transport in containers				X											
		shipped by air or conventional sea (NOT in containers)					X										
	Not hazardous goods pre-packed	in plastic drum						X									
		in carton box						X									
Hazardous or poisonous goods														X			

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Notes:

- 1 – Saddle on slide to be used for loading into box containers.
- 2 – Pallets if shipped by truck, crates if shipped by vessel or truck + vessel.
- 3 – only when components belonging to group of **goods III** (Packages) are equipped with components belonging to group of **goods IV** (Instrumentation, laboratory and electric equipment), the package has to be fully protected with a **seal bag**; alternatively it is possible to cover only the equipment group IV by using specific products (sponges, films, etc.) that release progressively protective substances (**VCI**).
- 4 – Suitable quantity of **dehydrating agent**, can keep the humidity rate below 35% (at the temperature of 20°C) for the period of one year.
- 5 – Steel reels (i.e. for HV cable) shall be supplied completed with saddle.
- 6 – Bundles if shipped by truck, crates if shipped by vessel or truck+vessel.
- 7 – Open type cap/plug are preferred; close type cap/plug (to be considered as alternative) shall be used together with appropriate amount of dehydrating agents inside sufficient to keep the humidity ratio below 50% for the whole envisaged period (12 months).
- 8 – If seal bag cannot be applied to item due to volume or weight reasons, Vendor shall propose an alternative to be approved by Tecnimont.
- 9 – Crates with plain ends.
- 10 – With soft spacers between pipes.
- 11 – Shipped loose into OT containers or truck.
- 12 – With suitable spacers between structures.
- 13 – Details to be agreed.
- 14 – Shipped using steel rack if necessary.
- 15 – Structures shall be tied in bundle before to be put into crates; suitable spacers shall be applied between structures.
- 16 – If structures are not shipped into container, the bundle shall be stackable, otherwise crate shall be provided.
- 17 – Bundle must be stackable, crate must be stackable.

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8. SPECIFIC SELECTION OF PACKAGES

According to the generic package selected at par.7, VENDOR has to select the right specific package according to dimensions and weights.

In case of doubt the most restrictive choose shall be used.

PACKAGE TYPE	INDICATIONS	SPECIFIC PACKAGE	PARAGRAPH
CASE	<ul style="list-style-type: none"> External volume up to 3 m³ Net weight up to 500 kg 	Small-sized plywood / OSB panel or wooden board panel	see point 13.2.1 - 13.2.2
	<ul style="list-style-type: none"> No limits of dimensions Net weight up to 30.000 kg 	Standard plywood / OSB panel or wooden board panel	see point 13.2.3 - 13.2.4
	<ul style="list-style-type: none"> No limits of dimensions Net weight up to 60.000 kg 	Standard wooden board for heavy package	see point 13.2.5
CRATE	<ul style="list-style-type: none"> External volume up to 3 m³ Net weight up to 500 kg 	Small-sized	see point 13.3.1
	<ul style="list-style-type: none"> External dimensions up to 800 x 250 x 250 cm Net weight up to 3.000 kg 	Reduced-size	see point 13.3.2
	<ul style="list-style-type: none"> No limits of dimensions Net weight up to 60.000 kg 	Standard	see point 13.3.3
	<ul style="list-style-type: none"> Raw pipes 	For pipes	see point 13.4
SADDLE	<ul style="list-style-type: none"> Dimensions of the equipment ≤ 5 m³ 	Standard	see point 13.5.1
	<ul style="list-style-type: none"> Dimensions of the equipment ≤ 5 m³ 	On slides	see point 13.5.2
	<ul style="list-style-type: none"> Dimensions of the equipment > 5 m³ 	Double	see point 13.5.3
BUNDLE	<ul style="list-style-type: none"> Gross weight up to 8.000 kg Dimensions (width x height) up to 120x150 cm 	Bundle	see point 13.6
PALLET	<ul style="list-style-type: none"> Various applications 	Pallet	see point 13.7
REEL	<ul style="list-style-type: none"> Φ > 80 cm 	Reel	see point 13.8
HOMOLOGATED PACKAGE	<ul style="list-style-type: none"> Various applications 	Homologated package	see point 13.9
PACKAGE FOR RANDOM PACKING	<ul style="list-style-type: none"> Various applications 	Eurobag plus pallet	see point 13.10



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9. PACKING LIST AND MARKING

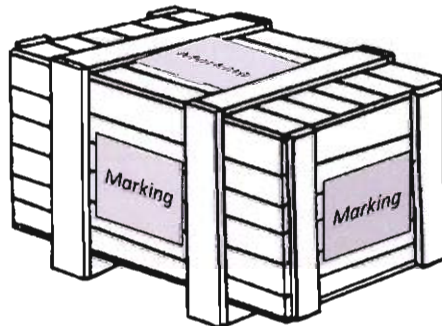
A copy of the packing list shall be placed in a waterproof envelope and then fixed under a metallic plate marked "PACKING LIST" applied externally to the package.

An additional copy of the packing list shall be fixed on the internal surface of the cover.

Package marking shall allow an easy and fast identification of items (for example Project name & number, purchase order n°, vendor, content, destination, etc.) and give information for a proper lifting, transport and storage operations (for example gross weight, stackability, storage class, centre of gravity, etc.).

Marking information for each single contract is indicated in the "Purchase Conditions" that are enclosed to Tecnimont purchase order.

The package marking shall be clear, indelible and proportionate to the package dimensions, placed as minimum on two adjoining sidewalls and on the cover of each package; it can be executed directly on the package by black characters on light background, or indirectly on A3-size plastic-coated signboards (mm 420x297) filled in by black characters on white background.



Moreover:

- for **Crates**, the marking shall be written on a suitable plywood or similar panel - minimum thickness 3 mm.
- for **Equipment** shipped on Saddles, marking can be executed directly on the apparatus or on the saddles.
- for **Bundles**, the marking shall be made with metallic plates or with two plastic-coated signboards fixed on plywood panels, placed at the two sidewalls and tied with wire or steel straps.
- for **Pallets** marking shall be placed on two adjoining sides and on the upper part.
- for **Reels**, marking shall be placed on the flanges.
- on **Homologated packages**, markings shall also respect rules & laws.

The gross weight, the centre of gravity and the lifting or forking points (symmetrical and adequately placed out from the centre of gravity) shall be clearly marked.

If it is necessary, the **maximum stackable load** that is guaranteed shall be marked on all side of case or crates.

Handling & Storage Markings symbols shall be in accordance with the international symbols (see APPENDIX B).

VENDOR shall meet requirements indicated at point 4 of the present specification, in addition shall recommend the storage class corresponding to the following conventional methods:

Storage class:

- A** Outdoors
- B** Outdoors, sheltered
- C** Indoors
- D** Indoors, heated area
- E** Indoors, air-conditioned area

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The above "Storage class" (A, B, C, D or E) shall be indicated in the packing list (subject to TECNIMONT comments) and in the marking too.

If required by TECNIMONT, the upper corners of the packages shall be marked by an **identification coloured strip** (to be defined) that is executed with indelible paint.

"PERISHABLE GOODS" has to be included in the marking if packages include perishables material.

If **dehydrating agents** are used, type, quantity, and location shall be marked.

If **inert gases** are used, gas type, pressure and precautions of use shall be indicated, warning labels "DEPRESSURIZE BEFORE OPENING" shall be applied on each opening.

10. STOWAGE

Goods shall be ALWAYS secured to the package to avoid dangerous falls or shifts during lifting and transport operations. In case of transport in containers, the package shall be secured towards the container.

When possible, the material has to be directly secured to the bottom by bolts, tie-rods, clamps or other suitable fasteners. Holders or fasteners to the walls shan't bear static loads (i.e. loads that are present when the package is motionless); if necessary, they can be prepared to contribute to bear dynamic loads (i.e. loads generated by lifting and transport operations).

It is recommended to place heaviest parts on the bottom to increase the package stability.

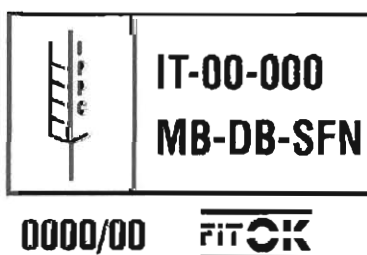
Small parts will be pre-packed in wooden small-sized cases placed in the main package.

In case of transport by containers, loading, securing and roof tarpaulin handling, for OT containers only, are included into VENDORS scope of works.

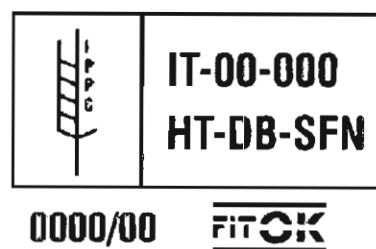
11. PHYTOSANITARY MEASURES

When requested by Project Specifications or by Local Regulations of the shipment destination country, all wooden package shall be prepared in accordance with ISPM15 (International Standard for Phytosanitary Measures): all woods have to be fumigated or heat treated and then marked with the official stamp or brand, internationally recognized, to attest phytosanitary status.

The certification marking has to be visible on at least three sides of the package.



Marking
for wood
fumigated



Marking
for wood
heat
treated

Expiration of wood treatment, if any, shall be clearly indicated.

Fumigation of single full containers is allowed (certificate must be provided).

In case the packing does not match with local regulations, costs due to inadequate or not in compliance with the above will be at VENDOR charges.

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12. TESTING

Tecnimont reserves the right to check the suitability of packing, compliance to present specification, stowage and marking.

In case of non-compliance, **VENDOR** shall complete or remake the packing, whether entirely or partially, at his own care and expense, in due time to meet the contractual delivery date.

VENDOR has to notify the packing inspection to Tecnimont 10 days working in advance.

Packing inspection shall take place at vendor's designated premises, as per the following procedure:

- Case and crates shall be left open;
- Shrink wrapped plastic covering or vacuum plastic covering operations to be completed after inspection.

Tecnimont inspector or his delegated third party shall check:

- Compliance of packing to Purchase Order;
- Packing list;
- Case content compliance to packing list;
- Stowage;
- Marking;
- Final check on the integrity of goods.

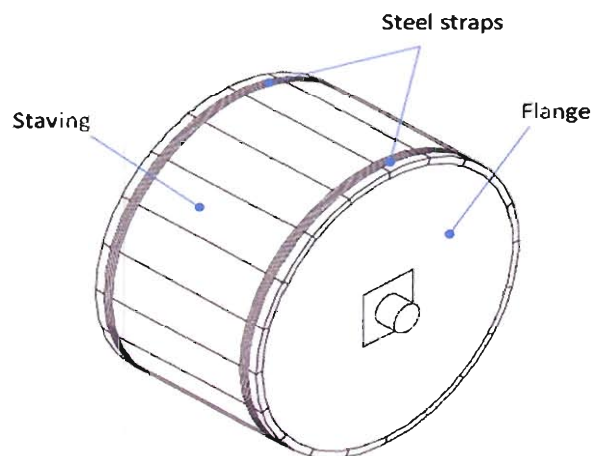
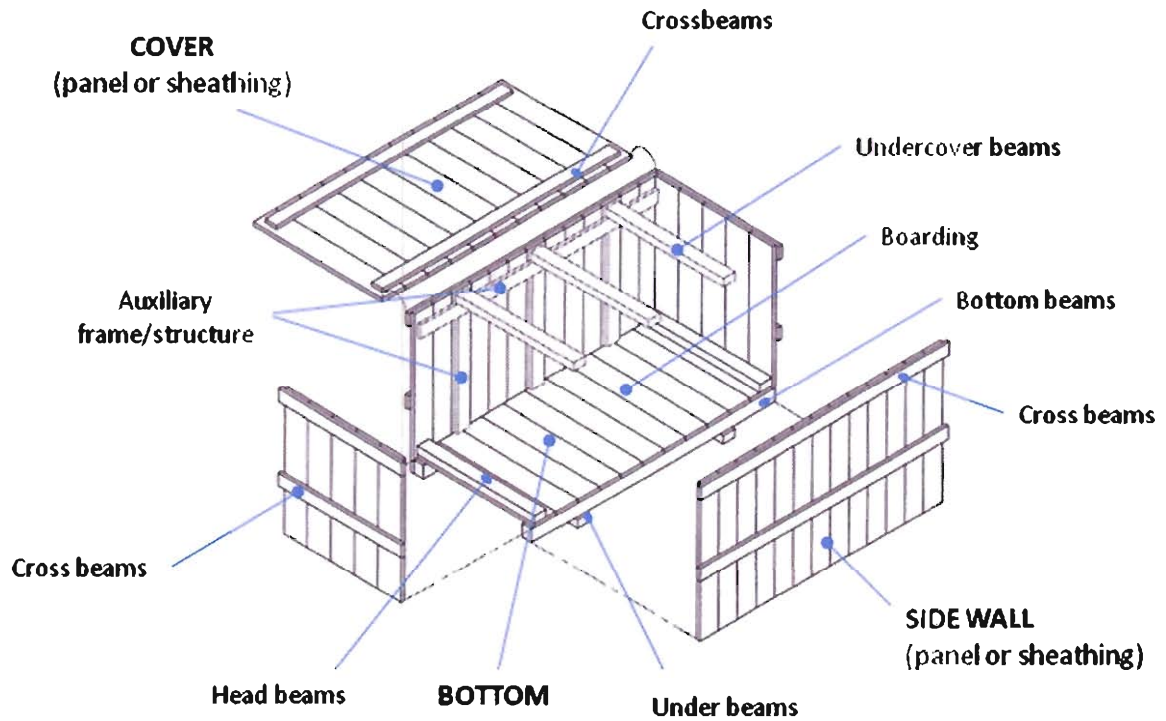
After packing acceptance by Tecnimont inspector, **VENDOR** is authorized to:

- shrink wrapping operation as well as vacuum sealing;
- close cases and crates together with incorporation of the appropriate packing lists.

At the end of the activities, **packing certificate** shall be prepared and signed (see APPENDIX C).

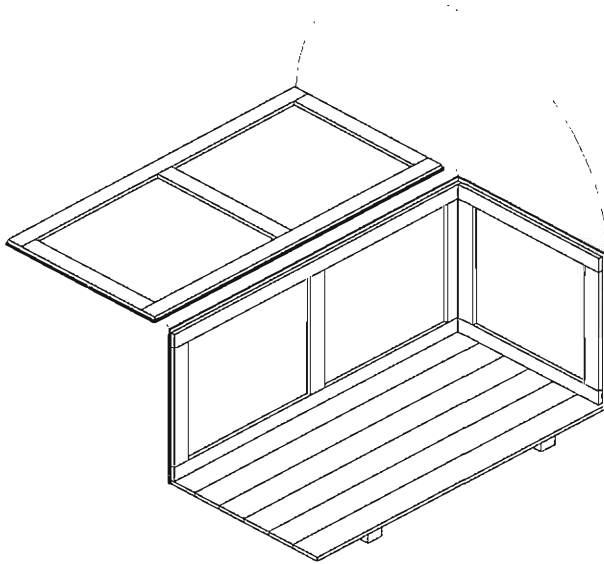
13. APPLICABLE PACKING STYLE

13.1 Legend

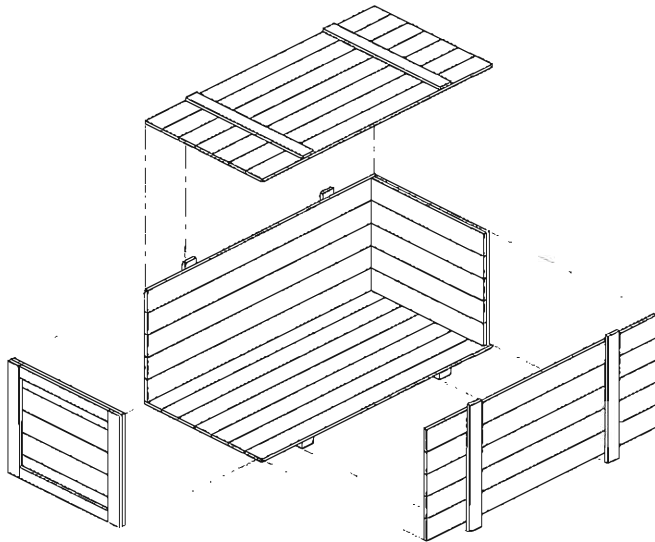


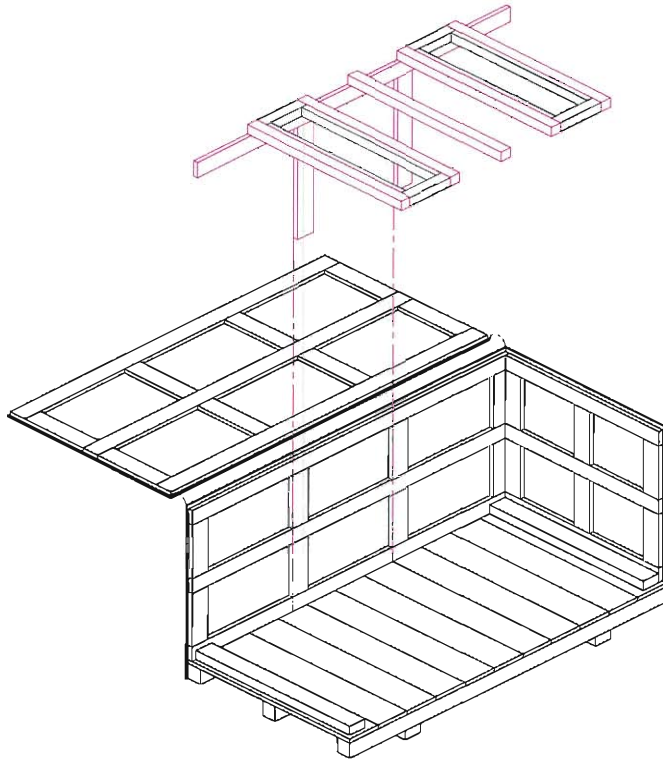
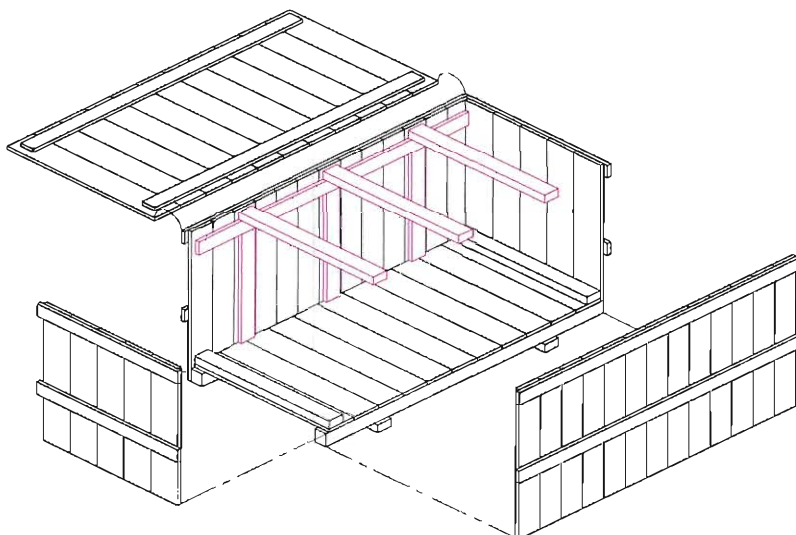
13.2 Case

13.2.1 Case - Small Size Plywood or OSB (UNI EN 300)



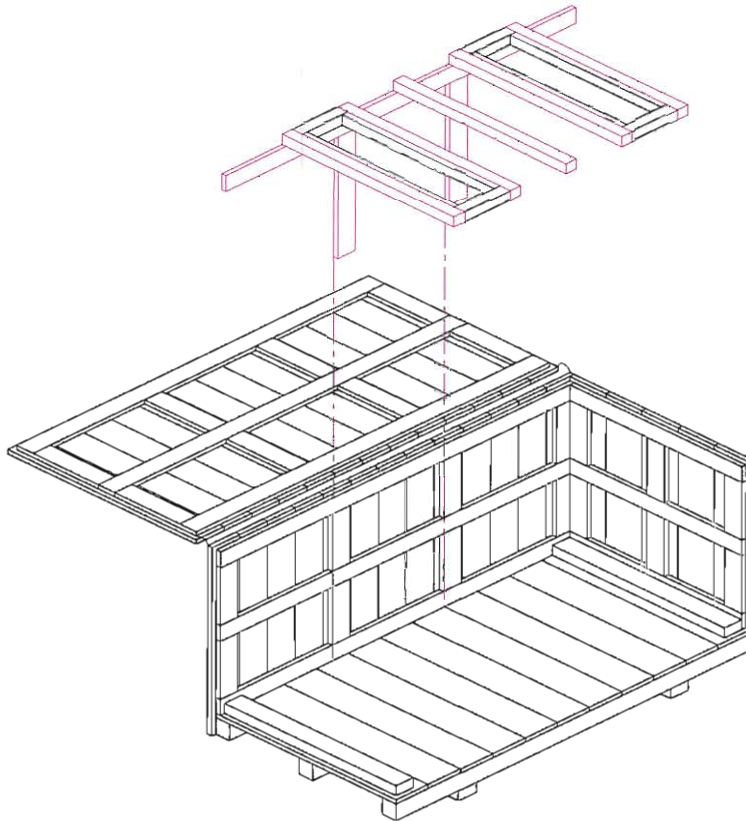
13.2.2 Case - Small Size Wooden Board (alternative to 13.2.1)



13.2.3 Case - Standard Size Plywood or OSB (UNI EN 300)**13.2.4 Case - Standard Size Wooden Board (alternative to 13.2.3)**

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13.2.5 Case - Standard Wooden Board For Heavy Packages (over 30,000 kg, no alternatives)



13.2.6 Construction Details

13.2.6.1 Bottom

The bottom consists of wooden adjoining boards that are fixed transversally to two or more longitudinal underlying beams.

Some transversal or longitudinal underbeams are positioned under the longitudinal beams and they are nailed to them. The underbeams raise the bottom from the floor, so they allow the passage and the positioning of lifting ropes or forks.

The bottom is normally strengthened by two transversal head-beams that are fixed on the boarding by nauling - for thickness up to 6 cm or by bolting (for higher thickness).

The load distributors are other further possible components of transversal strengthening for the bottom. They are used to strengthen the case bottom where the two lifting points are situated or to subdivide the load on the longitudinal beams.

The minimum sections of the bottom components are written in the following tables. They are valid as measures of reference with the following specifications:

- the number of the bottom beams is defined on the basis of a maximum centre distance of **100 cm**;
- beams of a smaller dimensional category can be used for the packing of skid, that is plants, machineries etc. that have a **self-load-bearing** structure;
- the section of the possible **load distributors** shall be calculated on the basis of the stress that is generated in the bottom during the lifting operations;

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MINIMUM SECTIONS OF THE BOTTOM BEAMS			
Net weight [kg]	External length of the case [cm]		
	Up to 400	From 401 to 800	Over 800
up to 1000	8 x 10	8 x 10	10 x 12
From 1001 to 3000	8 x 10	10 x 12	10 x 12
From 3.001 to 8.000	10 x 12	12 x 15	12 x 15
From 8.001 to 15.000	12 x 15	12 x 15	15 x 20
From 15.001 to 30.000	15 x 20	15 x 20	20 x 20
From 30.001 to 45.000	15 x 20	20 x 20	20 x 25
From 45.001 to 60.000	20 x 20	20 x 25	20 x 25

MINIMUM SECTIONS OF OTHER BOTTOM COMPONENTS				
Net weight [kg]	Boarding [cm]	Underbeams [cm]	Head-beams [cm]	Ø bolts [mm]
up to 500	2.5	n.a.	n.a.	n.a.
From 501 to 3000	2.5	10 x 8	10 x 6	n.a.
From 3.001 to 8.000	3	12 x 8	10 x 8	10
From 8.001 to 15.000	4	12 x 10	12 x 10	12
From 15.001 to 30.000	4	12 x 10	15 x 12	16
From 30.001 to 45.000	5	15 x 10	15 x 12	16
From 45.001 to 60.000	5	18 x 10	20 x 15	n° 2 Ø16

13.2.6.2 Side Walls and Cover

The walls (sides and heads) and the cover consist of an internal frame and an external panel. The wall frame is made up of horizontal crossbeams and vertical struts; the cover frame is made up of longitudinal crossbeams and transversal cut-down sizes.

When a Wooden Board Case is selected, or anyway over 30'000 kg, the wall and cover shall be formed by wooden adjoining boards (see the figure); the beams shall be minimum 12 cm width.

For all type of cases, covers and walls shall be waterproofed: the cover by a polyethylene film (minimum thickness 0,5 mm) and the walls by a polyethylene film (minimum thickness 0,1 mm). These films shall be installed between the external panel and the internal frame. In addition a polyethylene film, with minimum thickness 1 mm, shall be applied above the cover.

The bottom shall permit and facilitate the drainage of possible condensation or liquids.

From 1000 kg weight, cases shall have an auxiliary frame, installed in the sidewalls. It consists of an upper horizontal crossbeam and of vertical struts. The scope is to reinforce the walls in order to improve stackability of cases.

The minimum sections of the wall and cover components and the minimum number of horizontal crossbeams are written in the following tables.

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MINIMUM SECTIONS OF SIDE WALL AND COVER COMPONENTS					
Net weight [kg]	Frame [cm]	Plywood panel [cm]	Wood Panel [cm]	Auxil. struct. [cm] int. h. up to 200 cm	Auxil. struct. [cm] int. h. over 200 cm
Up to 1000	n.a.	0.8	1,9	n.a.	n.a.
From 1.001 to 8.000	10 x 4	1	2,5	10 x 2,5	10 x 4
From 8.001 to 30.000	12 x 4	1,3	2,5	10 x 2,5	10 x 4
From 30.001 to 60.000	12 x 4	n.a.	2,5	10 x 4	10 x 6

MINIMUM NUMBER OF CROSSBEAMS FOR EACH WALL	
External height of the case [cm]	N°
Up to 140	2
Up to 240	3
Up to 340	4
Over 340	5

Maximum pitch between vertical beams of auxiliary framers shall be **125 cm**.

13.2.6.3 Undercover Beams

All cases above 500 kg shall have an undercover beam that shall be placed transversally and fixed by nails to auxiliary frame.

These structural components have a double scope:

- they improve the quantities of case stackable;
- together with the cover they bear the transversal compression produced by the ropes during the lifting operations.

The undercover beams shall have a maximum wheelbase of 100 cm and they will have to comply with the minimum sections that are written in the following table.

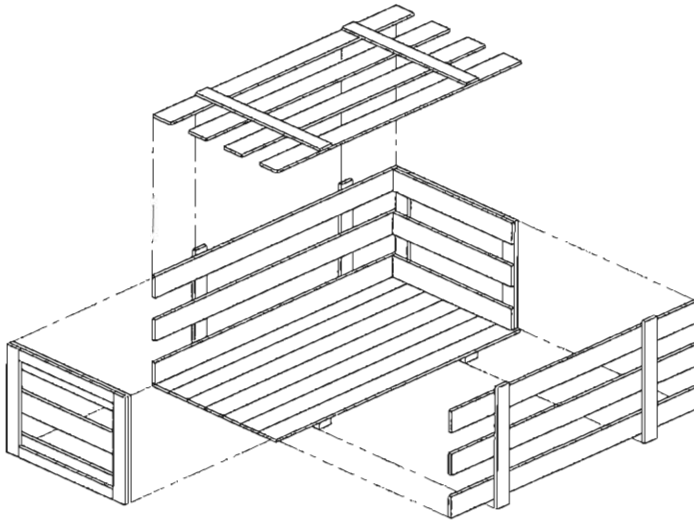
UNDERCOVER BEAMS				
Net weight [kg]	External width of the case [cm]			
	Up to 120	From 121 to 220	From 221 to 270	Over 270
Up to 500	n.a.	n.a.	n.a.	n.a.
From 501 to 1.000	6 x 8	8 x 8	8 x 10	10 x 12
From 1.001 to 3.000	6 x 8	8 x 10	8 x 10	10 x 12
From 3.001 to 8.000	8 x 10	8 x 10	10 x 12	12 x 15
From 8.001 to 15.000	8 x 10	10 x 12	12 x 15	12 x 15
From 15.001 to 30.000	10 x 12	10 x 12	12 x 15	12 x 15
From 30.001 to 60.000	10 x 12	12 x 15	12 x 15	12 x 15

The cases that have an external width over **270 cm** or a net weight over **10.000 kg** have to be provided with wooden additional strengthening structures able to support the transversal compression that is produced by the ropes during the lifting operations.

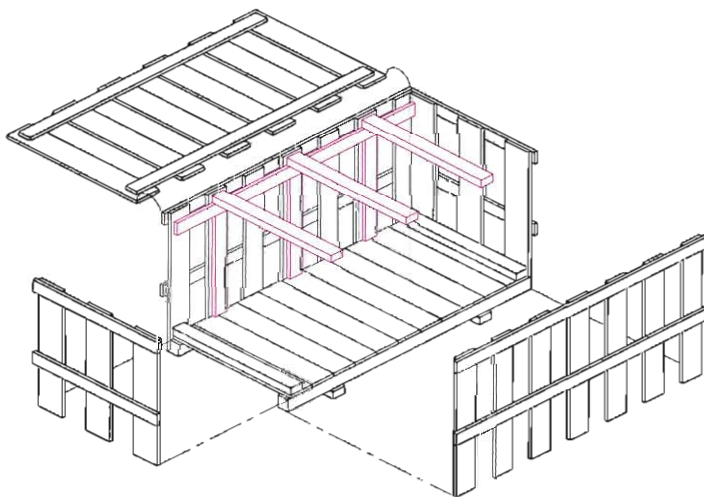
Strengthening structures shall have the same size of undercover beams.

13.3 Crate

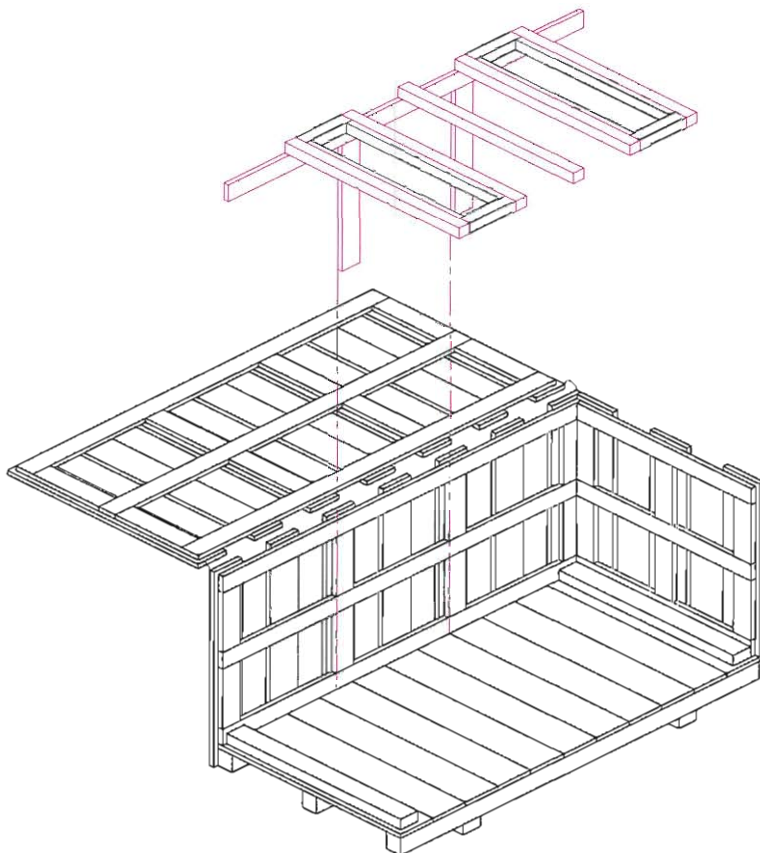
13.3.1 Crate Small-Sized



13.3.2 Crate Reduced-Size



13.3.3 Standard Crates



13.3.4 Construction Details

13.3.4.1 Bottom

The bottom consists of wooden adjoining boards that are fixed transversally to two or more longitudinal underlying beams. If the contents makes it possible, the bottom boarding can be discontinuous (crate boarding) with a plenum surface not less than 60%.

Some transversal or longitudinal underbeams are positioned under the longitudinal beams and they are nailed to them. The underbeams raise the bottom from the floor, so they allow the passage and the positioning of lifting ropes or forks.

The bottom is normally strengthened by two transversal head-beams that are fixed on the boarding by nailing - for thickness up to 6 cm or by bolting (for higher thickness).

The load distributors are other further possible components of transversal strengthening for the bottom. They are used to strengthen the case bottom where the two lifting points are situated or to subdivide the load on the longitudinal beams.

The minimum sections of the bottom components are written in the following tables. They are valid as measures of reference with the following specifications:

- the number of the bottom beams is defined on the basis of a maximum centre distance of **100 cm**;
- beams of a smaller dimensional category can be used for the packing of skid, that is plants, machineries etc. that have a **self-load-bearing** structure;
- the section of the possible **load distributors** shall be calculated on the basis of the stress that is generated in the bottom during the lifting operations;

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MINIMUM SECTIONS OF THE BOTTOM BEAMS			
Net weight [kg]	External length of the case [cm]		
	Up to 400	From 401 to 800	Over 800
up to 1000	8 x 8	8 x 10	10 x 12
From 1001 to 3000	8 x 10	10 x 12	10 x 12
From 3.001 to 8.000	10 x 12	12 x 15	12 x 15
From 8.001 to 15.000	12 x 15	12 x 15	15 x 20
From 15.001 to 30.000	15 x 20	15 x 20	20 x 20
From 30.001 to 45.000	15 x 20	20 x 20	20 x 25
From 45.001 to 60.000	20 x 20	20 x 25	20 x 25

MINIMUM SECTIONS OF OTHER BOTTOM COMPONENTS				
Net weight [kg]	Boarding [cm]	Underbeams [cm]	Head-beams [cm]	Ø bolts [mm]
up to 500	2.5	n.a.	n.a.	n.a.
From 501 to 3000	2.5	10 x 8	10 x 6	n.a.
From 3.001 to 8.000	3	12 x 8	10 x 8	10
From 8.001 to 15.000	4	12 x 10	12 x 10	12
From 15.001 to 30.000	4	12 x 10	15 x 12	16
From 30.001 to 45.000	5	15 x 10	15 x 12	16
From 45.001 to 60.000	5	18 x 10	20 x 15	n° 2 Ø16

13.3.4.2 Side Walls And Cover

The walls (sides and heads) and the cover consist of an internal frame and an external panel. The wall frame is made up of horizontal crossbeams and vertical struts; the cover frame is made up of longitudinal crossbeams and transversal cut-down sizes.

The beams shall be minimum 12 cm width; they shall generate a plenum surface not less than 45% of the total surface and consider the size/diameter of items inside.

For all type of crates, covers and walls shall be waterproofed: the cover by a polyethylene film (minimum thickness 0,5 mm) and the walls by a polyethylene film (minimum thickness 0,1 mm). These films shall be installed between the external boards and the internal frame. In addition a polyethylene film, with minimum thickness 1 mm, shall be applied above the cover.

The bottom shall permit and facilitate the drainage of possible condensation or liquids.

From 1000 kg weight, crates shall have an auxiliary frame, installed in the sidewalls. It consists of an upper horizontal crossbeam and of vertical struts. The scope is to reinforce the walls in order to improve stackability of crates.

The minimum sections of the wall and cover components and the minimum number of horizontal crossbeams are written in the following tables.



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MINIMUM SECTIONS OF SIDE WALL AND COVER COMPONENTS					
Net weight [kg]	Frame [cm]	Plywood panel [cm]	Wood Panel [cm]	Auxil. struct. [cm] int. h. up to 200 cm	Auxil. struct. [cm] int. h. over 200 cm
Up to 1000	n.a.	0.8	1,9	n.a.	n.a.
From 1.001 to 3.000	n.a.	1	2,5	10 x 2,5	10 x 4
From 3.001 to 8.000	10 x 4	1	2,5	10 x 2,5	10 x 4
From 8.001 to 30.000	12 x 4	1,3	2,5	10 x 2,5	10 x 4
From 30.001 to 60.000	12 x 4	n.a.	2,5	10 x 4	10 x 6

MINIMUM NUMBER OF CROSSBEAMS FOR EACH SIDE WALL	
External height of the crates [cm]	N°
Up to 140	2
Up to 240	3
Up to 340	4
Over 340	5

The vertical struts of the auxiliary frame shall be placed at a maximum centre distance of **125 cm**.

13.3.4.3 Undercover Beams

All crates above 500 kg shall have an undercover beam that shall be placed transversally and fixed by nails to auxiliary frame.

These structural components have a double scope:

- they improve the quantities of crates stackable;
- together with the cover they bear the transversal compression produced by the ropes during the lifting operations.

The undercover beams shall have a maximum wheelbase of 100 cm and they will have to comply with the minimum sections that are written in the following table.

UNDERCOVER BEAMS				
Net weight [kg]	External width of the crates [cm]			
	Up to 120	From 121 to 220	From 221 to 270	Over 270
Up to 500	n.a.	n.a.	n.a.	n.a.
From 501 to 1.000	6 x 8	8 x 8	8 x 10	10 x 12
From 1.001 to 3.000	6 x 8	8 x 10	8 x 10	10 x 12
From 3.001 to 8.000	8 x 10	8 x 10	10 x 12	12 x 15
From 8.001 to 15.000	8 x 10	10 x 12	12 x 15	12 x 15
From 15.001 to 30.000	10 x 12	10 x 12	12 x 15	12 x 15
From 30.001 to 60.000	10 x 12	12 x 15	12 x 15	12 x 15

The crates that have an external width over **270 cm** or a net weight over **10.000 kg** have to be provided with wooden additional strengthening structures able to support the transversal compression that is produced by the ropes during the lifting operations.

Strengthening structures shall have the same size of undercover beams



13.4 Precautions for pipes and fittings

Packing of fittings and pipes may require, if agreed with Tecnimont, seal bag.

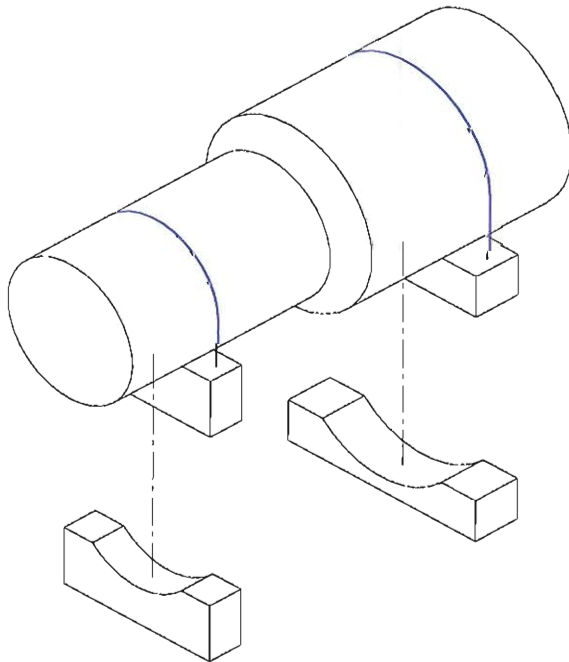
Cases and crates construction and stowage precautions must be provided to prevent pipes and fittings damage, to protect integrity of any loose parts.

Gaps in crate construction to consider size and diameter of pipes and fittings.

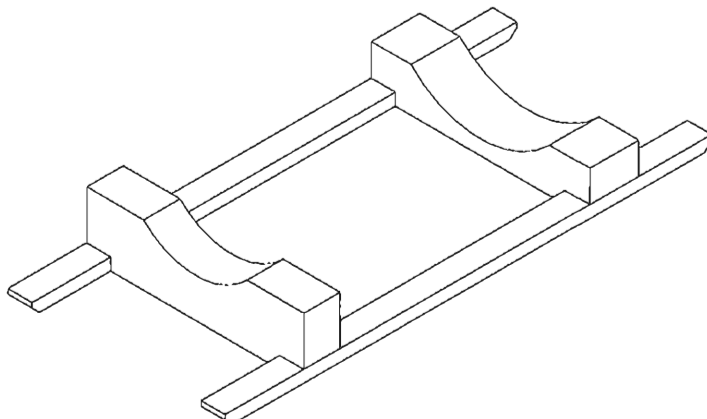
13.5 Saddles

Important note: for saddle design requirements always refer to and comply with the engineering supply specifications dedicated to the relevant items.

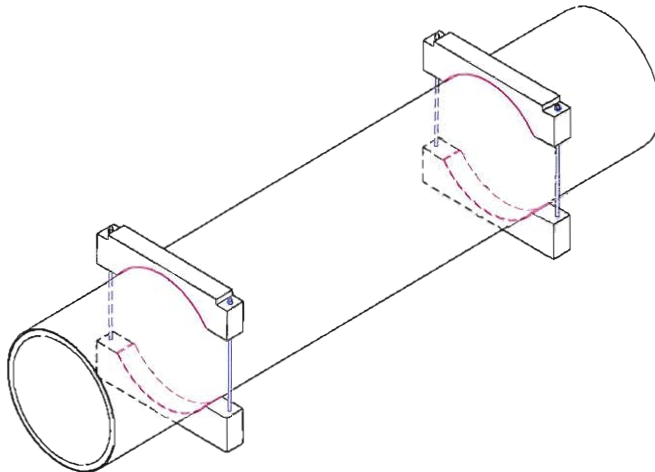
13.5.1 Standard Saddles



13.5.2 Saddles on Slides



13.5.3 Double Saddles



13.5.4 Construction Details

13.5.4.1 Saddle

The saddles are shaped structures, normally concave, made of wood or steel and secured to the equipments to be packed.

The saddles are suitable to pack self-supporting equipments (but supplied without instrumentation or insulation installed)

The minimum indicative length of the saddles shall be at least the same as the external diameter of the equipment to facilitate the anchorage between the saddles and the equipment itself.

The width of the saddles is suggested by the following table; as a rule the baseboards are built with the same length and width as the plates to which they are fixed.

SADDLE WIDTH	
Net weight [kg]	Minimum width [cm]
Up to 2.000	15
From 2.001 to 6.000	20
From 6.001 to 10.000	30
From 10.001 to 20.000	40
Over 20.000	50

The depth of the cradle shall be at least equal to 15% of equipment diameter. For example, for the equipment is 2 m diameter, the depth of the cradle shall be at least 30 cm.

The **ground elevation** reached by an equipment placed on saddles shall be as minimum as possible in order not to compromise the strength of the saddles and the passage of the lifting ropes (unless it is used another kind of lifting, for example by lifting plugs).

Number of saddles to be prepared (2, 3 or more) is defined on the basis of the technical information of the manufacturer and depends on the equipment weight, rigidity and to the method of transport planned, in order to allow a correct distribution of the weight on the load plane.

The combination of the length and width measures, the number of the saddles or of the baseboards and the total weight (equipment + saddles) shall generate a bearing load not over 10.000 kg/m². For example 2 saddles of 200 x 50 cm are suitable to support a total weight not over 20.000 kg (2 x 0,5 x 2 x 10.000).

The saddles are built in a single beam wood piece or by superimposing more beams in crossed layers; in the second case the beams that go from the base to the lowest point of the cradle shall be made in a piece only in order not to compromise the strength of the cradles.

The saddles shall be firmly anchored to the equipment, alternatively by:

- steel rope, of suitable section, covered by a protective rubber sheath;
- steel hoop, of suitable section (min. 50 x 3 mm), by putting a protective strip between the hoop and the equipment.

It is also possible to use metallic saddles that shall be completed with rubber strips placed between the saddles and the equipment or wooden baseboards fixed to the saddle base plates by bolts or passing thread bars.

13.5.4.2 Saddle on Slide

Saddle on slide shall be used for loading into box containers. The saddles are connected to each other by longitudinal boards. The slides facilitate the packages loading/downloading in/from box containers.

For this type of packing the slide shall be made in one piece only with a bevel on the extremity to facilitate package slipping on container floor.

13.5.4.3 Double Saddle

Double saddle shall be used for Bituminized pipes and pipe-lines in general above 14" diameter a straw **mattress** - or a similar product - shall be placed between the support cradles and the pipe (see the figure).

The following table suggests the **width** of the saddles and the **depth** of the cradle (that is of the only shaped part, measured on the vertical) on the basis of the nominal diameter of the pipe.

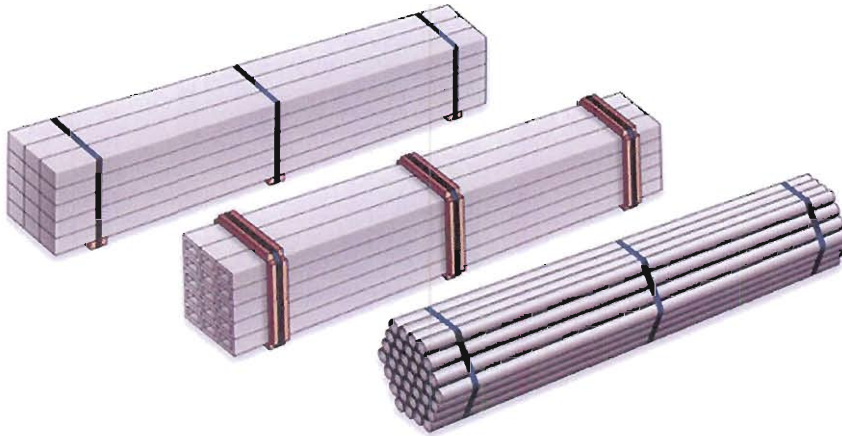
DIMENSIONS OF THE CRADLES	
Nominal diameter [mm]	Width x Depth [cm]
Up to 800	12 x 15
Over 800 up to 1.200	15 x 20
Over 1.200	20 x 25

In addition the following dimensions shall be respected:

- Minimum section in height (saddle and counter-saddle): 6 cm
- Minimum depth on the counter-saddle: 4 cm
- Minimum diameter of the thread bars: M12
- Minimum distance of the bars from the borders: 4 cm

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13.6 Bundles



13.6.1 Construction Details

Bundles may be applied to pipes, carpentry or similar that can be suitable for handling, within the following maximum limits:

- Gross weight up to 8.000 kg
- Dimensions (Width x Height) up to 120 x 150 cm

Minimum number of n.3 fasteners shall be used for bundling.

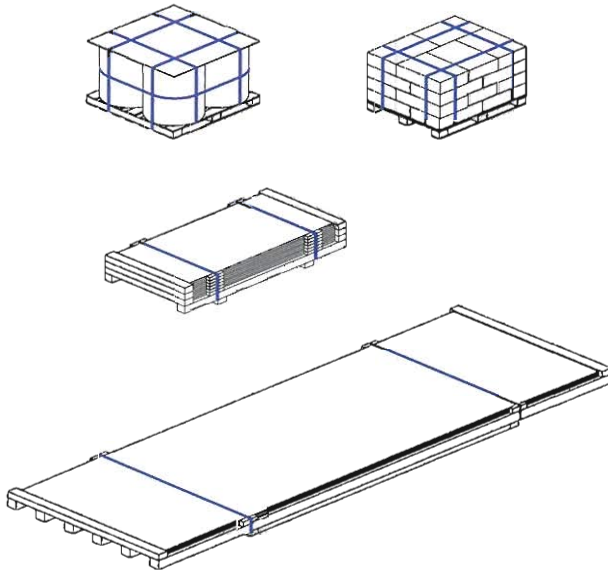
Fasteners can be metal or suitable plastic; material to be compatible with bundle materials (i.e. stainless steel on stainless steel). Moreover, suitable protections shall be inserted between fasteners and material where direct contact is possible.

Size and resistance shall be adequate for loading, unloading and repeated handling of bundle weight.

Pipe ends shall be closed with plastic or wooden caps. Open type cap/plug are preferred; close type cap/plug (to be considered as alternative) shall be used together with appropriate amount of dehydrating agents inside sufficient to keep the humidity ratio below 50% for the whole envisaged period (12 months).

Note: for bundling with saddles also refer to paragraph 13.5.

13.7 Pallets



13.7.1 Construction Details

Standard pallets made by wood or plastic are used for transport and storage of goods that don't require any special mechanical protection or already have an additional package (i.e plastic wrapped card box or can).

Special pallets **made on measure**, are similar in the construction to the bottom of the cases and are used for transport of materials such as the plate packages.

The special pallets for plates packing shall have head-beams with a height that is at least equal to the thickness of the plate package in order to protect plates end from impact/handling damages.

All goods shall be adequately tied to each other and secured to the pallet and, if necessary, they shall be wrapped with extensible or term shrinking film.

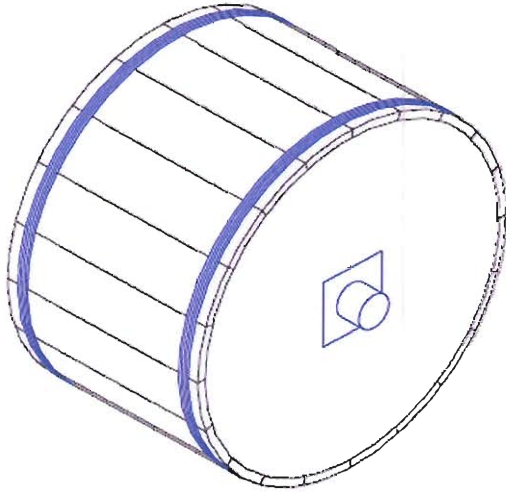
The minimum sections of the structural components for special pallets are written in the following tables.

MINIMUM SECTIONS OF SPECIAL PALLETS LONGITUDINAL BEAMS			
Net weight [kg]	External length of the package [cm]		
	Up to 400	From 401 to 800	Over 800
Up to 1.000	8 x 8	8 x 10	8 x 10
From 1.001 to 3.000	8 x 10	8 x 10	10 x 12
From 3.001 to 8.000	10 x 12	12 x 15	12 x 15

MINIMUM SECTIONS OF THE OTHER SPECIAL PALLET PARTS		
Net weight [kg]	Boarding [cm]	Underbeams [cm]
Up to 1.000	2,5	10 x 6
From 1.001 to 3.000	2,5	10 x 8
From 3.001 to 8.000	3	12 x 8

In the case of flat steel plate packing, the bottom boarding is not required.

13.8 Reel



13.8.1 Construction Details

Wooden Drum shall be used for cable reel with diameter > 80 cm, internally cable shall be wrapped by plastic film.

The staving shall be realized by using new boards fixed by nail to the cable reel. Beams width shall be suitable to reel flanges diameter; in order to prevent that water or dust can enter trough openings or breaks.

Afterwards the beams shall be tied by steel straps of suitable section, min 30 mm wide and 0,80 mm thick and shall be placed near to flanges (no more than 5 cm far) in order to not remove nails from flanges

The recommended sections of the beams are written in the following table.

STAVING		
Flange diameter [cm]	Beam width [cm]	Minimum thickness [cm]
< 200	8 ÷ 10	2,5
≥ 200	8 ÷ 12	4

13.9 Homologated Packages

The products that are classified as dangerous (i.e. flammable, toxic, radioactive, ...) shall be packed separately into homologated containers, in accordance with International rules i.e.:

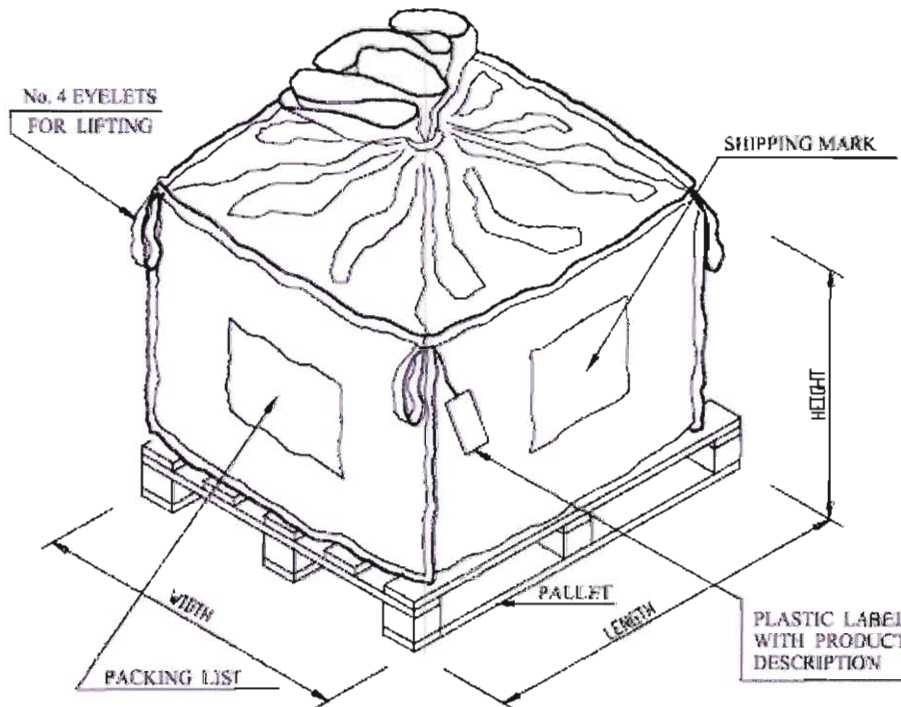
- ADR: Accord européen Relatif au transport international des marchandises Dangereuses par Route
- RID: Règlement International concernant les transports des marchandises Dangereuses
- IMO: International Maritime Organization
- IATA: International Air Transport Association – Dangerous goods regulations
- Local applicable law and rules.

The VENDOR shall comply with the rules or laws and shall become responsible for any consequences that may occur to the Buyer if said rules are not respected.

Marking on homologated packages as dangerous good shall be done in accordance with rules & laws.

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13.10 Package For Random Packing



Pallet has to be FITOK conformed according to para n.11 and the Eurobag (polypropylene sack) shall be un reusable.

13.11 Metal Reinforcements

Whenever necessary and in case of a gross weight over 2.000 kg, cases and crates shall be equipped with steel strengthening brackets and angle bars that are fixed respectively to the bottom and to the upper edges of the sidewalls where ropes pass (see drawing here below). They shall be sized to avoid abrasions and damages produced by the action of lifting ropes or chains. During the lifting of apparatuses that are packed on saddles some protective rolling shutters shall be put between ropes and apparatus.

a) Straps:

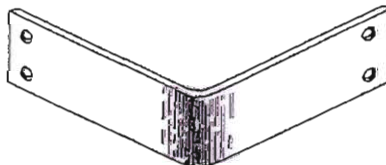
When their use is required, the following types of straps are acceptable:

- Synthetic;
- Carbon steel.

Annealed material may not be used. Straps shall be applied in a crossover configuration (one on the head side and the other vertically on the side), well tensioned with the appropriate tool and locked in place with steel clamps, with the same surface treatment of strap or made of the same material.

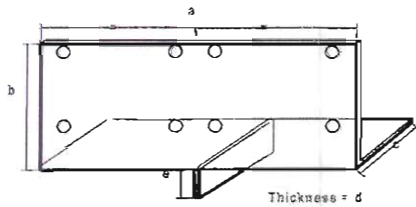
b) Brackets:

All wooden cases and crates with weight over 5000 Kg and plywood cases with gross weight over 2000 Kg shall be reinforced at the corners with corner brackets made of steel, with minimum thickness 0.05 cm and maximum distance 100 cm; mandatory is one bracket for each external horizontal reinforcing beam.

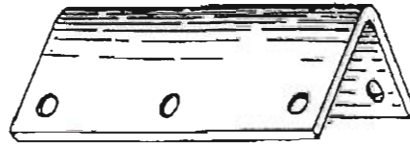


c) Steel plates and angle bars:

Wooden cases and crates with gross weight over 2000 Kg shall be fitted with steel plates at the harnessing points and angle bars at the top corners to prevent abrasion and breakage by the ropes. Minimum thicknesses are given in table here below.



Plates




Angles

Thickness of plates and angle bars:

GROSS WEIGHT (Kg)	THICKNESS (cm)
2000 – 6000	0.3
6000 – 15000	0.6
15000 – 18000	0.8

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APPENDIX A – Cleanliness Requirements

Tecnimont shall indicate into Material requisition and/or Supply Specification and/or Purchase order if an item must meet cleanliness requirements.

Cleanliness item requires a very smooth surface finishing without any welding spatter or scratch or contaminant on the surfaces. Special test are done during manufacturing in order to verify compliance to technical specification.

Improper handling or packaging of those items shall compromise the cleanliness quality.

It is mandatory to:

- Plugs all openings with external plastic cap (cap to be insert inside openings are NOT allowed because can contaminate o scratch the surfaces)
- Dehydrating agent shall always been used but NOT in contact with metallic surfaces
- Two separate seal bags shall be used, whereof the outer layer shall be HDPE
- Each pipe bundles is protected by plastic film
- Crates end shall be closed
- Teflon can't be use as sealant or to protect filled ends
- Any type of lubricant or temporary paint, or corrosion inhibitor is forbidden

Mandatory Packing requirements

In the following table are listed the packing requirements for clean items. No alternative solution is allowed without Tecnimont written approval.

For Item not included in the table, the solution for a similar component shall be adopted.

Description	Remarks	Dehydrating agent	HDPE Plastic foil	Seal bag	Case	Crate	End caps / plugs	Saddle
Silos	Shipped in loose parts	X	X	X		X		
Silos	Shipped assembled	X	X	X			X	X
Pumps		X	X	X	X		X	
Compressors		X	X	X	X		X	
Extruders		X	X	X	X		X	
Conveyors		X	X	X	X			
Pelletizers		X	X	X	X			
Raw pipes, fittings and flanges	≤ 6"	X	X	X	X		X	
Raw pipes, fittings and flanges	> 6"	X	X	X		X	X	
Pre-fabricated piping	≤ 6"	X	X	X	X		X	
Pre-fabricated piping	> 6"	X	X	X		X	X	
Instruments & valves		X	X	X	X		X	
Hoppers		X	X	X	X		X	
Filters		X	X	X	X		X	

Note - Suitable quantity of **dehydrating agent**, can keep the humidity rate below 35% - at the temperature of 20°C - for the period of one year.










Marking

Clean item shall be easily identified on package marking by applying a label on each side indicating "CLEAN ITEM INSIDE - KEEP STORED INDOORS".

Storage class to be indicated into Packing List shall be "C" Indoors storage.

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APPENDIX B – International Symbols

SYMBOL	DESCRIPTON	REMARKS
	HANDLE WITH CARE <i>ATTENZIONE! FRAGILE</i>	To be shown on one side and on the top at least (preferably on all sides) <i>Indicare almeno su un lato e in alto (preferibilmente su tutti i lati)</i>
	THIS WAY UP <i>ALTO</i>	To be shown on all top covers <i>Indicare sugli angoli superiori</i>
	SLING HERE <i>IMBRAGARE QUI</i>	To be shown on slinging points, depending on centre of gravity <i>Indicare in corrispondenza dei punti di imbragatura, dipendentemente dal baricentro</i>
	KEEP DRY <i>TENERE ALL'ASCIUTTO</i>	To be shown on one side and on the top at least (preferably on all sides) <i>Indicare almeno su un lato e in alto (preferibilmente su tutti i lati)</i>
	CENTRE OF GRAVITY <i>BARICENTRO</i>	To indicate the centre of gravity <i>Per indicare il centro di gravita'</i>
	DO NOT USE HOOKS <i>NON USARE GANCI</i>	To indicate that hooks are forbidden for the package lifting <i>Per indicare che è proibito l'uso di ganci per il sollevamento</i>
	KEEP AWAY FROM HEAT <i>TENERE LONTANO DA FONTI DI CALORE</i>	To indicate that the package shall be kept away from heat <i>Per indicare di tenere il collo lontano da fonti di calore</i>
	DO NOT ROLL <i>PROIBITO IL ROTOLAMENTO</i>	To indicate that the package shall not be rolled <i>Per indicare di non far rotolare il collo</i>
	NO HAND TRUCK HERE <i>VIETATI I CARRELLI A MANO</i>	To indicate that hand trucks or dollies shall not be in the package handling area <i>Per indicare il divieto dell'uso di carrelli a mano nell'area di movimentazione del collo</i>
	FUMIGATED <i>FUMIGATO</i>	To indicate that package meets International Standards for Phytosanitary Measures <i>Per indicare che l'imballo rispetta la Normativa Internazionale Fitosanitaria</i>

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APPENDIX C – Packing Test Certificate

MAIN DATA (Dati principali)			
VENDOR NAME	(Nome fornitore)	
TECNIMONT PROJECT NUMBER	(Numero di progetto Tecnimont)	
TECNIMONT ORDER NUMBER	(Numero d'ordine Tecnimont)	
PACKING LIST NUMBER	(Numero di packing list)	
PACKING TYPE	(Tipo di imballo)	
PRESERVATION (Protezioni)			
NITROGEN BLANKETING (Polmonazione di azoto) – para 6.2.1	<input type="checkbox"/>	Volume (m ³)	Pressure (mbar)
SEAL BAG (Sacco barriera) – para 6.4	<input type="checkbox"/>		
DEHYDRATING AGENT (Agente disidratante) – para 6.4	<input type="checkbox"/>	Type	Kg m ³ to dehydrate
		DIN/MIL units No.	FSH units No.
VCI (Prodotti VCI) – para 6.5	<input type="checkbox"/>	Type	Int. <input type="checkbox"/> Ext. <input type="checkbox"/>
VSI/TECTYL OIL (Oli VSI / oli) – para 6.2.2 - 6.5	<input type="checkbox"/>		
PACKING WATERPROOFING (Impermeabilizzazione imballo) – para 6.2.4 - 13.2-3	<input type="checkbox"/>	Type	
TESTS PERFORMED (Controlli eseguiti)			
EMPTYING AND DRYING CHECK OF VESSEL AND COIL AFTER HYDRO TEST (controllo svuotamento e asciugatura di serbatoi e camicie)	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
PRESERVATION CHECK (Controllo protezione) - para.6.2-3-4-5 – 13.2-3	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
STOWAGE CHECK (Controllo fissaggio merce) - para 10	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
PACKING THICKNESSES CHECK (Controllo spessori cassa) - para 13	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
DOCUMENTATION included (Documentazione inclusa) - para 5.5	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
WEIGHTS and DIMENSIONS CHECK (Controllo pesi e volumi)	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
PACKING LIST CHECK (Controllo packing list) - para 9	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
MARKING CHECK (Controllo marcature) - para 9	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
PHYTOSANITARY CHECK (Controllo requisiti fitosanitari) - para 11	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
GRAVITY CENTER CHECK (Controllo baricentro) - para 9	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
VISUAL INTEGRITY CHECK (Controllo integrita')	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
STACKABILITY CHECK (Controllo sovrapponibilita') - para 5.4	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
IMPACT, TILT, TEMPERATURE, HUMIDITY INDICATORS OR RECORDERS CHECK (Controllo indicatori urto, inclinazione, temperatura, umidita') - para 6.6	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
CLEANLINESS REQUIREMENT CHECK (Controllo requisiti di pulizia) - APPENDIX A	ACCEPTED <input type="checkbox"/>	REJECTED <input type="checkbox"/>	N.A. <input type="checkbox"/>
CERTIFICATION (Certificazione)			
ON DATE (In data) / / THE PACKING OF THE ABOVE MENTIONED ORDER HAS BEEN CHECKED AND IT IS IN ACCORDANCE WITH (l'imballo dell'ordine in oggetto è stato controllato ed è conforme a):			
<input type="checkbox"/> PACKING SPECIFICATIONS TM077/13E (Specifica di imballo TM077/13E)			
<input type="checkbox"/> VENDOR PACKING SPECIFICATION (Specifica di imballo del fornitore):			
<input type="checkbox"/> OTHER (Altro):			

VENDOR stamp, signature and date
(timbro, firma e data del fornitore)

TECNIMONT or delegated TPI stamp, signature and date
(timbro, firma e data di Tecnimont o Agenzia delegata)

MAIN DATA (Dati principali)

VENDOR NAME (Fornitore)
 TECNIMONT PROJECT (Numero di progetto)
 TECNIMONT ORDER (Ordine)
 PACKING LIST NUMBER (Numero di packing list)

SINGLE PACKAGE CHECK (Controllo singoli imballi)

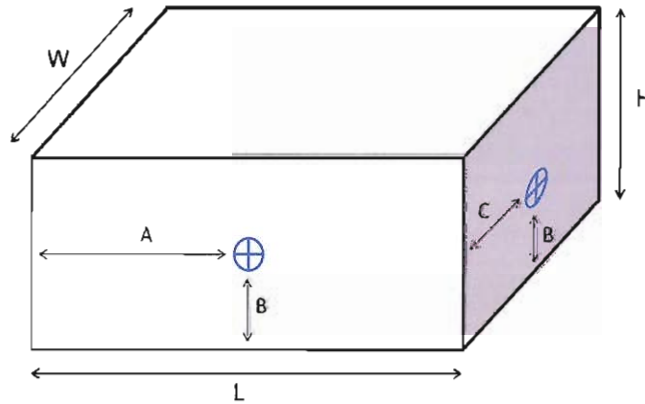
RECORD MEASURES ONLY FOR PACKAGES WITH ONE OR MORE DIMENSIONS EXCEEDING THE FOLLOWING LIMITS
 (Registrazione le dimensioni solo di quegli imballi che eccedono anche solo uno dei seguenti limiti):

Length (lunghezza): $L \geq 500$ cm

Width (larghezza): $W \geq 200$ cm

Height (altezza): $H \geq 200$ cm

Gross weight (peso lordo) ≥ 5000 kg



PACKAGE NUMBER (* (numero di collo)	L (cm)	W (cm)	H (cm)	A (cm)	B (cm)	C (cm)	GROSS WEIGHT (Kg)
..... of							
..... of							
..... of							
..... of							
..... of							
..... of							
..... of							
..... of							

(* As per Packing list Master sheet.

REMARKS (note):

.....

.....

VENDOR stamp, signature and date
(timbro, firma e data del fornitore)

TECNIMONT or delegated TPI stamp, signature and date
(timbro, firma e data di Tecnimont o Agenzia delegata)