FORVIA HELLA	FORVIA-HELLA packaging guideline for OE Suppliers	HELLA Norm HN51025

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1 Process assignment acc. to HPH

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Edition date:	Designer of the HN:	PDE of the related process:	PLD of the related process:
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2 Purpose and scope

This HELLA Norm applies to external and internal suppliers of FORVIA HELLA

3 Normative references

Standard/Recommendation	Name	Reference in the chapter...
DIN EN 13698-1	Part1: Construction specification for 800 mm × 1200 mm flat wooden pallets	Pallet production specification
DIN EN 13698-2	Part1: Construction specification for 1000 mm × 1200 mm flat wooden pallets	Pallet production specification
VDA 4500	Small load carrier (KLT) system	Standard packaging
VDA 4504	Electrostatically dissipating small load carrier (KLT) system	Standard packaging
VDA 4530	Disposable cardboard boxes / alternative packaging according to VDA-4500 / VDA-4504	Standard packaging
VDA 4902	Merchandise tags (barcode-capable)	Marking of the Packaging
VDA 4994	Application recommendation for the Global Transport Label – GTL	Labelling of the packaging
IPPC ISPM 15	International Standards for Phytosanitary Measures	Packaging wood materials
HF-7700_C	Packaging Data Sheet	Packaging planning document
HN 26120	Standard Thermoforming Trays	Special packaging / special load carriers
HN 26121	Recycled content for packaging material Plastic Trays Hella	Recycled content
HN20302	Requirements for External Cleanliness Measurements	Cleaning of the packaging
HN67300	Cleanliness level of packaging	Cleaning of the packaging
AD-01249	General / Technical Cleanliness Specification	
HN51001	Overseas Standard Packaging	Overseas Shipping
HN 51020	Mandatory Recycling Markings on Packaging Materials	
HN26113	Packaging test	Packaging testing of boxes and load unit
AD-00385	Hella Quality Management	Guideline for Suppliers
AD-00403	Standard Catalogue EU	All plants in Europe
AD-00972	Standard Catalogue China GL	Lighting plants in China
AD-00973	Standard Catalogue China GE	Electronic plants in China
AD-00963	Standard Catalogue Mexico	Lighting plants in NSA

FIGURE 2: APPLICABLE DOCUMENTS

4 Definitions and abbreviations

Abbreviations used in this guide.

Concept	Definition
Packaging:	General umbrella term for all packaging elements.
Disposable packaging:	Packaging that can only be used once
Reusable packaging:	Packaging that can be used several times without affecting the protective, transport, storage, and handling functions.
Load carrier (LT):	The load carrier encloses the product.
Small load carriers (KLT):	Small load carriers that form a load unit and can only be transported with the help of loading aids (e.g., pallets).
Large load carriers (BMS):	Large load carriers that form a load unit without loading aids and can be transported.
Standard Container:	Universal packaging, not product-specific
Special load carriers (SLT):	Article-specific load carriers that are only used for the use of a specific product.
Loading unit (LE):	A unit of load is the unit that is transported and stored. A load unit can consist of a load carrier or is a combination of small load carriers and loading aids.
Loading aids (LHM):	Loading aids are used to form loading units if the load carriers are not transportable individually. (e.g., pallets, end covers, etc.).
Packaging aids (PHM):	Packaging aids are materials that are used to accommodate/protect the product within a load carrier (films, intermediate layers, etc.).
Inner packing:	Packaging materials that are used in the packaging to protect the products
DFÜ:	Remote data transmission
Forvia Hella GL:	Forvia Hella Business Group Lightning
Forvia Hella GE:	Forvia Hella Business Group Electronic

FIGURE 1: LIST OF ABBREVIATIONS

5 General information

5.1 Responsibility of the supplier

This manual outlines FORVIA HELLA's packaging requirements for its suppliers. The subsequent regulations are established to achieve these key objectives:

- Optimize container and packaging design
- Standardize dimensions
- Align packaging with coordinated quantity contents
- Ensure packaging materials are environmentally sustainable

to ensure a rational and seamless flow of materials between the supplier and FORVIA HELLA.

5.2 General Packaging Requirements

To develop a packaging concept for a FORVIA HELLA product, the packaging requirements must first be defined by FORVIA HELLA. In addition to the individual nature of the product, the entire logistics chain must also be factored in, following the line-back principle. (*FIGURE 3: PACKAGING PLANNING FLOW CHART*)

To meet the best specific packaging requirements, the following general requirements must be considered:

- The packaging must ensure that the parts are delivered without damage.
- The packaging must ensure adequate protection during transportation, handling, and storage.
- A rational use of loading units and an optimal filling level of packaging must be ensured.
- The packaging material used shall be environmentally sustainable.
- Ergonomic regulations must be observed.
- The cleanliness agreements must be adhered to.

To ensure optimal processes in FORVIA HELLA plants, the following general packaging requirements also apply:

- The specification of standard dimensions for packaging and loading units must be complied with according to FORVIA HELLA standard catalogue and Tray-Norm (HN 26120).
- The material used for the inner packaging must meet the technical cleanliness requirements specified in the Hella Technical Cleanliness Norm (HN 67300).
- The type of packaging shall ensure appropriate handling for transport, handling, and storage.

5.3 Packaging Avoidance

Packaging must be planned according to ecological and economic principles. This includes the avoidance, reduction, and recycling of packaging material. In general, therefore, the following principles apply:

- Packaging must be limited to what is necessary.
- Reuse must be ensured though the use of reusable packaging.
- The proportion of disposable packaging must be minimized, with reusable packaging generally preferred over disposable packaging (exception overseas transport).
- Only environmentally friendly and recyclable materials (HN 26121) are to be used.

To avoid unnecessary environmental pollution, the material specifications in Chapter 8.1 must be adhered to when using both disposable and reusable packaging. The following shall be observed:

- As few different materials as possible shall be used within a packaging concept.
- If different materials are used, they shall be as easy as possible to separate and sort.

6 Packaging Planning

6.1 Packaging planning process

The supplier is responsible for the packaging design, cost calculation, and coordination with purchasing and logistics, ensuring the proper delivery and quality of components.

The supplier is accountable for maintaining the quality of components delivered, whether in original or alternative packaging.

The supplier must comply with all project milestone deliverables.

During the quotation phase, the supplier receives a proposed packaging data concept from FORVIA HELLA. (HF-7700_C).

Based on this, the supplier develops a packaging proposal, records it in the packaging data sheet (HF-7700_C), calculates the costs, and submits the completed packaging data sheet to FORVIA HELLA.

The packaging volumes shall be initially agreed upon as estimates during the RFQ stage and refined before SOP. Call-offs shall serve as the basis for necessary adjustments.

FORVIA HELLA reviews the packaging proposal and cost calculations to determine suitability as part of the nomination process. After a successful transport test, the final packaging and costs are agreed upon with the supplier and confirmed in a packaging specification (HF-7700_C) signed by both contracting parties.

The results of the packaging agreement, including the packaging terms and conditions, form an integral part of the contract concluded between the supplier and FORVIA HELLA.

As a general principle, all articles to be supplied to FORVIA HELLA must be packed in the agreed-upon packaging and packing unit quantities as defined in the signed packaging data sheet (HF-7700_C). Any deviations from the signed packaging agreement are only allowed with prior consultation and written approval from FORVIA HELLA, applicable to the specified delivery and time frame.

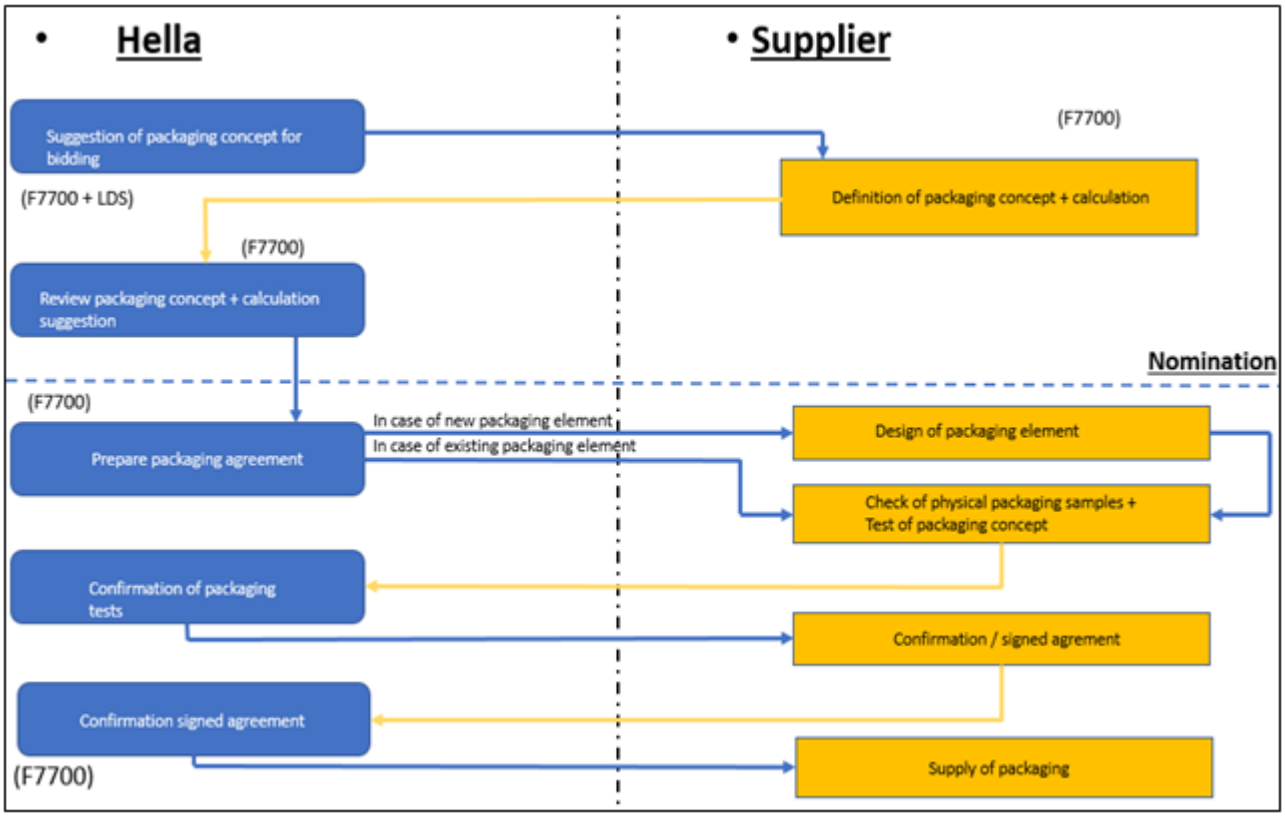
Once the packaging has been defined and agreed for a component, it shall also be used for subsequent deliveries unless a new agreement on the packaging is concluded.

As a general principle, unpackaged goods will not be accepted upon delivery. This also applies to bulk goods (e.g., screws, plastic parts, …).

The packaging (and related tools) remains the property of the procuring party. If packaging costs are allocated in the part price, ownership of the packaging remains with the procuring party upon project completion. Should additional packaging be required after project completion or resourcing, FORVIA HELLA reserves the right to procure packaging from the procuring party’s supplier with use of the associated tool.

The supplier retains responsibility for the packaging throughout the project lifecycle, including storage, cleaning, and maintenance. Delivery of empties are subject to the same cost allocation rules as components (incoterms). After the end of production (EOP), packaging must be returned in acceptable condition to the procuring party, consistent with the project lifecycle requirements.

Any exceptions to these ownership terms and responsibility of packaging throughout the project lifecycle must be explicitly detailed in the Nomination Sheet and mutually agreed upon by FORVIA HELLA and the nominated supplier.



Note: The responsibility for procuring packaging will be defined during the Project Nomination Phase.

FIGURE 3: PACKAGING PLANNING FLOW CHART

Table: Influencing factors in packaging planning

Product Requirements	**Transport/Handling/ Storage criteria**	**Manufacturing**
- Damage-free Delivery - Ensuring the required Degree of purification of the Product - ESD protection -Corrosion protection - Surface sensitivity - Quickly breaking edges - Size and weight - Material and Surface texture -Geometry	- Static, dynamic and climatic resilience - Moisture protection - Stackability and foldability - Damage-free, problem-free handling - Fast and hassle-free Loading and unloading of the Vehicles - Uniform identification - Packaging development under Consideration of internal Dimensions of the means of transport	- Positioning accuracy due to automatic or semi-automatic Handling equipment - Roller conveyor suitability if applicable
Economic aspects		
- Standard dimensions - Minimum dead weight - Optimal container filling level without compromising part quality - Easy-Handling design to reduce transport, storage, and handling costs		

- Cost-effective parts removal with short unpacking time
Ergonomics and safety
- Ensuring good parts removal - Permissible maximum container weight - Adherence to FORVIA HELLA Ergonomics Guideline
Ecological aspects
- Disposable packaging must be avoided - Avoidance, reduction, and recycling of packaging materials - No composites and coatings unless agreed with both parties - Only use plastic (PP) strapping as tension straps - Recyclable and clearly labelled materials in natural colours - Corrosion protection paper must be free of harmful substances and marked - Use of heat-treated or fumigated and marked wood - Disposable packaging must be marked according to EU Framework Directive 2018/851 and 2018/852

FIGURE 4: INFLUENCING FACTORS IN PACKAGING PLANNING

6.2 Payment

The allocation of costs will be determined during the Project Nomination Phase based on the project lifecycle *(CHAPTER 7.3 - 6.6)*.

Packaging costs, along with other related costs (e.g., tools, testing, certifications), must be included in the offer and itemized separately. Standard packaging requirements (*FIGURE 2: APPLICABLE DOCUMENTS)* from FORVIA HELLA must be considered.

FORVIA HELLA reserves the right to conduct audits at parts suppliers, including an annual commercial review. Additionally, parts suppliers must provide packaging prices to FORVIA HELLA for review upon request.

6.3 Packaging Testing

During its lifetime, the packaging is exposed to a wide variety of stresses during transport, handling, and storage, which it must withstand. **Pressure loads** occur as soon as the packaging is stacked or dropped during transport or storage. **Horizontal and vertical shock loads** can occur when the packaging is set down or when the means of transport is started. Vibration loads can also occur during transport. In addition to these mechanical loads, **climatic stresses**, such as extreme temperatures, also affect the packaging.

To assess the suitability of packaging as early as the development phase, various load tests must be conducted. There are two available options: on-site evaluation through sample shipping or load simulation in a laboratory. All packaging tests must be coordinated with the FORVIA HELLA packaging planner, and proper documentation of the tests is mandatory. The test results must be submitted to the FORVIA HELLA packaging planner.

Additionally, document **HN 26113** Packaging Test must be taken into account.

In the following, the various loads that can act on a packaging material are presented as well as tests with which these loads can be simulated.

The final conformation for the packaging concept is made with the approval of the packaging tests.

Table 21: Packaging Testing

Load	Suitable test	Test facility	Purpose
Transport: Train, truck, ...	Vibration test	Vibration-checking facility	Testing of protective properties and packaging stability during dynamic, horizontal, and vertical loads
	Horizontal Shock Testing	Horizontal shock test device / inclined plane	Testing of protective properties under horizontal shock loads
Storage	Crushing test	Upsetting press	Determination of different maximum pressure resistances
Fluctuating climatic conditions	Climatic test	Climatic chamber	Testing of climatic resistance and protection of the packaging
Vertical impacts	Free Fall Exam	Drop table	Testing of protective properties in the event of vertical impacts
Transportation: Forklift	Driving & Emergency Braking	Forklift	Testing of packaging stability, during transport
Vertical impacts due to overturning	Flat Case Testing / Tilt Case Testing		Testing of packaging stability, during handling

FIGURE 5: PACKAGING TEST

Further tests can be requested based on project specific requirements.

6.4 Approval of the packaging concept

In principle, every packaging concept must be approved by the FORVIA HELLA packaging planner. To obtain approval, a completed packaging data sheet (HF-7700_C) is required (*FIGURE 3: PACKAGING PLANNING FLOW CHART)*.

The supplier is responsible for accurately filling out the data sheet with all details of the packaging concept, including relevant images of the packaging. If, for example, trays are used, the drawing, 3D data, and technical specifications of the packaging must also be submitted for approval.

In some cases, FORVIA HELLA may receive small electronic components (SMT components) on rolls from our suppliers in single-use packaging. For these small components, the project team is responsible for determining whether the packaging data sheet (HF-7700_C) is required.

6.5 Durable packaging customization

The supplier must adapt the packaging accordingly upon request.

Any potential additional costs for the adaptation must be communicated in detail to the FORVIA HELLA packaging planner. Approval for the adaptation will only be granted after approval by the packaging planner and proper documentation within an updated and completed Packaging Data Sheet (HF-7700_C).

7 Packaging Types

7.1 Reusable packaging

The FORVIA HELLA Standard Packaging HN 26120 and the Standard Packaging Catalogue (*FIGURE 2: APPLICABLE DOCUMENTS*) are the required standards for FORVIA HELLA. Any deviations from these defined standards must be discussed and mutually agreed upon by both contracting parties.

7.1.1 Container Circulation Days

Container circulation days shall be defined on a project basis in accordance with Business Group and Divisional Standards.

The following standards must be considered, and any deviations must be reviewed and approved by FORVIA HELLA within the Packaging Data Sheet (HF-7700_C).

- **Standard GL & GE – Europe / NSA:**
  - **Production time at Supplier:** 1 loop day
  - **Delivery frequency / Storage time at Supplier:** Maximum 4 days, depending on the agreed delivery frequency per week
  - **Transport (full and empty):** Based on the FORVIA HELLA Matrix, considering the distance between the supplier and the FORVIA HELLA plant (calculated within HF-7700_C)
  - **Production time at FORVIA HELLA:** 1 loop day
  - **Storage time at FORVIA HELLA:** 1 to a maximum of 4 loop days, depending on the agreed delivery frequency per week
  - **Cleaning (if required, confirmed by FORVIA HELLA and based on the technical class):** Maximum 2 days, depending on the technical class level and the agreed cleaning cycle frequency

- **Regional Standards:**
  - **Standard GL/GE – APAC:** Determined based on project-specific negotiations

All packaging loop days must be coordinated and confirmed with the FORVIA HELLA packaging planner within the Packaging Data Sheet (HF-7700_C).
Any specific requirements (e.g., consignment) must be separately aligned and approved by FORVIA HELLA.
FORVIA HELLA is not obligated to provide returnable packaging for supplier bank builds, shutdowns, safety stocks, or similar situations.

7.1.2 Packaging identification

FORVIA HELLA packaging always includes an 8-digit ID number, which shall be displayed visibly on the packaging.

If a supplier's returnable packaging is intended for permanent use, an ID number must also be requested from FORVIA HELLA for that packaging.

The ID number must be clearly visible on the packaging. The ID number is essential information about the packaging and must be included in the dispatch papers and ASN (for all components in the load unit or full packaging list).

7.1.3 Cleaning of reusable packaging

The packaging must generally ensure that the cleanliness level of the component is sustained and ensure that no functional relevant contamination from the outside can reach the component. The packaging must further ensure that no functional relevant or other critical contamination will be generated during transport.

The supplier is responsible for cleaning the reusable packaging on demand. The required level of packaging cleanliness is specified in HN67300. Any deviations from the defined standard of cleaning responsibility must be discussed and mutually agreed upon by both contracting parties.
The cleanliness requirement for each part is specified on the part drawing and documented on the Packaging Data Sheet (HF-7700_C).
For all parts (raw materials, semi-finished goods, and finished goods) with Technical Cleanliness requirements (TC class >0), the following conditions must be met:

- Usage of low abrasive material with smooth, closed surface (void free).
- Water outlet holes and other openings are not allowed.
- Minimal contact between packaging material and part (especially for trays / inlays: minimum contact of part in the cavity, minimal lateral contact, no contact between the components, no contact to functional surfaces, undercuts and draining spaces were liquid or particles can cumulate must be avoided)
- Cavities (particle traps) where particles can systematically be collected, without them reaching back the part, are desired. Thereby, it must be respected that they can be easily cleaned. These cavities shall be designed as deep as possible.
- It must be considered that a frequent cleaning of the packaging will be done with both wet and dry cleaning options. Type and frequency of the cleaning is defined in the TC concept. Temperature and cleaning solvent resistance, automated cleaning, air blowing, etc. must be considered. The cleaning process must not affect the characteristics of the packaging (form stability, ESD, surfaces, etc.) in a negative way.
- The product must be protected against movement during transport (especially jumping out of the cavity). This can e.g. be realized by fixation with a cover or upper layer tray.
- Lateral movement of the parts shall be minimized.
- For covering the upper layer of a stack of self-supporting trays a cover plate shall be considered.
- The Technical Cleanliness level of new deep drawn or injection moulded packaging at delivery must fulfil the requirements of the ZVEI Guideline Technical Cleanliness in electronical engineering chapter 4.2.3.4 respectively 4.2.5.
- Further information on packaging cleaning is given in HN67300 and OS.01.0114.I.103

The cleanliness of parts is differentiated by 4 cleanliness classes. The cleanliness level of packaging for parts class 1-3 is given in HN67300.

Purity class	**0**	**1**	**2**	**3**
Explanation	Basic Cleanliness	Specified Cleanliness	Advanced Cleanliness	Highly Advanced Cleanliness
Metallic particles	None Requirements	≤ 1000 µ	≤ 600 µ	≤ 400 µ
Non-metallic particles	None Requirements	≤ 1500 µ	≤ 1000 µ	≤ 600 µ

FIGURE 6: TECHNICAL CLEANLINESS CLASS

Any deviation from the agreed cleanliness requirements will be corrected at the supplier's expense and will lead to a logistics claim from FORVIA HELLA.

7.1.4 **Damaged reusable packaging**

As a rule, reusable packaging is considered damaged if the functionality of the packaging can no longer be guaranteed. Damaged packaging may no longer be used and must be repaired or disposed of accordingly.

The contracted supplier only ships undamaged reusable packaging to FORVIA HELLA. In the event of damaged packaging, the following procedures are required:

1. When receiving empty, damaged reusable packaging from the contracted supplier/ FORVIA HELLA:

    - The receiving party will be informed immediately by e-mail about the type of damage and the number of occurrences. Associated shipping documents will be attached to the complaint.

- In the event of deviations from the standard process, such as the return transport of the empty, damaged additional packaging to the receiving party, a written instruction from the responsible party must be provided.
- In general, only the instructions of the FORVIA HELLA contact person shall be followed.
- The account adjustment is only conducted according to the written instruction of FORVIA HELLA.

2. Upon receipt of fully damaged reusable packaging from the contracted supplier:

   - The sender (supplier) receives the invoice for the repair or disposal with a copy of the delivery note/consignment note or pallet consignment note.

In general, the cost allocation is based on the polluter-pays principle. If the responsible party cannot be clearly identified, both parties shall share the responsibility and costs equally.

7.2 Disposable packaging

The planning of disposable packaging is permissible only when reusable packaging cannot be used economically.
The disposable packaging must be designed to achieve optimal functionality in terms of simple, ergonomic, and favourable handling of the inner packaging and the parts.

Single-use packaging is intended for one-time use only and must be sent for material recycling. As a general rule, disposable packaging should be avoided and may only be used in exceptional cases as packaging aids, after consultation and release from the packaging planners at the FORVIA HELLA plants.

The disposable packaging shall be selected and coordinated according to the specifications in VDA 4530 Disposable cardboard boxes / alternative packaging in accordance with VDA-4500 / VDA-4504.
This ensures that the possible repackaging costs are minimized.

Any deviations from the defined standard and signed packaging agreement, including the exceptional use of disposable or alternative packaging, are only allowed with prior consultation and written approval from FORVIA HELLA, within the specified delivery and time frame. If the supplier is responsible for any deviation from the agreed packaging terms, all associated repackaging costs will be charged to the supplier.

As an exception, a similar disposable packaging can also be coordinated. The standard dimensions of 300 x 200 / 400 x 300 / 600 x 400 mm for palletizing on a pallet of 1200 x 800 mm must be considered here.

For deliveries in one way packaging to Europe or within Europe, the requirements of the European Union (EU) Framework Directive 2018/851 and 2018/852, which promote the circular economy and sustainable waste management, must be observed.

Marking is carried out according to HN 51020 Mandatory Recycling Markings on Packaging Materials.

7.3 Standard “Universal” packaging

The FORVIA HELLA standard packaging HN 26120 and standard packaging catalogue (*FIGURE 2: APPLICABLE DOCUMENTS*) are the required standard for FORVIA HELLA, any deviations to the defined standard must be aligned and agreed between both contracting parties.

Packaging identification must comply with the requirements outlined in Chapter 7.1.2. Supplier names or special markings are not allowed on standard “universal” packaging. Any deviations from this requirement must be reviewed and approved by FORVIA HELLA.

The responsibility for procuring “universal” packaging will be defined during the Project Nomination Phase.

FORVIA HELLA GL: As a general principle, FORVIA HELLA will be responsible for the procurement of “universal” packaging.

If it is agreed during the Project Nomination Phase that the contracted supplier will procure the standard “universal” packaging, it will be managed through FORVIA HELLA's pooling system. Consequently, FORVIA HELLA cannot ensure the consistent use of the same universal packaging for each cycle.

7.4 Special packaging

Special packaging is defined as packaging that can only be used for a specific product or product family. This means that the packaging usually deviates from the standardized inner and outer dimensions, or from the inner workings of a universal load carrier. The special packaging is therefore not universally applicable.

Reasons for the use of special packaging arise from the individual properties of a component, for which a universal load carrier cannot adequately fulfil the packaging functions.
This is the case, among other things, if:

- The component cannot be packed in a universal load carrier due to increased dimensions.
- The component requires increased positional accuracy.
- The component has an increased (surface) sensitivity.
- There are overall quality requirements that require special packaging.

As a design rule, the modular dimensions of the standard containers shall always be adhered to due to the lower handling effort and that the special packaging of the component is conducted through the inner packaging. The following concepts of special packaging are therefore used at FORVIA HELLA:

- Standard packaging with additional inner packaging
- Standard trays with individually defined nest shapes (HN 26120)

The use of special packaging shall be coordinated with FORVIA HELLA packaging planner and only permitted in exceptional cases.

The responsibility for procuring “special” packaging will be defined during the Project Nomination Phase.

FORVIA HELLA GL: As a general principle, the procurement of “special” packaging will be allocated in the piece price of the nominated supplier.

Packaging identification must comply with the requirements specified in Chapter 7.1.2. All packaging must be developed based on guidelines for tray requirement (HN 26120), standard packaging catalogue (*FIGURE 2: APPLICABLE DOCUMENTS*), and recycled content (HN 26121). Any deviations must be coordinated and released by the FORVIA HELLA packaging planner.

Injection-molded trays are commonly used in electronics plants (FORVIA HELLA GE). This type of packaging must be evaluated and accounted for during the project phase.

7.5 Inner packaging

Inner packaging is defined as all packaging materials that are used within the packaging for additional securing and protection of the component. The following packaging materials are suitable as inner packaging:

- Intermediate layers and wrapping paper.
- Trays and bridge inserts
- Bags, flap bags and side gusseted bags
- Inlays, die-cut blanks, and corner pads.

When selecting inner packaging, the guidelines for tray requirements (HN 26120) and recycled content (HN 26121) must be followed. Therefore, the inner packaging must always be coordinated with the FORVIA HELLA packaging planner.

The responsibility for procurement of “inner” packaging will be determined during the Project Nomination Phase.

FORVIA HELLA GL: As a general principle, the procurement of “inner” packaging will be allocated in the piece price of the nominated supplier.

Packaging identification must comply with the requirements specified in Chapter 7.1.2.

7.6 Alternative packaging

The procuring party is responsible for alternative packaging, which must be agreed upon at the start of the project and documented within the Packaging Data Sheet (HF-7700_C). The alternative packaging concept must align with the defined and agreed standard packaging concept, including handling unit quantity and design. The exceptional use of alternative packaging is only permitted with prior consultation and written approval from FORVIA HELLA, within the specified delivery and time frame.

The cost of alternative packaging shall be included and calculated during the negotiation phase and must be confirmed by FORVIA HELLA Purchasing and Packaging Planner.

It is the Supplier responsibility to ensure delivery of order quantities in agreed standard packaging concept and/or alternative packaging if applicable.

Alternative packaging may only be used with prior confirmation from FORVIA HELLA if sufficient standard packaging is not available. Otherwise, its use is not permitted.

8 Other

8.1 Material

FORVIA HELLA uses only environmentally friendly and (easily) recyclable materials as packaging material. Furthermore, the guidelines of technical cleanliness apply to all materials. The use of certain materials is therefore situation-dependent and must always be clarified with FORVIA HELLA's packaging planner.

Below is an example categorization of permitted and prohibited packaging materials.

Material	General suitability	Information
Foams / Trays / boxes		
EPP	Yes	
EPS/Styrofoam	No	Only after written consultation with the packaging planner
ABS	Yes	
PE	Yes	
PP	Yes	
PET	Yes	
PS	Yes	
Tension straps		
Steel	No	
PP	Yes	
Polyester	No	As an exception is PET for straps permitted
PA	No	
Wood		

Heat-treated wood	Yes	
Wood radiated with Gamma-rays and X-rays	No	
Impregnated wood	No	
Fumigated wood	No	
Coated and painted wood	No	
Flake board (OSB)	Yes	Uncoated and unpainted.
Plywood	Yes	No IPPC-marking necessary.
Paper, Corrugated, Solid Board		
Paper, conventional	Yes	
Cardboard made of corrugated board/solid board	Yes	Closure with plastic or textile banding.
ESD-coated corrugated board/solid board	Yes	
VCI-coated corrugated board/solid board	Yes	
Laminated corrugated board/solid board		Only permitted after case-by-case review and approval from FORVIA HELLA. Use for returnable packaging limited.
Composites	**No**	**Composites are not permitted**

FIGURE 7: PERMITTED AND PROHIBITED PACKAGING MATERIALS

8.2 Dimensions and weights

The FORVIA HELLA Standard Packaging HN 26120 and the Standard Packaging Catalogue (*FIGURE 2: APPLICABLE DOCUMENTS)* are the required standards for FORVIA HELLA. Additionally, the Ergonomics Guideline must be followed. Any deviations from these established standards must be discussed and mutually agreed upon by both contracting parties.

8.3 Load Unit security and Delivery of packaging

To guarantee efficient transport and storage, the following general requirements apply:

- Stability of the Load Unit in terms of properties, shape and volume
- Stacking ability of load units
- The basic dimension of the load carriers (pallets) must not be exceeded by the packed material and load securing equipment.
- Incomplete layers are not permitted.
- The load units must be able to be handled by industrial trucks
- A load unit comprising plastic returnable containers must be covered by a cover lid.
- Load units must have plastic fastener straps along the long side (metal fastener straps are not permitted)
- Straps must not be allowed to cut into cardboard boxes and containers
- Edge reinforcements must be used whenever the safety of the load unit makes this necessary
- Securing Load Unit through stretch film must be avoided. Any deviations must be agreed by both contracting parties during the project phase.

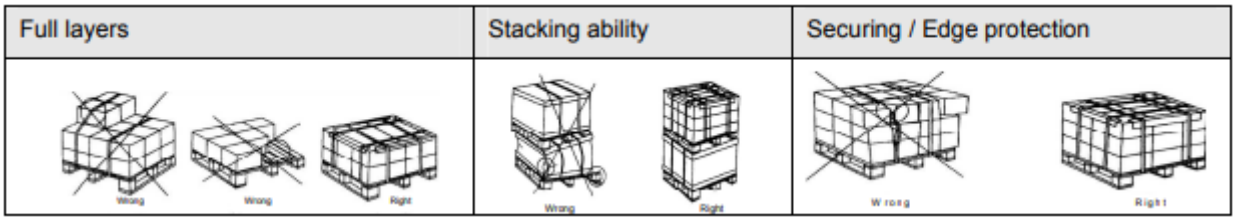


FIGURE 8: ILLUSTRATION OF ACCEPTABLE LOAD UNIT SECURITY AND DELIVERY CONDITIONS

Any deviations or requests for additional approval must be coordinated with the FORVIA HELLA Packaging Planner during the project phase.

8.4 Overseas Shipping

This chapter is an excerpt from the FORVIA HELLA standard HN 51001. All documented requirements outlined in HN 51001 must be followed.

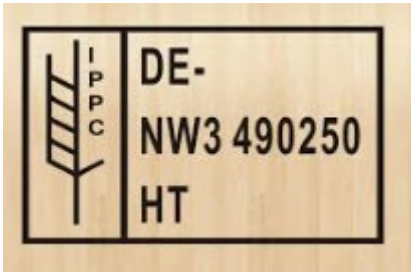
Packaging is exposed to increased mechanical and climatic stresses during overseas transport and therefore requires special attention to packaging regulations. In general, FORVIA HELLA only uses organic disposable packaging material for overseas transports, which must therefore withstand external factors. These include:

- Climatic stresses (humidity, temperature)
- Mechanical loads (static and dynamic)
- Duration of the load
- Signs of material fatigue
- Transport routes and means of transport.
- Load distribution

The material properties of the selected disposable packaging material (corrugated cardboard and wood in addition to other packaging aids) as well as an assessment of all influencing factors must be considered when packaging for overseas transports.

ISPM 15

The ISPM 15 represents the international standard for Phytosanitary Measures for wooden packaging materials in international trade. The ISPM 15 enters into force via binding national implementations.



The ISPM 15 / IPPC marking requires the following:

- Standard treatment (Heat treatment HT, a core temperature of 56°C must be maintained during 30 minutes in the timber)
- Marking of the packaging as proof of treatment
- De-barking of packaging timber
- The IPPC symbol
- Country code according to ISO 3166 for example DE for Germany
- 0000 = registration number of the treatment facility including regional code

Container utilization and pallet selection

For transport, only ISO standard containers in 20 ft length and 40 ft length, optionally as a high cube variant, are used. With the standardised width of 2350mm of an ISO container, the common pallet size of 1200x800mm is unsuitable for overseas transport.

FORVIA HELLA therefore requires the use of the following overseas pallets in the order shown within the container: Any deviations from the defined standard must be discussed and mutually agreed upon by both contracting parties.

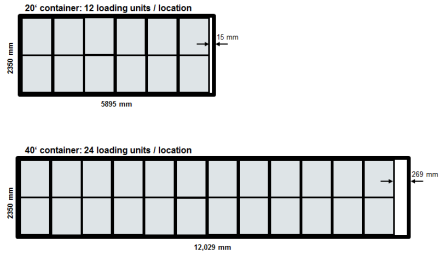
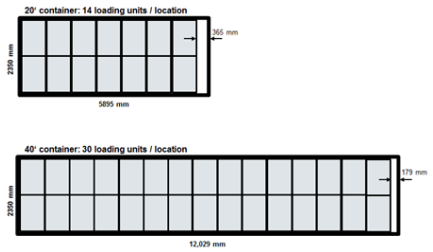
1. **Dimensions (1140x980 mm)**	2. **Dimensions (1140x790 mm)**
	
	
Space utilization 20 ft container: 97 % Space utilization 40 ft container: 95 %	Space utilization 20 ft container: 91 % Space utilization 40 ft container: 96 %

FIGURE 9: CONTAINER UTILIZATION AND PALLET SELECTION

The pallet used must also have the following characteristics:

- Load capacity with surface load (dynamic) of at least 500 kg per pallet
- Load capacity with flat load (static) of at least 2,000 kg in the stack
- High-bay capability with uneven support of at least 500 kg

Cardboard requirements

The cardboard box shall be designed to fully occupy the area of the overseas pallet, ensuring optimal utilization of the container.

External factors influencing the transport must be considered when choosing the packaging. Climatic stresses, such as increased humidity, can lead to a loss of stability of up to 30% in organic materials such as wood and paper due to their moisture-attracting properties.
Therefore, single- and double-walled cardboard shall only be used as inner packaging and three-walled cardboard packaging as outer packaging in one of the following two variants:

- Box-in-box cardboard packaging
- IMC cardboard packaging

Further information on cardboard packaging and an overview of FORVIA HELLA's overseas cardboard packaging standards can be found in HN 51001 (*FIGURE 2: APPLICABLE DOCUMENTS)*.

Using a lid

To ensure sufficient stability, the use of a pallet lid is required. The dimensions of the lid must be in line with the dimension of the pallet to be stabilised. The following lid variants are recommended:

- Recommended Pallet lid Dimensions 1140 x 980 mm
- Recommended Pallet lid Dimensions 1140 x 790 mm

Also, to note:

- Attention to plant protection.
- Addition of desiccants
- Use of VCI paper as corrosion protection
- Application of mandatory labels

8.5 ESD Protection

ESD requirements shall be documented by FORVIA HELLA in the initial Packaging Data Sheet (HF-7700_C) and must be agreed upon with the supplier during the project nomination phase. The supplier must provide the ESD measurement report to the FORVIA HELLA packaging planner.

These requirements must be included in the finalized Packaging Data Sheet (HF-7700_C), ensuring that all necessary ESD measurements and requirements are properly considered.

8.6 Claims Management

Any deviations from the defined, agreed, and signed standards in the FORVIA HELLA Packaging Data Sheet (HF-7700_C) will result in a claim. Any costs incurred due to non-compliance with the agreed terms shall be borne by the responsible party in accordance with the Polluter-Pays principle.

9 Changes made since the previous edition

Status 2025-02-18: New document

Version	Modifications	Page	Name / Date
1.0	New document		N. Gorki / 18.02.25
2.0	7.7 Label chapter was deleted due to HPC516		C.Baranyi/16.06.2025
3.0	7.1.3 Cleaning of reusable packaging		C.Baranyi/15.07.2025