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Packing Recommendations

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Affected Section(s)	Changes / Reason / Remarks
All	Import into DOORS database. Allocation of object tags to each paragraph.

Contents

1. Scope

[R-PCK-4] / / / This document summarizes the general recommendations for shipping sensitive equipment within Europe and from Europe to Chile or from Chile to Europe.

[R-PCK-5] / / / It is a collection of tips and advices collected over 30 years of experience of successful transport of sensitive equipment and systems within Europe and from Europe to Chile. Following these recommendations reduces substantially the risk of damage, loss and having to deal with cumbersome insurance scheme.

[R-PCK-6] / / / It also provide relevant information concerning the importation of equipment to Chile and the regulations about authorized packing materials

2. Related Documents

2.1 Applicable Documents

[R-PCK-9] / / / The following documents, of the exact version shown, form part of this document to the extent specified herein. In the event of conflict between the documents referenced herein and the content of this document, the content of this document shall be considered as superseding.

AD1 Packing/shipping list for PiP;

ESO-417361

https://pdm.eso.org/kronodoc/HQ/ESO-417361/1

2.2 Reference Documents

[R-PCK-12] / / / The following documents, of the exact version shown herein, are listed as background references only. They are not to be construed as a binding complement to the present document.

RD1 Electronic Product Marking for ELT;

ESO-321432 Version 2

https://pdm.eso.org/kronodoc/HQ/ESO-321432/2

RD2 Ley Chile - Decreto 75 (APRUEBA REGLAMENTO QUE ESTABLECE NORMAS APLICABLES A LAS IMPORTACIONES Y EXPORTACIONES DE LAS SUSTANCIAS AGOTADORAS DE LA CAPA DE OZONO, LOS VOLÚMENES MÁXIMOS DE IMPORTACIÓN Y LOS CRITERIOS PARA SU DISTRIBUCIÓN);

https://www.bcn.cl/leychile/navegar?idNorma=1046626

RD3 Ley Chile - Resolucion 408 Exenta (APRUEBA LISTADO DE SUSTANCIAS PELIGROSAS PARA LA SALUD);

https://www.bcn.cl/leychile/navegar?idNorma=1090269

RD4 Government Chile - Lista Sustancias Quimicas Controladas;

www.interior.gob.cl/media/2014/04/Lista-Sustancias-Quimicas-Controladas.pdf

3. Introduction

[R-PCK-15] / / /

This document concerns the packing of instruments, instrument sub-systems, telescope assemblies, subsystems, electronic and optoelectronic components. The general practice at ESO is to pack these items in separate boxes.. Airfreight, sea freight, rail freight and land freight can be selected depending on schedule, costs, volume, distance and risk (see Table 1). On the other hand the full container packing has the advantage that the complete shipment stays together. The document does not intend to forbid or recommend one scheme over another.

[R-PCK-16] / / /

	Pros	**Cons**
Sea Freight	The most cost effective form of freight shipping Possible to ship large volumes of cargo including large and heavy goods A greener form of freight shipping (smaller carbon footprint in comparison to air freight per unit of ton-km: ~10 gCO2e/t-km) Can be delivered directly to Antofagasta	Relatively slow transit times, Risk of container ships experiencing delays in port or unable to load/unload cargo 5 to 6 weeks from Europe to Chile. It requires extremely good (sea) water tight packing
Land freight	Highly cost effective and economical especially over short distances Less preferred from environmental/sustainability point of view with 80 gCO2e/t-km door-to-door service (within continent)	Limited capacity dictated by size of vehicle Transport times can be adversely affected by uncontrollable circumstances including traffic and weather
Rail freight	Cost effective when transporting freight across long distances Environmentally friendly but depends heavily on country electricity mix; ~5 to 50 gCO2e/t-km Reliable transit times and schedules	Not economically viable across shorter distances Requires additional logistic for door-2-door delivery
Air freight	Fastest form of freight forwarding for large distances a fortiori intercontinental Greater security for your goods (goods typically arrive with a 99.99% success rate)	Considerably more expensive Limited capacity and not always able to ship large or heavy cargo Incapable of transporting certain cargo including many hazardous substances

	Worst shipment type from environmental point of view: 1-2 kgCO2e/t-km ~ 2 weeks days between Europe and Chile	Considerable carbon footprint. pressurized cabin may be requested for very sensitive optical components Door to door service requires additional logistics

Table 1 Comparison of different freight solutions.

3.1 Acronyms

This document employs several abbreviations and acronyms to refer concisely to an item, after it has been introduced. The following list is aimed to help the reader in recalling the extended meaning of each short expression:

AD	Applicable Document
CO2	Carbon dioxide
Glue 2216	3M™ Scotch-Weld™ Epoxy Adhesive 2216
ISPM-15	International Standards For Phytosanitary Measures No. 15
INMF	Spanish version of the ISPM-15 norm
PA	Product Assurance
RD	Reference Document
SoW	Statement of Work
SPE	Specification

4. Packing

4.1 Preparation, pre-packing

[R-PCK-19] / / / It is not realistic to assume to be able to transfer the full information on the sensitive equipment to the packing company. Only the persons who build the equipment can have the complete knowledge about its sensitivity to transport. For this reason, a preparation work and for some very critical components, pre-packing activities are necessary before involvement of the packing company.

[R-PCK-20] / / / For the pre-packing phase, the following points shall be checked and implemented:

[R-PCK-21] / / / • All freely moving parts shall be rigidly fixed or well damped (if necessary with implementation of dedicated transport securing bars…)

[R-PCK-22] / / / • Every optical element which is not rigidly fixed in its mount shall be packed separately (this apply specially for large heavy optics which are often spring loaded)

[R-PCK-23] / / / • For movable stages (turn table, translation stages…) they shall be packed in such way that the heavier components are supported. This is to avoid any damage of the guiding elements by the load.

[R-PCK-24] / / / • Every optical component shall be well protected (covers, optical paper, foam…..) and should only be sealed with desiccant.

[R-PCK-25] / / / • Every screw shall be carefully tightened or secured, in case of transport of complete assemblies. Any loose screw may be completely unscrewed by the vibration and may cause a lot of damage while moving inside the assembly.

[R-PCK-26] / / / • All loose cables shall be attached and the connector should be wrapped in protected foils.

[R-PCK-27] / / / • All tubes and fluid cooling systems shall be purged. Remaining liquid could leak and or freeze with disastrous consequences.

[R-PCK-28] / / / • All batteries shall be removed (especially Lithium Ion accus)

[R-PCK-29] / / / • All dangerous material shall be removed (explosive, corrosive, toxic vapors etc.)

[R-PCK-30] / / / • Electrostatic discharge prevention means shall be implemented (static safe containers).

[R-PCK-144] / / / • Due to regulations applicable hazardous and controlled chemical substances, users are required, before importing and/ or exporting to/ from Chile, to check the attached lists according to UN and CAS numbers mentioned on the safety data sheets of the products. In case one of these substances is listed, please consider buying these locally in Chile to avoid formalities and delays with the local authorities (see RD3 and RD4).

[R-PCK-145] / / /
- If buying locally cannot be done, please inform immediately ESO Logistics Chile as the process requires a special procedure, for which the Safety Data Sheet (SDS) will be requested in a Spanish version. Also, a period of approximately 10 working days of storage (not at port but in a mid-term certified warehouse) must be considered, to allow the Chilean authority in charge (Seremi de Salud) to carry out an inspection of the products already cleared from customs so, after this is done, the shipment can continue in transit to final destination.

[R-PCK-146] / / /
- Note that products containing substances mentioned in the ozone-depleting substances list (Ley N° 20096; see RD2) must be bought locally in Chile, as ESO will not support the special import/export process related to those substances.

[R-PCK-31] / / /
- Corrosive fluids in cryostats shall be removed.

[R-PCK-32] / / /
- A member of the team shall be present permanently during packing operation.

4.2 Choice and design of the boxes

[R-PCK-34] / / / One of the advantages of separate wooden boxes is that they can be custom made for a reasonable budget. Nevertheless it is important to respect a few fundamental rules while defining the size of the boxes. These rules are listed in this section:

[R-PCK-35] / / /
- One shall avoid too small and too light boxes which can be handled manually (they are the ones which will be the easiest to drop). The box shall be as much as possible longer and wider than high. This will guarantee a better stability of the box during handling and transport. This also avoids reaching too rapidly the height maximum for normal air transport (therefore all electronic cabinet are transported lying horizontally in the transport box).

[R-PCK-134] / / /
- Be aware of a maximium size in case of transportation by aircraft.

[R-PCK-36] / / /
- All boxes shall have the possibility to be handled with a forklift. For large bulky boxes it is important to have the possibility to take them from all side with a forklift.

[R-PCK-37] / / /
- Heavy boxes shall also have the possibility to be handled with a crane.

[R-PCK-38] / / /
- The battens shall be high enough to for a safe handling with the forklift. The product inside the container shall have a gap with the floor to avoid any damage if the forklift is inserted accidentally in the container.

[R-PCK-39] / / /
- The cover shall leave a gap over the product inside in order to avoid a collision of the cover with the product during handling and opening.

[R-PCK-40] / / /
- In the case the equipment has many equivalent systems: 3 collimators, 2 cameras, grating…, it is recommended to avoid putting all of them in the same box. If one box is lost, has an accident or is delayed some work can be done with the components, which have been delivered.

[R-PCK-41] / / /
- Very sensitive parts are safely packed on the top of very heavy components, in the same box.

[R-PCK-42] / / /
- Every box should carry shock and tilt indicators. They should be placed on the box so they are visible from outside. They can then be read at various stage of the transport.

This has also a psychological effect on the person who handles the boxes. Every box should also carry the standard sign indicating the top (2 arrows to the top).

[R-PCK-43] / / /
- Polystyrene chips shall not be used as damping/filling material. Due to static charging in the dry Paranal environment they will cling to everything including sensitive optical surfaces. With a bit of wind, they will fly away and have a very bad impact on the Paranal environment.

[R-PCK-44] / / /
- The box shall be screwed and not nailed. This helps for inspection and reclosing the box.

4.3 Material of the box

[R-PCK-46] / / / This section mainly addresses the case of packing using custom made wooden boxes. Chile is extremely careful with its environment and in consequence applies a strong control on what enters the country. We shall guarantee that we are not entering any parasite; therefore it is absolutely necessary to be able to prove the provenance and treatment of the wood.

[R-PCK-47] / / / International Standards for Phytosanitary Measures No. 15 (ISPM 15) is an International Phytosanitary Measure developed by the International Plant Protection Convention (IPPC) that directly addresses the need to treat wood materials of a thickness greater than 6mm, used to ship products between countries in order to prevent spread of disease and insects. ISPM 15 affects all wood packaging material (pallets, crates, etc.) requiring to be heat treated or fumigated with methyl bromide and stamped (see Figure 1).

[R-PCK-48] / / / In addition, It is also strongly recommended to have the box cover panel doubled inside with a layer of water tight material to protect from moisture.

[R-PCK-49] / / / Finally, plywood is preferred to plastic boxes that might generate droplets in case of fire. Plywood is cheaper, stiffer and has a better resistance against fire. Note that there are different flammability grades for plywood.

[R-PCK-50] / / / As a Summary, the following rules shall be followed:

[R-PCK-51] / / /
- All wooden elements used in packaging of all the items defined in this specification shall be treated according to the International Standards for Phytosanitary Measures N.15 (ISPM 15) and proven certificate shall be provided.

[R-PCK-52] / / /
- Material of the boxes shall be selected to reduce the flammability and to avoid droplets in case of fire. In particular, fire loads and ignition probability of the transport boxed shall be limited to the possible extent, notably where polyolefin material (e.g., plastic; foams) is used, e.g. by adequate flame-retardant treatment.

[R-PCK-53] / / /
- Addition coatings or layers to reduce and or avoid moisture shall be implemented.

[R-PCK-54] / / /
- The exposure to hazardous materials coming from the transport box, as may occur by outgassing of wood treatment (and/or bonding) chemicals, shall be limited to the possible extent. Optical surfaces (lenses, mirrors) shall be adequately protected to avoid contamination produced through outgassing of the plastic bags and wood treatment chemical.

[R-PCK-55]
/ / /

Figure 1: Fumigation/HT wood certificate stamp

4.4 Installation in the boxes

4.4.1 Foam based Packing

[R-PCK-58] / / /

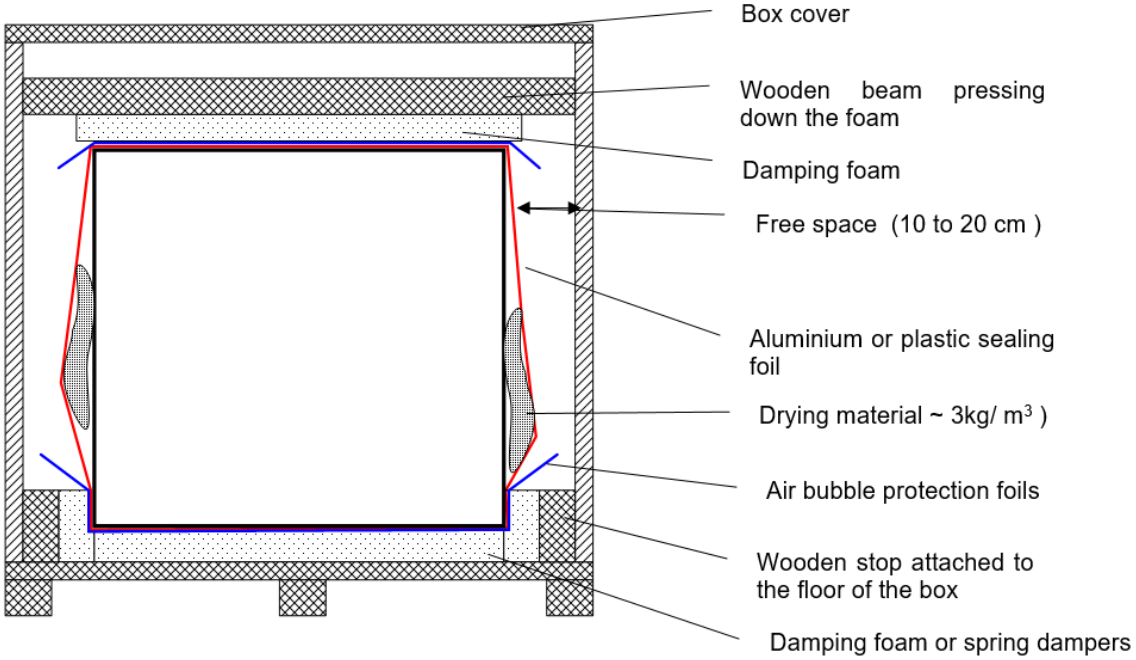


Figure 2: Traditional packing of small components

[R-PCK-59] / / / Figure 2 shows the traditional way of packing. The box is considered as a cover, which only acts as a protection for the equipment. The equipment is mainly sitting on the floor of the box and pressed down by a traverse (Pressing beam) via damping foam.

[R-PCK-60] / / / The following points shall be checked and implemented:

[R-PCK-61] / / /
- The box shall be fixed inside the container and shall remain stable during transportation. This can be done using screws, foams or belts to apply pressure

[R-PCK-62] / / /
- A free space between the box and the content of 10-20 cm shall be implemented. It is very important not to use the full volume of the box. In case of an accident during transport the fork of the fork-lift can enter in the box without causing any damage to the equipment.

[R-PCK-63] / / /
- The air bubble foils shall be implemented to protect the sealing foil against any damage.

[R-PCK-64] / / /
- After installation on the floor of the box, the sealing foil shall be first evacuated and then closed by welding. This has two advantage 1st it reduces the quantity of air and then the humidity and 2nd it stabilises and hold the various parcels together.

[R-PCK-65] / / /
- In case of system sensitive to the temperature or in case of long period of storage aluminised foils shall be selected instead of plastic ones.

[R-PCK-66] / / /
- No damping foam shall be enclosed inside of the sealing foil: the foam might retain water.

[R-PCK-67] / / /
- The distribution of the load in the boxes shall be as much as possible symmetrical to have the centre of gravity approximately centred on the floor. If it is not the case the position of the COG should clearly be indicated on the box.

[R-PCK-68] / / /
- The foam shall be selected to have approximately a compression of 10 % under the full load. The same compression is to be applied to the upper layer of foam.

4.4.2 Floating packing for electronic cabinets

[R-PCK-70] / / /

Figure 3: Floating packing for electronic cabinets

[R-PCK-71] / / / Figure 3 shows a practical example of this type of packing used for standard electronic cabinets.

[R-PCK-72] / / / In this configuration, the electronic cabinet is installed horizontally with the back door on a wooden plate which has some openings for the door handles and hinges. This wooden plate is floating on a number of discrete foam blocks. Similar foam blocks are used to separate the cabinet from every wall of the box.

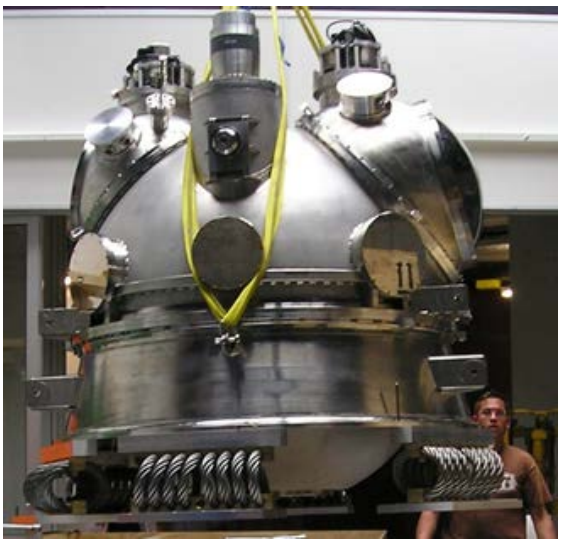
4.4.3 Springs and dampers

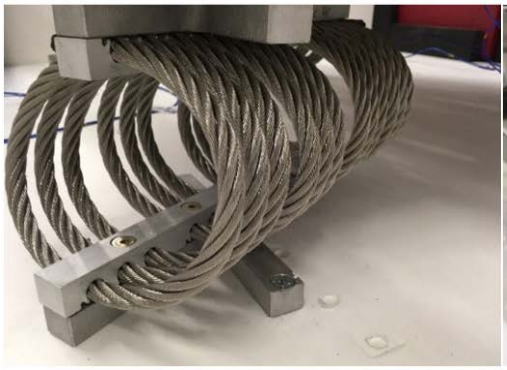
[R-PCK-74] / / / Figure 4 shows another way of packing. This shall be used for very sensitive sub-assemblies that have to be transported integrated. In this case the object is suspended in a very rigid mechanical structure with springs. The springs are designed in order to have an Eigen frequency around 2 to 3 Hertz.

[R-PCK-75] / / / The structure can either be directly bolted on the floor of the box or mounted swimming between foam layers. The recommendations given earlier concerning sealing apply here as well.

[R-PCK-76] / / / It is not recommended to use air dampers for air freight or for shipment to Paranal and Amazones, due to the altitude on the mountains. Especially air bags, which are very easy to use for local transport in Europe, are absolutely not suitable for transport to Paranal and Amazones. Generally, they are pressurized in Europe close to sea level, at the altitude of Paranal the differential pressure is such that they are absolutely rigid and their expansion at lower air pressure may even destroy the box.

[R-PCK-77]
/ / /





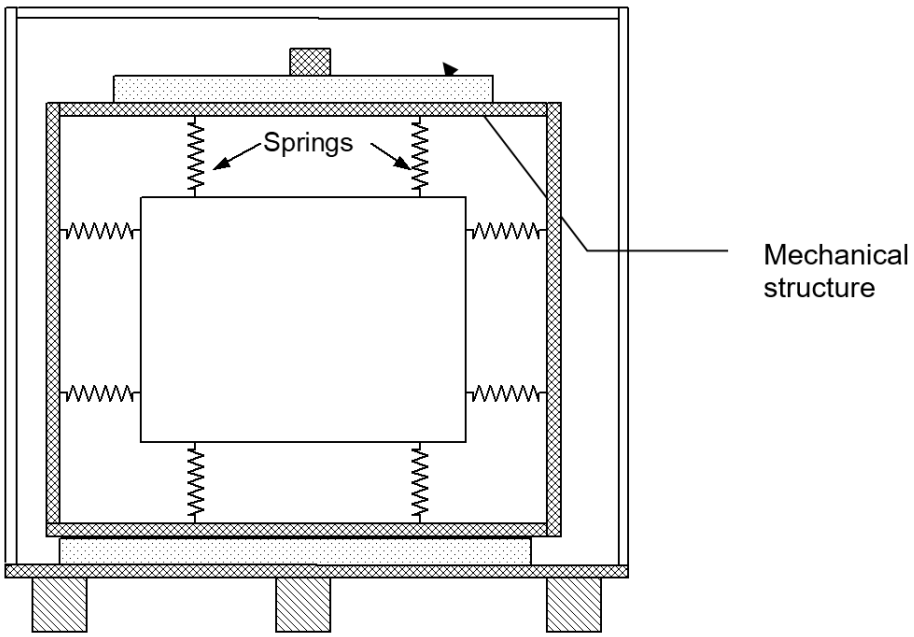


Figure 4: Spring damper system

4.5 Moisture

[R-PCK-79] / / / Moisture is an issue that might accelerate corrosion or damage the product. Therefore, the following points shall be considered:

[R-PCK-80] / / /
- Plastic bags filled with dry air or preferably Nitrogen shall be used to pack the equipment.

[R-PCK-81] / / /
- 3 kg of desiccant shall be used per cubic meter.

[R-PCK-82] / / /
- Grease might be used on sensitive mechanical parts

[R-PCK-83] / / /
- Modern shock indicators shall be selected, if moisture shall be monitored during transport.

4.6 Stacking

[R-PCK-85] / / / Stacking might be an option used by any suppliers. The following recommendation shall be taken into account:

[R-PCK-86] / / /
- Standard 20- or 40-feet transport containers have an entrance door that has a limited height. This height and additional margin when handling the transport boxes inside the ISO 20- or 40-feet containers shall be considered when designing the transport boxes (see Figure 5)

[R-PCK-87] / / /
- The structure of the transport box could be used of stacking. It is however recommended to used internal pillars for stacking and not the transport box itself. The loads on the side panel might be too large (see Figure 6).

[R-PCK-88] / / /
- Latching shall be taken into account to secure the transport boxes inside ISO 20- or 40-feet containers. This can be performed using belts. The transport box shall be designed such that latching or additional bracings between wooden boxes and container walls is possible (see Figure 7)

[R-PCK-89] / / /
- Handles and locks shall be inserted in the transport box (see Figure 8) if possible otherwise protected (see Figure 6). These parts can easily get damaged during handling.

[R-PCK-90] / / /

	20' Container Standard	40' Container Standard	40' Container High Cube
Internal length	5.90 m	12.01 m	12.01 m
Internal width	2.35 m	2.35 m	2.35 m
Internal height	2.38 m	2.38 m	2.69 m
Door width	2.33 m	2.33 m	2.35 m
Door height	2.28 m	2.28 m	2.58 m
Capacity / Loading	32.8 m³	67.2m³	76.9 m³
Tare weight	2,30 kg	3,980 kg	4,150 kg
Net load	21,640 kg	26,500 kg	26,330 kg

Figure 5 Standard height of ISO transport containers

[R-PCK-91]
/ / /

Figure 6 Example of a transport boxes, including pillars for stacking

[R-PCK-92]
/ / /

Figure 7: Example of latching

[R-PCK-93] / / /

Figure 8: Example of inserted handles.

5. Sensors, Indicators

[R-PCK-95] / / / Typical acceleration loads during transport are 1 to 2 g on a truck, 4 g in an airplane and up to 10 g at the harbour during handling.

[R-PCK-96] / / / As already indicated in the previous chapter, it is recommended to equip every box with tilt and shock indicator. Indicators should be placed on two perpendicular sides of the boxes. It is recommended not to be too critical with shock sensors (5G sensors will always be activated), better choose 10 to 20 g. Good packing should in any case lead to further damping of shocks that are applied to the outside of the box.

[R-PCK-97] / / / The shock sensors shall be placed close to the corner of the boxes in order to record real shocks on the box and not only shocks on the wall.

[R-PCK-98] / / / The indicators shall be well visible; they are generally accompanied by a self-adhesive announcing sheet which should be installed close to the sensors itself. To see the indicator and the description is an excellent warning for the staff doing the handling.

[R-PCK-99] / / / Generally the boxes are loaded very tightly to each other on the truck. This is obviously in order to get a very compact and stable load. In order to avoid the indicator to be

destroyed during the loading operation, the indicator shall be installed in a protected area. Figure 9 shows one possibility to protect the indicator.

[R-PCK-100] / / / In case of extremely sensitive components, it is advisable to have the box equipped with a shock sensor and data logging system. This will allow, in case of problem, to identify the time slot and then the operation where the problem occurred. In such cases it is recommended to mention clearly on the box that it is equipped with a sensor. Note that modern shock indicators record acceleration and tilt in every direction.

[R-PCK-101] / / / Available shock recorders on the market tested by ESO include the ASPION ones (*Schocksensor G-Log* | *Schockrecorder* | *Datenlogger* | *ASPION:* https://www.aspion.de/schock-sensor-aspion-g-log-schockrecorder-transportueberwachung-datenlogger/ *)*

[R-PCK-102] / / /

Figure 9: Indicator protection

6. Box Marking

[R-PCK-104] / / / A number of information items shall be directly marked on the boxes. This is generally done by spraying water resistant paint through stencil masks. Figure 10 shows some examples of box marking that are mandatory to follow:

[R-PCK-105] / / /
- The two arrows is an international convention to indicate the top of the box (the arrows are pointing up)

[R-PCK-106] / / /
- The wine glass is an international convention to indicate that the content of the box is fragile.

[R-PCK-107] / / /
- The umbrella with the drop is an international convention to indicate that the box should be protected against rain

[R-PCK-108] / / /
- The name of the project shall be indicated on the box as well as the name of the contact person on both ends of the transport chain.

[R-PCK-109] / / /
- The number of the box shall also be indicated.

[R-PCK-110] / / /
- All these information shall be repeated on two perpendicular sides of the boxes

[R-PCK-111] / / /
- When the box can be lifted with a crane, it shall be indicated where the slings can be placed. This is indicated with the chain symbol on the right side of the figure 10.

[R-PCK-112] / / /
- When the position of the center of gravity is not obvious (not on the geometric center of the box), its approximately position shall be indicated. This is marked with the circle and the cross in the right side of the figure 10.

[R-PCK-113] / / /
- Some special marks can also be applied when a box is really sensitive (red and green diagonal on the right part of figure 10)

[R-PCK-114] / / /
- A naming plate or product identifier or QR code shall be attached to the box. It shall include (see ESO-321432 “Electronic Product Marking for ELT”):
  - the name of the product
  - the serial number (if applicable)
  - the company name
  - the item number (if applicable)
  - the month and year of manufacturing.

[R-PCK-115] / / /

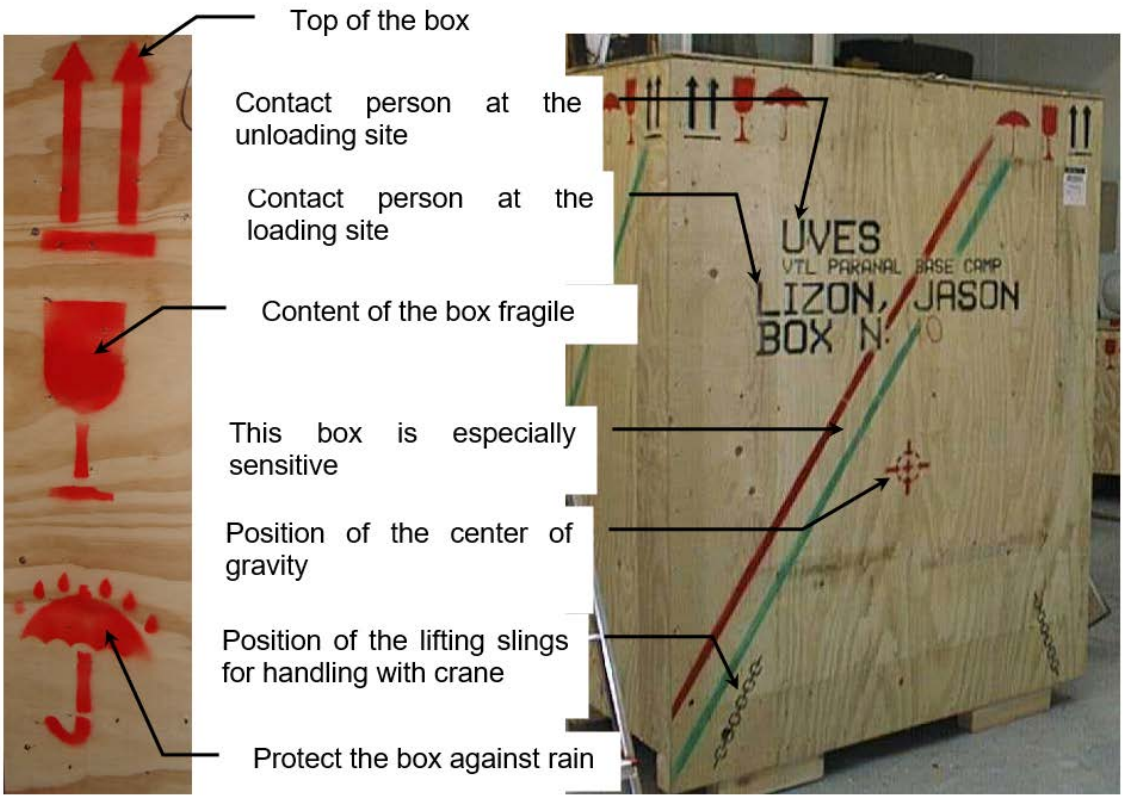
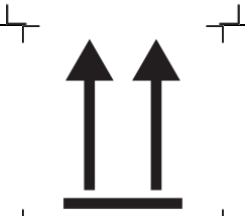
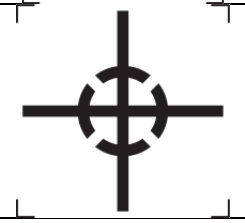


Figure 10: Box marking

[R-PCK-116] Table 2 shows examples of labels or stickers according to the ISO 7000 norms used by all shipping companies.
/ / /

[R-PCK-117] The important labels that shall be visible are listed below:
/ / /

Fragile	
Lifting	
Orientation	
Mass and center of gravity	
Minimum length of the fork lift	Written in readable capitals
Fumigation certificate/ HT (heat treatment) stamp	
Maximum stacking	

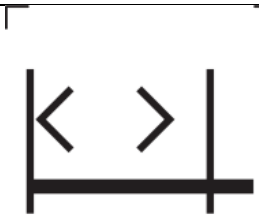
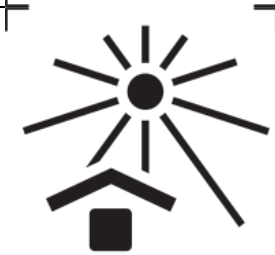
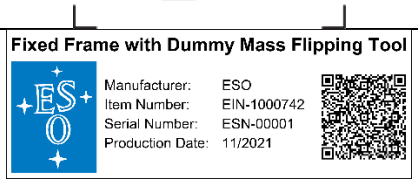
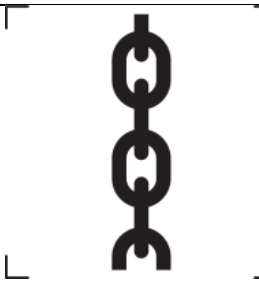
Do not step on the cover (if applicable)	
External sizes	
No direct sun (if applicable)	
Naming plate or product identifier or QR code, including serial number.	
Keep dry	
Sling here	

Table 2 List of ISO 7000 symbols relevant for packing.

[R-PCK-118]
/ / /

Figure 11: standard Stickers

[R-PCK-119]
/ / /
Figure 11 shows stickers that are not according to the ISO 7000 norms, but still can be used, especially to emphasize the fragility warnings.

[R-PCK-120]
/ / /
Note that transport containers are usually called crate in the business of transportation.

[R-PCK-121]
/ / /
A shipping list shall be prepared for any shipment to Chile. This list shall contains all relevant information (product name, mass, crate dimensions, code, cost). Detail packing lists shall be prepared for every box.

[R-PCK-135]
/ / /
Dimensions shall be indicated as L x W x H (length x width x height).

7. Transport

[R-PCK-123] / / / It is advisable to have a representative of ESO or of the consortium at every unloading and transfer place as well as along the road transport in Chile.

[R-PCK-124] / / / There are different means of transportation, as described in Table 1.

[R-PCK-125] / / / The road transport in Chile is the most critical part of the complete transport. There are many kilometers of unpaved road which are in a very bad state.

[R-PCK-126] / / / An air damped truck shall be specified and to verified that one gets it.

[R-PCK-127] / / / The most sensitive boxes shall be placed on the quietest part of the truck loading area (avoid to put them on the back of the trailer).

[R-PCK-136] / / / The speed limit for each truck shall be mentioned to the shipping company.

[R-PCK-137] / / / The type of required truck shall be mentioned to the shipping company. Please indicate if an escort is necessarry.

[R-PCK-138] / / / In order to avoid heating up during the transit to site, a light coloured tarpaulin shall be used as cover if possible.

8. Unpacking

[R-PCK-129] / / / In case the shock or tilt sensors are activated or clear damage can be seen on the outside of the box, it shall be declared as soon as possible to the insurance company. A first investigation can be made during the opening of the box. Some damage (especially misalignment of sensitive optical components) requires a long procedure to be finally established. They can be declared later, but it is easier to claim the damage when potential damage has already been announced before unpacking.

[R-PCK-130] / / / The person who has followed the packing should ideally also be present to follow or better execute themselves the unpacking. This person knows how the boxes are built and where the sensitive components are located. Other staff will benefit from the presence of unpacking instructions.

9. Summary

[R-PCK-148] / / /
The purpose of this summary is emphasize on the recommendations that have to be fulfilled in order to guarantee the safe delivery to Chile and the successful acceptance by the Chilean customs:

[R-PCK-149] / / /
- Safety and integrity reasons
  - R-PCK-20 (safe packing)
  - R-PCK-104 (box Marking and handling)
  - R-PCK-121 (product identification for the customs)
- Forbidden products will be blocked by the customs.
  - R-PCK-144
  - R-PCK-146
  - R-PCK-31
- Limitation to the Maximum size or envelope
  - R-PCK-134
  - R-PCK-36
- Fumigation
  - R-PCK-46 and 47 (47 shall be linked to 46, it is a definition)
  - R-PCK-50
- Moisture prevention
  - R-PCK-79
- Optimization of the space inside the transport container (cost driver and safety aspects)
  - R-PCK-2085
- Insurance
  - R-PCK-42
  - R-PCK-96
  - R-PCK-100

[R-PCK-131] / / /
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