HARMAN

PACKAGING MANUAL

for the electronics production at the plants of the Automotive Division

Karlsbad-Ittersbach	**0001**
Wörth-Schaidt	**0002**
Straubing	**0074**
Székesfehérvár	**0076**
Château du Loir	**0090**

1019831 - 183 / 2012.04

Locations

HARMAN

Purpose

The Packaging Manual is the basis upon which packaging is agreed between HARMAN (HARMAN/BECKER Automotive Systems GmbH) and the respective suppliers.

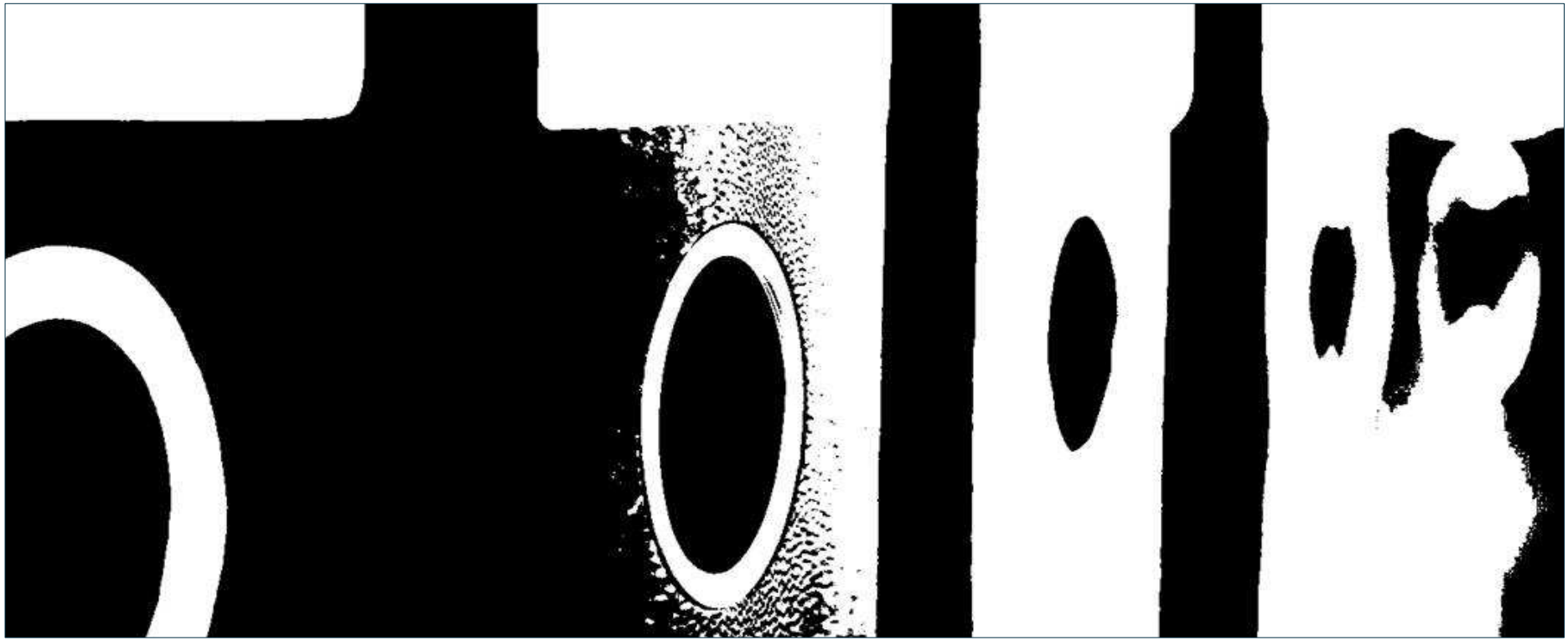
Additional Requirements for imports from outside Europe ("Overseas Packaging - Guideline") are to be requested from the HARMAN purchasing department.

Content

HARMAN

Definitions / Guidelines

The point of the definitions is to ensure the consistency of definitions between HARMAN and the suppliers, while the guidelines specify the explicit HARMAN requirements.



HARMAN
Harman/Becker Automotive Systems GmbH

Disposable packaging
Packaging or packaging components, which are used only for a single shipment process. The reason for this is that the return of the empty packaging and reuse would not be economical or the packaging would not endure further shipments.

Reusable packaging
This type of packaging is intended to be used for several cycles in order to reduce the amount of packaging waste, to prevent the entry of cardboard particles in the production process and if possible to realise cost savings. A high proportion of the costs of a reusable solution is made up of the expenditure for the return of the empties. Therefore, folding or nestable constructions are preferred as variants that reduce shipping volume.

KLT
„Kleinladungsträger“ = "Small load carriers" can be reusable containers, proprietary developments of a manufacturer or standardized containers offered by several manufacturers (e.g. VDA-KLT).

SLT
„Sonderladungsträger“ = "Special load carriers" = Especially designed container for the particular application or project.

ULT
„Universalladungsträger“ = "Universal load carriers" = containers, whose usefulness is not limited by the end of the project or by changes of the packaged goods.

EP
„Euro-Palette“ = "Euro pallet" = 800 x 1200 mm, reusable pool pallet

ISOP
„ISO-Palette” = "ISO pallet" = 1000 x 1200 mm, reusable pool pallet

EWP
„Einweg-Palette“ = "Disposable pallet" = 600 x 800, 800 x 1200 or 1000 x 1200 mm

Load
Defines the maximum weight of the bearing load that a packaging component or unit can bear.

Container-stacking-factor
Container-stacking-factor 0 corresponds to one layer of containers per pallet.
Container-stacking-factor 1 corresponds to two layers of containers per pallet.
Container-stacking-factor 2 corresponds to three layers of containers per pallet…

Pallet-stacking-factor
Pallet-stacking-factor 0 indicates a pallet that cannot bear an additional load, e.g. of a second pallet.
Pallet stacking factor 1 indicates a pallet that can bear the load of one further pallet with maximum the same weight.
Pallet-stacking-factor 2 indicates a pallet that can bear the load of two further pallets with maximum the same weight of the first pallet.

IEC 61340-5-1/2
Standard for the protection of electronic components against electrostatic phenomena

ESD
„Electrostatic Discharge“ = „Elektrostatische Entladung“

ESDS
„Electrostatic Discharge Sensitive Device“ = „Elektrostatisch gefährdetes Bauelement / Baugruppe“

NON-ESDS
Components or assembly groups that are not ESDS

EPA
„Electrostatic Protected Area“ = „ESD-geschützter Bereich“

SHZ
“SonderHandlingsZone” = “Special Handling Zone” = a part of the production area in which NON-ESD packaging components are to be removed or in case of the dispatch area to be added to the final product (e.g. filling materials).

Adjacent packaging
ESD proofed packaging components with a direct (physical) contact to ESDS or NON-ESDS goods.

Enveloping packaging
Packaging components which do not come into direct (physical) contact with ESDS or NON ESDS, but which are used to retain one or more of these parts.

Padding/Filling material
Material which provides protection for the packaged goods during transit (e.g. by cushioning them) and doesn’t come into direct (physical) contact with packaged goods (see SHZ).

Secondary packaging
Additional packaging components to protect the packaged goods against external physical influences. If the packaging is used in the EPA it must meet the same criteria for ESD as the "Enveloping packaging".

Antistatic
D =„dissipative“ packaging components with a volume conductive resistance of $1 \times 10^5\ \Omega \leq R < 1 \times 10^{11}\ \Omega$

Electrostatic conductive
C =„conductive“ packaging components with a volume conductive resistance of $1 \times 10^2\ \Omega \leq R < 1 \times 10^5\ \Omega$

Shielding
S =„shielding“ = packaging component with shielding effect (<50nJ)

ESDS label

Warning symbol for "ESD sensitive component" - ESDS must be labelled in accordance with standard IEC 61340-5-1. Supplementary information must in no way detract from the warning.

Packaging labelling

"ESD protective symbol" - Packaging components approved for use in the EPA area or for the protection of ESDS must be labelled according to standard IEC 61340-5-1.

IPPC standard

For the importation of wood packaging components, the standard created by the International Plant Protection Convention (IPPC), the "International Standard for Phytosanitary Measures" (ISPM) No. 15" applies. It requires wood packaging material made of solid wood to be permanently protected from pest infestation by heat treatment or fumigation and to be labelled accordingly. The label must contain information about the treatment method, the location and mode of execution. Germany has transposed the corresponding European Directive through its "Sixth Ordinance amending phytosanitary regulations (Federal Law Gazette I No. 63 p. 2916". As an alternative to solid wood, certified packaging components made of wood materials (e.g. particle board pallets) or contaminant-free plastic pallets can be used. Within the European Union and in trade with Switzerland the IPPC standard (ISPM No. 15) does not apply.

REACH

REACH (***R**egistration, **E**valuation, **A**uthorisation and **R**estriction of **C**hemicals*) is a European regulation for the registration and restriction of chemical raw material, semi-finished and finished products. This regulation entered into force on 1 June 2007.

http://echa.europa.eu/

http://echa.europa.eu/reach_en.asp

1. All packaging components in direct contact with the electronic components that are a part of the smallest packaging unit, including protective materials, dry bags and label bags for goods tags, must be designed in accordance with IEC 61340-5-1 for protection against electrostatic discharge and must comply with HARMAN's internal guidelines "Annex MKA- W-138, Table 1". The annex "MKA-W-138" must be requested from the Purchasing Department for each new project in order to ensure that the most up-to-date documentation is used. Packaging components for ESDS must also comply with HARMAN's internal guidelines even when the handling units are stacked. The ESD properties must extend over the entire period of use. The supplier shall ensure that the measured values are observed for climatic conditions in accordance with IEC 61340-5-1. Prior to the start of series production, an HARMAN ESD officer must check and approve the packaging.

2. With the start of C sample phase, the supplier must submit an offer for a disposable and a reusable solution based on this Packaging Manual.

3. The fundamental decision about the "recyclable/ disposable" type of packaging and its design is part of the contract negotiations as well as the ownership of the packaging and the responsibility for costs.

4. When using HARMAN's own reusable packaging, the supplier is obligated to record information separately for each HARMAN plant with regards to incoming and outgoing goods movements using packaging accounts. Inventory capability is to be permanently ensured so that Harman may at any time audit the specified returnable packaging accounts. The supplier is obliged to balance its returnable packaging accounts at the end of the month. To do this, the HARMAN plants will send monthly account statements for HARMAN's reusable packaging. The balance of HARMAN's account statement must then be confirmed by the supplier or, if necessary, immediately complained per mail to HARMAN.

5. The supplier will initially continue to be supplied on the basis of unadjusted account holdings. If a bottleneck should occur in the availability of empty containers for the supplier on account of a late or undelivered report, the resulting expenses (e.g. for special transportation, alternative packaging, repackaging costs, rent, etc.) are to be borne by the supplier.

6. General and binding inventory deadlines for all supplier relations related to HARMAN empties are set by HARMAN and communicated in good time at least once a year. Possible inventory differences which cannot be resolved by the supplier are borne at its own expense.

7. If a supplier fails to meet its obligation and submits a late or no inventory report at all, HARMAN is entitled to invoice a one-time fee of €300.00 for the additional costs incurred. Additionally, based on the level of bookings on the inventory deadline, an average inventory loss of 10% (compensation), will be charged.

8. Costs that are invoiced to suppliers resulting from inventory discrepancies cannot be offset against the inventory reports in subsequent years or against the packaging accounts of other HARMAN plants. No compensation of the inventories of HARMAN plants will be carried out between the plants.

9. The deadline for clarifying any inventory discrepancies that may occur is 4 weeks after delivery of the corrected account statement showing the difference posting. The differences may relate only to the inventory month, as suppliers will be sent account statements on a monthly basis and existing deviations must be disputed immediately.

10. The supplier is obliged to specify the corresponding reusable load carrier on the respective delivery note when delivering material. This includes information on the HARMAN container part number, container name and quantity. It is not permitted to combine load carrier quantities for multiple delivery notes into a single document.

11. The approval of packaging shall not release the supplier from its responsibility for proper delivery or supply of parts. Here the guidelines specified in the HARMAN Packaging Handbook, as well as the agreements between H/B and the supplier, as set out in the packaging data sheet, apply.

12. The basis for calculating HARMAN's own reusable packaging between supplies within Germany and border areas and the HARMAN plants is 21 circulation days.

13. Additional requirements for load carriers, such as improvements in lot sizes, higher safety stocks or needs of sub-suppliers shall be borne by the supplier.

14. Temporary additional load carrier requirements that cannot be covered in the allotted circulation days must be justified in writing immediately by the supplier after receipt of notification to container management with the following information:
Container type with part number + Container quantity + Expected duration of the additional requirement + Justification for the additional requirement.

15. The scrapping of HARMAN's own load carriers may be performed only by written agreement with HARMAN container management. Otherwise, the suppliers are charged in the amount of the replacement value.

16. HARMAN will provide the supplier, if defined in the packaging data sheet, with clean and functional HARMAN load carriers. Old adhesive labels, dots of adhesive, etc. must, however, be removed in the process by suppliers prior to shipment of the material to the HARMAN plants. The direct contact packaging components for the containers such as deep draw trays must generally be cleaned by the supplier. The supplier is obliged to ensure that the direct contact packaging components are in a clean and functional condition when filling. Suitable cleaning methods are to be defined and permanently implemented by the supplier, in consultation with HARMAN.

17. The flow of goods is based on the Euro-pallet with dimensions 800 x 1200 mm. For suppliers who use disposable pallets, the guidelines in the packaging examples regarding disposable pallets apply.

18. Euro-pallets which are not exchangeable or to be booked are pallets where:
1. A board is missing, broken diagonally or horizontally,
2. An edge board (top or bottom board) is splintered in such a way that more than one nail or screw shank is exposed
3. More than two edge boards (top or bottom board) are splintered in such a way that a nail or screw shank is exposed on each one
4. A block (top or bottom board) is broken or splintered in such a way that more than one nail or screw shank is exposed
5. No less than one of the lift/pallet organisation signs and the sign EUR is visible
6. Clearly inadmissible components were used for repair (e.g.: boards or blocks that were too thin, too narrow, too short)
7. The general condition is so bad that the load bearing capacity is not guaranteed (e.g. due to decayed, rotten or splintered boards or blocks)
8. The material carrier could be contaminated

If the damage is visible during the goods inwards inspection, this is noted on the shipping documents and there is no exchange of pallets or no receipt posting. Pallets that are not safe for transport and require repackaging are charged to the supplier at a flat rate of € 40.75 per pallet.

19. The maximum pallet height is 1000 mm for all plants. It is imperative that deviations are agreed with the packaging designer.

20. The total pallet weight must not exceed 700 kg.

21. The strapping of the pallet in preparation for shipping is done using a stable pallet cover with the help of two plastic straps that are welded. In the absence of a pallet cover the strapping must be done using edge protectors and four plastic bands. The strapping must not overlap the goods tags.

22. The standard weight of the smallest packaging unit that can be handled (KLT, SLT, cardboard, etc.) is max. 10 kg. Deviations from this require a written approval.

23. All sealable disposable packaging that goes into the production area must be equipped with slip lids to avoid problems such as particle emission, handling, etc.

24. Collapsible container solutions are favoured due to the volume reduction for the return transportation of empties.

25. The footprints stated (600 x 400 and 400 x 300 mm) are maximum values and apply to the outer contours of the packaging.

26. The parts within the packaging must not get caught up with each other as a result of their arrangement.

27. A pack layer of packaging should, if possible, have an even number of parts.

28. In general, intermediate layers must have recesses to facilitate better extraction.

29. For parts to be delivered in bulk, the packaging must not be filled up to the edge. The containers are positioned diagonally in the workplace; at an angle of max. 45° no parts mus t drop from the container.

30. Trays and blisters must be stackable and the parts must have recesses, handles, etc. for their extraction. Their arrangement in the workplace can be in an inclined angle up to 60 °.

31. For the packaging components, new legislation and policies of national, European and international law that are applicable in the Federal Republic of Germany are binding. Costs arising from a violation of these requirements will be borne by the producer of the packaging.

32. Confirmation from the supplier on receipt of the Packaging Handbook and the associated packaging data sheet should be sent to Purchasing.

33. The initial tracking of documents is carried out by Purchasing, with approval on the packaging design being acknowledged by the supplier with the packaging plan, in conjunction with the Purchasing Department (cost issue).

34. The packaging data sheet is valid as soon as no objection is raised by the supplier within the mentioned period, starting with the date of issue.

35. The packaging data sheet is then documented and filed in SAP by the responsible packaging designer.

36. The supplier must immediately notify all subsequent changes in packaging that may affect the price to Purchasing Department.

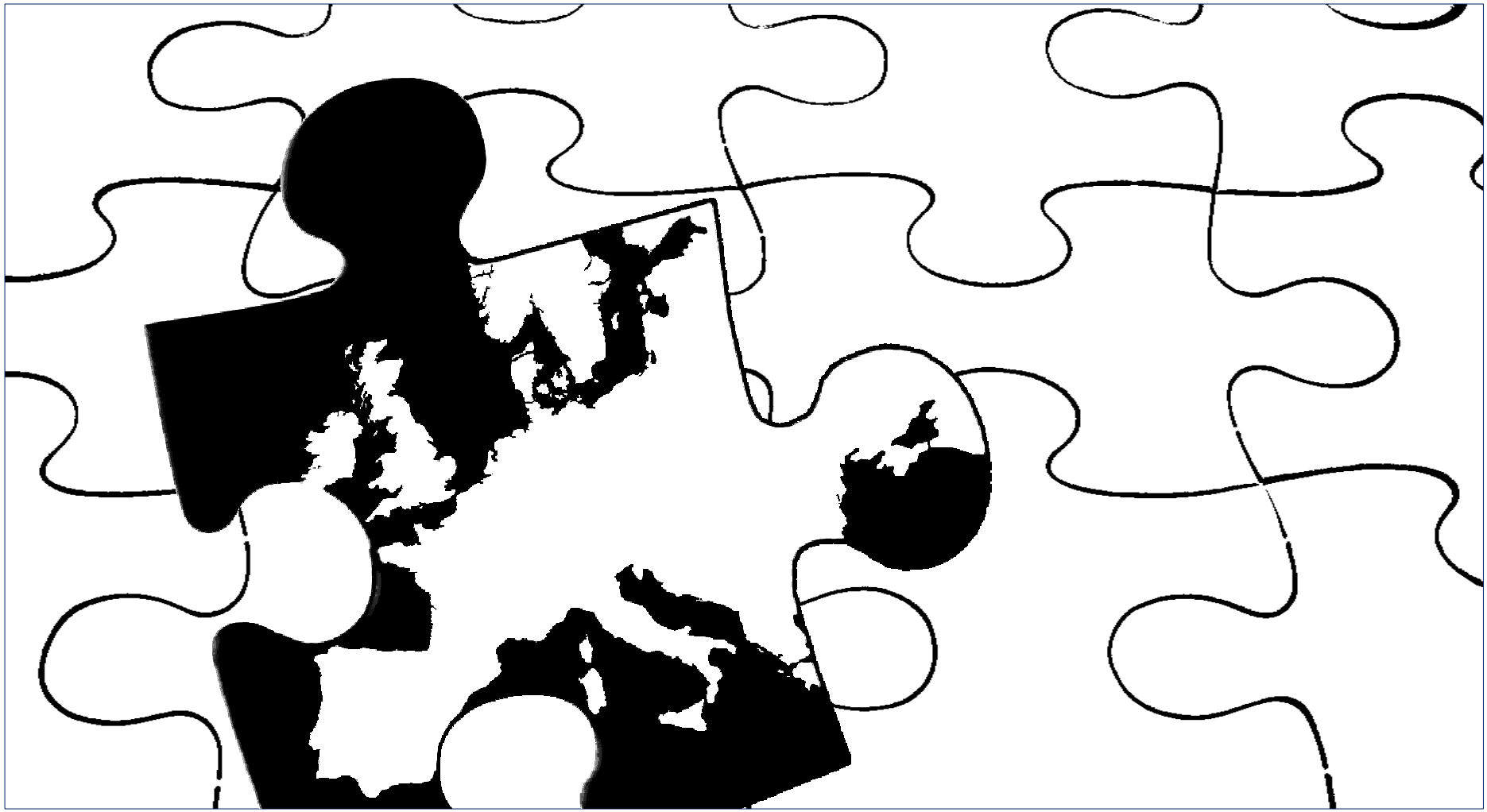
37. If any subsequent changes are made to the packaging, the packaging data sheet must be re-assessed and possibly recreated by the responsible planner.

38. For components that require the use of desiccants, only dustproof desiccant bags with unmixed content are allowed. The use of desiccants with moisture indicators, such as cobalt dichloride (CoCl 2), is strictly prohibited. If technically possible, 100% bentonite should be used as a drying agent.

39. For components that require the use of humidity indicators, humidity indicators are only allowed on a cardboard base, which are free of cobalt dichloride and comply with the REACH requirements

40. REACH/ECHA - For delivery by HARMAN the supplier is generally obliged to mention the notifiable substances to HARMAN, in relation to the type and quantity of materials per supplied component or per unit.

Principle
Should the planned packaging solutions not meet the guidelines, the planners of the packing plants affected are to be consulted by the purchasing agent.
The supplier guarantees the packaging properties required by HARMAN over the entire duration of the project.
Where there are differences between the German and the English version of the Packaging Handbook the text of the German version applies.



Packaging examples

The following case studies provide suggestions as to the design of the containers, in particular the divisions or compartments, depending on the application and packaging materials used.

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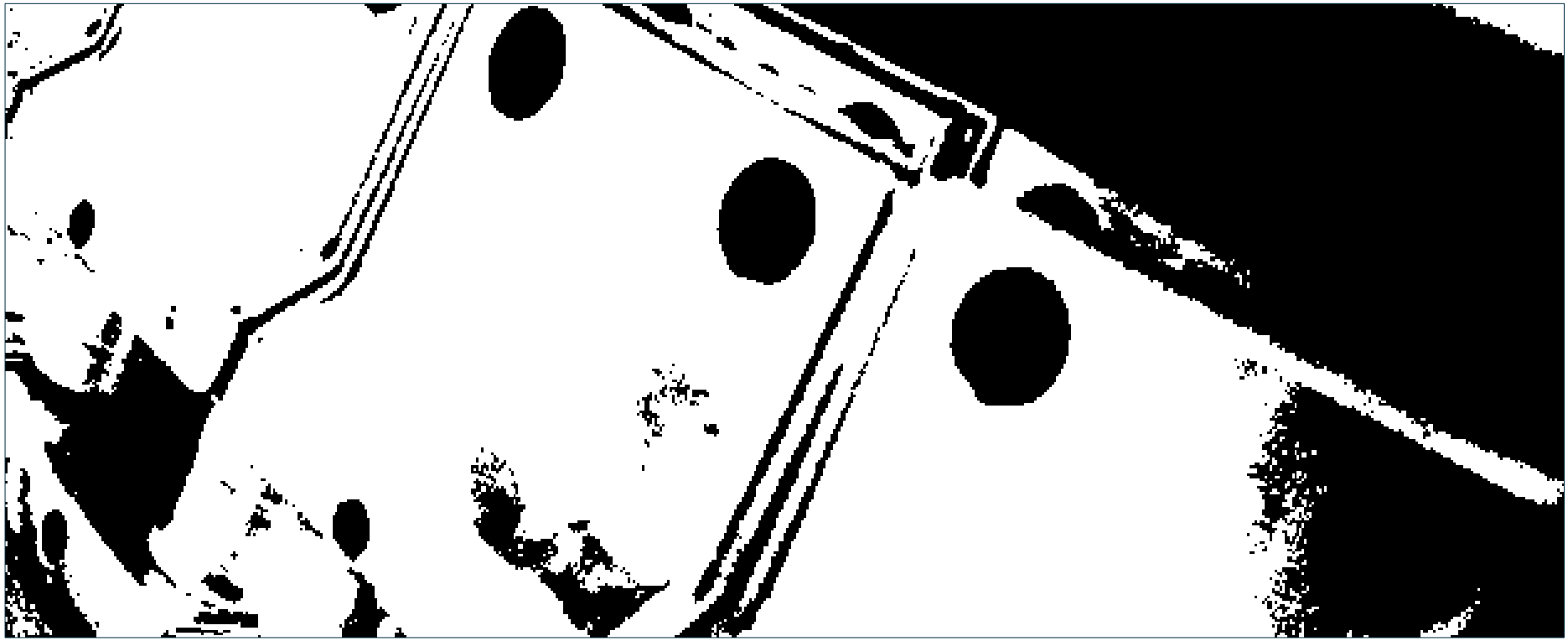
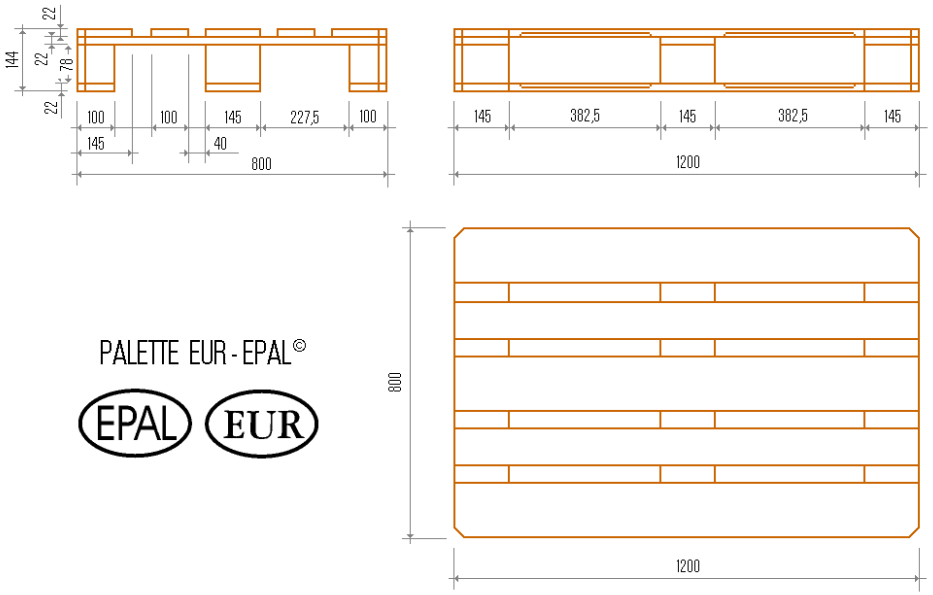
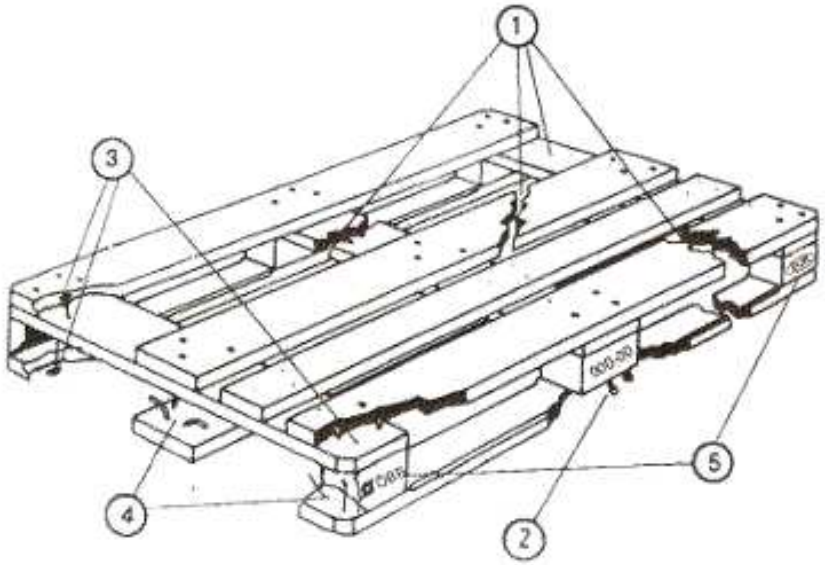


Packaging examples

Euro Pallet

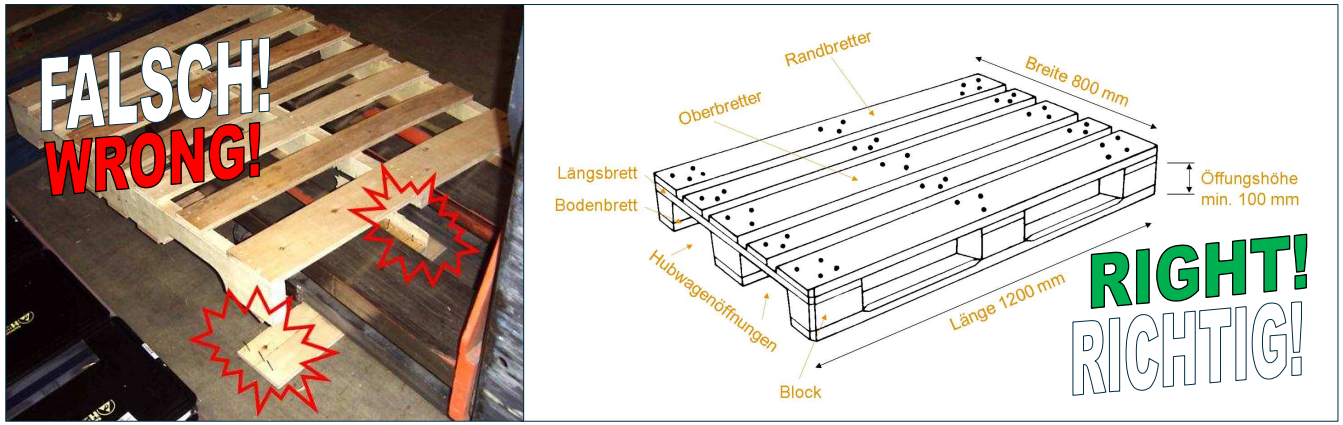




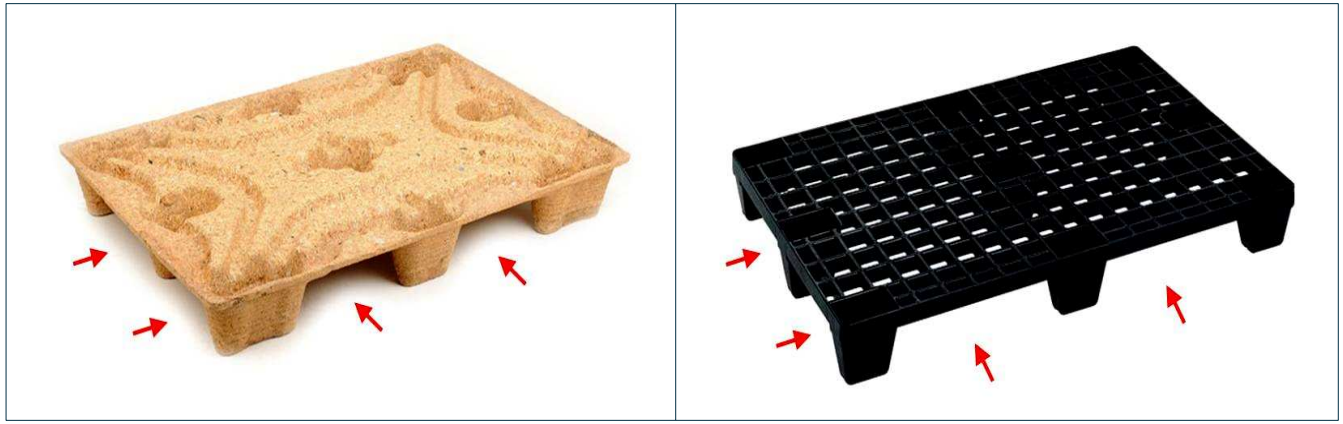
Euro pallets which are not exchangeable or to be booked are pallets where:

1. A board is missing, broken diagonally or horizontally,
2. An edge board (top or bottom board) is splintered in such a way that more than one nail or screw shank is exposed
3. More than two edge boards (top or bottom board) are splintered in such a way that a nail or screw shank is exposed on each one
4. A block (top or bottom board) is broken or splintered in such a way that more than one nail or screw shank is exposed
5. No less than one of the lift/pallet organisation signs and the sign EUR is visible
6. Clearly inadmissible components were used for repair (e.g.: boards or blocks that were too thin, too narrow, and/or too short)
7. The general condition is so bad that the load bearing capacity is not guaranteed (e.g. due to decayed, rotten or splintered boards or blocks)
8. The material carrier could be contaminated

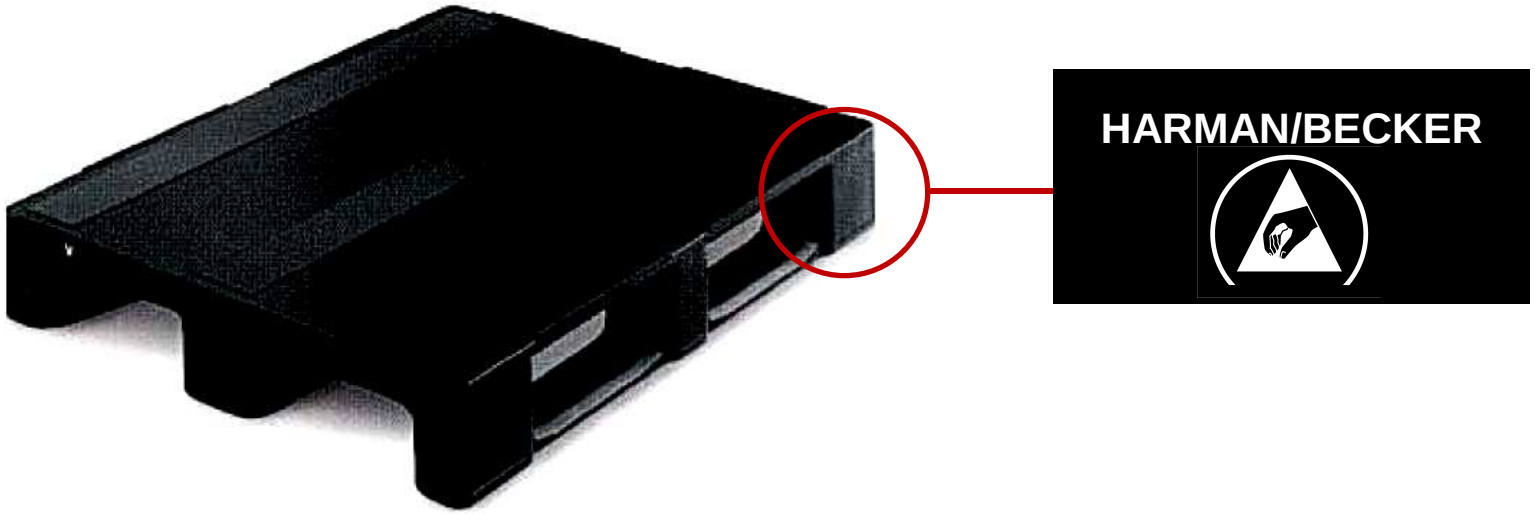
Disposable pallet
Disposable pallets made of wood must be designed in such a way that they can be handled by trucks from the narrow side.



As an alternative to this, wood pallets treated according to ISPM 15, four-way disposable pallets made of wood or plastic materials may be used by suppliers outside of Europe.



HARMAN's own ESD pallet



Conductive pallets in the format 1200 x 800 mm can be supplied only in exceptional cases and must indicate the respective plant ID.
Manufacturer: Georg Utz GmbH (high rack mountable) or Cabka Plast GmbH. (non-high rack mountable)

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property	X		For ESDS		X	Pallet-compatible	X	
Shielding		X	For non-ESDS	X		Stackable	X	
Conductive	X		ESD protection symbol	X		Foldable / Nestable		X
Dissipative		X	ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free	X		Handles		X
SHZ Approved	X		Reusable	X		Reclosable		X

Packaging examples

Highshield-Beutel

Metalised foil pouches from amine-free material

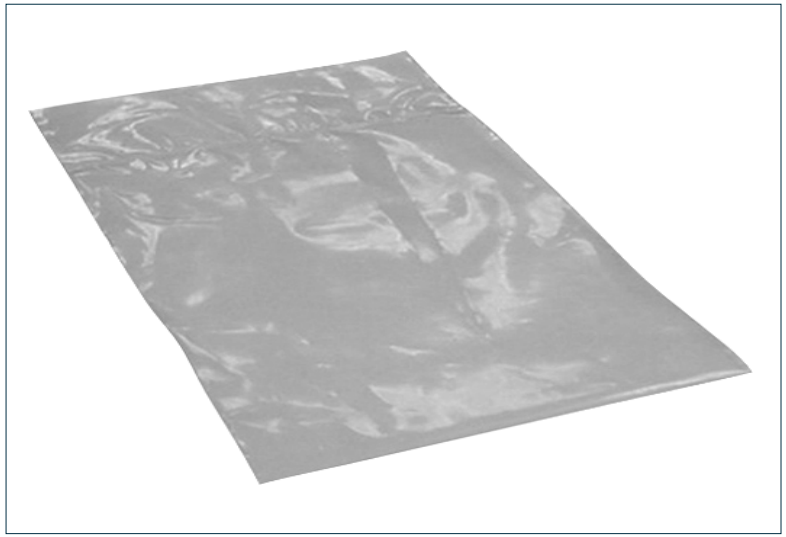
Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS	X		Pallet-compatible		X
Shielding	X		For non-ESDS	X		Stackable		X
Conductive	X		ESD protection symbol		X	Foldable / Nestable		X
Dissipative	X		ESD warning sign	X		Slip lid		X
EPA approved	X		Corrosion-free	X		Handles		X
SHZ Approved	X		Reusable		X	Reclosable	X	X

Packaging examples

Conductive plastic bag

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS	X		Pallet-compatible		X
Shielding		X	For non-ESDS	X		Stackable		X
Conductive	X		ESD protection symbol	X		Foldable / Nestable		X
Dissipative		X	ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free	X		Handles		X
SHZ Approved	X		Reusable	X		Reclosable	X	X

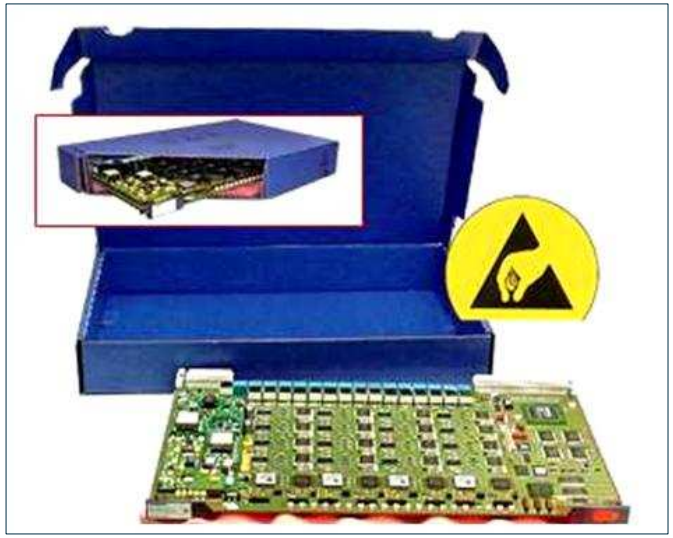
Antistatic poly bags



Permanent antistatic polyethylene, printed consumption period, amine-free
The colour of the poly-bag, usually pink, can vary by manufacturer!

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS		X	Pallet-compatible		X
Shielding		X	For non-ESDS	X		Stackable		X
Conductive		X	ESD protection symbol	X		Foldable / Nestable		X
Dissipative	X		ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free		X	Handles		X
SHZ Approved	X		Reusable		X	Reclosable	X	X

ESD cardboard



Conductive coated cardboard (e.g. *CORSTAT*)
Only to be approved following a mandatory inspection in each case by the packaging development team!

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS	X		Pallet-compatible	X	X
Shielding	X		For non-ESDS		X	Stackable	X	X
Conductive	X		ESD protection symbol		X	Foldable / Nestable	X	X
Dissipative		X	ESD warning sign	X		Slip lid	X	X
EPA approved	X		Corrosion-free		X	Handles	X	X
SHZ Approved	X		Reusable	X		Reclosable	X	X

Packaging examples

Conductive packaging made of twin-wall sheet

Outer packaging of *twin-wall sheets* for trays, shielding sheets, bulk, etc.

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
			For ESDS		X	Pallet-compatible	X	X
Shielding		X	For non-ESDS	X		Stackable	X	X
Conductive	X		ESD protection symbol	X		Foldable / Nestable		X
Dissipative	X		ESD warning sign		X	Slip lid	X	X
EPA approved	X		Corrosion-free	X		Handles	X	X
SHZ Approved	X		Reusable	X	X	Reclosable	X	X

HARMAN

II

Conductive EPP packaging

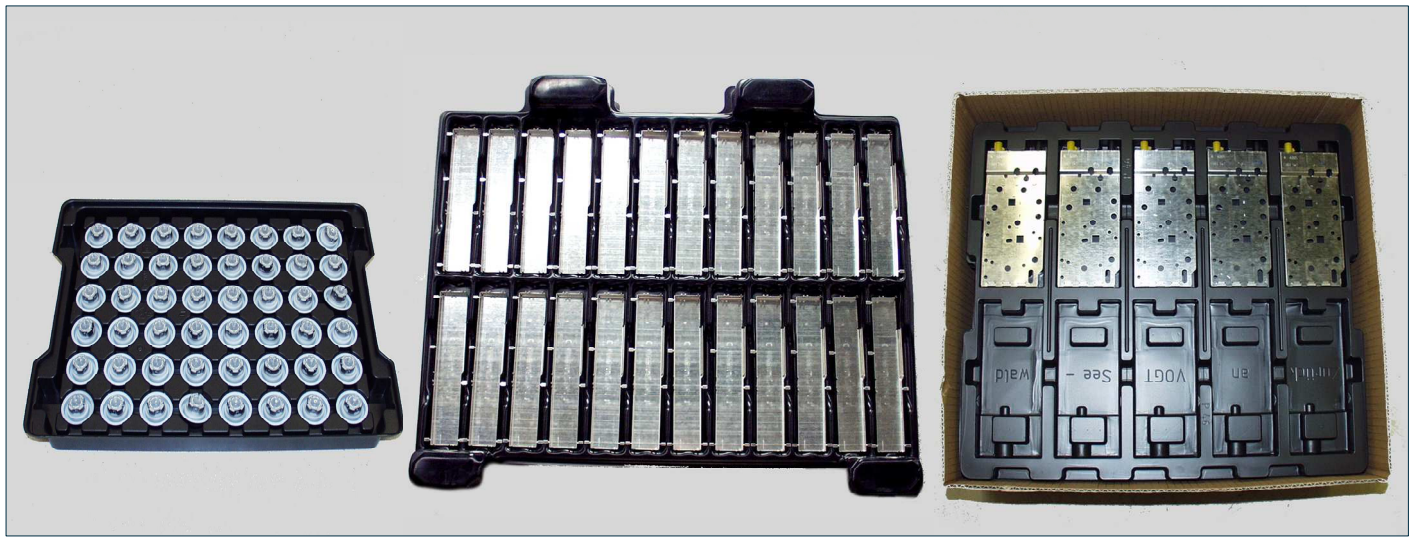
Outer packaging made of *expanded poly-propylene* (EPP) for face plates, cover plates, face walls etc.

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
			For ESDS		X	Pallet-compatible	X	
Shielding		X	For non-ESDS	X		Stackable	X	
Conductive	X		ESD protection symbol	X		Foldable / Nestable	X	X
Dissipative	X		ESD warning sign		X	Slip lid	X	X
EPA approved	X		Corrosion-free	X		Handles	X	X
SHZ Approved	X		Reusable	X		Reclosable	X	X

HARMAN

II

Conductive deep draw trays and blister



Reusable or disposable blister trays for knobs, light guides, sheet metal parts, etc.

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
			For ESDS		X	Pallet-compatible		X
Shielding		X	For non-ESDS	X		Stackable	X	X
Conductive	X	X	ESD protection symbol	X		Foldable / Nestable	X	X
Dissipative	X		ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free	X		Handles	X	
SHZ Approved	X		Reusable	X	X	Reclosable		X

Packaging examples

HARMAN‘s own conductive folding boxes

Folding boxes of sizes 600 x 400 x 310 mm (60 l), 600 x 400 x 220 mm (44 l) and 400 x 300 x 220 mm (22 l)

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property	X		For ESDS		X	Pallet-compatible	X	
Shielding		X	For non-ESDS	X		Stackable	X	
Conductive	X		ESD protection symbol	X		Foldable / Nestable	X	
Dissipative		X	ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free	X		Handles	X	
SHZ Approved	X		Reusable	X		Reclosable		X

HARMAN

II

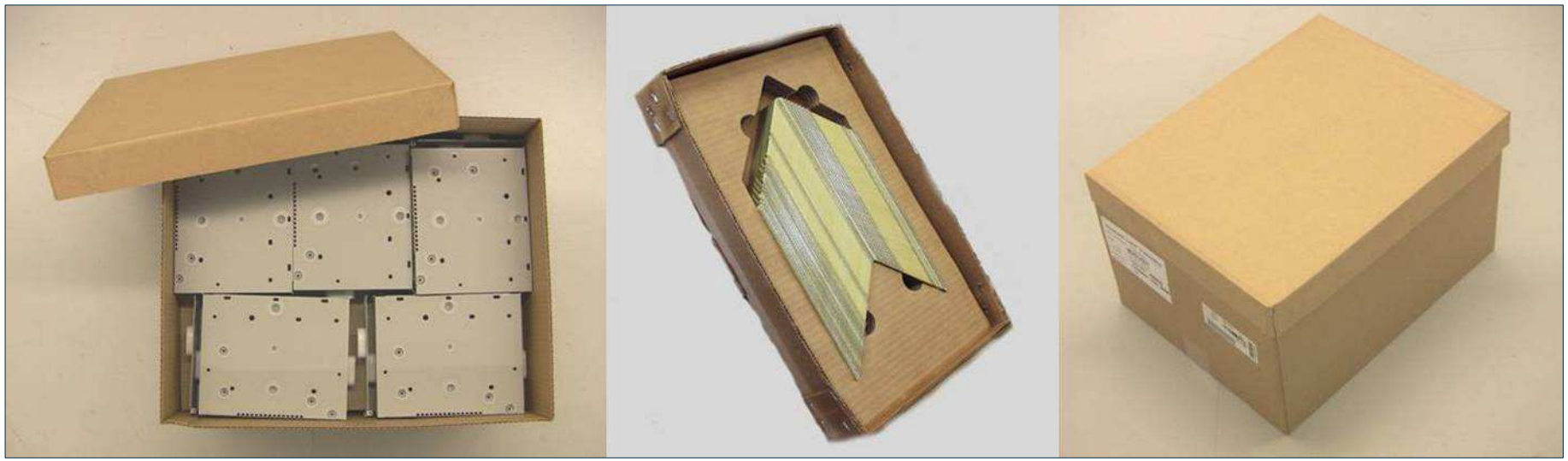
HARMAN‘s own conductive folding boxes

Folding boxes in combination with disposable or reusable components

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property	X	X	For ESDS		X	Pallet-compatible	X	
Shielding		X	For non-ESDS	X		Stackable	X	
Conductive	X		ESD protection symbol	X		Foldable / Nestable	X	
Dissipative		X	ESD warning sign		X	Slip lid		X
EPA approved	X		Corrosion-free	X		Handles	X	
SHZ Approved	X		Reusable	X	X	Reclosable		X

Packaging examples

Cardboard packaging



Cardboard materials in the form of corrugated and solid board
Only to be approved following a mandatory inspection in each case by the packaging development team!

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS		X	Pallet-compatible	X	
Shielding		X	For non-ESDS	X		Stackable	X	
Conductive		X	ESD protection symbol		X	Foldable / Nestable		X
Dissipative		X	ESD warning sign		X	Slip lid	X	X
EPA approved		X	Corrosion-free		X	Handles	X	X
SHZ Approved	X		Reusable	X	X	Reclosable	X	

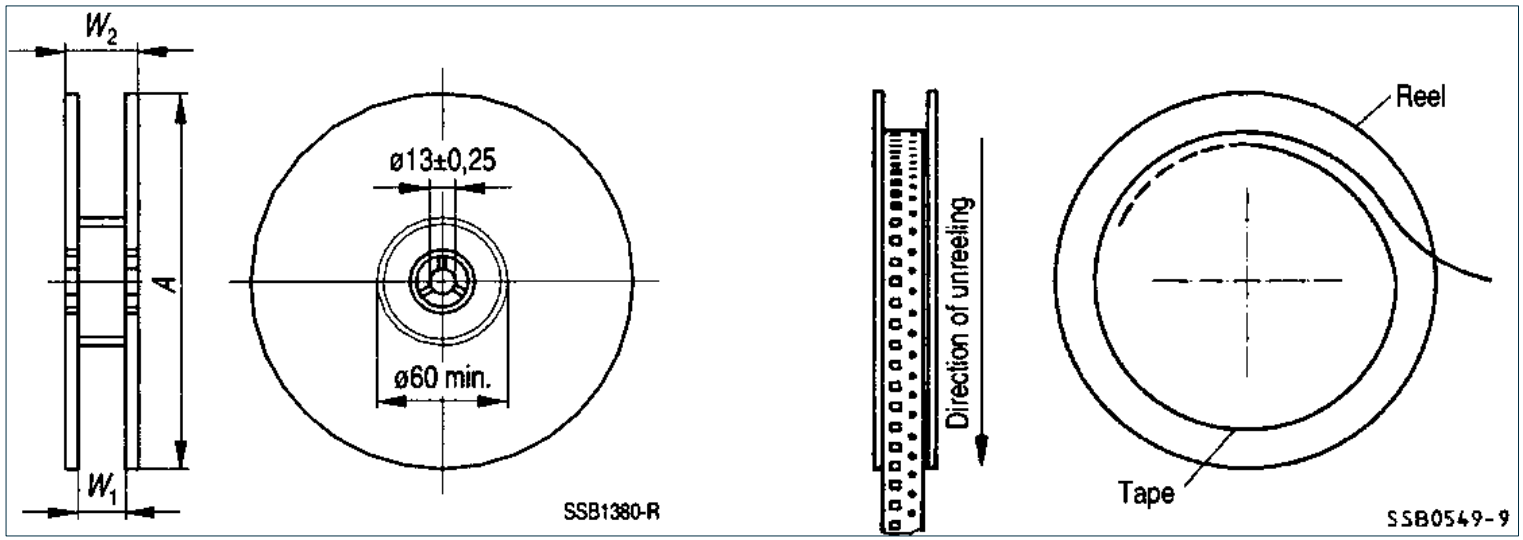
Packaging examples

Filling materials

Materials are used to fill the voids in the packaging and thus reduce the mechanical load by acceleration or negative acceleration on the packaged materials. Have to be removed before entering the EPA.

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS		X	Pallet-compatible		X
Shielding		X	For non-ESDS	X		Stackable		X
Conductive		X	ESD protection symbol		X	Foldable / Nestable		X
Dissipative		X	ESD warning sign		X	Slip lid		X
EPA approved		X	Corrosion-free		X	Handles		X
SHZ Approved	X		Reusable		X	Reclosable		X

Roll materials



The packaging must comply with HARMAN's own standard 1386.395-195 and standard IEC 61340-5-1/2.

Performance	Yes	No	Performance	Yes	No	Performance	Yes	No
HARMAN property		X	For ESDS	X		Pallet-compatible		X
Shielding		X	For non-ESDS	X		Stackable		X
Conductive	X		ESD protection symbol		X	Foldable / Nestable		X
Dissipative	X		ESD warning sign	X		Slip lid		X
EPA approved	X		Corrosion-free	X		Handles		X
SHZ Approved	X		Reusable	X		Reclosable		X

Label / Goods tags

Clear and secure legibility and scanability of the contents of labels and goods tags is the basic prerequisite for the correct transfer of information between HARMAN and its suppliers.

Source
The "Preprints/data exchange" working group in the VDA commodity committee (VDA AKVD) goods tags (bar code capability), 4902 Version 4 / September 1994 edition under consideration: Addition to the recommendation of VDA 4902 Version 4 (goods tags) for more data entries / April 1996

VDA goods tags
The goods tag is used to clearly identify packages and load carriers in the internal material flow and in transit between the supplier, carrier and consignee. Therefore, all suppliers must ensure that all packages and load carriers are provided with a current, carefully completed goods tag with a barcode in accordance with VDA Recommendation 4902 Version 4. It must be ensured that all data on the goods tag corresponds to the contents of the package or load carrier. To ensure clear identification, the supplier is obliged to remove any old goods tags and labels on packages or load units prior to shipment.
HARMAN reserves the right to charge suppliers with the extra costs that result from missing or illegible good tags.

Format
210 x 148 mm format, pallet label (master Label)
210 x 74 mm format, container label (unit label)

Model
The label to be used must be created according to VDA Recommendation 4902 Version 4. The basic principle is that the 210 x 148 mm format must always be used on the main goods tags on packages, e.g. during pallet delivery.
It is imperative that in addition to the transport unit (e.g. pallet) label, every single container is provided with a VDA goods tag.

Reusable items
A container label in 210 x 74 mm format (unit label) is to be used here. The container label must be placed in the provided map-case and secured with a dot of textile adhesive that can be removed without residue. In principle, no adhesive labels can be used and receipts shall not be glued to it. If the provided slots on the load carriers cannot be used, the VDA goods tags need to be fastened with easily removable adhesive dots that do not leave residue. Wire suspensions are not allowed for accident prevention reasons.

Label / Goods tags

Disposable/reusable packaging
A container label in 210 x 74 mm format (unit label) is to be used here, which is stuck on in this application.

Batch purity
Based on the smallest container, only items from the same batch with a trace code can be delivered.

Remaining quantities
One leftover container per delivery is allowed, provided that this has at least 50% of the normal amount of an individual container.

Barcode regulation
Code 39 (EAN 128 by agreement only)

Markings
Upon delivery of several part numbers on a package (e.g. pallet) the pallet label is to be marked in accordance with VDA Recommendation 4902 Version 4 in the "Customer part number" field with the note "Mixed shipment". However, this method of delivery requires the packaging planner's written approval.

Specifications for small packages
When labelling the smallest packaging unit, a distinction must be made between mechanical and electronic components.

Mechanical components
Marking the containers (small containers) with the VDA goods tag in 210 x 74 mm (unit label) format

Electronic components
The HARMAN specific label, which is affixed by the supplier, serves for the clear identification of electronic components in the in-house material flow. Therefore, the supplier must ensure that all components are labelled with a current, accurate and fully completed label with a barcode.
It must be ensured that all data on the label corresponds to the components' data.

Pallet labels for all components in accordance with VDA

210 x 148 mm, pallet label (master label) according to VDA 4902 (valid Version 4 / ODETTE)

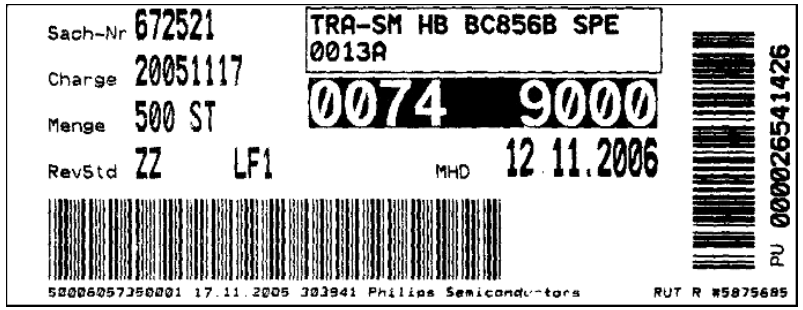
Small container label in accordance with VDA for mechanical components
210 x 74 mm, container label (unit label)

Small container label for electronic components

The HARMAN specific label which is affixed by the supplier serves for the clear identification of electronic components in the in-house material flow. Therefore, the supplier must ensure that all components are labelled with a current, accurate and fully completed label with a barcode. It must be ensured that all data on the label corresponds to the components' data.
In doing so, no format is given for the adhesive label, as this can depend on the area of application and the available surface. However, in general, the completeness and legibility of the data must be ensured.

The following label contents are compulsory:

- HARMAN code number as plain text and barcode (not the serial number, at least 7 digits, maximum of 11 digits with leading zeros and generally without separation by a full stop, blank spaces or underscores etc.)
- Amount/quantity as plain text and barcode
- Supplier as plain text
- Revision status as plain text and barcode
- Bag seal date (moisture level parts) as plain text and barcode
- Supplier trace code (electronic components) as plain text and barcode
- Unit identification no. (Unique container number of the package) as plain text and bar code
- HARMAN purchase order no. as plain text and barcode



Example of a HARMAN own label

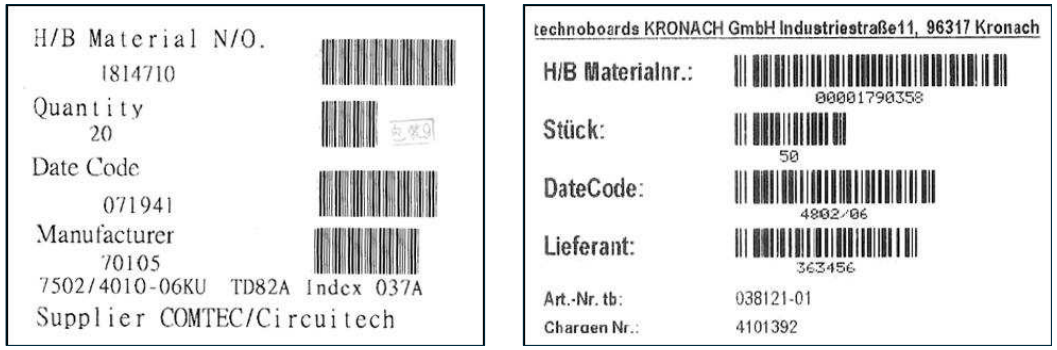
Example of a supplier label

Small container label for PCBs/ROH boards

At HARMAN, complete traceability is required for circuit boards. For this reason, it is essential that the following data is stated in plain text and in barcode form on the supplier label of the smallest container unit:

1. HARMAN code number (not the serial number) at least 7 digits, maximum of 11 digits with leading zeros and generally without separation by full stop, blank spaces, underscores, etc.
2. Amount / quantity
3. Date code
4. Harman/Becker purchase order no. or Supplier no.

The data required by HARMAN must be displayed in the correct order and include the barcode. The order of the data must conform to the above list. Generally, the data is arranged left-aligned on the label, further data required by the supplier should be then placed on the right side of the label.



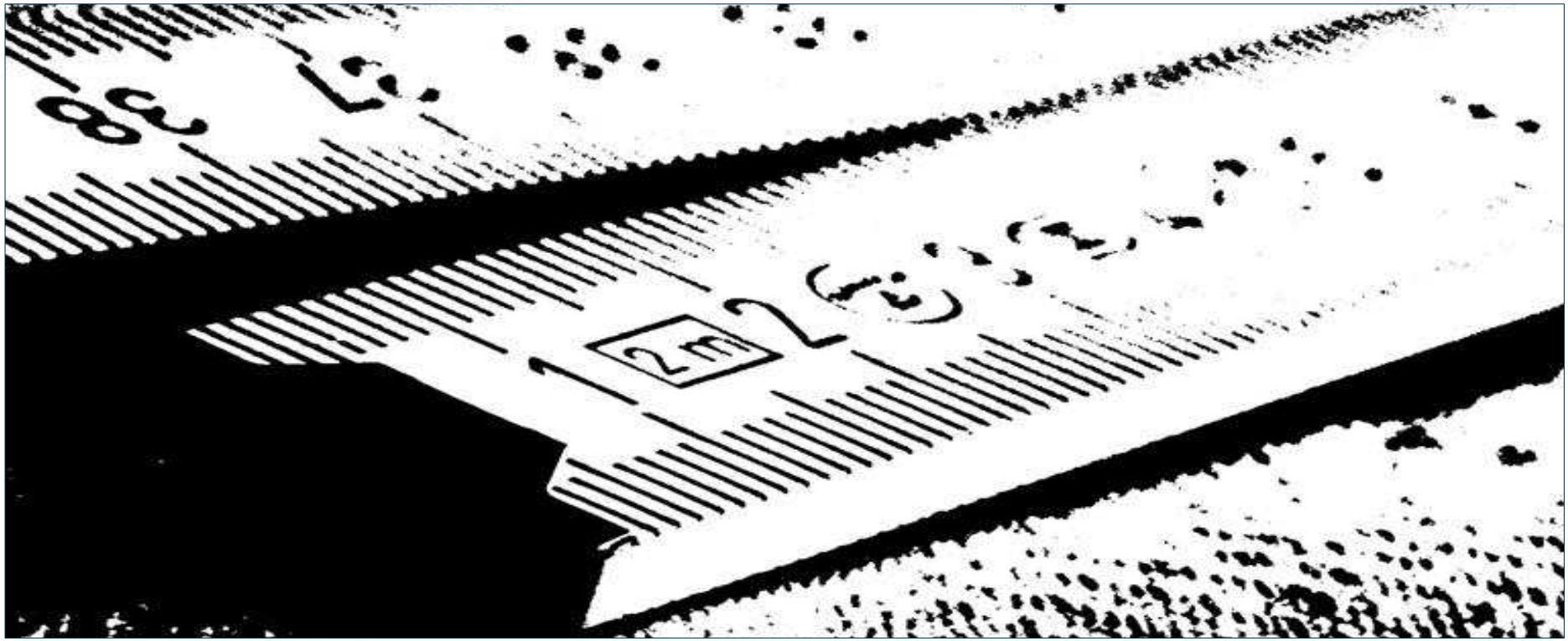
Example labels with the required data

Label / Goods tags

Principle
If a HARMAN specific label is necessary due to the requirements, this is to be submitted to and approved by HARMAN.

Packaging agreement

Purpose
Establishing a packaging agreement serves to ensure legal standards and HARMAN's own standards with regard to the packaging to be used within a supplier-customer relationship.



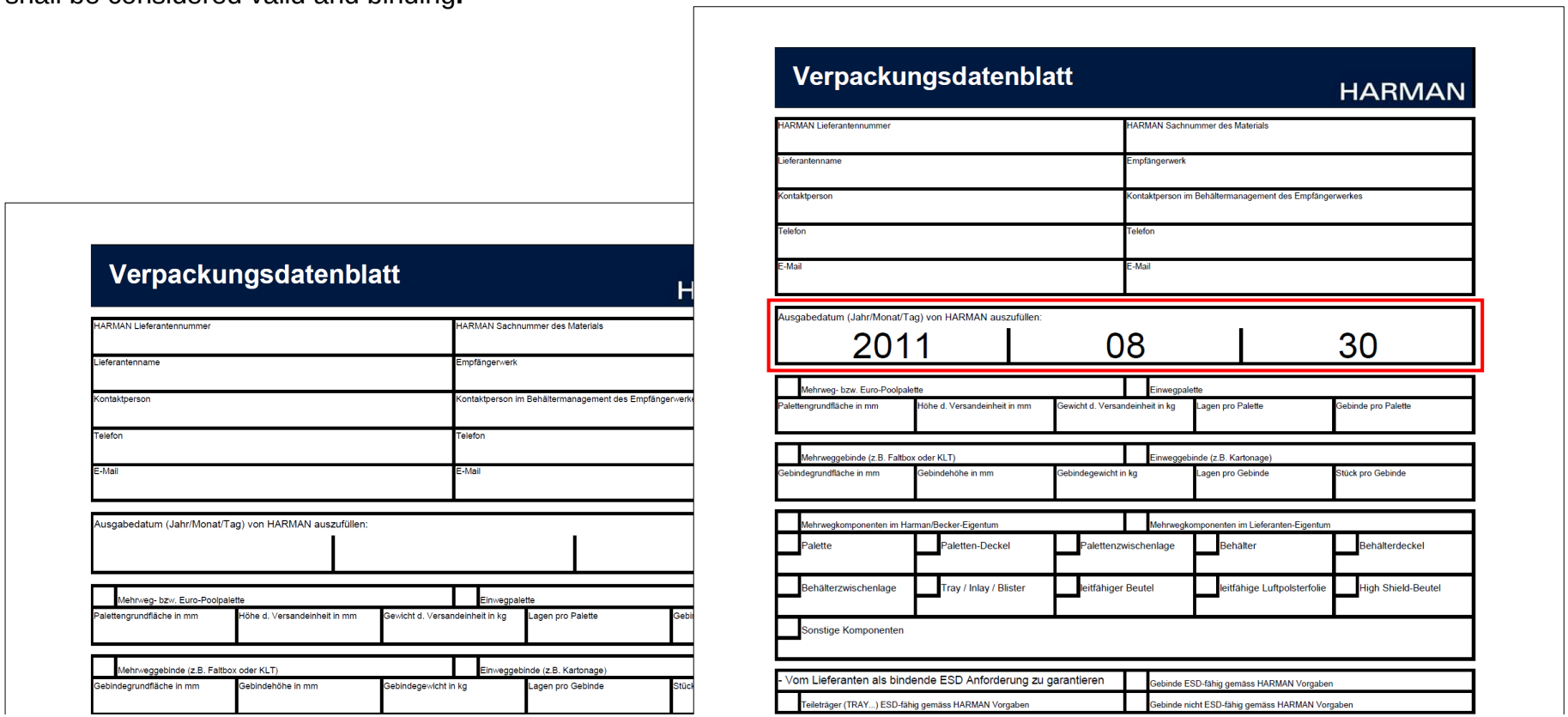
Packaging data sheet

The packaging agreement between HARMAN and the supplier is established and documented using the data sheets.

The supplier must request the packaging data sheet as an Excel file and the data of the competent packaging planner from HARMAN's Purchasing department and is obliged to fill it out in accordance with the agreements with the HARMAN packaging planner.

The data sheet is then sent to the responsible packaging planner
who checks and adds to the packaging data sheet if necessary, provides it with the relevant issue date and sends it back to the supplier by e-mail in PDF format.

If after two weeks (10 working days), starting with the issue date, there is no response by the supplier, the packaging data sheet shall be considered valid and binding**.**



Verpackungsdatenblatt HARMAN

HARMAN Lieferantennummer	HARMAN Sachnummer des Materials
Lieferantenname	Empfängerwerk
Kontaktperson	Kontaktperson im Behältermanagement des Empfängerwerkes
Telefon	Telefon
E-Mail	E-Mail

Ausgabedatum (Jahr/Monat/Tag) von HARMAN auszufüllen: 2011 | 08 | 30

☐ Mehrweg- bzw. Euro-Poolpalette			☐ Einwegpalette	
Palettengrundfläche in mm	Höhe d. Versandeinheit in mm	Gewicht d. Versandeinheit in kg	Lagen pro Palette	Gebinde pro Palette

☐ Mehrweggebinde (z.B. Faltbox oder KLT)			☐ Einweggebinde (z.B. Kartonage)	
Gebindegrundfläche in mm	Gebindehöhe in mm	Gebindegewicht in kg	Lagen pro Gebinde	Stück pro Gebinde

☐ Mehrwegkomponenten im Harman/Becker-Eigentum				☐ Mehrwegkomponenten im Lieferanten-Eigentum
☐ Palette	☐ Paletten-Deckel	☐ Palettenzwischenlage	☐ Behälter	☐ Behälterdeckel
☐ Behälterzwischenlage	☐ Tray / Inlay / Blister	☐ leitfähiger Beutel	☐ leitfähige Luftpolsterfolie	☐ High Shield-Beutel
☐ Sonstige Komponenten				

- Vom Lieferanten als bindende ESD Anforderung zu garantieren	☐ Gebinde ESD-fähig gemäss HARMAN Vorgaben
☐ Teileträger (TRAY...) ESD-fähig gemäss HARMAN Vorgaben	☐ Gebinde nicht ESD-fähig gemäss HARMAN Vorgaben

Revision history

Procedure
The Packaging Handbook is subject to the documentation of the HARMAN standards department. Amendments and additions are controlled by authorised persons using change requests and are communicated to suppliers by HARMAN's Purchasing department.

February 2006
Creation of the standard Packaging Handbook for plants 0001, 0002 and 0074

April 2012
Creation of the new version of the Packaging Handbook, including a packaging data sheet and extension to include plants 0076 and 0090

Plant Representatives

Karlsbad-Ittersbach	**0001**
Ottenschläger, Berthold	MEKC
Becker, Mathias	MEKO
Fischer, Axel	MTM
Keppler, Georg	MTM

Straubing	**0074**
Schraufstetter, Thomas	MESL
Fuchs, Matthias	MESL
Macht, Josef	MESL

Château du Loir	**0090**
Wehrle, Delphine	LOG

Wörth-Schaidt	**0002**
Prozek, Michael	MEWL

Székesfehérvár	**0076**
Zaka, Miklós	LOG
Pozsgai, David	LOG