

General packing & storage guidelines

Bertrams Chemical Plants

(Version 09.2024)



1. PREAMBLE

These packing and storage guidelines apply, without exception, to any orders and purchases made by BERTRAMS CHEMICAL PLANTS, hereinafter referred to as "BCAG". The purpose of this document is to ensure, that the supplied equipment/material will be transported to the end destination in a safe and complete manner.

2. GENERAL

- 1) The Packer or Seller, as used in this guideline, is defined as the seller of the equipment/material, a subcontractor of the seller, or a separate contractor, who has the final responsibility for protection and packaging of the equipment/material.
- 2) The Packer shall retain full responsibility for packaging and protecting the equipment/material.
- 3) The Packer's responsibility for complete compliance shall not be relieved, in whole or in part, by anything contained in or omitted from the guideline or the Purchase Order. The Packer shall refer all conflicts between the requirements of this guideline and the Purchase Order, in writing, for clarification and resolution before proceeding with the packaging or protection of the affected equipment/material.
- 4) Export packing shall be suitable and adequate to protect the equipment/material against damages during ocean and inland transportation up to job site with several loading and unloading.
- 5) Packaged equipment/material, showing damage, defects or shortages resulting from improper packaging, packaging material, or packing procedures, or having concealed damage or shortages at the time of unpacking, shall be subject to rejection and replacement at no additional cost to BCAG. Extra costs which were caused by such reasons as described hereof shall be at the Packer's or the Seller's account.
- 6) Language to be described in the packing list, tag and marking shall be in English language if not defined differently in the purchase order.
- 7) All packaging equipment/material and packaging process/procedures shall be subject to inspection by BCAG, BCAG's client, or the authorized agent appointed by BCAG or the client during all stages of packing work.

3. PACKING INSTRUCTION

- 1) The packing shall be designed according **HPE-packing guideline** and **GDV packing manual!**



- 2) The package design shall enable the cargo to be stowed with the following function: cargos with the package height more than 2m can be safely stowed maximum two layers of similar goods with similar weights as the supplied package; cargos with the package height below 2m can be safely stowed max. three layers of similar goods with similar weights as the supplied package. The wooden cases, cargo pallets, and flat racks should have an even top surface.

This instruction (2.) shall be not applicable to oversized equipment packed on flat rack without top surface.

- 3) Categories of packing type for the equipment/material are defined in **Table 1** as minimum package requirements.
- 4) Unauthorized partial shipments are not allowed. Equipment shall be shipped fully assembled whenever practical. When it is not possible to ship equipment fully assembled, it shall be the Seller's responsibility to disassemble equipment so that it can be properly packed and protected, and to include instructions with the shipment for assembly of equipment after delivery to the job site. The Packer shall disassemble equipment for packaging in accordance with the instructions by the Seller.
- 5) Initial (commissioning & start-up) spares and operational spares, when ordered, must always be packed in separate rate respectively.
- 6) All packing material shall be new with highest quality and selected and applied in compliance with good engineering/manufacturing/construction practice. Second-hand case, Case(waterproof) and/or any other type of wooden packing material constructed with "used" timber are not accepted. Straw or hay in any form is prohibited to use as packing material.

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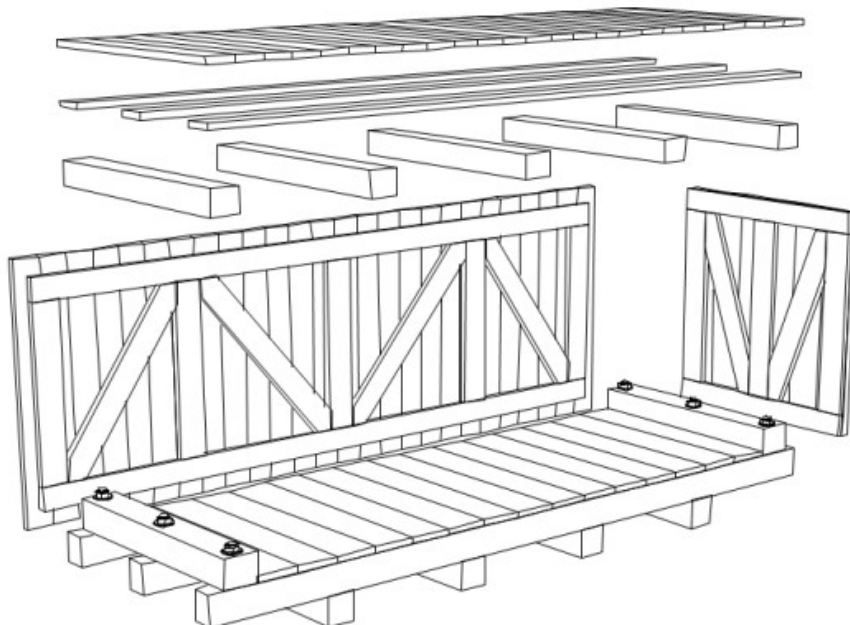
- 7) Wooden packaging material shall be treated according to ISPM15 standard. On request of BCAG Seller must provide free of charge a heat- or fumigation treatment certificate strictly complying with ISPM15 "Guidelines for Regulating Wood Packing Material in International Trade", and authorized by the local authority, for all cargos with wooden packing materials.
- 8) Wooden case/boxes shall be lined with waterproof paper/foil.
- 9) All packages shall provide protection against corrosion for minimum 6 months.
- 10) A calculated amount of desiccant shall ensure that the relative humidity cannot rise above 40%. Corrosion is therefore excluded (desiccant method).
- 11) Dimensions of case/box to be designed taking into consideration of the size of 20 and/or 40' container if the Seller receive such instructions as to ship it by container from the freight forwarder and/or BCAG.
- 12) The use of desiccant crystals within an enclosed piece of equipment is of particular importance in high humidity and areas subject to wide variation in temperature over a twenty-four (24) hour period. Location of desiccant shall be at suitable intervals to provide uniform distribution. The quantity of dehydrating agents to be used shall be determined based on the surface area of the moisture barrier, the moisture vapor transmission rate and the volume of the enclosed space. Additional desiccant shall be used if other moisture absorbing dunnage or supporting structure are included within the enclosed volume.
- 13) All equipment shipped utilizing dehydration materials shall be labeled or tagged with an easily observed red sign, reading: 'Caution-Desiccants materials are enclosed within this equipment. Do not operate before removing. Should the enclosure be broken before operating, the desiccant must be replaced for continued storage.'
- 14) The Bottom of each packing must have lifting possibilities for crane and forklift according to the center of gravity.
- 15) Goods must be fastened irremovably to the bottom of the case. The mounting must be made with screwed joints. Skids shall be used, if applicable. If direct screw connections are not possible, additional supports / frames shall be used.
- 16) The safety distance between the goods and the packaging shall be minimum 3 cm.
- 17) The packing must protect the goods against vibrations.
- 18) Packing of goods that could be damaged by vibrations, shall be equipped with appropriate shock indicators, visible from outside of the packing.
- 19) The general construction of a wooden box shall consider the following minimum requirements:

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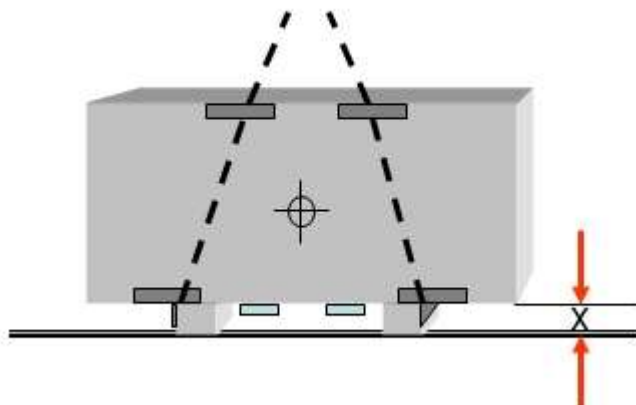
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General construction of a wooden box > 1000Kg



- Bottom construction shall be stabilized with longitudinal beams to avoid bending of the box during handling (lifting by fork or crane).
- Important are the crossbeams at both ends of the bottom, fixed with bolts.
- The side walls shall be strengthened by diagonal planks to ensure stability and to enable the transfer of forces from the top to the bottom of the box.

Handling, Loading and Lashing



- The space "X" shall be large enough to enable the handling by bigger forklifts (e.g. in the harbor)
- For boxes > 3000 kg the box shall be equipped with bump plates (see picture).

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4. COUNTRY SPECIFIC REGULATIONS FOR PACKAGING

- 1) Specific packing standards and regulations of the country of destination, such as SASO Technical Regulation for Degradable Plastic Products (Saudi Arabia) must be considered by seller. Seller will be liable for the compatibility of the packaging materials and for all consequential damages, that occur through breach of supplier's duties.

5. OVERSIZE INDIVISIBLE LOADS

- 1) Seller shall ensure that when packed any one individual dimension is less than the following:
 - a. Length 12.00 meters
 - b. Width 2.10 meters
 - c. Height 2.30 meters
 - d. Weight 20.00 metric ton

If it is necessary to exceed any factor as described above the Seller shall obtain BCAG's approval in writing prior to packing.

- 2) Transportation drawings must be submitted to BCAG/the freight forwarder 4 weeks prior to the contracted delivery date.

6. HAZARDOUS MATERIAL

- 1) The Seller is responsible for ensuring that any hazardous material in his supply is packed separately and safely.
- 2) Paint and thinner shall be delivered in barrels / cans / tins of max. 25 liters or 25 Kg.
- 3) A Material Safety Data Sheet (M.S.D.S.) must be sent to BCAG. A copy of MSDS must be attached to the packing list on each box.
- 4) Dangerous Goods cases shall be created and marked according to ADR/RID / IMDG Code / IATA -DGR standard.
- 5) Packing shall be made in accordance with the instructions by the International Maritime Dangerous Goods Code. (IMDG Code). As minimum, the Seller shall be responsible to supply information on handling and to mark this material in accordance with the applicable law of the country of origin and the requirements of the shipping agency for transporting the material, whether by road, by sea, by rail, or by air.

7. MARKING INSTRUCTIONS

- 1) The marking shall be according to ISPM-Standard and shall include without exception at least the following:
 - a. IPPC Logo
 - b. Approval number including the ISO country code
 - c. Treatment Mark according ISPM-15 (HT Heat Treatment)
- 2) Marking shall be stenciled on the outside of the package with appropriate instructions for the handling, transport, and storage of the equipment /material in proportion to site of equipment/material or package.
- 3) All cases are to be stenciled in water-proof ink on top and two opposite sides in clear legible characters.

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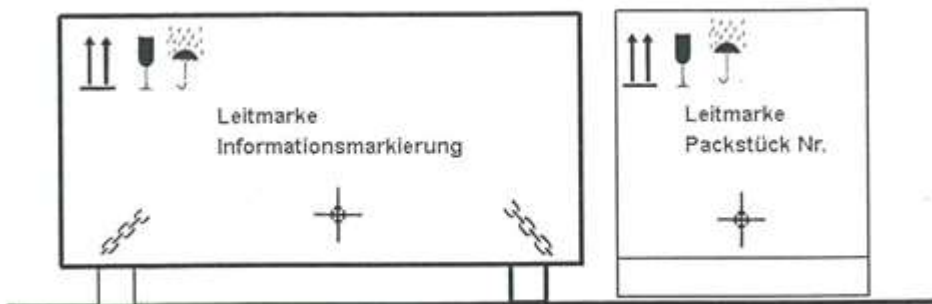
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- 4) On bundles the marking is to be embossed on a metal or similar tag and wired on securely. Bundles and loose items which are not suitable for application of shipping mark direct onto bundles or pieces, must be supplied with at least two indestructible labels, one at each end, bearing shipping mark and additional data i.e. weight and site. Labels are tied to bundles or pieces with steel wires.

8. SHIPPING MARK

- 1) Shipping mark must appear on all packages, metal tags, labels, and all shipping documents such as packing list, etc.
- 2) In case shipping marking is provided by BCAG, seller shall mark the packing accordingly.
- 3) Letter size of the shipping mark shall be larger than 5 cm square in general. The size shall be enlarged in line with the size of packages.
- 4) Hand lettering with felt-tip markers is not acceptable.
- 5) Marking for cargo handling care, sling wire, center of gravity, etc., shall be stenciled at proper points/places on each package.
- 6) Cargo damages which were caused by improper marking for sling wire end center of gravity shall be the Seller's responsibility.

Marking for Export boxes



- Marking shall include lifting points.
- Center of gravity
- Handling instructions

9. PACKING LIST

- 1) The Seller should prepare package marking and Packing List as per the FORM, refer to **Annex-1 & Annex-2**.
- 2) The Seller must show fully itemized complete description of spare parts and accessories for item by item clearly in the packing list.

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- 3) Packing list must show the full details of contents for each package if quantity of package to be delivered will be more than one.
 - a) BCAG Item No.
 - b) BCAG Project No.
 - c) Material description
 - d) Quantity
 - 4) One copy of packing list shall be placed in a waterproof envelope inside of each package, and the other copy shall also be placed in a waterproof envelope and securely attached to the outside of each package as illustrated above.
 - 5) If the equipment/material is shipped unpacked, the said two copies of packing lists are to be placed in a waterproof envelope and securely wired to the material with galvanized or aluminum wire or other suitable method.

10. SPECIAL HANDLING PROCEDURE

- 1) The Seller is requested to submit to BCAG and to the nominated freight forwarder a "Handling and Storage Procedure" for special goods for which special attention shall be paid during transportation and storage. Cargo and Handling damages which are caused due to missing or insufficient handling and storage instructions shall be Seller's responsibility.

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Table 1 - Minimum packing requirements

The following minimum packing requirements shall be considered if not agreed differently with the Purchase Order.

No.	Equipment	Description	Packing type / minimum requirement	Remarks
1	Falling film evaporator		On saddles, all openings closed, evaporator to be covered with water vapor-proofed plastic foil *	Including lifting points for handling
2	Final concentrator		Transport base, all openings closed, concentrator to be covered with water vapor-proofed plastic foil *	Including lifting points for handling
3	Heat exchanger, condenser	Small size	Case	Suitable for 40`container ocean transportation
4	Heat exchanger, condenser (plate)	Large size	Crate or case, with shock-indicators, after consultation. In case of crate, all openings closed, heat exchanger to be covered with water vapor-proofed plastic foil *	Suitable for 40`container ocean transportation
5	Condenser (tube)	Large size	On saddles, all openings closed, condenser to be covered with water vapor-proofed plastic foil *	Including lifting points for handling
6	Heaters, boilers		On saddles, all openings closed	Including lifting points for handling
7	Accessories to heaters (platforms, ladders, anchor bolts)		In crates or on pallets. The pallets must be loaded in such a way that they can be stacked	Depending on size, suitable for 40' container or open bulk ocean transportation
8	Tanks		On saddles, all openings closed, tank to be covered with water vapor-proofed plastic foil *	Including lifting points for handling
9	Prill cooler		Depending on size, crate or case	Depending on size, suitable for 40' container or open bulk ocean transportation
10	Nickel tubes		Case Max. 40 pcs per case or after consultation	Suitable for 40`container ocean transportation. All empty spaces must be filled with stable packaging material. The tubes must not move axially or radially in the crate. Both end panels of the crate must be reinforced accordingly. Felt, fleece or foil must be placed between each tube to prevent direct contact between the individual tubes. Pictures of all crates packed with the tubes with open lids are required

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11	Nickel central tubes	Ø 112x3.5 mm	Case Max. 16 pcs per case	Suitable for 40`container ocean transportation. All empty spaces must be filled with stable packaging material. The tubes must not move axially or radially in the crate. Both end panels of the crate must be reinforced accordingly. Felt, fleece or foil must be placed between each tube to prevent direct contact between the individual tubes. Pictures of all crates packed with the tubes with open lids are required
12	Pumps for all media		Case with shock indicators	Suitable for 40`container ocean transportation
13	Control panels, MCC panels, VFD panels, junction boxes		Case with shock indicators	Suitable for 40`container ocean transportation
14	Stacks		On saddles, all openings closed	Including lifting points for handling
15	Accessories to stacks (platforms, ladders, anchor cage)		In crates or on pallets. The pallets must be loaded in such a way that they can be stacked	Depending on size, suitable for 40' container or open bulk ocean transportation.
16	Vapor, air- and flue gas ducts		In crates or on pallets. The pallets must be loaded in such a way that they can be stacked	Depending on size, suitable for 40' container or open bulk ocean transportation.
17	Flexible joints for ducts		Case	Suitable for 40`container ocean transportation
18	Piping material, fittings and piping accessories		In crates or on pallets. The pallets must be loaded in such a way that they can be stacked	Suitable for 40`container ocean transportation
19	Valves		Case	Suitable for 40`container ocean transportation
20	Instruments		Case	Suitable for 40`container ocean transportation
21	Burners		Case	Suitable for 40`container ocean transportation
22	Fuel trains, racks or skids		Case	Suitable for 40`container ocean transportation
23	Flaking machines		Crate or case, after consultation	Depending on size, suitable for 40' container or open bulk ocean transportation.
24	Cooling cylinders		On saddles, all openings closed, cylinder to be covered with water vapor-proofed plastic foil *	Including lifting points for handling
25	FD & ID fans		Case	Suitable for 40`container ocean transportation
26	Bagging-Units		Case	Suitable for 40`container ocean transportation

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27	All not mentioned parts		After consultation	Suitable for 40`container ocean transportation
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* Seller shall ensure that equipment is completely covered with water vapor-proofed plastic foil. It must be ensured that the foil is not damaged at any point. Sharp-edged corners must be carefully padded, as the foil packaging must be impermeable to water vapor (absolutely tight). Special care is required for all openings through the foil, such as boltings of the equipment to the bottom of the box. At all points where the film must be "destroyed", e.g. to attach a bolt to the bottom of the box, a rubber seal on both sides is required. A calculated amount of desiccant shall ensure that the relative humidity cannot rise above 40%. Corrosion is therefore excluded (desiccant method).

Annex 1 - BCAG Packing list

Packliste / Packing List		Project: 8XXXXX	XXXXX
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Kisten Nr. Pack No	Verpackung Package	Abmessungen Dimensions L x W x H [cm]	Brutto Gewicht Gross Weight	Netto Gewicht Net Weight
	1 Case		Kgs	Kgs

Item N°	Part of	Qty	Unit	Description	Main data	Type /Material	Weight [kg]

Storage code : XX	Erstellt durch / Prepared by	Geprüft durch / Checked by	Dok. Nr./Doc. No. - Rev =File Name		
	Änderung Revision		8XXXXX-01-101-A4		00
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Annex 2 - BCAG package marking

Projekt No.: **XXXXXXXX** / **Project Name:** **XXXXXXXX**

P/O No.: **XXXXXXXX**

Consignee address



VIA XXXXXXXX XXXPORT

Pack-No.: **XXXXXX**

Net. weight: **xxx** KGS

Gross weight: **xxx** KGS

Dim.: **XX** x **XX** x **XX** CM

VENDOR: BERTRAMS CHEMICAL PLANTS LTD., SWITZERLAND
HANDLE WITH CARE, RIGHT SIDE UP, KEEP AWAY FROM MOISTURE