# Packaging Guideline MAHLE ELECTRONICS



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#### 1. General information about packaging

In the present Packaging Guidelines, the basic requirements are defined for the packaging of purchased parts, which the supplier must accomplish. It must be observed for the development, design, and planning of packaging.

This manual is intended for suppliers that choose new packaging or replace the existing one to be suitable for MAHLE Electronics plant and for the supplier. The manual offers guidelines to all involved into the packaging process. These standards are necessary to ensure general accountability to maintain quality performance and reduce costs. This manual can be updated by additional requirements of the MAHLE Electronics.

#### 2. General requirements

For packaging purchased parts the following principle applies: "As much packaging as necessary, as little packaging as possible"

As a general rule, the following points must be noted:

- Packaging must be movable using industrial trucks without any problems
- Applicable safety regulations for the work personnel must be complied with Packaging rule out risks of injury during transportation, opening and removal Avoidance of unnecessary packaging and packaging aids
- Avoidance of environmentally harmful substances
- Transport-optimized loading units to avoid emissions of pollutants
- Weight and volume reduction
- Use of reusable and recyclable packaging

It must always be prioritized during shipments that a pallet contains a single product reference. In those cases where this is not possible and several product references must be sent on the same pallet, the load must be supplied leaving all the products with the same reference on the same level, all the products on the pallet being easily identifiable.

#### 3. Supplier's responsibility

#### 3.1 General responsibility requirements

Supplier is responsible for appropriate packaging. Goods must be packed in such a way that they do not break or damage, from the manufacturing source to the point of use in MAHLE Electronics.

- In choosing packaging, the safety of worker must be considered. Packaging weight must not exceed **12 kg**, and should enable manual handling by of one person.
- Dimensions of a packaging unit must be the lowest possible with regards to the assembly line or linefeed and not more than 600x400x220.
- The handling unit must be as lowest possible but in no case more than 1200x1000x1180mm.
- Packaging design must protect the product.
- Supplier is responsible for the correct labelling.
- The supplier must consider a protection of a product inside of the packaging unit to prevent any damage during transportation.
- In the process of continuous improvement in MAHLE Electronics the packaging can be changed. Supplier shall respond to the request and manage new packaging changes.
- The returnable MAHLE Electronics packaging's are preferred, in some cases one-way packaging's can be used, which must be recyclable.

#### 3.2 One-way packaging

When application of returnable packaging is not reasonable or possible, one-way packaging shall be selected.

Therefore, the one-way packaging is required to be:

- Stackable.
- Recyclable. (see point Recyclable components)
- Environmentally friendly.
- Able to be emptied quickly.
- Able to provide protection against corrosion and all types of damages.

#### 3.3 Returnable packaging

Wherever possible and reasonable from an economic point of view, returnable packaging is preferred. Returnable packaging must be capable of being used for multiple return trips. Its design requires:

- Stackability
- Preferably collapsibility into smaller volume to save space
- Durability and washability, lightweight and firmness
- Ability to be easily filled and emptied
- Ability to be attached to pallets for easy lifting and handling manually.
- Recyclable

 The supplier must be responsible for the cleanliness of the returnable packaging, always sending it to MAHLE in good condition and clean according to previously agreed conditions.

# 3.4 Additional supplier responsibilities in the case of MAHLE Electronics provided returnable packaging

Supplier is responsible for keeping records of returnable packagings in and out of the supplier location. In case of deviations of number of packagings, the supplier must inform MAHLE Electronics .

- The supplier must have enough stock of packaging.
- The supplier is responsible to make two annual report (each 6 months) of the packaging state and conditions. The report includes number of packagings with possible deviations and conditions of packagings. In case of damage or lost packaging at the supplier location, MAHLE Electronics will charge the supplier.
- Each supplier must develop a contingency plan for emergency packaging in case of breakage, loss or misuse of the packaging, which has to be approved by MAHLE Electronics.
- If the need to provide the supplier with alternative/emergency packaging to the series has been previously agreed upon, it is the supplier's responsibility to have the necessary stock to be able to supply the series without being this stopped or altered.

#### 3.5 Recyclable components – Elimination of single use plastics and foams

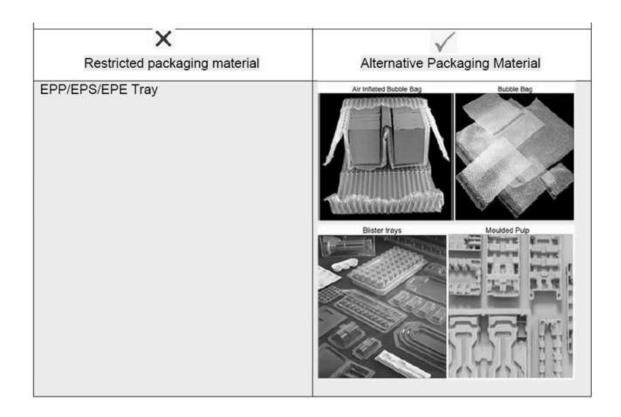
It is our purpose to eliminate Singe Use Plastics and FOAMS (EPP / EPE / PET – Plastics PE / EPE / EPP) from its packaging for all MAHLE Electronics.

Suppliers are requested to use alternate packaging materials when designing new packaging to be followed during initial concept and quote process for packaging approval.

The below shown alternate packaging materials are few examples and suppliers are encouraged to use other options.

#### Packagings should be:

- Environmentally friendly
- Able to be emptied quickly
- Able to provide protection against corrosion and any type of parts damage.



#### 4. Packaging planning

For all purchased parts, specific packaging requirements apply, in order to ensure an economical material flow and production process:

- Product protection
- Compliance with quality requirements
- Production-optimized delivery
- Compliance with work safety, cleanliness, and tidiness
- Compliance with legal requirements
- Minimized packaging costs
- Standardization

These points must be observed without fail when planning the packaging. Planning procedure:

- 1) Testing the geometry of the component, status, quantity and quality requirement
- 2) Definition of possible packaging systems
  - a. Packaging possible in standard packaging?
  - b. Use of own container?
  - c. Specialist packaging required? (Special pallet, wooden box)
  - d. Separate internal packaging required? (Use, compartments etc.)
  - e. Corrosion protection required?
- 3) Selection and calculation of the packaging
- 4) Presentation of a packaging concept, including costs and approval

#### 5. Packaging concepts

#### 5.1 Packaging Unit (PU)

A packaging unit represents the smallest unit in which the ordered quantity is packed. The packaging unit can be MAHLE Electronics returnable, supplier's or one-way packaging unit.



# 5.2 Handling Unit

A handling unit consists of packaging unit and can contain other additional packaging. It must ensure mechanical manipulation. The handling unit must be labelled both in its total load and in each individual packaging units.



#### 6. Packaging Physical Requirements

#### 6.1 Weight and dimensions

MAHLE Electronics requires usage of HU base dimensions 1200 x 800 (mm) and/or 800 x 600 (mm). The maximum dimension permitted is **1200x1000x1180mm** in order ensure best transportation usage and mechanical manipulation inside MAHLE Electronics. Total height of handling unit must not exceed 1180mm.

Total weight of one packaging unit must not exceed 12 kg to ensure manipulation by one person manually. In case that for some exceptional reason this weight must be exceeded, it must be justified and agreed upon in the work group prior to the validation of the packaging by MAHLE Electronics.

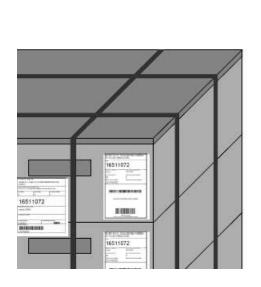
Packaging unit must be designed in the way that maximum space is used in it and there is no empty space. By doing so, other requirements must be followed as mentioned early.

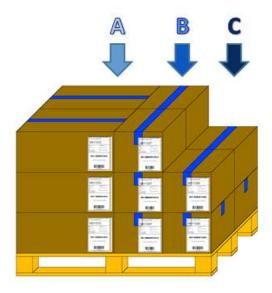


#### 6.2 Stacking and protecting the packaging and handling unit.

Packaging must be fixed and prevented from moving. Incomplete layers must be avoided. PP or metal strap shall be used to fix packaging units due to safety reasons. Packagings shall be covered and wrapped with stretch foil. This must be fixed with enough strength to fasten the packaging.

The figure shows an example of stacking the various items on a pallet for mixed codes A, B and C.







Able to safely stack in storage and transit to same height as durable equivalent



Max height of unit load as per section 7.1 Full Perimeter pallet required



Full perimeter pallet, reinforced with under runners to withstand handling forces

#### UNACCEPTABLE



Collapsed stack Insufficient durability



base with under



No banding of pallet



Pyramid load does not allow stacking



Bandingunder pallet base (restricts fork access)

#### 6.3 Delivery documentation

Packaging units must contain documentation that comprises information about the supplier name, ident number packing quantity of receiving material. Furthermore the packaging's shall have a date of delivery and date of production. In the packaging documentation shall also include the ident of the returnable MAHLE Electronics.

#### 6.4 Recycling and environmental requirements

Packaging shall be planned taking into account basic economic and ecological requirements. Some basic rules are:

- The best way to reduce the packaging waste is to reduce the total amount of packaging.
- Reduction of numerous one-way packaging materials used by the supplier.
- Recycling Returnable or one-way packaging must be made of recyclable materials.

The European Union is seeking to harmonize measures about environmental requirements. Environmental requirements regarding packaging materials must comply with the »European communities Directive 94/62/EC.«

MAHLE Electronics will be considering the European directive when planning new returnable packaging. To avoid environment pollution, we use eco-friendly materials, which can be recycled and for this reason they are marked with such international symbol. Every arrow has a meaning that is: **Collect! Process! Reuse!** 



For returnable packaging mainly plastic materials are used. Label of the type or to say the chemical composition of the material is a triangle with three arrows and a number in the middle. Below the triangle there can also be initials of the material.



#### 7. Aerial and Overseas Shippings

#### 7.1 Air Freight

To ensure damage – free transportation shipments must be properly packed. There are some pointers written bellow, just to understand the meaning and importance of proper packaging for damage-free air freight movements.

#### 7.1.1 Hazards of distribution

<u>Punctures and abrasion:</u> Occur when packaging's contact each other during the shipping process. <u>Compression:</u> happens when external forces damage faces, sides, or corners of a package. <u>Environmental exposures:</u> packaging's are exposed to high and low pressure and temperatures that may have effects on packages and products. There are also others, such as dirt, dust, precipitation. A shipper must consider these hazards to avoid damage to product and packages. Shipment handling: Usually the packaging is handled with a forklift and it is common that impacts associated with handling operations occur. Proper cushioning can reduce damage that may occur. <u>Vibration:</u> Proper cushioning can absorb the negative vibrations when handling, transporting and forklifting.

#### 7.1.2. Air freight pallets

We use mainly wooden and plastic pallets for air freights. Pallets should be high quality to reduce damages according to forklifting and manual handling. Pallets also have to be large enough to accommodate shipments without overhang, damage free without any nails out of the pallet. We also must not exceed the maximum capacity of the pallet.

Plastic pallets are an alternative to wooden pallets. They are very durable and they can be reused many times. On the other hand, they are very expensive.

#### 7.1.3 Air marking and labelling shipments

All air freights must be properly labelled. A label must be durable and must consist of a name, address, sender and consignee. It also has to be clearly visible. Below there are a few examples of markings commonly used.

#### DO NOT FORK



# KEEP DRY



#### FRAGILE



#### DO NOT TOP LOAD



### TOP HEAVY



#### CENTER OF GRAVITY



#### 7.2 Overseas packaging

For overseas shipping, wooden boxes or wooden pallets with cartons should be used, which must satisfy the requirements regarding stackability, transport stress, import regulations for wooden packagings (IPPC standard) etc.

| TYPE | REFERENCE                  |
|------|----------------------------|
| 4H   | SACIM<br>D110 100 007      |
|      | PACKAG TABLE<br>CAR-S*2990 |

#### DIMENSIONS

Pallet max. outer (mm) included 1,140 x 950 x 640

Min. inner (mm) 1,082 x 919 x 505

Useful volume (dm<sup>3</sup>) 507 dm<sup>3</sup>

Tare (Kg) estimate 20



#### CHARACTERISTICS OF THE CORRUGATED CARDBOARD COMPONENTS

| Description | Clamification parameter DFⅅ=(4C+E) TT =ECTx \( \sqrt{ep} \) | Sum of the gam<br>of both outer<br>surfaces (C)<br>g/m <sup>2</sup> | Minimum gum of each TT component = of the corrugated car@board gun' | TT (J)<br>dynamic<br>perforation<br>DF & DD<br>buriting | Min.<br>thickness<br>(mm) |
|-------------|---|---|---|---|---------------------------|
| CASING      | 2,690   | 400   | 110   | 945   |                           |
| BELT        | ≥ 50.5  |   | 1,400   | ≥ 20  | 12.5                      |
| LID         | 3,050   | 320   | 110   | 1,050   |                           |

Outer lid absolutely must be Kraft cardboard.

#### CHARACTERISTICS OF WOODEN COMPONENTS

| Description | Standard | Humidity | Additional information       |  |
|-------------|----------|----------|------------------------------|--|
| PALLET      | ISPM 15  | <17 %    | Bark-free 2nd grade softwood |  |

#### CHARACTERISTICS OF OTHER COMPONENTS

| Description | Material  | Other | Additional information                              |  |
|-------------|-----------|-------|---|--|
| BRACES      | Cardboard | Qty 4 | For transport and folded delivery (static stacking) |  |

#### CHARACTERISTICS OF THE WHOLE

| Description      | Vertical<br>Compressive<br>Strength (RCV) | Content max. | Additional information |
|------------------|---|--------------|------------------------|
| Assembled<br>BOX | 2,300 daN                                 | 1,000        |                        |

| TYPE | REFERENCE    |
|------|--------------|
| 3P   | SACIM        |
|      | D110 100 008 |
|      | PACKAG TABLE |
|      | CAR-S*2991   |

#### DIMENSIONS

Pallet max. outer (mm) included 1,140 x 950 x 850

Min. inner (mm) 1,082 x 919 x 710

Useful volume (dm<sup>3</sup>) 705 dm<sup>3</sup>

Tare (Kg) estimate 21



#### CHARACTERISTICS OF THE CORRUGATED CARDBOARD COMPONENTS

| Description    | Classification parameter DFⅅ=(4C+E) TT =ECTx \( \sqrt{ep} \) | Sum of the gam<br>of both outer<br>surfaces (C)<br>g/m <sup>2</sup> | Minimum gum of each TT component = of the corrugated cardboard g/m <sup>2</sup> | TT (J)<br>dynamic<br>perforation<br>DF & DD<br>buriting | Min.<br>thickness<br>(mm) |
|----------------|--|---|---|---|---------------------------|
| CASING<br>BELT | 2,690<br>≥50.5   | 400   | 110<br>1,400  | 945<br>≥ 20   | 12.5                      |
| LID            | 3,050  | 320   | 110   | 1,080   |                           |

Outer lid absolutely must be Kraft cardboard.

#### CHARACTERISTICS OF WOODEN COMPONENTS

| Description | Standard | Humidity | Additional information       |
|-------------|----------|----------|------------------------------|
| PALLET      | ISPM 15  | <1796    | Bark-free 2nd grade softwood |

#### CHARACTERISTICS OF OTHER COMPONENTS

| Description | Material  | Other | Additional information                              |
|-------------|-----------|-------|---|
| BRACES      | Cardboard | Qty 4 | For transport and folded delivery (static stacking) |

#### CHARACTERISTICS OF THE WHOLE

| Description      | Vertical<br>Compressive<br>Strength (RCV) | Content max.<br>load | Additional information                 |
|------------------|---|----------------------|--|
| Assembled<br>BOX | 2,300 daN                                 | 1,000                | 2 swing arms (dimensions 600 x 200 mm) |

#### 7.3 Container desification

To achieve a good level of container filling, the supplier must develop the packaging in accordance with the size given in the specifications and the packaging recommendation expressed by the engineering department.

The proposed range of packaging is based on:

- returnable package (metal Handling Unit or plastic Packaging Unit)

 "disposable" cardboard packages or in exceptional cases in wooden packages (cardboard or wooden Handling Unit and cardboard Packaging Unit).

Reminder: 40-Foot High Cube container size Exterior: 12,192mm x 2,438mm x 2,900m

Interior: 12,010mm x 2,340mm x 2,690mm (2,590mm to the door)



#### 8. TYPES OF PACKAGINGS

#### 8.1 Packaging in the KLT system

The KLT system is the preferred disposable container system used by MITS.

Basically, the supplier should first check whether the parts to be delivered can be packed in a Multipack container. The following points must be always observed:

- Compliance with the prescribed dynamic payloads and superimposed loads
- Compliance with the palletizing requirements
- For parts with separate surface protection requirements, appropriate internal packaging, such as deep-draw inserts, compartments etc. made of plastic should preferably be used
- Parts with required corrosion protection must be packed in appropriate VCI bags or aluminium composite foil bags

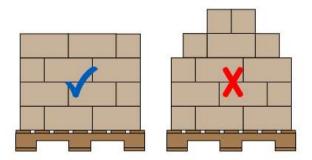
#### 8.2 Cardboard cartons

Cardboard cartons are the most common type of shipping containers. We must know the strength and weakness of these containers to have damage-free shipments.

This type of material loses strength in about six months. IN addition, humidity and moisture weaken cartons and we cannot reuse it anymore.

#### 8.3 Pyramid-shaped loads

Pyramid shaped loads are one of the biggest packaging problems in the industry. They do not provide level surface on top and therefore can cause damage to other shipments. Shipments packed in such way can cost more. We must avoid such shipment packaging.



#### 8.4 Wood

Wood packages allow safe, damage-free transit if it is done properly using quality lumber. Use plywood and not oriented strand board (OSB), medium density fibreboard (MDF) or particleboard. Fasteners should not be located in knots or other defective areas of the wood.

#### 8.5 Dunnage

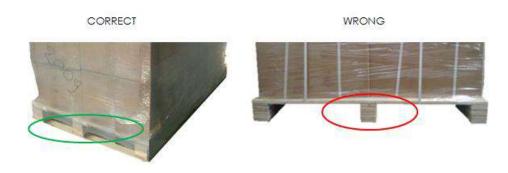
One big problem with shipments is empty spaces in carton boxes and other containers. Empty spaces can cause material movements and therefore possible damages and brakes. So we must use dunnage that can be simple rolled-up paper, wood inserts or blocks or custom wraps and foam. In no case filler materials that come from EPP/EPS/EPE TRAY should be used.

#### 8.6 Cushioning

During shipments many transportation operations take place. Because of this, products require cushioning for protection against vibrations and shocks from the time of the pickup to the final delivery. Cushioning must absorb multiple shocks.

#### 8.7 Stretch wrapping

Stretch wrapping is a common and effective method of keeping boxes and containers together. The stretch wrap must be applied correctly: around the pallet and then continued around the load and upward.



#### 8.8 Corrosion protection

The corrosion protection (unless specifically prescribed otherwise in the drawings or specifications/quality standards) must be defined by the supplier in accordance with the sensitivity of its product, which it is aware of. The chosen protection method may not impair the functionality and use of the products. Protection agents that are used must be free from residues and be capable of being removed and disposed of in an economically viable manner.

VCI resources can be used, if it is ensured that the protection exists beyond the prescribed service life and parts there of or individual materials are not inadmissible influenced.

For parts that require special protection from corrosion, the following packaging must additionally be used:

Examples of anti-corrosion packaging:

- VCI bags, if necessary, with the addition of VCI emitters
- Alternative VCI sacks or side-fold covers for large-scale containers, with the addition of VCI emitters, where necessary
- Vacuum packaging in aluminium composite foil, with the addition of drying agents and/or VCI emitters (e.g. VCI paper), where necessary
- The packaging materials referred to may be freely selected according to requirements/ economic viability.

Anti-corrosion packaging should generally be used for sea transport!

#### 9. Palletization

#### 9.1. Load securing

The following packaging aids are permitted for load securing:

- Strapping made of plastic
- Cover plates
- Load end plates
- Stretch or shrink wrap films

#### 9.2. Standard dimensions

- The standard dimensions of 1200x1000x1180mm should generally not be exceeded.
- With oversized components, however, this may be exceeded.

#### Logistical processing:

Depending on the arranged Incoterms, a loaned packaging account should either be administered with the relevant freight forwarder or with the supplier directly.

| Euro pallet cage   |                     |
|--------------------|---------------------|
| MITS item number   | 72282995            |
| Name               | Pallet cage pallet  |
| Material           | Steel               |
| Color:             | gray                |
| Weight             | 85 kg               |
| Stacking factor    | 5                   |
| Payload            | 915 kg              |
| Inside dimensions  | 1180 x 780 x 780 mm |
| Outside dimensions | 1240 x 835 x 970 mm |

#### 9.2.1 Flat pallet (EPAL/Europool)

The following points must be always observed:

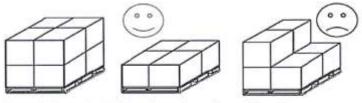
- Compliance with the prescribed dynamic payloads and superimposed loads
- No damaged pallets may be used
- The packaged goods must not protrude beyond the pallet
- Parts with required corrosion protection must be packed in appropriate VCI bags or aluminium composite foil bags.

| Euro flat pallet  |                                     |
|-------------------|-------------------------------------|
| MITS item number: | 72283017                            |
| Name:             | Euro flat pallet UIC standard 435-2 |
| Material:         | Wood                                |
| Color:            | natural                             |
| Weight:           | 20 kg                               |
| Payload:          | 1000 kg                             |
| Dimensions:       | 1200 x 800 x 144 mm                 |

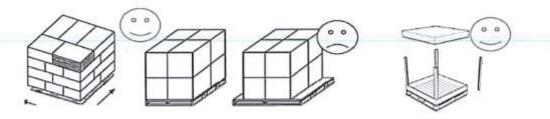
#### 9.3. Stackability

• Loading units should <u>at least</u> be dynamically stackable twice (1+1), provided that the size and geometry of the component allow this.

| Stacking frame and lids |   |
|-------------------------|---|
| MITS item number        | 72325767 + 72325768 (lid)                 |
| Dimensions              | 1200 x 800 x 200 mm / 1200 x 800 x 9 mm   |
| Use                     | max. 4 stacking frames per packaging unit |



- ⇒The load must be distributed over the surface of the pallet.
- ⇒The palletised load may not extend beyond the surface of the pallet.
- ⇒The successive layers must be superimposed. The superimposed stacking provides greater vertical compressive strength.
- ⇒ All deliveries must be made by full and single reference\* bed \*excluding PU rounded delivery



- ⇒ The block thus formed must not exceed the height of 1,250 mm (pallet included).
- ⇒ Weight 250 kg max. (unless exempt by the AILN Engineering department concerned if heavier)

#### Storage

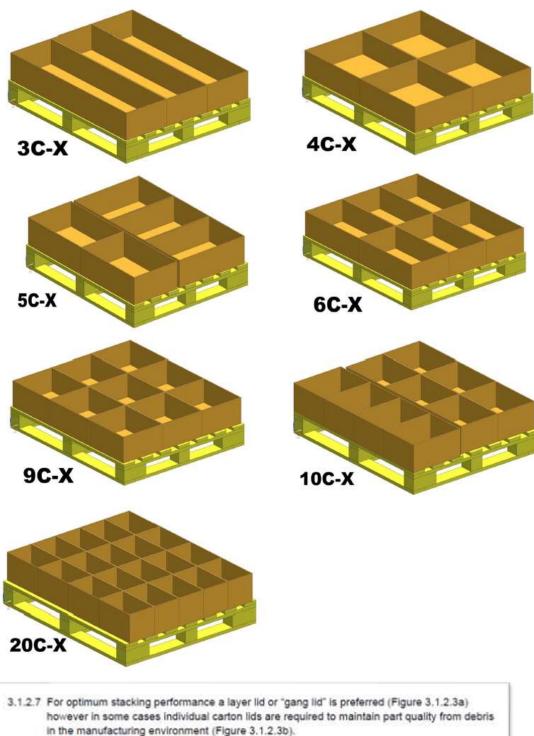
The heaviest packaging must occupy the lower level.

\* Special case: It is essential to add 4 in moisture-resistant composite cardboard corner pieces in the angles between the casing and belt for cardboard packages weighing more than 400 kg, mini thickness 4 mm. The length of the corner pieces will be the same as the height of the cardboard box belt.











#### 10. Supplier's own returnable packaging

For purchased parts that cannot be delivered in standardized containers, a packaging suggestion must be requested from the supplier. If the supplier operates a different container system, delivery is generally possible in one of these containers. However, the provisions regarding surface protection and corrosion protection must be complied with.

#### 10.1. Returnable packaging processing and empties account management

Unless specified otherwise, a reconciliation of the account balances and postings of the respective loaned packaging account will take place once per month, depending on the Incoterms, with the respective freight forwarder or directly with the supplier.

If no objection is raised by the respective exchange partner, the documented book balances shall be deemed as accepted. Corresponding booking documents, such as copies of the delivery notes, corrected remote data transmission logs, delivery notes, etc. shall be enclosed.

#### 11. Special packaging

If a material requires special packaging, due to its size, geometry or other part-specific requirements, the following regulations apply:

- The use of special packaging generally requires a separate technical approval by MAHLE Electronics.
- The logistical and commercial terms and conditions are regulated separately
- Tool costs and plate costs shall be offered separately



Plastic box with insert





#### 12. Overseas Cardboard Packaging

Overseas packaging specifications for part suppliers. These specifications allow ISO High Cubes containers using the following means of transport: Truck, Boat and Train.

#### 2.5 Container densification

To achieve a good level of container filling, the supplier must develop the packaging in accordance with the size given in the specifications and the packaging recommendation expressed by the engineering department. The proposed range of packaging is based on:

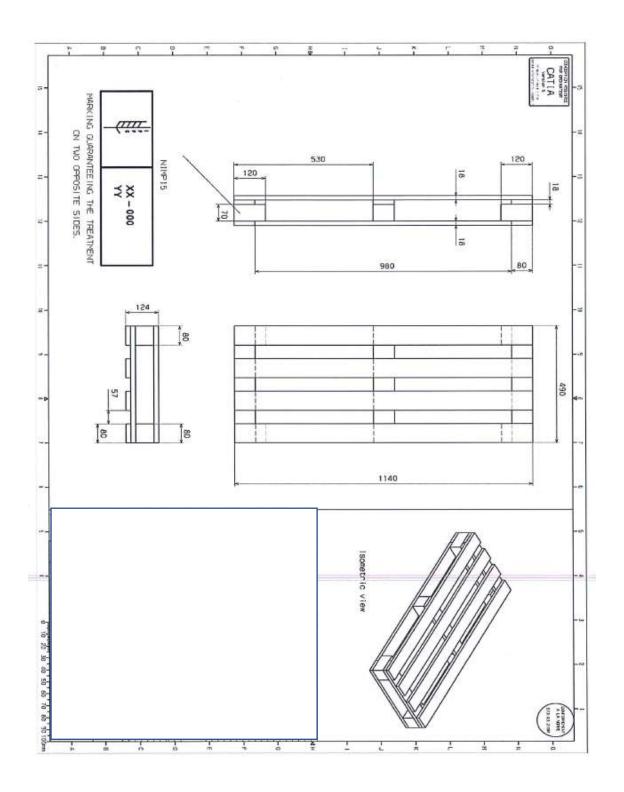
- returnable package (metal Handling Unit or plastic Packaging Unit)

 "disposable" cardboard packages or in exceptional cases in wooden packages (cardboard or wooden Handling Unit and cardboard Packaging Unit).

Reminder: 40-Foot High Cube container size Exterior: 12,192mm x 2,438mm x 2,900m

Interior: 12,010mm x 2,340mm x 2,690mm (2,590mm to the door)





| TYPE | REFERENCE    |  |  |
|------|--------------|--|--|
| 100  | SACIM        |  |  |
| 3P   | D110 100 008 |  |  |
| •    | PACKAG TABLE |  |  |
|      | CAR-S*2991   |  |  |

#### DIMENSIONS

Pallet max, outer (mm) included 1140 x 980 x 850

Min. inner (mm) 1092 x 929 x 715

Useful volume (dm<sup>3</sup>) 725 dm<sup>3</sup>

Tare (Kg) estimate

21



#### CHARACTERISTICS OF THE CORRUGATED CARDBOARD COMPONENTS

| Description |      | Classification<br>parameter<br>DFⅅ=(4C+E)<br>TT=ECTx \(\sqrt{ep}\) | Sum of the gsm<br>of both outer<br>surfaces (C)<br>g/m <sup>2</sup> | Туре | TT (J)<br>dynamic<br>perforation<br>DF & DD<br>bursting | Min.<br>thickness<br>(mm) |
|-------------|------|--|---|------|---|---------------------------|
| CASING      | 1/30 | C.27   |   |      |   |                           |
| BELT        | 3.03 | C.18   |   |      |   | 12.5                      |
| LID         | 1/50 | C.27   |   |      |   |                           |

#### Outer lid absolutely must be Kraft cardboard.

#### CHARACTERISTICS OF WOODEN COMPONENTS

| Description | Standard | Humidity | Additional information       |
|-------------|----------|----------|------------------------------|
| PALLET      | ISPM 15  | < 17 %   | Bark-free 2nd grade softwood |

#### CHARACTERISTICS OF OTHER COMPONENTS

| Description | Material  | Other | Additional information                              |
|-------------|-----------|-------|---|
| BRACES      | Cardboard | Qty 4 | For transport and folded delivery (static stacking) |

#### CHARACTERISTICS OF THE WHOLE

| Description      | Vertical<br>Compressive<br>Strength (RCV) | Content max.<br>load kg | Additional information                 |
|------------------|---|-------------------------|--|
| Assembled<br>BOX | 2500 daN                                  | 1000                    | 2 swing arms (dimensions 600 x 200 mm) |

#### 13. Internal packaging's

If separate internal packagings/load carriers are required for load securing/surface protection, the following rules apply:

- Internal packaging/load carriers are to be executed as a reusable solution, in
- consideration of economic aspects
- Appropriate concepts must be technically approved by MAHLE Electronics.
- Tool costs and plate costs shall be offered separately

Examples of internal packaging / load carriers:



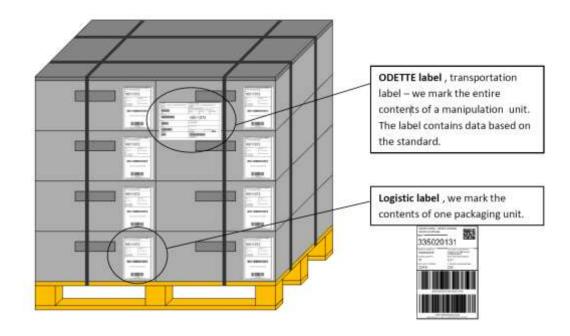
#### 14. Labelling and Marking Packaging Units

Unless otherwise agreed between MAHLE Electronics and the supplier the ODETTE labelling standard is used. Every transport unit must have transportation label and also every packaging unit must have a label which shall contain:

- Manufacturer's name
- Material name
- Order number
- MAHLE Electronics identification / Part Number
- Quantity number
- Each container requires two labels on opposite sides of the container
- The location of the labels must be on the side of the container that is proportionate to the width of the sea container.
- Labels must be adhesive and secured to the container to prevent peeling during transportation and storage
- All information on the labels must remain visible and readable

Labelling of the goods ordered is an integral part of the contracts and annexes to the contracts between MAHLE Electronics and the supplier.

All chemicals must be given on each packaging unit as prescribed by the Law on chemicals and safety data sheet.



#### ATTENTION: Marking mixed manipulation and packaging unit

When mix levels must contain parts of same reference (part numbers).



MIX label-, in case that one manipulation unit contains a few different materials, the pallet is marked with special label on which the items and quantity of materials of MAHLE Electric

Logistic label marks the contents of one packaging unit. The label tells us the type and contents of one packaging unit.



# 13.1 Special Labels

If appropriate, the following marking symbols should be used:

| Const de garde | Centre of gravity of the packaging |
|----------------|------------------------------------|
| T Caree a sec  | Keep dry                           |
| Tragae         | Fragile                            |

| No | Meaning of the picture symbol | Picture symbol   | Function  | Comments              |
|----|-------------------------------|------------------|---|-----------------------|
| 1  | Fragile                       |                  | The content of the package is fragile and must therefore be handled with care |                       |
| 2  | Do not use a hook             | [ <del>}</del> ] | Hooks are banned for handling the package                                     | ISO 7000 No.<br>0 622 |
| 3  | Тор                           | [11]             | Shows the correct upright position of the package                             | ISO 7000 No. 0 623    |
| 4  | Protect from heat             | <b>淡</b>         | The package must be protected from heat                                       | ISO 7000 No.<br>0 624 |

| 5  | Protect from radi-<br>oactivity                |               | ,<br>,          | The content of the package may deteriorate or become unusable as a result of radioactivity | ISO 7000 No.<br>2 401 |
|----|--|---------------|-----------------|--|-----------------------|
| 6  | Protect from mois-<br>ture                     |               |                 | The package must be kept in a dry envi-<br>ronment   | ISO 7000 No.<br>0 626 |
| 7  | Center of gravity                              | 4             | <b>—</b>        | Shows the package's center of gravity, which is handled as a single unit                   | ISO 7000 No.<br>0 627 |
| 8  | Do not roll                                    | <b>K</b> ]    |                 | The package must not be rolled   | ISO 7000 No.<br>2 405 |
| 9  | Do not use a hand truck here                   | _ <u> </u>    | <u>{</u>        | Hand trucks must not<br>be used on this side<br>for handling the<br>package                | ISO 7000 No.<br>0 629 |
| 10 | Do not use a fork-<br>lift truck               | · #           | ]               | The package should not be handled with forklift trucks                                     | ISO 7000 No.<br>2 406 |
| 11 | Clamps in the di-<br>rection of the ar-<br>row | -<br><b>→</b> | -<br>  <b>♦</b> | The clamps must be applied on the side shown for handling the package                      | ISO 7000 No.<br>0 631 |

| 12 | No clamps in the direction of the arrow | -<br><b>≯Ì</b> ≫ | ] <b>+</b> | The package should not be handled with clamps on the sides shown  | ISO 7000 No.<br>2 404 |
|----|---|------------------|------------|---|-----------------------|
| 13 | Limit of the stack-<br>ing load mass    |                  | . T        | Indicates the limit of<br>the stacking load<br>mass of packages   | ISO 7000 No.<br>0 630 |
| 14 | Stack limit                             | [ .X             | t ]        | Largest number of identical packages, which may be stacked, whereby n stands for the number of permitted packages | ISO 7000 No.<br>2 403 |
| 15 | Do not stack                            |                  | ,<br>,     | The stacking of the packages is not allow and no load should be placed on the package                             | ISO 7000 No.<br>2 402 |
| 16 | Attach here                             | <b>O</b>         | ا د        | Slings must be placed as shown for lifting the package  | ISO 7000 No.<br>0 625 |
| 17 | Permitted temper-<br>ature range        |                  | ر ،        | Indicates the tem-<br>perature range, in<br>which the package<br>must be stored and<br>handled                    | ISO 7000 No.<br>0 632 |



# 15. Contact

| Responsibility     | Name            | Phone           | Email                                     |
|--------------------|-----------------|-----------------|---|
| Packaging Engineer | Carmen Lopez    | +34 669 454 873 | <u>Carmen.lopez.castellanos@mahle.com</u> |
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| Plant Production   | TBD             | TBD             | TBD                                       |

# 16. Document Control

| Version | Date       | Editor                            | Description   |
|---------|------------|-----------------------------------|---|
| V0.1    | 20.10.2021 | Carmen Lopez                      | Idea inicial packaging guidelines   |
| V0.2    | 21.10.2021 | Carmen Lopez                      | Se actualiza el documento   |
| V0.3    | 15.02.2022 | Carmen Lopez                      | Se completa con información adicional   |
| V0.4    | 21.09.2022 | Carmen Lopez y<br>Ramiro Gilabert | Se actualiza el documento con modificaciones y correcciones generales   |
| V1      | 10/10/2022 | Carmen Lope y<br>Ramiro Gilabert  | Se publica la primera versión del documento en búsqueda de aprobación por parte de los departamentos involucrados |
|         |            |                                   |   |
|         |            |                                   |   |
|         |            |                                   |   |
|         |            |                                   |   |