

# SUPPLIER PACKAGING GUIDELINES

## CONNECTED CAR & LIFESTYLE DIVISION NORTH & SOUTH AMERICA

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### SUPPLIER PACKAGING GUIDELINES

#### 1.0 Preface

The purpose of this manual is to provide suppliers with guidelines and specifications of Harman International packaging program. This packaging program is bound by the following Factory Physics foundation:

- Standardization: make common all processes and procedures
- Just In Time (JIT): what is needed, when it is needed, and in the amount needed
- Jidoka: necessity of not passing on a defect

Harman International desires to evolve a close team working relationship between all parties interested in supplied part packaging. Suppliers will be given the required support by Harman International.

This manual is to be referenced when shipping to Harman International North & South American- Connected Car & Lifestyle Division production/warehouse locations. Deviation requests can be submitted at <a href="mailto:supplier\_packaging@harman.com">supplier\_packaging@harman.com</a>.

If shipping to European countries, please reference *Packaging Manual for the electronics production at the plants of the Automotive Division; 1019831-183/2012.04.* 

#### **2.0 General Requirements**

#### 2.1 PACKAGING DATA FORM

Packaging Data Form

It is the suppliers responsibility to submit a Packaging Data Form to Harman International during the quoting process or when a packaging change is requested. Each part requires a Packaging Data Form. Suppliers are required to store and back up electronic Packaging Data Form files.

12/8/2015

PUAMV-A 303563 REL

Г	· · ·			Franklin							PARTNUMBER	PRINT REVISION LEVEL	
1				Juarez									
1	HAF	MAN	1	PACKAGING DA					ΔΤΔ ΕΟ	RM			
	5	e	-	Queretaro									
SUPPL	IER NAME:			PACKAGING CONTACT:							SUPPLIER RESPONSIBILITIES:		
SUPPL	IER CODE:			PHONE NUMBER:					PART MATERIAL:		- Packaging design		
SUPPL	22R			E-MAIL ADDRESS:					CLASS A SURFACE: YES NO		- Packagaing that prevents shipping	and material handling defects	
FACILI	CTION TY:			DATE:					ESD SENSITIVE:	YES NO	Electronic storage of submitted Packaging Data Form		
	PART (P	PACKAGING PO	SITION)		DUNNAGE (IN CONTAI	VER POSITION	•		CONTAINER (with label shown)		UNT LOAD (as shipped with label shown)		
ITAL IMAGE	6												
Р	COMPONENT NAME			ESCRIPTION MANUFACTURER MATERIAL			LEAD TIME RET/EXP		COMMENTS				
K	DUNNAGE												
	CONTAINER COLD	R											
, MARINA	CONTAINER TYPE												
T	TOP CAPIBOTTON	I TRAY											
5	PALLET												
1	STRETCHUSHRINK	FILM											
A .	CORNER SUPPOR	16											
6	BANDING												
	OTHER				_								
	COMPO	INENT	LENGTH (moh)	WIDTH (Inch)	HEIGHT (Inch)	Container Information (Expendable only)		COMPONENT	WEIGHT IN POUNDS	QUA	NTITES		
P K	PART SIZE					STYLE	CARTON STRENGTH STCTUD	FUITE	PART		QUANTITY PARTS/CONTAINER		
G	CONTAINER (D)								DUNNAGE (TARE)		CONTAINER/LAYER ON PALLET		
D	CONTAINER (OD)								CONTAINER (TARE)		LAYERPALLET		
Â	INNER TRAY (OD)					1			PALLET (TARE)		CONTAINER/PALLET		
Â	PALLET ONLY								CONTAINER GROSS (INCLUDE PARTS)		STACKING RULE:		
	UNIT LOAD AS SH	PPED							INCLUDE PARTS				

#### 2.2 PACKAGING DESIGN

All part quotations are to assume expendable packaging unless otherwise requested by Harman International.

Suppliers are responsible for packaging design. This includes returnable packaging when applicable.\*\*

Packaging will conform to the following:

- Standards described in this manual.
- Fully utilize cubic capacity of pallet footprint and allowable stack height.
- Container(s) must not extend past pallet footprint.
- Deliver part to point of use, in a production ready and defect free condition. Expendable packaging must protect parts from quality issues such as corrosion and damage under any INCOTERM conditions. Resulting costs from corrosion and damaged parts will not be accepted by Harman International.
- It is the supplier's responsible to perform validation tests to assure that the product and packaging will withstand "real world" load conditions, handling and any applicable transportation modes. Supplier must retain records that document the validation test method and passing results for any expendable packaging design. Palletized loads must withstand stacking of similar product up to a height of 90".
- Design and part count per container shall not vary by part number. Containers are to be shipped completely filled.
- > Mode of transportation will be designated by Harman International.
- > Federal and local codes, laws, and regulations.
- The approval of packaging shall not release the supplier from its responsibility to deliver parts production ready and defect free, regardless of the INCOTERMS.

\*\*Enclosure packaging design may be done in conjunction with Harman International if part is targeted for packaging re-use.

#### 2.3 PACKAGING MATERIAL

Recyclable material shall be used, such as corrugated paper, reusable containers, thermoform plastics, etc. Harman International reserves the right to approve selection of packaging materials. For example, materials such as foamed plastic are more difficult to recycle or dispose of than thermoformed plastics, and therefore should only be used when no suitable substitute is available. Expanded Polystyrene (EPS) in its natural or compound state is not to be used as a packaging material without prior written approval.

Suppliers must assure that packaging materials in need of repair are not used for shipping parts.

Plastic material must be labeled in accordance with Society of the Plastics Industry (SPI).

#### 2.4 MANUALLY HANDLED CONTAINERS

**Manually** handled overpacks (both palletized and unpalletized) must meet the following requirements:

Stitched or glued manufacturers joint.

Individual overpacks must not exceed 30 pounds (13.6 kg) total weight (weight of the part + package).

Boxmaker's certificate and recyclable symbol must be printed on the <u>bottom</u> of the carton, unless approved by Harman International Packaging Department. The certificate must be visible on outside of the carton.

Minimum of 200 # burst test (32ECT optional) corrugated strength.

Each manually handled container should contain only one part number.

Trays and blisters within manually handled containers must be stackable and have recesses, handles, etc. for easy and expedient extraction of parts and trays from the cartons.

Do not use loose fill packaging (foam peanuts, shredded paper, newspaper, etc.).

#### **3.0 Contents Identification**

#### 3.1 LABELING AND IDENTIFICATION

- Labeling requirements are defined by AIAG-B-10 Labeling standards. Reference example shown below for pallet level label (not to scale).
- Two Master Labels per part number should be placed on adjacent sides of the pallet, in upper corners, if using shrink/stretch wrap, adhere to the outside of the wrap. This applies to mixed and single part number loads.
- Each carton on the pallet must be labeled with the part number and quantity in the carton.
- All information on the labels must be clearly visible and legible.
- Part numbers and quantities must be accurate.
- Reels each reel must be labeled with a Harman part number.
- Odette labeling must be approved by the Harman International Packaging Department.

FROM: XYZ SUPPLIER 1234 VENDOR WAY			TO:						
VENDORVILLE C	A	90808	·						
CUSTOMER PART NO (P) 220	03	0					ENG REV:		
(Q) 12	Ĩ			BOWL ASSEN	ASSEMBLY				
				12345-BWL					
PO & REL: 12345001						SUPPLIER: 050848844			
	5679		SHIP DATE: 04/20/2010						
						PACKAGE ID: (3S) 00000001			
					·/	0000			

Mixed Loads - two labels (exhibit A) should be placed on each manually handled carton
of material, on adjacent side panels, in upper corners of the carton along with a Master
Label for each part number and quantity or a Master Label (exhibit B) with all part
numbers and total quantities of each part number on adjacent sides of the pallet, in the
upper corners, outside of the shrink/stretch wrap.



#### Exhibit A

Exhibit B

#### 4.0 Packing Slips

- All parts on the packaging list must reference Harman International part numbers.
- Packing list is broken down on a pallet level basis for part quantity checking purposes.
- Suppliers must provide a contact on the packing list to ensure any issues are addressed and resolved promptly.

#### 5.0 Expendable Packaging

#### **5.1 PALLET REQUIREMENT**

- Use only four-way entry, double-face, non-reversible, flush pallet (no winged pallets) with 2 1/2" x 9" minimum fork entry openings on 27" centers on each stringer. (Note: Due to size restrictions, smaller size pallets, ie. 32" X 30" may only be two way entry.) Deviations from this requirement must be approved by Harman International Packaging Department.
- Pallets must not be smaller in length and width than the load height.
- No overhang of product material is allowed.
- Pallets shall support the load of material being shipped (stacking similar product two high) without damage and arrive at Harman International locations in good structural condition.
- Broken or cracked pallets are not acceptable.
- Top surfaces of pallets should be flat to permit stacking.
- Pallets must not be constructed of corrugated materials.



#### 5.2 PALLET FOOTPRINT

- Maximum stacking height for multiple pallets is 90" for ground shipments and 2000 mm for ocean shipments.
- Pallet footprint utilization should be maximized to allow the greatest number of parts per pallet while keeping their protection from damage as the priority.
- Pallets sizes not shown below must be approved by the Harman International Packaging Department.
- Individual pallet load foot prints allowed are as follows:

Ocean Shipment - Pallet Footprint								
Length	Width	Height						
1000 mm	1200 mm	1000 mm						
800 mm	1200 mm	1000 mm						
1140 mm	790 mm	1000 mm						

North America Shipment (Ground/Truck Transportation) - Pallet Footprint							
Length	Width	Height					
48"	45"	45"					
48"	40"	45"					
32"	30"	45"					

#### 5.3 CARTONS/PALLETIZATION

- All parts should be shipped in full pallet loads, however, if quantity is not sufficient for one pallet load, more than one part number may be contained in the pallet load.
- Part numbers are not to be on more than one pallet load or fragmented when quantity is sufficient to make a full pallet load.
- Mixed pallets must be clearly marked with labels/placards indicating "Mixed Load Pallet" on all four sides of the pallet and can only contain material for one Harman International location.
- Mixed pallets see labeling instructions in section 3.1 of this document.
- Part weight, load stability and carton integrity must be taken into consideration when palletizing mixed loads. (i.e. do not stack heavy parts on top of light parts, etc).
- Cartons are to be palletized in layers only. When carton quantities are inadequate to complete full layers, additional cartons are to be added marked "EMPTY".
- When stacking cartons on pallets, attempt to utilize the full surface of the pallet before creating a second layer and attempt to distribute the weight evenly over the pallet surface.
- The top surface of the load must be parallel to the pallet base. Do not pyramid stack full pallet loads.



- Loads must use materials of sufficient strength and must be stacked with <u>similar</u> product up to a height of 90" when received at Harman International receiving point and/or customer. Palletized loads will be stacked and must withstand stacking up to 90". If testing has not been conducted by the supplier to verify the stacking strength, pallets under 710 pounds must be reinforced with vertical corner supports at four corners. The pallet must also have minimum C flute tray top and bottom with corner supports contained within the trays, and a minimum of three layers of shrink or stretch film. Vertical corner supports shall be 3" wide, be constructed of solid fiberboard (minimum .225" thickness) and must run the full vertical length of the load. Pallets over 710 pounds must be placed into a double wall pallet box in lieu of testing and pallets over 1465 pounds must be tested to confirm the pallet/pallet box can withstand stacking two high. No placards, labels etc. to be used indicating "Do Not Double Stack."
- Corrugated material used in shipping containers must have adequate strength to withstand the test of usage; the parts and container must arrive in satisfactory condition until presented at point of use.
- All materials being received shall be labeled according to Harman/Becker labeling standard and any labeling requirements within this document.
- Any pallet load that is leaning, bulging, unstable or over hanging will not be acceptable.
- No overhang of product material is allowed.
- All pallet loads must be adequately banded or secured with stretch wrap to prevent shifting in handling and in transportation. Shrink wrapping the pallet is required if the middle boxes of the pallet have the potential of shifting outside the pallet footprint during transportation.



- Loads secured to pallets using shrink or stretch-wrap must use material of sufficient thickness to retain the load and to prevent load shift. Use a minimum of 70-gauge (.0007 inch) stretch wrapping. Load retention of 138 kpa (20 psi) minimum pull force should be used. The stretch wrap can be twisted like a rope for greater strength, but only in combination with full stretch wrapping of the load. Securely capture the pallet when wrapping the bottom layer. Wrap the entire pallet load (pallet + product) from top to bottom a minimum of three times, heavier loads may require more. DO NOT ONLY WRAP THE CARTONS.
- If using stretch-wrap, DO NOT wrap two pallets, racks, pallet boxes together. These units need to be handled on a one load each basis. Do not strap more than one pallet deep together.
- Loads secured to pallets with strapping must use edge protectors to prevent straps from cutting into cartons. Draw the strapping tight and keep the strapping as close to the load as possible to avoid strapping and pallet deck board damage/breakage. This may require running the strapping between deck boards rather than the edge of the pallet. Do not tension straps to the point of crushing the cartons on the pallet. Metal banding cannot be used, only plastic (preferably heat sealed polyester) banding will be accepted.



- Maximum weight per pallet should not exceed 2000 pounds.
- Interlocking of lightweight cartons is acceptable. However, interlocking of heavy (>25 lbs.) unit packages should be avoided to eliminate container wall crushing. When column stacking is used, layer pads or tray tops and bottoms & corner supports should also be used to eliminate column toppling. Pallets shipping via Ocean or Air must only use a column stacking pattern.
- A liner sheet must be placed on the top deck of a pallet to prevent small product from coming through top deck boards.
- Pallet boxes may be used in place of stretch-wrap or strapping. If using pallet boxes, the lid must be properly secured (ie. stretch wrap, banding, etc.). If pallet boxes are attached to a wooden pallet, they *must* also be a breakaway design with minimal staple usage to allow easy disassembly. Pallet box height should not exceed 31.5" or should have an accessibility feature (example: drop door). Pallet box designs must be reviewed with Harman International Packaging Department prior to initial shipment.
- Directional arrows must be followed when cartons are stacked for shipment.

• Harman International has the option, if necessary, of approving or rejecting a supplier's selection of packaging materials and sources.

#### 5.4 CARTON CLOSURES

Carton closures methods are listed in order of preference:

- > No sharp blade required to open, see Figure 5
- > Strippable reinforced tape, tape must be recyclable
- Kraft tape- No reinforcement
- > Spot glue, glue transfer to the part surface is unacceptable
- Package closures must be capable of containing the part within the bag/carton/container during shipping and handling.



#### 5.5 CRATES

Crates need the following features:

- > Use pallet footprints listed in this manual.
- > Base to follow pallet design height and entry methods of standard pallet.
- > No tools required to open top.
- Crate maximum height is 32" or must have an accessibility feature (example: drop door) for unloading cartons.

#### 5.6 CLASS A PROTECTION

Protective Foam or tape may be required to protect specific parts. This requirement should be discussed with the Harman International Packaging Department.

#### 5.7 STATIC PROTECTION

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 ANSI/ESD S20.20 for protection against electrostatic discharge and must comply with Harman International's internal guidelines "PSP10-M-008 - ESD Measurements". PSP10-M-008 - ESD Measurements 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 International'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 ANSI/ESD S20.20. Prior to the start of series production, a Harman International ESD officer must check and approve the packaging.

#### 5.8 TEMPERATURE

Packaging is to withstand temperature variations from  $-30^{\circ}$  F to  $150^{\circ}$  F.

#### **5.9 MOISTURE**

Packaging is to withstand 90% humidity exposure during handling, transit, and storage.

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.

#### 5.10 CORROSION PREVENTION AND PRESERVATION

It is our intention to allow our suppliers to use their standard rust/corrosion proofing materials where possible. The responsibility remains with the suppliers to provide preservation that will protect the parts for a minimum of 3 year after receipt.

#### 5.11 REGULATIONS ON WOOD PACKAGING

Many countries have implemented strict guidelines for wood when it passes across their borders. This is to prevent harmful insects which live in wood from spreading through wooden packaging. This means all wood supplied to Harman International that passed through a customs border **must** undergo heat treatment (HT) or Methyl Bromide (MB) fumigation, be stamped with IPPC symbol, and in full compliance with current ISPM-15 (International Standards for Phytosanitary Measures number 15). See example of the IPPC symbol below.



Wood treated via MB will need to be accompanied with additional paperwork prior to unload at Harman International facility. Any loads without the accompanied paperwork will be refused.

#### 5.12 PASS THRU PACKAGING

In the event an inbound package is targeted for re-use (Pass Thru), the following materials will be required:

- Cornerboard- 3in x 3in x TBD 4 per pallet load. Minimum .225" thickness.
- Top/Bottom Trays- Size TBD by pallet footprint
- Hand holes on width end of all Handheld cartons:



#### 6.0 Returnable Containers

#### 6.1 STANDARD CONTAINERS

Returnable packaging helps achieve Factory Physics foundation goals; therefore, Harman International encourages returnable packaging proposals.

Standard containers are available from many suppliers. Container options include plastic totes, collapsible plastic containers, collapsible metal bins, collapsible wire baskets, and plastic pallets.

Supplier Responsibilities

- Ship parts only in approved Harman series containers.
- Do not ship in supplier-owned containers unless pre-approved/ Harman will not be responsible for losses.
- Do not ship in damaged or dirty containers.
  - > Communicate repair needs without delay.
- Carry a 4 day supply of alternative packaging: A lack of returnable containers is not an excuse to stop shipping.
- Inventory Management
  - Deviation reporting upon container receipts (24 hr window). Deviations should be sent to <u>supplier\_packaging@harman.com</u>. The supplier is responsible for all financial costs as a result of unreported or inaccurate deviations.
  - If returnables have not been received and shipping in expendable packaging has been initiated, the completed form below must be submitted by the supplier for the following 7 business days to <u>supplier\_packaging@harman.com</u>.
- Repair and Maintenance
  - > Do not store containers outside unless approved by Harman.
  - Tag damaged packaging and email <u>supplier\_packaging@harman.com</u> immediately for disposition.
  - > The supplier is responsible for 50% of repair and maintenance costs.
  - Do not scrap or recycle packaging unless authorized by Supplier Packaging. This includes all packaging material, damaged inserts, layer pads, top caps and pallets.
- Bank builds are the responsibility of the supplier.
- Series packaging should not be used for bank builds.
- Bank builds must be repacked prior to shipping.

DATE	x/x/2016							
Supplier Name	TBD							
Supplier Number	TBD			Date of cycle count	xx/xx/xxxx			
Address	TBD					COMMENTS:		
						]		
		AT JUFFLI		ATION				
						Delivery Number/s Shipped in Expendable	Date of Shipment with	
Packaging Type	Tote	Pallet	Lid	TBD	TBD	Packaging	Expendable	
Full+ WIP								
Empty								
In Transit to								
Harman								
In Transit to								
Supplier								
Damaged								
Sub Total								
Initial System Fill Total								
Discrepancy								

#### 6.2 BACK-UP FOR STANDARD CONTAINERS

In the event that Returnable containers are not available, a back-up expendable container should be developed to prevent missing shipments.

Back Up container should meet the following requirements:

- Footprint should be equivalent or similar to returnable container.
- Standard pack quantity should be equivalent to returnable container.
- Container design should be validated by Harman prior to use.
- Additional costs due to packaging damage and/or failure by the supplier to provide packaging when shipment is due, will not be accepted by Harman International.