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Changes

- References to Continental Automotive Technical Standard norms (TST)
- Update Chapter 9 Approved Materials and not Approved Materials (REACH)
- New Chapter 11 Continental Automotive Pallet Standards and references to TSTs
- New Chapter 14 Technical Cleanliness of Packaging Materials
- Update Chapter 16 Delivery in returnable small load carriers (KLT)

Previous editions

Former specification was part of the SML (Supplier Manual Logistics) published as CN 855228-1 (Version 1.0; Release 08. 2010)
Extract and update of the former SML (Supplier Manual Logistics), mainly packaging themes

1 SCOPE

With its trendsetting systems technology, the Automotive Group of Continental AG (concerning this norm referring to all legal entities within the Continental Automotive Divisions, Chassis & Safety, Interior, Powertrain – thereinafter Continental or CA) makes a convincing and decisive contribution worldwide to the optimization of safety, reliability, economic viability, environmental compatibility and convenience of modern motor vehicles.

Logistic procedures and processes are becoming increasingly important in relationships between Continental and suppliers. This norm aims to standardize and continuously improve procurement processes involving Continental and suppliers. These improvement and standardization actions are basis for creation of transparency in the logistics processes in Continental supply chain and all parties should benefit from them.

This norm is intended as a reference, which CA plants and suppliers shall use to clarify any difficulties and questions which may arise. The CA plants and suppliers shall undertake all necessary actions to meet the logistics requirements stated in this norm. Compliance with the content is essential and will impact future sourcing decisions. It is therefore recommended that CA plants and suppliers inform all responsible members of their staff of the contents of this norm.

This standard applies to all companies within Continental Automotive Divisions as well as to their plants and functional areas and their suppliers worldwide and is proposed by Supply Chain Management Automotive - Customs, Transportation & Packaging.

2 APPLICATION

This norm shall apply to all worldwide activities of Continental and all deliveries to worldwide destinations of Continental. This norm is part of the currently valid purchasing agreement between the supplier and Continental and states binding requirements for logistic processes and procedures. Except otherwise explicitly laid down in the currently valid purchasing agreement, the supplier shall undertake to meet the requirements stated in this norm.
In the event that any of the provisions of this norm is ineffective, the other provisions of this norm shall remain in full force and effect.
In case of conflicting rules between the rules of this norm and any other written agreement between the supplier and Continental, it must be decided case by case which document shall prevail.

Due to changing framework conditions, it will be necessary to adapt the logistics requirements from time to time. The CA plants and suppliers of Continental are obliged to follow the current valid version.
3 REFERENCES

- GSA General Supply Chain Agreement
- SML Supplier Manual Logistics
- TST N 098 00.02 000 Transportation, Customs / Foreign Trade and Export Control: Definition, Process, Requirements
- TST N 098 00.02 001 Continental Automotive Trade Terms
- TST N 098 00.03 000 Requirements on marking of goods
- TST N 098 02.01 001 Container Optimized Wood Pallet L1108 and L1110 (1140x790/ 980 x140mm)
- TST N 098 02.02 001 Plastic-Light-Pallet
- TST N 098 02.02 002 Plastic-Heavy-Pallet
- TST N 098 02.03 001 ESD-Plastic-Light-Pallet
- TST N 098 02.03 002 ESD-Plastic-Heavy-Pallet
- TST N 098 05.01 000 Expendable Packaging (formerly Appendix A04)
- TST N 098 01.01 000 Packaging Specification Data Sheet (formerly Appendix A01)
- Appendix A02 Packaging Material Release
- Appendix A03 Definition of the Packaging Loop
- Appendix A08 Logistics Costs Break Down
- EN ISO 780 Verpackung, Bildzeichen fuer die Handhabung von Guetern / Packaging; Pictoral Marking for Handling of Goods
- DIN 6120 Packstoffe und Packmittel aus Kunststoff Bildzeichen/ Marking of packaging and packaging materials for recycling purposes - Plastics packaging and packaging materials - Part 1: Graphical symbols
- EN ISO 14001 Umweltmanagementsysteme, Anforderungen mit Anleitung zur Anwendung / Environmental management systems; Requirements with guidance for use
- VDA 4500 Kleinladungsträger (KLT)-System / Small Load Carrier (KLT) System
- VDA 4504 Elektrostatisch ableitendes Kleinladungsträger (KLT)- System / Electrostatically Dissipative Small Load Carrier (KLT) System
- VDA 4525 Standardisierte Einwegverpackung für Seecontainer-Anwendungen / Standardized expendable packaging for sea container applications
- IEC 61340 Elektrostatik / Electrostatics
- ANSI ESD S20.20 Protection of Electrical and Electronic Parts, Assemblies and Equipment
- ANSI S 541 Packaging Materials
- ANSI STM 11.11 Resistance test methods for planar solid materials)
- ANSI STM 11.13 Two-Point resistance measurements
- ANSI STM 11.31 Shielding bags

All TSTs and Appendix are downloadable at the Continental Automotive Homepage for Suppliers: http://www.conti-online.com/www/automotive_de_en/general/contact_services/suppliers_logistics_en.html
4 RESPONSIBILITIES

The supplier is responsible for the quality and delivery of the products and therefore also for compliance with these packaging requirements. In order to ensure safe handling (in accordance with accident prevention and other regulations) and smooth operations, it is essential for all goods to be delivered in accordance with the requirements stated in this section.

This norm defines packaging procedures and functions.

It is the responsibility of the supplier to provide individual and/or collective packaging for the goods. The packaging provided by the supplier shall ensure that the goods reach their destination in sufficient condition.

Among other things, the packaging shall protect the goods from damage (loads in transit) and from deterioration caused by environmental effects. The packaging shall also protect personnel against hazards resulting from the goods themselves (e.g. regulations concerning the handling of hazardous goods).

The supplier shall submit a packaging proposal to Continental ( "Packaging Specification Data Sheet") and shall agree with Continental upon packaging. This will result in minimal cost in handling (e.g. removal of products for assembly) and disposal.

The "Packaging Specification Data Sheet" is described in detail in the CA norm TST N 098 01.01 000.

5 GENERAL REQUIREMENTS FOR PACKAGING DEVELOPMENT AND DEFINITION

All packaging shall be designed to perform the functions required. The properties required for the various functions of packaging are listed below:

Protective functions

- temperature-resistant, tight
- corrosion-resistant, dustproof
- chemically neutral
- sturdy, shockproof
- shock-absorbing, pressure-resistant
- tear-proof
- technical cleanliness

Storage, handling and shipment functions in addition to the protective functions

- damage free
- stackable, slip-resistant, standardized
- standardized for easy handling
- designed for automated handling
- to under run the box / pallet with a forklift, if more than 12/ 15 kg*
- designed to form units and to save space
- minimum dynamic stacking factor = 2 (1+1)
- maximum gross weight of 1000 kg per pallet
- maximum gross weight of 12/ 15 kg* per manual handled loading unit

* The weight depends on plant and country-specific requirements.

- maximum outer dimensions (incl. Pallet and lid):
  The maximum outer loading unit dimensions should be defined according to the type of packaging and transportation mode:
  - Type of packaging: (Details see Cap. 8)
- Returnable, review catalogue of returnable listed per location
- Expendable, according to transportation mode

➤ Transportation mode: (Details see Cap. 8.1)
- Air-freight
- Sea-freight
- Truck

- Preferred nominal outer dimensions per handling unit:
  ➤ 300 x 200 mm or 400 x 300 mm or 600 x 400 mm
  ➤ Outer dimensions per handling unit must be finally defined with Plant Packaging Contact according to type of packaging and transportation mode.

Traceability, identification and information functions
- See TST N098 00.03 000 “Requirements on marking of goods”
- Package Identification Symbols (pictogram 1-3 according to EN ISO 780)

![Identification symbols](image)

Figure 5-01: Identification symbols

Use functions
- easy to open and re-close
- easy to repack
- re-usable
- environmentally compatible
- easy to dispose of hygienic
- without metal brackets or clips for personal safety

Sales functions (Serial, After Market or Trading goods)
- economical
- distinctive, informative
- promotional, easy to open
- easy to re-close
- packaging and labeling according to customer specification

A catalogue of standard packaging meeting these requirements is available by each plant. When selecting packaging, standard packaging material from the receiving plant shall be considered first as it meets the above requirements and has already proved its effectiveness in practice.

Only packaging materials in accordance with the Continental specification shall be used. (See chapter 9: Approved Materials and not Approved Materials).
6 GENERAL PACKAGING DEFINITION PROCEDURE

It is the responsibility of the logistics department of the Continental plant concerned to define and approve delivery packaging for production materials in cooperation with the supplier and the production scheduling and quality departments of the receiving plant concerned.

The objective is to standardize packaging for all components to the greatest extent possible. Where the same parts are delivered to different Continental plants, efforts should be made to standardize the packaging used for the parts concerned.

Regardless a separate plant specific packaging release is necessary, a notice about this matter in the requested packaging proposal will be helpful.

Following the receipt of an enquiry from the purchasing department, the first step is for the supplier to prepare a packaging proposal for each new part of the product to be delivered.

This proposal shall be submitted on the template “Logistics Costs Break Down” (see Appendix A08) issued to the supplier by the purchasing department and it shall be an essential part of the quotation submitted by the supplier.

The detailed packaging proposal (see TST N 098 01.01 000 “Packaging Specification Data Sheet”) submitted by the supplier within the SCR (Supplier Component Review) shall be forwarded by the purchasing department to the logistics department of the receiving plant for review.

The logistics department of the receiving plant shall review the packaging proposal and define the delivery packaging on the basis of the proposal, after discussing any modifications required with the supplier. Upon request by the logistics department of the receiving plant, the supplier shall submit samples plus packaging material and conduct any packaging tests which may be required.

Following the approval of the detailed packaging proposal as a packaging specification (see the standard template in TST N 098 01.01 000 “Packaging Specification Data Sheet”, the plant logistics of the receiving plant shall forward one copy of the packaging specification to the purchasing department for inclusion in the general agreement with the supplier.

A second copy of the packaging specification shall be held by the receiving inspection department of the production plant for inspection of the goods concerned.

The supplier shall be under an obligation to comply with the approved plant specific packaging specification. Any deviations (for example in the event of a shortage of packaging materials) shall be subject to the approval of the logistics department.

If requested by plant specific requirements, each packaging specification for returnable packaging shall include a substitute packaging that may be used in the event of a shortage of returnable packaging.

Before using any such substitute packaging, the supplier shall notify the receiving plant and submit a complaint concerning the shortage of returnable packaging. (See also Chapter 15.1.2 “Empty box Supplies”). The supplier should obtain a release for the alternate packaging from the plant logistics of the receiving plant.

In the event of a failure by the supplier to comply with the agreed packaging specification, Continental reserves the right to refuse to take delivery or to repack the goods concerned and to charge the cost of handling and repacking to the supplier.

The approval of packaging by Continental does not relieve the supplier from its responsibility to supply parts which are free from damage.
The diagram below (Figure 6-01) indicates the packaging planning procedure. The various steps from the packaging proposal of the supplier via packaging definition with the receiving plant to approval for series production are shown in parallel to the product approval stages in engineering and purchasing.

A general agreement between purchasing and the supplier cannot be concluded until a complete packaging and labeling specification approved by the plant logistics of the receiving plant is available.
Figure 6.01: Packaging planning procedure

Continental
Product Life Cycle

Opportunity approved
G10
Quote approved
G20
Order received
G30
Final Concept approved
G40
Design
G50
Design frozen
G60
Design approved
G70
Production Process confirmed
G80
Production Plan approved
G90
Production Launch completed
G100
Series Production
G101
Delivery Obligation ended
G110

PLC Phase
PLC Gate

Analysis regarding availability of component technologies on supplier market
- Define an initial concept (e.g., product and process design, quality, logistics, purchasing) based on input from all disciplines (technical, business, and logistics);
- Finalize the concept/product architecture; production process design, quality, logistics, purchasing, etc., based on input from all disciplines;
- Evaluate customer and supplier Advanced Product Quality Planning (APQP);
- Identify strategic suppliers;
- Prepare supplier RFQs and analysis tools;
- Supplier Concept;
- Update template "Logistics cost break down - Appendix A299” (inc. Packaging concept);
- Review of template "Logistics cost break down - Appendix A299”;
- Supplier pre-selection;
- Selection, sourcing, and introduction of supplier components;
- Component specification;
- Logistics Concept and Planned packaging proposals by supplier "Packaging Specification Data Sheet - Concept for SCR" (Appendix A299);
- Supplier testing;
- Supplier component review (ESC9);
- Certification of Supplier;
- Review of packaging proposal by Continental "Packaging Specification Data Sheet" (Appendix A299);
- Sign off with Suppliers;
- Production of packaging prototypes;
- Finalization of packaging proposal;
- Design validation and FMEA from suppliers;
- Production of packaging samples (final tool);
- Validation and release of supplier components (Supplier PPAP);
- Approval of packaging samples with defined components and final version "Packaging Specification Data Sheet - concept for PPAP" (Appendix A299);
- Procurement of packaging;
- Released supplier PPAP (RPPAP);
- Verification of production process capabilities including logistics;
- Series production.
7 Packaging Design Improvements

The supplier has to obey the agreed packaging specification during the whole production run for cost-effectiveness and optimal product protection. If applicable the supplier should contact the receiving plant and provide the new improved packaging proposal.

The following approval process is corresponding to flow described in Chapter 6 “General Packaging Definition Procedure”).

8 Types of Packaging

Packaging may be subdivided into the following types:

- Non-returnable / expendable packaging
  Packaging that is used once only

- Returnable packaging
  Packaging that may be used several times

- Combined packaging
  A combination of non-returnable and returnable packaging in one loading unit

8.1 Non-Returnable / Expendable Packaging

Non-returnable/ expendable packaging should be avoided where possible. If non-returnable packaging is preferred to returnable packaging for economic reasons, only packaging, ancillary packaging and loading packaging approved by Continental may be used.

All such materials shall be environmentally compatible and recyclable and shall be marked with the „RESY- symbol” (only for domestic Europe). These materials are defined in “Approved Materials”.

The maximum (1) / preferred (2) outer dimensions of non-returnable packaging shall be according to transportation mode:

- Air-freight:  
  (1) 1200 x 1000 x 1000 mm  
  (2) 1140 x 790 x 460/ 750/ 1045 mm *  
  (2) 1140 x 980 x 460/ 750/ 1045 mm *

- Sea-freight:  
  (1)+(2) 1140 x 980 x 460/ 750/ 1045 mm *  
  (2) 1140 x 790 x 460/ 750/ 1045 mm *

- Truck:  
  Europe/Asia  
  (1) 1200 x 1000 x 1000 mm  
  (2) 1140 x 790 x 460/ 750/ 1045 mm *  
  (2) 1140 x 980 x 460/ 750/ 1045 mm *

  Americas  
  (1) 1220 x 1140 x 1200 mm  
  (plant specific definition is possible)

* VDA – recommendation 4525, detailed information you can find also in TST N 098 05.01 000 Expansible Packaging, the height could depend on height of inner packaging and should be the height of the loading unit including the height of pallet.

Maximum height of all loading units should be plant specific (often maximum height is 1000 mm).
No loading unit may exceed a gross weight of 1000 kg and packaging units shall be stackable:
- Static stacking factor of minimum 3 (1+2) and
- Dynamic stacking factor of minimum 2 (1+1).

No manual handling unit may exceed a gross weight of 15 kg.

Continental-plant specific demands/requirements are to be voted with the logistics department of the receiver’s plant directly.

The dimensions stated above are outer contours. Such packages shall not have protruding labels or straps. Especially with cartons, care shall be taken to ensure dimensional stability and appropriately folded lids.

8.2 Returnable Packaging

Our environmental target is to use returnable packaging wherever possible. Procedures for determining requirements and the use and purchasing of returnable packaging shall be defined by the plant logistics concerned in cooperation with the supplier (see also Chapter 15 “USE OF RETURNABLE PACKAGING”).

8.3 Combined Packaging

Combined packaging represents a combination of returnable and non-returnable (expendable) packaging in one loading unit.

9 APPROVED MATERIALS AND NOT APPROVED MATERIALS

<table>
<thead>
<tr>
<th>Material</th>
<th>Approved Materials</th>
<th>Not Approved Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Composites</td>
<td>General</td>
<td>Composites have to be avoided in general or require the separate approval of the particular receiving plant.</td>
</tr>
<tr>
<td>General Plastics</td>
<td>Disposable</td>
<td>PE, PP, PS, EPP, EPS have to be identified based on DIN 6120, PVC only after explicit approval of receiving plant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PUR, EPS-Chips</td>
</tr>
<tr>
<td>Re-usable</td>
<td>ABS, PE, PP, PS, EPP, EPE have to be identified based on DIN 6120, PVC only after explicit approval of receiving plant</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Approved Materials</td>
<td>Not Approved Materials</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>--------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Plastic Packaging Material</td>
<td>Foams: disposable re-usable</td>
<td>Adhesive tape, stickers or bags made from foreign material</td>
</tr>
<tr>
<td></td>
<td>PE, PE, PP, PS, PUR</td>
<td></td>
</tr>
<tr>
<td>Shrink and stretch wrapping</td>
<td>Only after explicit approval of receiving plant! Please see also Chapter 10.6.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Only PE with material identification based on DIN 6120.</td>
<td></td>
</tr>
<tr>
<td>Bags and sacks made of foil</td>
<td>Only PE with material identification based on DIN 6120</td>
<td>Other lettering shall not exceed 3% of the foil surface. Stickers, adhesive tape and lettering made from foreign materials</td>
</tr>
<tr>
<td></td>
<td>Stickers and adhesive tape made from the same materials</td>
<td></td>
</tr>
<tr>
<td>Expanded polystyrene (Styrofoam)</td>
<td>Only molded parts and only with explicit approval of receiving plant</td>
<td>Avoid stickers and adhesive tape made from foreign material</td>
</tr>
<tr>
<td>Paper and Cardboard</td>
<td>General</td>
<td>Coatings or adhesives that are not water soluble, e.g., wax, paraffin, bitumen, and oil paper or impregnated papers and cardboard adhesive fabric tapes, plastic bags, fiberglass reinforced adhesive paper tapes, adhesive paper tapes</td>
</tr>
<tr>
<td></td>
<td>Has to be free of paper production damaging substances and has to be marked with the RESY-Symbol.</td>
<td></td>
</tr>
<tr>
<td>Corrosion protection paper</td>
<td>For oil coated parts: VCI papers that are proven to be recycled with paper / cardboard. All kinds of papers have to be marked with the RESY symbol.</td>
<td></td>
</tr>
<tr>
<td>Strap</td>
<td>General</td>
<td>Polyamide (PA) straps Steel straps are only admitted with heavy loads and require the explicit approval of the particular receiving plant</td>
</tr>
<tr>
<td></td>
<td>Polypropylene (PP)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Polyester (PET) (= only with special approval of the receiving plant)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See also TST N 098 05.01 000 Expendable Packaging (formerly Appendix A04)</td>
<td></td>
</tr>
<tr>
<td>Wire</td>
<td>General</td>
<td>Not permitted</td>
</tr>
<tr>
<td></td>
<td>For attachment of labels, shipping bags etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Only with special approval of the receiving plant</td>
<td></td>
</tr>
</tbody>
</table>
9.1 Plastic Inserts

All plastic inserts require the approval of the packaging department responsible and shall be marked in accordance with DIN 6120.

Figure 9.1-1. PE-HD-Symbol according to DIN 6120 (examples)

Plastic inserts shall be reviewed for recycling potential. PVC inserts shall not be used otherwise a special and actual part and plant specific release exists. All returnable inserts shall be equipped with adequate numbers of drain holes for cleaning.

9.2 Wood

Packaging for delivery to several countries shall comply with the appropriate customs and quarantine regulations for wood and wooden packaging materials according to the IPPC-standard.

Pallets and crates shall be made from untreated, bark-free wood. Chipboard, plywood and similar wood-based materials shall not be used without prior approval by Continental. A declaration for non-wood packaging material is necessary for some countries.

The IPPC-Standard achieves international harmonization of phytosanitary measures, with the aim to facilitate trade and avoid the use of unjustifiable measures as barriers of trade.

This International Plant Protection Convention (IPPC) distributes the guideline, which is published with the title „Guidelines for Regulating Wood Packaging Material in International Trade“ (ISPM No.15 = International Standard for Phytosanitary Measures – status 2009).

The guideline has some extensions and the essential points are:

- Is valid only for raw wood. Processed wood material and raw wood packaging with a thickness of less than 3mm are excepted.
- Treatment of the raw wood packaging according to the recognized measures, like:
  - HT = Heat treatment with core temperature of 56°C for a minimum of 30 minutes
  - MB = Fumigation with methyl bromide (is not allowed anymore, by 2006, 1st September in some countries)
  - Boiler Pressure impregnate (currently mentioned but not accepted.)
- The marking (shown below) is necessary with an accepted logo (according to the IPPC ISPM no.15, Annex 2). It should be well readable, durable and fixed at two opposite sides of the wood packaging. The printing order is given: country (if n.: state), registration-number of the producer and the kind of approved measure (treatment).

The mark must not be hand drawn!
IPPC-Symbol: Fixed symbol according to ISPM no.15 Annex 2
XX ISO- two letter country code followed by a unique number (Producer/treatment provider code) assigned by the NPPO to the producer of wood packaging material or treatment provider.
YY IPPC abbreviation (according to IPPC no.15, Annex 1) for the approved measured used (e.g. HT, MB, DB)
 HT heat treatment
 MB fumigation with methyl bromide
 DB debarked

- The plant protection certification is not longer in demand.

According to the extensions and updating of the import regulation for wood packaging material of different countries, please inform you also via Internet

- United States Department of Agriculture:

- International Phytosanitary Portal (the official web site for the International Plant Protection Convention):
  https://www.ippc.int/servlet/CDSServlet?status=ND1ucHBvJjY9ZW4mMzM9KiYzNz1rb3M~

- Federal Research Centre for Cultivated Plants – Julius Kuehn Institute
  http://pflanzengesundheit.jki.bund.de/index.php?menuid=43
  http://pflanzengesundheit.jki.bund.de/index.php?menuid=70

- Packaging wood – Non – EU-States, who implement the ISPM Standard No.15 (incl. Overview reference list of the states):

- Packaging wood – placing on the market in Germany and trading between the EU-States
  http://pflanzengesundheit.jki.bund.de/index.php?menuid=46

- Packaging wood – Import from Non – EU-States
  http://pflanzengesundheit.jki.bund.de/index.php?menuid=44

- Packaging wood – Export from Non – EU-States

The requirements of the ISPM No.15 apply only to the import out of and/or export into countries outside of the European Union (EU).

The trade within Germany and between European Union states with the import and export of packaging wood doesn’t belong to the ISPM No.15.
9.3 Plastic Sheeting

Only polyethylene (PE) sheeting may be used. No stickers other than labels may be used. All plastics shall be marked with a material designation in accordance with DIN 6120 (Example for the symbol, see Chapter 9.1 “Plastic Inserts”).

Surfaces shall not be printed. Shrinking or stretching plastic sheet shall not be used in general; otherwise it is regulated in plant specific requirements. An appropriate outer packaging shall be used instead of such sheeting. Adhesive tapes and stickers made from other materials will not be accepted.

9.4 Padding and Shock-absorbent Material

The use of padding and shock-absorbent material shall be minimized by adapting quantities to the package size. Packages shall not be padded using expanded polystyrene or chips.

9.5 Securing Devices

Loads shall be secured using polypropylene (PP) or polyester (PET) straps marked with a material designation in accordance with DIN 6120. Steel straps or metal clips shall not be used without the prior specific approval of the receiving plant.

Packaging materials not in accordance with the above specifications shall not be used. Exceptions are subject to written approval by the receiving plant in connection with packaging instructions.

It should be noted that these requirements apply to packaging of all types, including any agreed substitute packaging.
10 **EXPENDABLE / OVERSEAS PACKAGING REQUIREMENTS**

The requirements of the packaging gain in importance with the increase of overseas transportations. The transport claims are enormous during long transit times and distances across different countries and climate zones.

Due to these facts the packaging should be adapted to these climatic and mechanical claims, also to the transportation expenses.

To reduce the logistic costs it should be a target to use loading unit dimension which are optimized to the sea-container dimensions like:

- 1140 x 790 x 460/750/1045* mm
- 1140 x 980 x 460/750/1045* mm

(* VDA – recommendation 4525, detailed information can also be find in TST N 098 05.01 000 Expendable Packaging, the height could depend on height of inner packaging and should be the height of the loading unit including the height of pallet.

Maximum height of all loading units (LU) should be plant specific definition (often max. Height is 1000 mm).

There are some basics to avoid packaging damages during the long overseas transports. The main requirements for an optimal overseas-packaging are:

- Using of 4-way-free-entry block pallets (advisable for wood pallets: according to the IPPC-standard)
- Use outer cardboard box glued with “wet strength glue/ water resistant glue”.

For the outer cover layer “kraft liner” is necessary and for the inner cover layer it is advisable to use “kraft liner”.

3-flute version of the outer cardboard box is advisable!

The quality requirements [breaking strength, BCT, ECT, thickness, puncture resistance, (wet) bursting strength] are mentioned in the TST N 098 05.01 000 “Expendable Packaging”!

That means e.g.:

- Flute sizes “A” = 4.0 to 4.9 mm height (h) mm and 8.0 to 9.5 mm pitch (t)
- 3-flute: Triple-wall corrugated fiberboard

![Figure 10-1: Triple-wall corrugated fiberboard; Flute dimension](image)

- In case of using small cartons, these should be packed inside an outer cardboard box.
The small cartons should fill out the outer cardboard box from bottom to top in order to support outside stacking.

The construction of the LU should be strong enough for a 2- till 3-times dynamical stackability (1+1 till 1+2 LU). Clear symbols printed on the LU, comprehensible for all nations and languages, are advantageous.

Using of VCI-protection is preferred or a sufficient number of desiccant bags in dependence on the sensitivity of the parts in exception.

Securing devices: In general no shrinking or stretching with plastic foil is allowed. Plant specific requirements should be voted by the logistics department of receiving plant. In general, only polypropylene (PP) or polyester (PET) straps are permitted!

The TST N098 05.01 000 “Expendable Packaging” (formerly Appendix A04) is an extract of a specification worked out together with car manufacturers and 1-Tier-suppliers worldwide and summarizes the main points and characteristics of the new global standardized expendable packaging specification. Furthermore it visualizes the main requirements and point out unacceptable and acceptable packaging conditions.

For using wooden packaging material see also Chapter 9 “Approved Materials and Not Approved Materials” and 9.2 “Wood”.
10.1 Accepted and Not Accepted Pallets

Due to the increase of transport damages presswood pallets are not accepted anymore! The presswood pallets don’t have a sufficient stability, so that they break easily. Furthermore during stacking, they sink into the packaging unit below, caused by the high pressure due to the little area the feet of the pallet are standing on. Additionally these pallets contaminate their immediate vicinity with splints.
See also the chapter 11 “Continental Automotive Pallet Standards”

<table>
<thead>
<tr>
<th>Not Accepted</th>
<th>Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Not Accepted Pallet" /></td>
<td><img src="image2" alt="Accepted Pallet" /></td>
</tr>
</tbody>
</table>

Figure 10-2: Not acceptable pallet and acceptable 4-way-free-entry block pallet

Due to these disadvantages, 4-way-free-entry block pallets with a minimum of 3 skids (see Figure 10-3) have to be used (wooden pallet certified according to IPPC-Standard or plastic pallet) instead of presswood pallets.

![Block Design](image3)

Figure 10-3: Definition of a 4-way-free-entry block pallet

(Graphics are courtesy of the National Wooden Pallet and Container Association)
10.2 Accepted and Not Accepted Loading Units

Single small cartons at the top of a LU, which initiate a non stackability of the LU, are not permitted. In such cases the supplier should contact the part scheduler of Continental, to optimize the order quantity (demands) in accordance to a stackable packaging unit.

<table>
<thead>
<tr>
<th>Not Accepted</th>
<th>Accepted</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image of not acceptable loading units" /></td>
<td><img src="image2" alt="Image of acceptable loading units" /></td>
</tr>
</tbody>
</table>

Figure 10-4: Not acceptable and acceptable loading units (LU)

Load Securing devices in the sea container have to be realized by cargo airbags or treated (IPPC) wooden beams. The use of old wooden pallets as space-stuffing is not permitted. If necessary, container stuffing is settled by specialists.

Some important and interesting information about load securing can also be found at the following internet-link:

http://www.tis-gdv.de
### 11 CONTINENTAL AUTOMOTIVE PALLET STANDARDS

It is the aim of Continental Automotive to introduce standard packaging material throughout the company, therefore also for expendable and returnable pallets.

The 4-way-free-entry **expendable pallets** with 3 skids are specified in special CA TST norms:

<table>
<thead>
<tr>
<th>TST no.</th>
<th>Title</th>
<th>Dimension [mm]</th>
<th>CA part-no</th>
</tr>
</thead>
<tbody>
<tr>
<td>N098 02.01 001</td>
<td>Container Optimized Wood Pallet L1108 and L1110</td>
<td>1140x790x140, 1140x980x140</td>
<td>98-4525-0108-0-00, 98-4525-0110-0-00</td>
</tr>
</tbody>
</table>

The 4-way-free-entry **returnable pallets** with 3 skids are specified in special CA TST norms:

<table>
<thead>
<tr>
<th>TST no.</th>
<th>Title</th>
<th>Dimension [mm]</th>
<th>CA part-no</th>
</tr>
</thead>
<tbody>
<tr>
<td>N098 02.02 001</td>
<td>Plastic-Light-Pallet</td>
<td>1200x800x150</td>
<td>98-0348-1285-0-00</td>
</tr>
<tr>
<td>N098 02.02 002</td>
<td>Plastic-Heavy-Pallet</td>
<td>1200x800x160</td>
<td>98-0789-1103-1-00</td>
</tr>
<tr>
<td>N098 02.03 001</td>
<td>ESD-Plastic-Light-Pallet</td>
<td>1200x800x150</td>
<td>98-0348-1285-1-00</td>
</tr>
<tr>
<td>N098 02.03 002</td>
<td>ESD-Plastic-Heavy-Pallet</td>
<td>1200x800x160</td>
<td>98-0348-1103-0-00</td>
</tr>
</tbody>
</table>

### 12 GENERAL PACKAGING REQUIREMENTS FOR ESD PROTECTION

#### 12.1 Requirements for ESD Protection

Electrostatic sensitive devices (ESDS) are electrostatic discharge (ESD) sensitive parts, which need to be protected against electrostatic charges and hard discharges as well as electrostatic fields during handling and transport. Most electronic components and PCBAs (printed-circuit-board-assemblies) are very sensitive ESDS; housed controllers, but also high precision resistors, have a lower ESD sensitivity.

Inside the ESD protected area (EPA) static conductive or dissipative packaging which does not charge up need to be chosen. Outside the EPA field and discharge shielding packaging material must be used.

The standards for ESD protection have to be followed:

- IEC 61340 series of standards especially:
  - IEC 61340-5-1 (main standard)
  - IEC 61340-5-2 (handbook)
  - IEC 61340-5-3 (packaging)
  - the parts of IEC 61340 which are referenced by IEC 61340-5-3 (e.g. standard test methods)

- Alternatively to IEC 61340 the American national standard; ANSI ESD S20.20 is very similar,
  - ANSI S 541 (Packaging Materials),
  - ANSI STM 11.11 (resistance test methods for planar solid materials),
  - ANSI STM 11.13 (Two-Point resistance measurements),
  - ANSI STM 11.31 (Shielding bags)

- VDA 4504

The ESD requirements for packaging is determined by

- the ESD sensitivity of the device to be packed
- the environment in which the packaging shall be used (inside or outside of an EPA)
- whether package is intimate or proximity packaging
- special requirements (e.g. for PCBAs containing a battery)
In any case the ESD Coordinator needs to accept the packaging. Early involvement of the ESD Coordinator during packaging design is therefore necessary.

The use and the area of the ESD packaging are specified by the responsible plant logistics in voting with the local ESD-coordinator and the supplier.

Acceptance and release of ESD packaging in a written form of a purchase measurement report is needed.

To be defined minimum requirements:

1. Material description based on ESD-capability permanent or temporally limited: anti-static, isolated, shielding, conductive, dissipative
2. Pervasive outgassing additives e.g. chemical additives with temporally defined attributes, static inhibitors, coco fatty acid must be pointed out declared
3. Measures and accomplishment data sheet and certificates
4. Electrical characteristics and measuring method (number and location of the measuring point), measurement equipment, temperature and humidity recorded on measurement documentation/certificate
5. System function
6. Warning notes identifications according to IEC DINEN 61340-5-1 e.g. date of expiry, allegation of the producer, production date and the recycling symbol
7. Periodic checking intervals on the basis of the defined criteria
8. Changes of the deliverer are binding notifications and require a written agreement

12.2 Minimum Requirements for Humidity Control and Corrosion Prevention

Components that may be susceptible to moisture / corrosion / rust and are shipped or stored in damp or humid environments require the use of corrosion protection methods.

Different kinds of corrosion prevention

- Desiccant bags
- VCI (volatile corrosion inhibitor)
- Corrosion Intercept-Method
- N2-Atmosphere in aluminium laminated film

Transportation and Storage Conditions

Corrosion prevention methods should be used, if any of the following transportation or storage conditions occur:

- Products originating in a region or with a final destination where normal conditions (during current seasons) include a relative air humidity of 50% or higher for 14 consecutive days.
- Sea container transportation
- Products stored for more than 14 days in a warehouse with internal relative air humidity of 50% or higher. This includes all storage periods until the product is received at the warehouse.
12.2.1 Methods of Application for Corrosion Prevention

**Wrong**

Parts should be packed dry and clean!

Wear Gloves!

During packaging procedure:

Temperature of product for packaging = Ambient air temperature

Packaging should be closed and dense. Holes and other damages should be closed by adhesive tape. Direct contact with water should be avoided.

At tight bulk density use VCI in the centre of the packaging.

Avoid direct contact between metal and wood, paper or carton. Intermediate layers should also be covered with VCI.

**Correct**

![Correct Packaging Diagram]

Figure 11-1: Methods of application for corrosion prevention

12.2.2 Dry Pack Moisture Sensitive Devices

Packaging for moisture sensitive devices has to be designed based on industrial standard IPC/JEDEC J-STD-033 and has to be marked with an appropriate label. See also TST N098 00.03 000 “Requirements on marking of goods”

The packaging design must avoid the problem of moisture absorption inside the packaging and internal packaging stresses when the device is subjected to sudden, increased temperature, such as during board mounting.

The table below presents the moisture sensitive level (MSL) definitions per IPC/JEDEC’s J-STD-033:
Possibilities for dry packs:
- Moisture barrier bags
- Desiccant bags
- Humidity indicator cards

Packaging for moisture-sensitive devices needs to be marked according to IPC/JEDEC J-STD-033. The following are examples for labels (excerpt from IPC/JEDEC J-STD-033)

Figure 11-2: IPC/JEDEC’s J-STD-033 MSL Classification

![Graph showing Soak Requirements](image-url)

Figure 11-3: Indicator Card (HIC), “Moisture-Sensitive Identification” (MSID) and Moisture-Sensitive Identification Label “Caution-Label”
13 PACKAGING FOR HAZARDOUS MATERIAL

Packaging for hazardous material needs to be approved by each plant and for each material number prior to the first shipment. Also pre-series and sample shipments are forbidden without previous packaging and shipping agreement.

For hazardous materials, the warning symbols must be attached visibly on the packaging. Below symbols for references:

![Figure 12-1: Hazardous materials warning symbols](image)

13.1 REACH - Regulation / SVHC (Substance of Very High Concern)

Packaging directive 94/62/EC on packaging and packaging waste:

The supplier has to fulfill all requirements according to directive 94/62/EC.

REACH-regulation / SVHC (Substance of Very High Concern):

It is not allowed to use packaging materials containing substances listed in Annex XIV of REACH-regulation or SVHC (Substance of Very High Concern). If such a substance is included in any packaging material, the supplier has to find a substitution immediately.
See further important information:

- European Chemicals Agency
  [http://echa.europa.eu/]
- REACH-helpdesk of CEFIC (European association of chemical manufacturers)
  [http://www.reachcentrum.org/]
- Official Guidance Documents for implementation of REACH
- Please note that the candidate list will be updated regularly by the European Union!

14 TECHNICAL CLEANLINESS OF PACKAGING MATERIALS

The requirements regarding technical cleanliness have to be considered:

The packaging materials that directly contact or surround the component/part have to conform to the cleanliness specification of the part mentioned in the drawing or specification of the part.

Additionally technical cleanliness requirements can arise from conditions of manufacturing (e.g. clean room).

The respective cleanliness requirements have to be arranged bilaterally between the supplier and receiving Continental plant within the Packaging Specification Data Sheets (TST N 098 01.01 000).

Costs for cleanliness of packaging materials should be separated from product piece price.
15 USE OF RETURNABLE PACKAGING

Continental is using returnable packaging to an increasing extent. Returnable packaging offers opportunities for the optimization of the logistic chain at the company's partners. In addition, the re-use of boxes is part of the Continental environmental policy. Packaging re-use cycles are integrated in the environmental management system in accordance with ISO 14001.

If the kind of packaging is chosen, it is absolutely necessary to look at the economic efficiency and the whole logistic process. In each Continental plant the re-usable packaging has to be considered carefully.

In view of the growing volumes and values of the packaging involved, it is essential to implement uniform procedures in relations with all suppliers. In addition, standardization is required for planning new packaging cycles and budgeting for these cycles.

Two main arrangements are possible for the use of returnable packaging.

1. The packaging is owned by the Continental plant
   In general Continental is supplied in Continental owned packaging (independent of returnable inner or outer packaging).
   No cost impact regarding procurement within the quote process
   (Supply excluding packaging is the normal case, if standard boxes are used; after a stock horizon has been defined, a maximum box limit is laid down for the supplier.)

2. Special packaging owned by the supplier
   (Only in special cases, where specific packaging is required cost split has to be agreed.)
   The supplier can use his own boxes or re-usable packaging in coordination with the purchasing department and the logistics department or project team of the appropriate receiving plant. This supplier-owned packaging has to be presented before the contract is completed and approved by each receiving plant.

For regulation regarding return transports of returnable packaging (freight, insurance) please see chapter 15.1.2 Empty Box Supplies and TST N098 00.02 000 “Transportation, Customs/ Foreign Trade and Export Control” - chapter 5.3 Preferred Delivery Terms and TST N98 00.02 001 “Continental Automotive Trade Terms”.

A regulation regarding repair, shrinkage, washing of returnable packaging has to be agreed with the responsible department of the Continental Automotive Plant. This regulation could be fixed in the “Packaging Specification Data Sheet” (TST N 098 01.01 000).

15.1 Determination of Requirements for Boxes Owned by Continental

The Continental plant concerned is responsible for defining packaging (on the basis of the supplier's proposal), for selecting the appropriate box type for each part to be delivered and for defining the box handling cycle.

For each supplier the quantity of needed boxes is calculated per article number on the basis of current part requirements, delivery frequency and lead times (see calculation procedure – the template “Definition of the Packaging Loop” – Appendix A03). The basis and results of the calculation have to be agreed with each supplier.

Suppliers are required to state reasons, if they wish to increase their box stocks. Additional quantities supplied without adequate advance planning may result in supply bottlenecks (see Chapter 15.1.2 “Empty Box Supplies”).
15.1.1 Box Purchasing

Continental returnable packaging is purchased directly by the plants concerned on the basis of the requirements calculated in accordance with the procedure described above. The boxes remain the property of the plant concerned and are intended only for the supply of parts to that plant (see also Chapter 15.1.2 “Empty Box Supplies”).

Additional box quantities required by suppliers, for example to pack advance production in order to cover vacation periods, will not be paid by the Continental plants concerned. Purchasing of boxes without Continental central function or plant specific release is prohibited.

Obtaining and ordering boxes from Continental plant is only permitted by the particular receiving plant. The packaging movement has to be coordinated with the plant logistics of the receiving plant.

15.1.2 Empty Box Supplies

Suppliers receive empty boxes directly from the Continental plant concerned. The Continental plants maintain empties accounts for each supplier and compare them with current box requirements. The supplier shall afford Continental all reasonable assistance for the maintenance of empties accounts. Particularly the Continental empties scheduler has to be reminded of missing empties so that he still can react on time (see Chapter 6 “General Packaging Definition Procedure”).

Any demand fluctuations shall be agreed without delay between the supplier and the Continental plant concerned. The supplier shall make its best efforts to avoid the use of substitute packaging and requires the authorization of the Continental plant concerned in advance.

Continental boxes shall not be used for deliveries to other Continental plants without the permission of the Continental plant which owns such boxes. However, suppliers delivering parts to more than one Continental plant in the same type of boxes shall not be under any obligation to segregate the boxes received from the various plants. In such cases, it shall be sufficient to agree on the use of the boxes with the plants concerned.

The freight costs for the delivery of the empty boxes should be payed depending on the contracted CA trade terms or Incoterms. The freight cost and insurance for empties will be payed by the party who also pay the freight costs of goods.

Please see therefore TST N098 00.02 000 “Transportation, Customs/ Foreign Trade and Export Control” - chapter 5.3 Preferred Delivery Terms and TST N098 00.02 001 “Continental Automotive Trade Terms”.

Example:
1) If freight costs of goods (Incoterms / Trade Terms: EXW, FOB, FCA CA-DAP & CA-DDP) are paid by Continental Automotive, then Continental Automotive also pays the freight costs of empties (i.e. INCOTERM DAP)
2) If freight costs of goods (Incoterms /Trade Terms: DDP, DAP, CIP & CPT) are paid by supplier, then supplier also pays the freight costs of empties (i.e. INCOTERM FCA)

15.1.3 Empty Box Inventory Management

Empty box accounts will be maintained by the Continental plant concerned and shall be checked by the supplier. Suppliers will receive regular boxes account statements covering all types of boxes used. These statements indicate the current boxes stocks held by the supplier taking into account any boxes received and issued (on the basis of delivery notes and bills of lading).
The supplier shall be entitled to object to any boxes account statement within a period of two weeks of the receipt of the statement. If no objections are received by Continental within such period of two weeks, the supplier shall be deemed to have approved the statement, which shall then form the basis for the calculation of any discrepancies.

Any objections by the supplier shall be submitted to the Continental plant concerned with copies of the relevant delivery notes. Boxes may only be credited to the supplier’s account if they are clearly indicated and designated according to the receiving plant requirements in the ASN and on the delivery notes issued by the supplier.

Upon the receipt of empty boxes, the supplier shall be obliged to verify the types and quantities received by comparison with the bills of lading. In the event of any discrepancies, the supplier shall correct the bill of lading, obtain a receipt from the driver and submit the corrected bill of lading with the receipt to the Continental plant concerned for the correction of the supplier’s boxes account.

15.1.4 Empty Box Inventory Handling

In order to maintain empty box cycles, annual reconciliation of recorded and actual box stocks is required. Such reconciliations shall be conducted by each Continental plant and each supplier at the end of each calendar year (or upon request).

The supplier shall be obligated to take a physical inventory of the boxes in stock. For this purpose, the supplier will receive in good time an inventory list with detailed instructions from each Continental plant concerned.

The empty boxes records kept by the Continental plant will then be compared with the inventory lists received from suppliers. The empty boxes records of Continental will then be corrected by adjustment entries to reflect the stocks of boxes actually held by suppliers.

15.2 Identification of Boxes

Apart from the identification of the boxes with information for the boxes management, the actual boxes or their components may be marked with special labels (created by Continental) or signs (boxes ID).

The identification or ident barcodes of the boxes shall not be damaged or taped up.

Each ESD protection boxes must be marked with the appropriate ESD-Symbol based on IEC 61340-5-3.

See also TST N098 00 03 000 “Requirements on marking of goods”
15.3 Handling of Special Boxes Owned by the Supplier

The handling of special boxes owned by the supplier shall be agreed in each specific case mutual by the supplier and Continental and laid down in attachment exhibits to the general agreement.

16 DELIVERY IN RETURNABLE SMALL LOAD CARRIERS (KLT)

It is the aim of Continental to introduce standard packaging material throughout the company. For small production components, Continental uses VDA small load carrier [in accordance with VDA recommendations 4500 for RL-KLT = “Redesign Light”-KLT and VDA 4504 for ESD RL-KLT (Electrostatic Discharge)].

Common terms for small load carrier are: SLC, “Kleinladungsträger” (KLT), totes, small boxes, ..; thereafter using the term “small load carrier” or “KLT”.

16.1 Type of Small Load Carriers (VDA RL-KLT / VDA ESD RL-KLT)

In order to achieve its standardization objectives, the following small load carrier “RL-KLT” types shall be chosen depending on the characteristics of the products to be packed. But Continental Automotive prefers only the RL-KLT types with the heights of 147mm and 213mm:

- **VDA RL-KLT (blue):**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Outside dimension</th>
<th>CA part-no</th>
<th>CA preferred RL-KLTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>RL-KLT 3147</td>
<td>(300 x 200 x 147 mm)</td>
<td>98-4500-3147-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4147</td>
<td>(400 x 300 x 147 mm)</td>
<td>98-4500-4147-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4213 **</td>
<td>(400 x 300 x 213 mm)</td>
<td>98-4500-4213-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4280</td>
<td>(400 x 300 x 280 mm)</td>
<td>98-4500-4280-0-00</td>
<td></td>
</tr>
<tr>
<td>RL-KLT 6147</td>
<td>(600 x 400 x 147 mm)</td>
<td>98-4500-6147-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 6213 **</td>
<td>(600 x 400 x 213 mm)</td>
<td>98-4500-6213-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 6280</td>
<td>(600 x 400 x 280 mm)</td>
<td>98-4500-6280-0-00</td>
<td></td>
</tr>
</tbody>
</table>

** New VDA KLT Standard (according to VDA 4500 / 4504), published in 10-2014

RL-KLTs are usable together with VDA KLT cover types (blue – color RAL 5005): D65, D45, D35

- **VDA ESD-RL-KLT (black):**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Outside dimension</th>
<th>CA part-no</th>
<th>CA preferred RL-KLTs</th>
</tr>
</thead>
<tbody>
<tr>
<td>RL-KLT 3115</td>
<td>(300 x 200 x 147 mm)</td>
<td>98-4500-3115-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4047</td>
<td>(400 x 300 x 147 mm)</td>
<td>98-4500-4047-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4174 *</td>
<td>(400 x 300 x 174 mm)</td>
<td>98-4500-4174-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4013 **</td>
<td>(400 x 300 x 213 mm)</td>
<td>98-4500-4013-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 4080</td>
<td>(400 x 300 x 280 mm)</td>
<td>98-4500-4080-0-00</td>
<td></td>
</tr>
<tr>
<td>RL-KLT 6047</td>
<td>(600 x 400 x 147 mm)</td>
<td>98-4500-6047-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 6147 *</td>
<td>(600 x 400 x 174 mm)</td>
<td>98-4500-6147-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 6013 **</td>
<td>(600 x 400 x 213 mm)</td>
<td>98-4500-6013-0-00</td>
<td>yes</td>
</tr>
<tr>
<td>RL-KLT 6080</td>
<td>(600 x 400 x 280 mm)</td>
<td>98-4500-6080-0-00</td>
<td></td>
</tr>
</tbody>
</table>

* No VDA ESD RL-KLT Standard (according to VDA 4504)

** New VDA ESD KLT Standard (according to VDA 4500/ 4504), published in 10-2014

ESD RL-KLTs are usable together with VDA ESD KLT cover types (black): D61-ESD, D41-ESD, D31-ESD
Due to optimized inner RL-KLT dimensions and the less inner production tolerances, which are important for special inner packaging developments like automation trays, Continental Automotive shall order only the new RL-KLT-generation from manufacturers, who produce on tooling equipment with manufacturer tooling-number as of R0149 and higher. That means the measurement schedule within all RL-KLT-drawings valid since 01.01.2010, shall be used for developments of inner packaging materials (it has smaller tolerance values). Also the combination of tooling equipment for producing RL-KLT shall be avoided.

The modular RL-KLT system, restricted to these preferred small load carrier types at CA, is a major step towards box standardization and also takes environmental constraints into account in reducing the use of disposable packaging by component producers and suppliers in the automobile industry.

Where suppliers believe that the use of other KLT series boxes would represent an improvement (in terms of quantity or quality), the supplier may make an alternative proposal to Continental. The economics of all packaging concepts shall be reviewed prior to plant-specific approval.

16.2 Description of the Small Load Carriers (RL-KLT/ ESD RL-KLT)

- The small load carriers are of modular design, allowing the stacking of RL-KLT or ESD RL-KLT in one stack.
- The upper stacking edge of each small load carrier shall be left free in order to allow interlocking stacking.
- All RL-KLT / ESD RL-KLT have smooth base/bottoms and can only be used in column stacking.
- With the exception of RL-KLT 3147, all RL-KLT types are equipped with drainage holes at the smooth base/bottom. All ESD RL-KLT types have no drainage holes.
- See also the VDA-recommendation 4500 and 4504!

![Diagram of small load carriers](image-url)
Figure 15.2-2: Description of the ESD-symbol position (here ESD RL-KLT 6080)

Figure 15.2-3: Description of the smooth base (RL-KLT and ESD RL-KLT)

Figure 15.2-4: VDA KLT cover types (blue): D65, D45, D35 and VDA ESD KLT cover types (black): D61-ESD, D41-ESD, D31-ESD
16.3 Assembly of a Loading Unit with Small Load Carriers

For a correct and acceptable loading unit with column stacking a 4-way-free-entry block-pallet preferable with a circulated safety border, small load carriers (RL-KLT or ESD RL-KLT), a stackable plastic cover and minimum 2 plastic straps are required:

![Diagram of a loading unit with small load carriers]

Figure 15.3-1: Necessary components of a loading unit with small load carrier (here RL-KLT 6280)

16.4 General Requirements for Delivery of Small Load Carriers

- Full loading units and layers shall be formed always!
- If a stackable layer can not be formed, the supplier should obtain an agreement with the Continental purchasing and receiving plant to optimize the quantity of the parts per small load carrier and per loading unit (LU).
- The use of empty small load carrier to fill up a layer is necessary until optimized order quantities are agreed with the Continental part scheduler.
- Mixed load require the release of each Continental receiving plant. Different loading heights on the same pallet are not allowed.
- The 4-way-free-entry block-pallet must have a minimum of 3 skids (min. width of skids 90mm) and should preferably be a returnable pallet with circulated safety border.
- The small load carriers shall be positioned flush with the edges of the pallet.
- Minimum two plastic straps shall be run around the entire loading unit. To prevent damage, plastic straps shall not be run around pallets without covers.
- Steel straps are not allowed.
- Each small load carrier shall be legibly marked.
- Special marking is required for mixed pallets.
- The loading unit shall not be shrunk or stretched.
- Individual small load carriers shipped without pallets shall be closed using an appropriate small box-cover and fastened using a plastic tape. The cover shall not be fastened in place using an adhesive tape.
Remark: Wooden Pallets (meant for one-way corrugated shipments) shall not be used to transport returnable containers (small load carriers), without consulting the receiving plant.

Wooden Pallets lack the locking mechanisms associated with returnable pallets and their use constitutes a potential hazard due to the possibility of containers sliding off.

16.5 Assembly of Loading Units for the Return of Empty Small Load Carriers

General requirements for delivery / return of empty small load carriers:

- Empty small load carriers shall be properly stored and shipped and protected against dirt and moisture.
- In order to ensure effective protection, empty small load carriers shall be stacked on pallets with the openings downwards.
- Any empty small load carriers received in a dirty or damaged condition shall be marked as such and returned to the party responsible.
- Each loading unit shall include only one type of small load carrier.
- Each layer shall be completed with number of small load carrier.
- Two plastic straps shall be run around the entire loading unit.

16.6 Shrinking, Stretching or Wrapping of Loading Units

Shrinking, stretching or wrapping of loading units shall be avoided in general, because of

- Additional handling for removing
- Additional waste
- Employment protection / safety of work
- Problems of the process

But in special cases plant specific requirements could permit it.
17 **MARKING**

The requirements regarding marking of goods are regulated in TST N098 00.03 000 “Requirements on marking of goods”

18 **ACCESSORIES / INTERNAL RACKAGING**

Only clean boxes may be used. For quality reasons, if appropriate for the product and agreed with the Continental plant concerned, each box carrier shall be lined with a sturdy polyethylene bag (PE-folding bag) with a thickness of at least 100 µm, according to plant specific requirements.

In order to achieve a smooth manufacturing process, it is necessary to obtain clean vendor parts in clean boxes. Thus each supplier is obligated to keep the boxes clean.

Dirty boxes may not be used. If dirty boxes have been detected, the replacement or cleaning issue has to be agreed with the plant concerned.

The maximum weight per box shall be agreed with the Continental plant concerned. The gross weight per box should not exceed 15 kg.

The design of internal packaging shall be agreed with the Continental plant concerned. Only wear-proofed materials may be used.

18.1 **Approval of Packaging**

For each article number, the supplier shall complete and submit to the Continental plant concerned a packaging approval application using the attached Packaging Specification Data Sheets (TST N 098 01.01 000). The template shall be submitted to the appropriate contact in the plant logistics.

Packaging approval by the Continental plant concerned is required for any packaging. The supplier shall apply for such approval using the template “Packaging Material Release” attached in the Appendix A02, which shall be returned to the supplier upon the issue of approval.

The supplier shall not deliver any products to Continental before the inner and outer packaging (returnable) required for such products has been approved by the Continental plant logistics in the receiving plant.

19 **CONTACTS @ SUPPLY CHAIN MANAGEMENT AUTOMOTIVE – CUSTOMS, TRANSPORTATION AND PACKAGING**

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