



Packaging Handbook for Suppliers

Guidelines for Packaging of Outsourced Items

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1 Purpose and Area of Application

This packaging handbook applies to deliveries to the following LuK plants:

- Bühl main plant
- Bühl Bussmatten
- Hamm
- Morbach
- Sasbach
- Sheffield
- Szombathely
- Chevilly
- Kaltennordheim

For deliveries to plants which are not listed above the relevant guidelines have to be requested from the particular plant.

The following guidelines apply to deliveries of:

- Production parts (incl. subcontracting)
- Trade goods

They do not apply to:

- Steel and wire coils
- Raw materials
- Operating supplies
- Prototypes

This packaging handbook is to be taken as an agreement supplementing the framework contract.

The following guidelines, by means of

- ideal containers and packaging design
- standardized dimensions
- uniform content quantities for packaging
- correct and complete labeling of packaging

are intended to result in a trouble-free flow of materials between the suppliers and LuK and to avoid unnecessary repacking work.

2 Packaging Requirements

2.1 General Packaging Requirements

Ecological, economical, and qualitative criteria are to be factored in when designing packaging.

For a parts shipment to satisfy quality requirements, the parts must be free from damage, corrosion, and contamination in accordance with the drawing requirements and further applicable specifications.

The following principles are to be observed with respect to ecological design:

- Packaging may not be larger or costlier than necessary.
- Only recyclable packaging materials may be used that are labeled with standardized (DIN 6120) symbols or others recognized by the waste management industry.
For this reason, compounds are not permissible.
- If the cost and quality of reusable packaging is equivalent to that of disposable packaging, reusable packaging is to be preferred.
- Reusable packaging that is poolable is to be preferred over varieties that cannot be pooled. It is therefore preferable to design inserts (bubble packs, dividers, trays, etc.) as disposable packaging.

2.2 Corrosion Protection

Suppliers must take appropriate measures to protect outsourced items that are subject to corrosion.

Provided that no other corrosion protection periods have been prescribed in the product drawing and further applicable specifications, the following minimum corrosion protection periods for unopened packaging upon delivery are to be guaranteed:

- 6 months for intercontinental deliveries
- 3 months for continental deliveries

Assuming marginal conditions common to the industry, normal climatic factors during transport (to the receiving plant) and storage need to be considered when designing corrosion protection. In the process, it is necessary to observe the corresponding parameters from the Technical Delivery Conditions and drawings. Furthermore, the "prohibited materials" standard S 132030-2 must be adhered to.

2.3 Cleanliness

When designing packaging it must be assured that parts are protected during storage and transport against pollution in accordance to cleanliness class (see drawing).

For this suitable packaging materials has to be used.

For details see Schaeffler standard S252001-1.

2.4 ESD

For electrostatic-sensitive devices (ESD), it is necessary to observe the corresponding VDE or DIN standards.

Overview about often used abbreviations in relation to ESD:

ESD:	Electrostatic Discharge
ESDS:	Electrostatic Discharge Sensitive Device
NON-ESDS:	Non Electrostatic Discharge Sensitive Device
EPA:	Electrostatic Protected Area
SHZ:	Special Handling Zone

3 Packaging Design

3.1 Dimensions and Weights

- Basic format big load carriers (e.g. pallets, skeleton container): 1200 mm x 800 mm
- Max. admissible overall weight per small load carrier or box: 12 kg
- Max. admissible overall weight per loading unit: 1,000 kg
- Max. overall height of the loading unit: 1,000 mm

3.2 Admissible Packaging Materials

Material	Admissible materials	Inadmissible materials
Compounds	- none	- all
Plastic in general	- labeled as per DIN 6120	- PVC, Styrofoam - coloured plastics (deviations only possible after special release)
Plastic packaging materials - foils, pouches, and bags - protective and insulating caps - tubes - flocked inserts	- PE - PE - PE, PP, PS - PE, PP, PS, PET, ABS	
Cardboard packaging and paper	- labeled with RESY symbol	- wax paper - paraffin paper - bituminous paper - oiled paper
Strapping materials	- PP, PET	- steel - polyamide - polyester
Corrosion protection paper	- only VCI paper that can be verified as being recyclable with paper / cardboard	
Wood	- solid wood (labeled for high-temperature treatment and IPPC) - plywood, base plate, OSB	- impregnated, lacquered, or coated wood - solid wood treated with methyl bromide (BT)
Fill materials	- corrugated cardboard - paper	- Styrofoam or chips made from plant-based material

3.3 Disposable Packaging Design

Only four-way pallets that are forkliftable on the narrow end may be used for disposable packaging.

Due to the increased risk of injury, boxes are not to be sealed with metal clamps, but instead with tape.

Generally, boxes must be lined with a PE bag in order to allow them to be repacked in small load carriers.

3.4 Reusable Packaging Design

The use of LuK standard load carriers, illustrated at the following link, is preferable for designing reusable packaging:

http://www.luk.de/content.luk.de/de/supplier/logistics/sets_of_rules/sets_of_rules.jsp

Special load carriers, such as, for example, a supplier's own containers or LuK's own special containers are to be a last resort and may only be used in justified exceptional cases and after consultation with the responsible LuK packaging technician.

3.5 Using Packaging Materials

3.5.1 Acquiring Disposable Packaging Materials

As a rule, LuK does not make disposable packaging materials available to the supplier. However, after being cleared by the purchasing department responsible for our packaging materials, suppliers may procure LuK-specific disposable packaging materials from our packaging material manufacturers at their own expense.

3.5.2 Acquiring Reusable Packaging Materials

3.5.2.1 Basic Information

Except when otherwise arranged, LuK will provide the supplier with poolable, LuK-specific, reusable packaging materials that are for a defined inventory of products. In this regard, the supplier will receive a circulating inventory based on future delivery schedules for 7 calendar days (incl. transit inventories).

Reusable packaging needed by the supplier for internal production processes must be directly procured by the supplier.

3.5.2.2 Poolable Load Carriers

The regulations of the European Pallet Association (<http://www.epal-pallets.org>) shall be applicable for Euro pallets and Euro mesh box pallets.

Load carriers not in line with the standard will be rejected and scrapped.

The expenses incurred from this will be charged to the responsible party.

3.5.2.3 LuK-Specific Reusable Packaging Materials

LuK-specific reusable packaging materials are to be procured exclusively through LuK.

3.5.2.4 Supplier-Specific Reusable Packaging Materials

Supplier-specific reusable packaging materials are to be procured exclusively through the supplier. The costs for purchasing supplier-specific reusable packaging materials are to be billed according to the parts price and listed in a separate offer.

The amount of the circulating inventory required for LuK is to be agreed upon amicably between the supplier and LuK.

3.5.3 Using Reusable Packaging Materials

3.5.3.1 Managing Empties

LuK coordinates returnable packaging accounts with the suppliers for all reusable packaging materials.

Returnable packaging account statements with activity and balance information will be sent to the supplier on a monthly basis.

Complaints must be made within 14 calendar days by submitting corresponding evidence to the returnable packaging department responsible.

If the account is not checked within this period of time, the account balance will count as accepted and will serve as the basis for charges made for replacing reusable packaging materials.

Therefore, when the supplier receives empties, he has to register a complaint with the responsible empties managing clerk immediately after determining any errors (difference in quantity, damage, dirty condition) and supply the packing slip, photographic evidence, and a brief description.

The subsequent procedure is to be agreed upon together with the LuK empties managing clerk on a case by case basis.

Where necessary, LuK will order the containers to be inventoried to compare the book inventory balance with the inventory that is actually available.

The supplier will be obligated to count the empties and required to report the results by the due date. If the supplier does not submit an inventory report, the provision of supplies and any replacements will be based on the unadjusted book inventory balances.

3.5.3.2 Providing Packaging Materials

The supplier must request any reusable packaging materials he requires from the responsible contact persons in a timely manner (at least 5 working days inside Germany, otherwise 10, before they are needed).

You can find the form to use for this and the contact persons via the following link:

http://www.luk.de/content.luk.de/de/supplier/logistics/sets_of_rules/sets_of_rules.jsp

The empties are delivered by LuK to the supplier, provided that no special arrangements have been made.

3.5.3.3 Storage, Repair, and Procuring Replacements

After accepting empties from the freight carrier, the supplier is responsible for proper storage that is protected from the weather.

LuK will repair or scrap any damaged load carriers and take care of procuring replacements. The responsible party shall bear the costs for this.

3.5.3.4 Cleaning

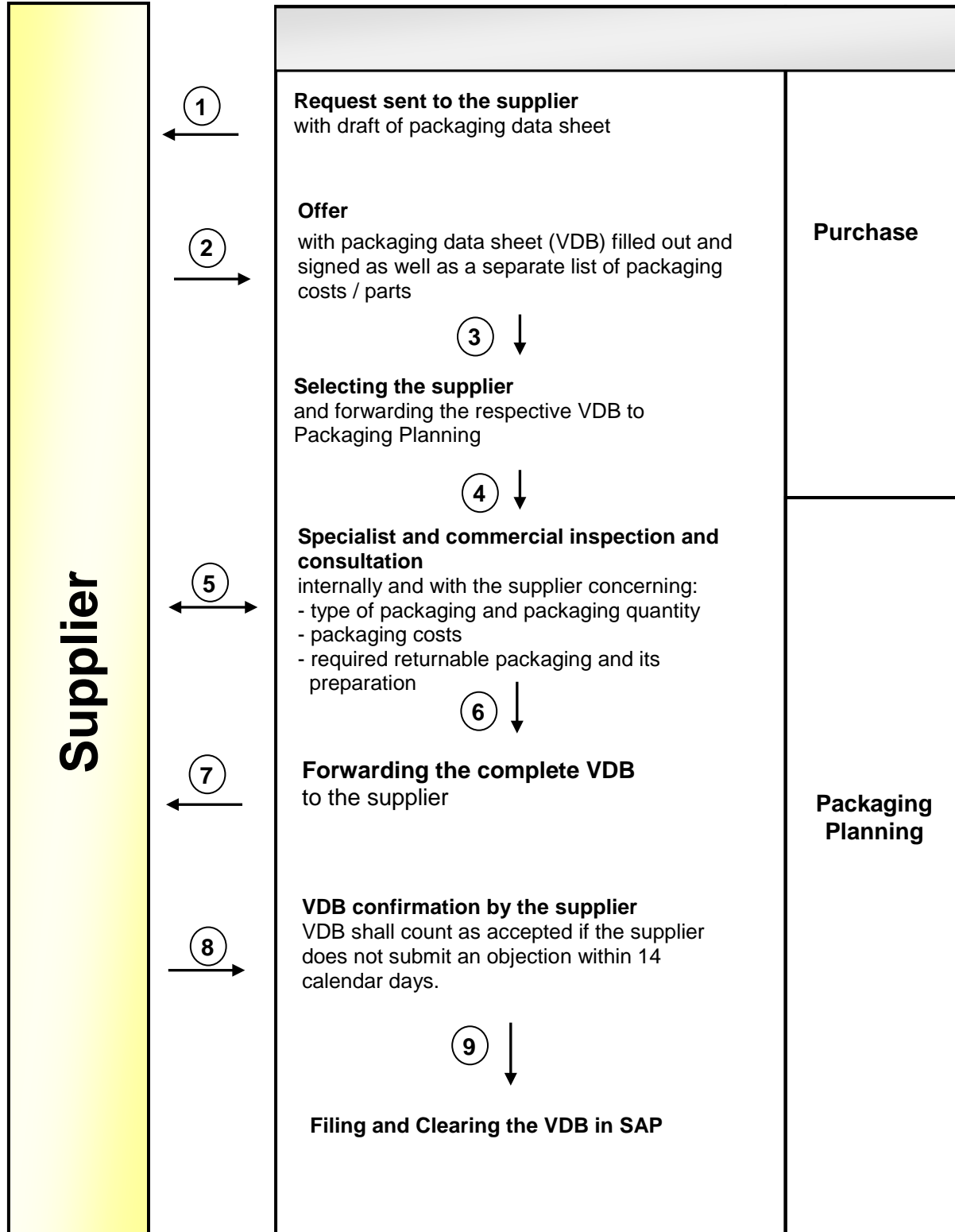
Generally, the cleaning of reusable packaging materials provided to the supplier will only involve the removal of coarse debris.

It will be up to the supplier to conduct more extensive cleaning should this be necessary due to the residual dirt requirements of the product being packaged.

Reusable packaging materials that can no longer be cleaned may not be recirculated.

No additional marking or taping may be done on reusable packaging materials, nor may they be diverted from their intended use or soiled more than would be expected from normal wear and tear. All labels must be removed.

3.6 Process of Determining Packaging



It is necessary to agree at an early date on the packaging for each product to ensure that a shipment will satisfy quality requirements. The agreement reached will depend on the procedure described above and has to be concluded before the first serial delivery.

A draft of the packaging data sheet will be provided to the supplier on request after making a purchase. This generally stipulates the use of reusable packaging.

Under certain circumstances, it may make economic sense to use disposable packaging instead (e.g. when the product has a short life span), or it may be necessary as backup packaging if there is a shortage of empties.

Therefore, disposable packaging must always be offered alongside reusable packaging for reasons of cost effectiveness and as backup packaging. When designing disposable packaging, it must be considered that repacking in reusable packaging needs to be possible with a minimum of effort. It is essential for disposable packaging to meet all other requirements set for reusable packaging (packaging quantity, inner packaging, etc.) as well.

The draft of packaging data sheet have been sent to the supplier do not release him from the obligation to ensure that the shipment satisfies quality requirements.

Therefore, the supplier needs to verify whether it satisfies both the general packaging requirements and the parts-specific requirements.

If they are fulfilled, the supplier needs to add the missing information concerning the reusable packaging to the draft of the packaging data sheet. Otherwise, he has to suggest and justify appropriate reusable packaging deviating from the packaging standards.

Based on this, he must define disposable packaging suitable for repacking and enter the corresponding data in the correct section of the draft of the packaging data sheet.

The supplier then has to return the draft of the packaging data sheet in EXCEL format back to Purchasing along with the offer.

After LuK has inspected the suggested packaging and it has been approved internally / externally, the agreed-upon packaging will be documented in a packaging data sheet incorporating the comprehensive change index and sent to the supplier.

This is to be reviewed by the supplier, who shall reply to the sender **within 14 calendar days** to confirm or disagree. If the supplier does not respond during this period of time, the packaging data sheet shall be deemed to be accepted!

Clearing the packaging, however, does **not** release the supplier from his responsibility with respect to the delivery made to the receiving plant needing to satisfy quality requirements.

Any deviations from the agreed-upon packaging shall only be admissible for justified exceptional cases and after being cleared in writing by Packaging Planning.

The use of alternative packaging also needs to be cleared in writing by Packaging Planning.

4 Palletizing of KLT or cardboard boxes

4.1 General

The usage of pallets depends on delivery volume and the requested type of shipment.
The relevant rules are available on the Schaeffler homepage.

Deliveries of small load carrier (KLT) without pallet have to be sent either within a box or have to be closed with a disposable lid and strapped with plastic band.

The following must be considered:

- Loading units need to be stackable at least two times (1 + 1) without showing any deformation or damage.
- Expandable load units have to be marked on 4 sides with admissible onload.
- Fill up empty spaces with empty small load carriers or boxes.

4.2 Mixed Deliveries

For mixed deliveries the following has to be considered:

- only allowed on pallets, but generally not admissible in large load carriers (e.g. skeleton container)
- different types of small load carriers are admissible on the same pallet
- different types of cardboard boxes are admissible on the same pallet
- small load carriers and cardboard boxes together on the same pallet are not allowed
- large packages must be loaded at the bottom of the pallet and small packages at the top
- do not pack identical material onto several mixed pallets
- do not pack identical material onto several mixed layers
- pack identical material next to each other in one mixed layer.

4.3 Load securing of small load carriers and cardboard boxes on pallet 1200 mm x 800 mm

Stretch wrapping:

- for small load carriers it is only admissible with special release
- for cardboard boxes admissible without any restriction

Strapping:

- with plastic band (steel band is not allowed at all)
- small load carriers 2-times parallel to small side of pallet with a pallet lid
- cardboard boxes 4-times with edge protection profiles
- deformation of packaging components are not allowed

5 Logistics Claims

Disruptions in the logistics process at LuK that are caused by the supplier constitute grounds for lodging a logistics claim. For example, this may include:

- Not observing the agreed-upon packaging (e.g. deviating from the packing quantity)
- Shipments without agreed-upon packaging
- Using containers not satisfying quality requirements (dirty, wet, damaged)

If the stipulations described in this handbook are not followed, LuK reserves the right to refuse to accept the delivery or, if applicable, to repack the merchandise.

Any extra costs incurred by this (e.g. for repacking, conveyor belt stoppage, defective containers, etc.) will be charged to the supplier at the amount of the expense by lodging a logistics claim.