WABASH™

SUPPLIER PACKAGING GUIDELINES FOR PRODUCTION PARTS

August 2025

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1.0 Introduction

The following Wabash Supplier Packaging Guidelines manual is designed to inform our supply base of our general guidelines required to achieve optimum part delivery. Our goals are to incorporate packaging that allows for parts to be received defect free, minimize cost, maximize cube efficiency, and present parts to our operators in the most ergonomically friendly way possible. These guidelines may be altered and/or modified by supplemental requirements from Wabash.

2.0 Compliance

The use of these guidelines in no way relieves the supplier of responsibility for part quality of the delivered part(s). These guidelines should apply to all production parts prior to quote submission. Any deviations or alterations from the approved packaging require approval in writing by Wabash. Persistent violation or reoccurring problems will be referred to the appropriate Wabash buyer for corrective action as necessary. Wabash retains the ability to accept or reject a supplier's selection of packaging, design, or material usage. Supplier questions related to packaging can be referred to Wabash's Material Handling Engineering team at MHEngineering@onewabash.com.

2.1 Responsibility

The supplier is responsible for reviewing this manual to ensure a clear understanding of these guidelines. If it is deemed unnecessary for Wabash to design the packaging, it is the supplier's responsibility to design, prototype, and purchase material for all expendable containers to ensure part quality.

3.0 Pricing

When submitting RFQ's, the packaging costs for containers, pallets, and miscellaneous items related to protection of the part **must** be included into the piece price of the part unless otherwise determined by Wabash. Examples of other items include but are not limited to: strapping, shrink wrap, corrosion inhibitors, labeling, corner/edge protectors, void fillers, and dunnage.

4.0 General Requirements

The selection of the container type and packaging design is the supplier's responsibility unless otherwise notified by Wabash. The supplier **must** use these guidelines for design of its packaging.

4.1 Packaging Approval Process

Once the supplier receives the RFQ, this manual should be reviewed and understood in its entirety. In rare circumstances, Wabash will design the packaging for the supplier. In these cases, the supplier will be notified by Wabash upon receipt of the RFQ. In all other cases, it is the supplier's responsibility to design the packaging according to the guidelines laid out in this manual. Submission does **not** confirm approval, and the Wabash MHE team will provide feedback for revision on packaging that is originally denied. Once approved, a test package will need to be sent to Wabash as part of the PPAP process so Wabash can review the packaging. Supplier **must** ship the container with attached "Test Package" label found in section 4.3. After packaging acknowledgement from Wabash, adherence to the agreed packaging plan **must** be maintained. Any deviation to container type, dimension and density must follow the deviation and continuous improvement process outlined in section 4.8. See figure 1 for further details.

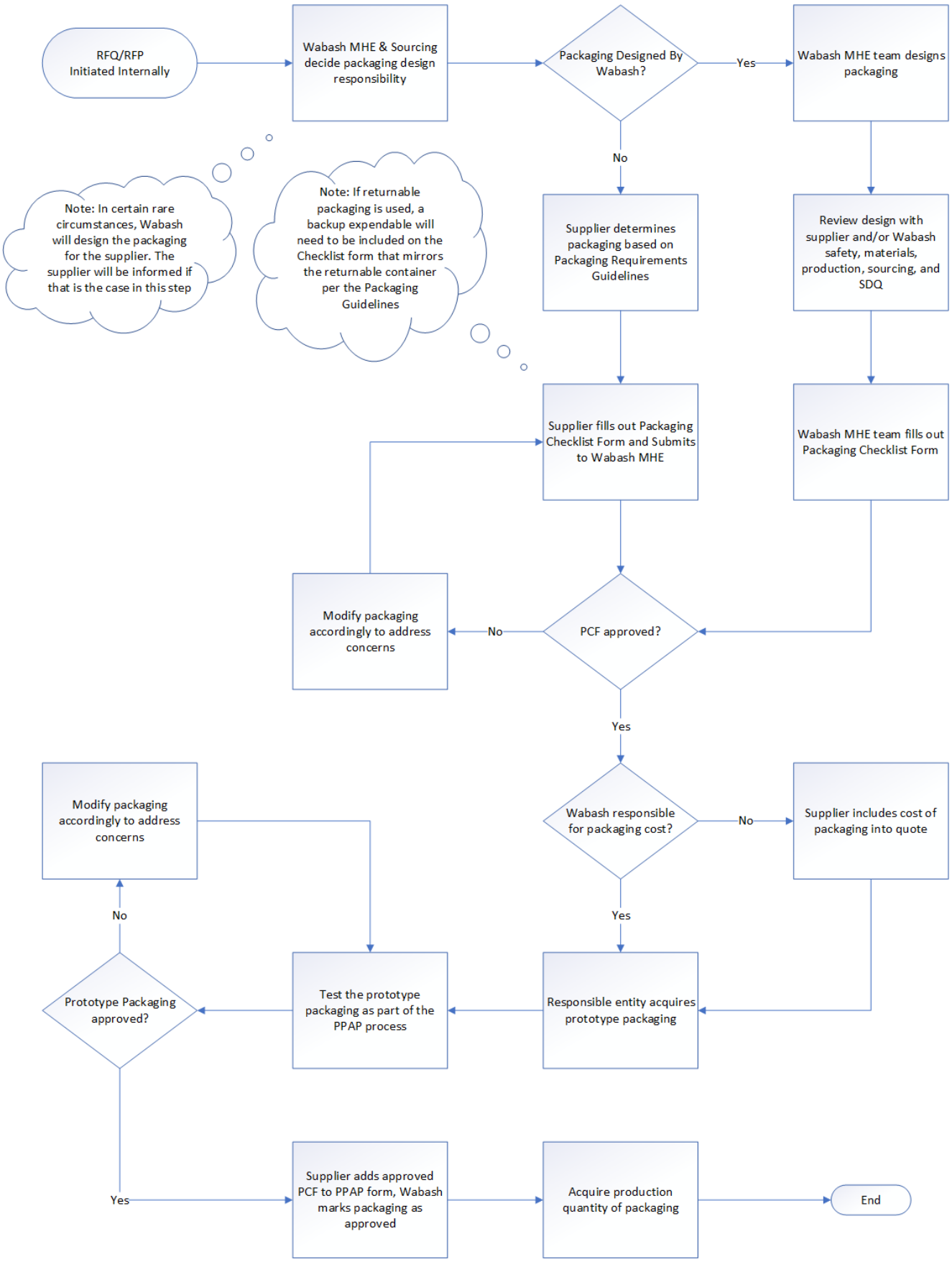


Figure 1. Initial packaging approval process flow

4.2 Packaging Checklist Form

Once an appropriate container is determined, suppliers are required to complete and submit a Packaging Checklist Form (PCF). This form is designed to be filled out for each part number and contains all relevant packaging information for the part. A PCF is required for any form of new packaging, including RFQs, deviations, and continuous improvement changes. The PCF can be found on Wabash's site (Wabash|Supplier Documents), and is provided only as a reference in Appendix 2. When the primary packaging is reusable, Wabash requires the PCF to contain information about a secondary, expendable packaging option. Otherwise, secondary package information is not required. If the form is not approved after review, Wabash will notify the supplier of necessary changes. After the changes are made, an updated PCF can be resubmitted for approval.

4.3 Conditions

The supplier is responsible for ensuring that the parts and packaged shipments are received in a damage-free condition, free from corrosion, and packaged efficiently for both material handling and economics for the intended method of transportation.

4.4 Testing and Test Packaging

Testing may be required by Wabash for sensitive or high-value parts, with the associated costs and materials being the responsibility of the supplier. In all other cases, testing is left to the supplier's discretion but is highly recommended by Wabash. When testing, suppliers should use full container quantities. Test shipments **must** be clearly identified with a test package label, an 8.5 inch (216 mm) x 11 inch (280 mm) sign displaying "Test Package Hold in Receiving Area" including: 'Contact Name' and "Contact Telephone Number'. An example of this label is in Figure 2.

Figure 2. Example test package label

4.4.1 Test Standards

Suppliers looking for real-life testing guidelines may refer to ASTM standards D-5487, D-5276, & D-4169 (www.astm.com). This testing allows for analysis and can be used to achieve optimal packaging performance. Additionally, the ISTA 1 Series Procedures provide guidelines for non-simulation integrity tests (www.ista.org). The following standards are used for corrugated board testing and certification:

- ECT-Edgewise Crush Test (ISO 3037)
- Bursting Strength (ISO 2759)
- FCT-Flat Crush Test (ISO 3035)
- Cobb-Water Absorption (ISO 535)

4.5 Regulations

All packaging **must** adhere to international, federal, and local government transportation regulations, as failure to comply may result in liabilities for the supplier, including associated costs and fines. Links to referenced regulations are provided throughout the manual where they are relevant.

4.6 Chemical and Hazardous Materials

Chemical and hazardous materials and their packaging **must** adhere to U.S. Department of Transportation Federal Motor Vehicle Safety Standards for classification, packaging, marking, and labeling, as well as other applicable federal, state, and local regulations. All chemical and hazardous materials require an SDS to be submitted to Wabash for approval. Submissions are on a per-site basis and should be sent to the appropriate Wabash EH&S site representative for approval. If the contact information for the site representative is not known, reach out to EHS@onewabash.com for further assistance. Physical SDSs are required to be attached to the material being shipped for the initial shipment, as well as any time a change in material or packaging occurs. For additional information and resources, visit the Code of Federal Regulations website (www.eCFR.gov).

4.7 Mixed Load Containers

Each individual carton/container should only contain one part number, and it is **not** recommended to mix part numbers on a pallet unit load. However, if necessary to maximize cubic efficiency, mixing part numbers is allowed if they are being shipped to the same destination and are labeled correctly. In cases where unit loads contain more than one part number, the appropriate 'Mixed Load' label **must** be used to indicate this condition. Additionally, a 'Master Label' for each part should also be used. More information about labeling can be found in section 11.0.

4.8 Packaging Deviations and Continuous Improvement

Any changes to the packaging on record for a given part number requires prior approval. To initiate a change, suppliers need to submit both a Deviation form and an updated Packaging Checklist Form, available on the Wabash website (Wabash|Supplier Documents) to supplierdevelopment@onewabash.com. After review, the Material handling Engineering team will provide an approval decision for the submitted packaging change. Modification from the submitted packaging design may be required, in which case the MHE team will work with the supplier towards a final design. In some cases, a sample package may be required to be sent to Wabash for approval. Wabash encourages supplier packaging changes made from continuous improvement initiatives. See Figure 3 for further details.

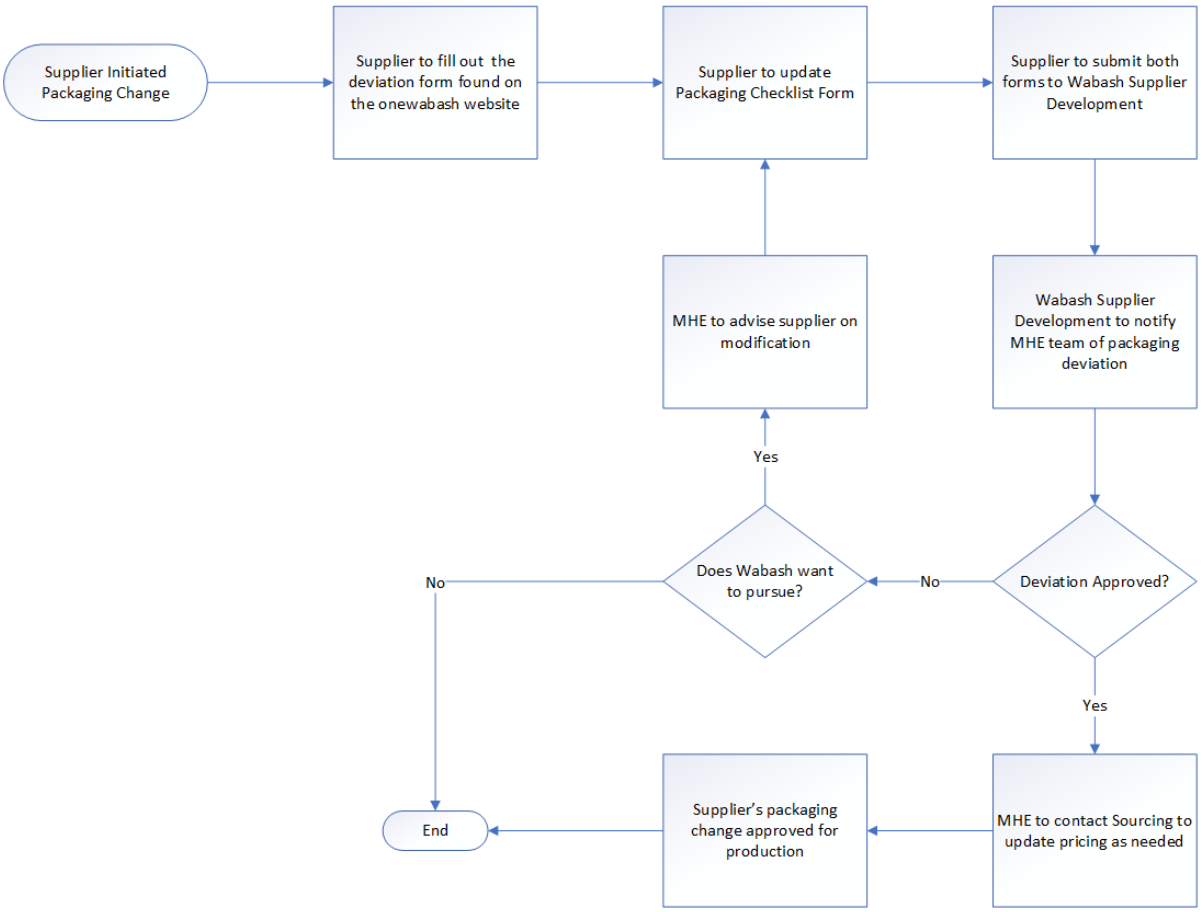


Figure 3. Change approval process flow

5.0 Pallet Size and Construction

All wood pallets shipped to Wabash **must** have flush stringer design and be assembled using cross ties. Full perimeter pallets are acceptable. Wing style pallets are **not** acceptable. Non-standard packaging materials such as molded chip or metal expendable pallets require approval by Wabash.

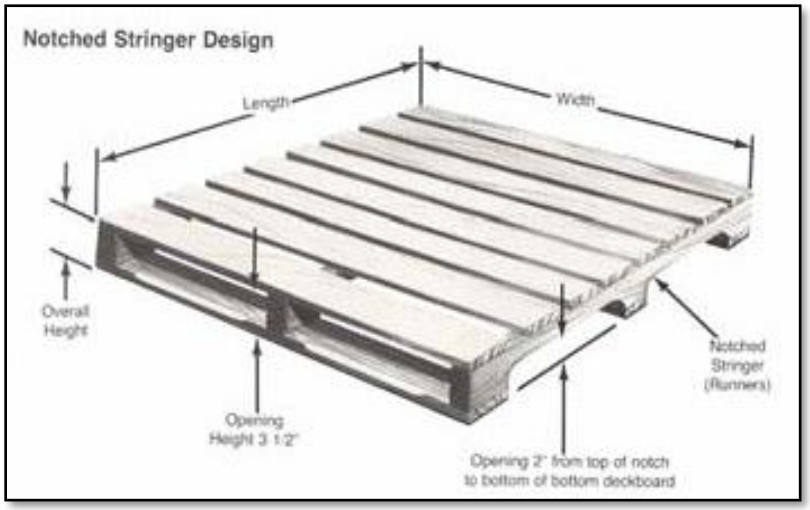


Figure 4. Example pallet

5.1 Pallet Designs

All wood pallets **must** be able to handle gross unit load weight capacity and allow for stacking in transit and storage (see 6.4). Designs **must** allow for 4-way entry and standard industrial fork truck equipment use. If a proposed pallet design cannot allow for 4-way entry, reach out to the MHE team at MHEngineering@onewabash.com to discuss options and next steps.

5.2 Wood Regulation

All wood pallets and packaging **must** conform to local and federal transportation rules and regulations. For international shipping to the United States, wood bracing **must** be treated and marked using the International Plant Protection Convention's (IPPC) "Regulation of wood packaging material in international trade" (International Standard for Phytosanitary Measures 15 (ISPM 15)) (www.ippc.int). Failure to comply with government regulations may have adverse liabilities. Any associated costs and/or fines incurred as a result will be the supplier's responsibility.

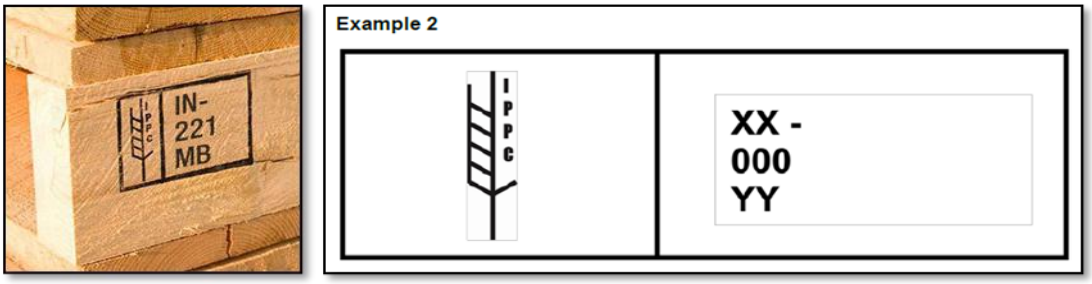


Figure 5. Stamping example for international shipments

5.3 Pallet Footprints

Pallets are typically developed to maximize trailer & sea-container cubic utilization. Pallet sizes greater than 48 inches (1219 mm) wide x 72 inches (1829 mm) long are considered to be custom pallets and should be avoided unless absolutely necessary. The following tables outline the recommended pallet sizes for both trailer & sea-container use.

30 x 32 (in) – 762 x 813 (mm)	45 x 48 (in) – 1143 x 1219 (mm) **Preferred for optimized shipments**
32 x 38 (in) – 813 x 965 (mm)	48 x 48 (in) – 1219 x 1219 (mm)
35 x 35 (in) – 889 x 889 (mm)	48 x 60 (in) – 1219 x 1524 (mm)
40 x 48 (in) – 1016 x 1219 (mm) **Preferred for optimized shipments**	48 x 72 (in) – 1219 x 1829 (mm)
42 x 48 (in) – 1067 x 1219 (mm)	

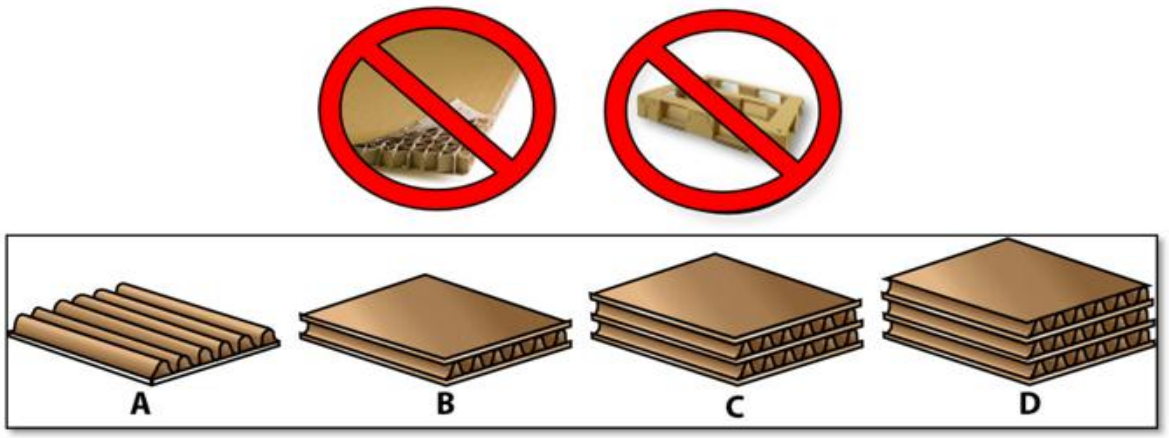
Figure 6. Recommended 4-way pallet sizes for maximizing trailer cubic utilization.

47 x 30 (in) – 1193 x 762 (mm)	52 x 45 (in) – 1320 x 1143 (mm)
47 x 45 (in) – 1193 x 1143 (mm) **Preferred for optimized shipments**	58 x 45 (in) – 1473 x 1143 (mm)
67 x 45 (in) – 1701 x 1143 (mm)	

Figure 7. Recommended 4-way pallet sizes for maximizing sea-container cubic utilization.

5.4 Pallet Weight Capacity

Wood pallets are required for use when the packaged or unit load gross weight exceeds 500 lbs. (227 kg) and/or exceeds 67 inches (1,702 mm) in length. Corrugated pallets are an acceptable alternative to wooden pallets in lightweight applications (<500 lbs.). If utilized, they **must** meet the same specifications as their wooden pallet counterparts and designed to withstand 90% humidity at 150 degrees Fahrenheit (65.6 degrees Celsius) exposure throughout the material handling process from vendor to point of use. This type of pallet **must** be constructed using laminated corrugated sheet (build-up block). Honey-comb type block is **not** permitted in the construction of the pallet base. Corrugated pallets are **not** acceptable for overseas shipments and **must not** be adopted. For these instances, wooden pallets **must** be used.



A) **Single Face:** One corrugated medium glued to one flat sheet of linerboard, flutes exposed.
B) **Single Wall:** Corrugated medium is glued between two sheets of linerboard (AKA – Doubleface).
C) **Double Wall:** Three sheets of linerboard with two mediums between layers.
D) **Triple Wall:** Four sheets of linerboard with three mediums between layers.

Figure 8. Example and non-example corrugated pallet options

5.5 Pallet Reuse

Reusable pallets **must** meet Wabash specifications and be inspected for durability prior to shipment. International use **must** conform to the ISPM-15 wood regulatory specification reviewed in section 5.2.

6.0 Manually Handled Containers

The supplier should evaluate the design and usage of manually handled containers based on the method(s) of transportation and material handling throughout the complete process. Design factors to consider are:

a. Packaging
b. Transportation
c. Material
d. Disposal cost
e. Part protection/quality
f. handling process (part orientation)
g. transportation cost (cube utilization)
h. packaging durability
i. load transfer
j. storage space

6.1 Container Design

Manually handled container designs **must** conform to local and international standards and maintain performance throughout the transportation and material handling processes. Wood containers **must** follow local and federal standards while international shipments need to adhere to ISPM-15 wood regulatory specifications also (www.ippc.int).

6.2 Container Selection

All manually handled containers are **required** to be filled to either **95% capacity or ≤30** pounds, whichever is least. This is to maximize the containers internal density and packaging integrity throughout the material handling process while maintaining ergonomic standards. When a part size will not allow for a manually handled container, a standard bulk pallet/container may be selected. Ensure that the container load capacity of 30 pounds is **not** exceeded and that proper measures are taken to provide for container stacking during transit and storage.

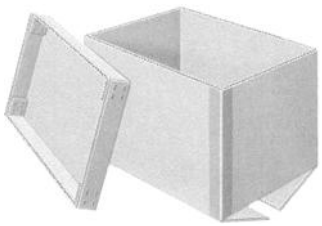
Carton sizes also **must** be designed for trailer & sea-container cube utilization. Wide selections of standard container sizes are available and designed for the best trailer & sea-container cubic utilization. Selecting the smallest lot size container will maximize density and cubic fill.
Figure 9 is a guide for standard carton sizes.

PACKAGE TYPE	DESCRIPTION	MANUFACTURER	MANU PART NUMBER	EXTERNAL DIMENSIONS			INTERNAL DIMENSIONS			CAPACITY (VOL - CUIN)	CONTAINER TARE WEIGHT (LBS)
				LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)	LENGTH (IN)	WIDTH (IN)	HEIGHT (IN)		
TOTE	FP143	ORBIS		21.90	15.20	9.30	21.10	14.40	8.40	2552.26	5.00
TOTE	FP261	ORBIS		23.90	19.60	12.60	22.20	18.20	11.50	4646.46	7.80
TOTE	FP03	ORBIS	40005986	11.80	9.80	7.70	10.10	7.80	6.50	512.07	2.00
TOTE	FP06	ORBIS		15.20	10.90	9.70	13.80	8.90	8.80	1080.82	2.90
TOTE	FP075	ORBIS	40005932	19.70	11.80	7.30	17.70	10.10	6.00	1072.62	3.40
TOTE	FP38	ORBIS	40005970	32.00	18.00	14.90	30.00	16.60	13.80	6872.40	11.40
TOTE	NXO2422-7	ORBIS	40006553	24.00	22.50	7.50	21.50	20.60	6.40	2834.56	4.70
TOTE	NXO3215-7	ORBIS	40006151	32.00	15.00	7.50	29.50	13.10	6.90	2666.51	4.70
TOTE	NXO1215-7	ORBIS	40006141	12.00	15.00	7.50	9.50	13.10	6.40	796.48	2.40
TOTE	NSO1615-9	ORBIS	40005322	16.00	15.00	9.50	13.00	13.10	8.90	1515.67	3.40
TOTE	NSO1207-5	ORBIS	40005152	12.00	7.40	5.00	9.50	5.60	4.50	14637.99	1.00
BULK	HDR3230-25	ORBIS	40008012	32.30	30.30	25.00	29.30	27.30	18.30	18637.44	69.50
BULK	HDR3230-30	ORBIS		32.30	30.30	30.00	29.30	27.30	23.30	59024.36	73.20
BULK	HDR7848-25	ORBIS		77.60	48.50	25.00	74.10	44.50	17.90	59024.36	173.00
BULK	HDRS5648-19	ORBIS		56.60	48.00	19.10	53.50	45.00	11.70	28167.75	137.50
BULK	HDR4048-39	ORBIS		47.20	39.40	39.40	43.80	36.00	32.90	51876.72	170.30
BULK	HDR4048-34	ORBIS		47.20	39.40	34.30	43.80	36.00	27.60	43519.68	158.30
BULK WIRE	WIRE3240-34	PREMIER HANDLING SOLUTIONS		32.00	40.00	34.00	32.00	40.00	34.00	43520.00	

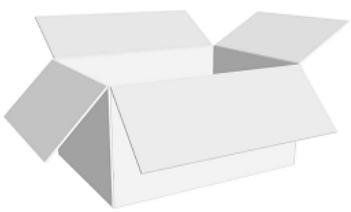
Figure 9. Standard manual hand-tote carton/pallet chart

6.3 Corrugated Manually Handled Tote Cartons and Carton Closure

Half-slotted (HSC) and Regular slotted (RSC) cartons are the only allowable carton styles. Carton design **must** be constructed with tab style joint(s). Stitched joints are recommended. Regular slotted cartons should be sealed utilizing reinforced tape or glue. Crimped stapled closures are **not** acceptable. Asphalt based tapes and adhesives are **not** allowed. Half slotted containers should always come accompanied with a lid. It is recommended to use four-way strapping practices on manually handled carton unit loads.



(HSC) Half Slotted Carton – Attached Flaps on Bottom with Open Top and Separate Cover



(RSC) Regular Slotted Carton – Attached Flaps on Top and Bottom

Figure 10. Example cartons

6.4 Unit Load

Containers and/or unit loads with the same footprint can be stacked upon each other to maximize cubing efficiencies. Each unit load **must** be properly palletized with containers in level layers to allow for stacking. All cartons shipped on a pallet need to be secured to the pallet and **must not** overhang when stacked in a unit load.

Figure 11. Example and non-example of unitization

Top layer **must** be configured with support on all four corners, allowing for stacking during transportation. The use of void fillers or empty cartons is an acceptable practice; considerations for load transfer need to be taken when using these methods. Pyramid stacking is **not** an acceptable practice. Standard unit load heights of 25, 33 or 50 inches should be maintained for maximum cubic efficiency. Container stack heights may vary depending on unit load height dimensions and dry van selection. Standard Manual Hand Tote/Carton Unit Load configuration example on next page.

The following criteria **must** also be observed when shipping.

- Right & left-hand parts are **not** to be mixed on the same pallet.
- Cartons **must** be uniform in size to maintain load stability.
- Avoid shipping less than a full layer.
- Multiple plant locations are **not** allowed on a single unit load.

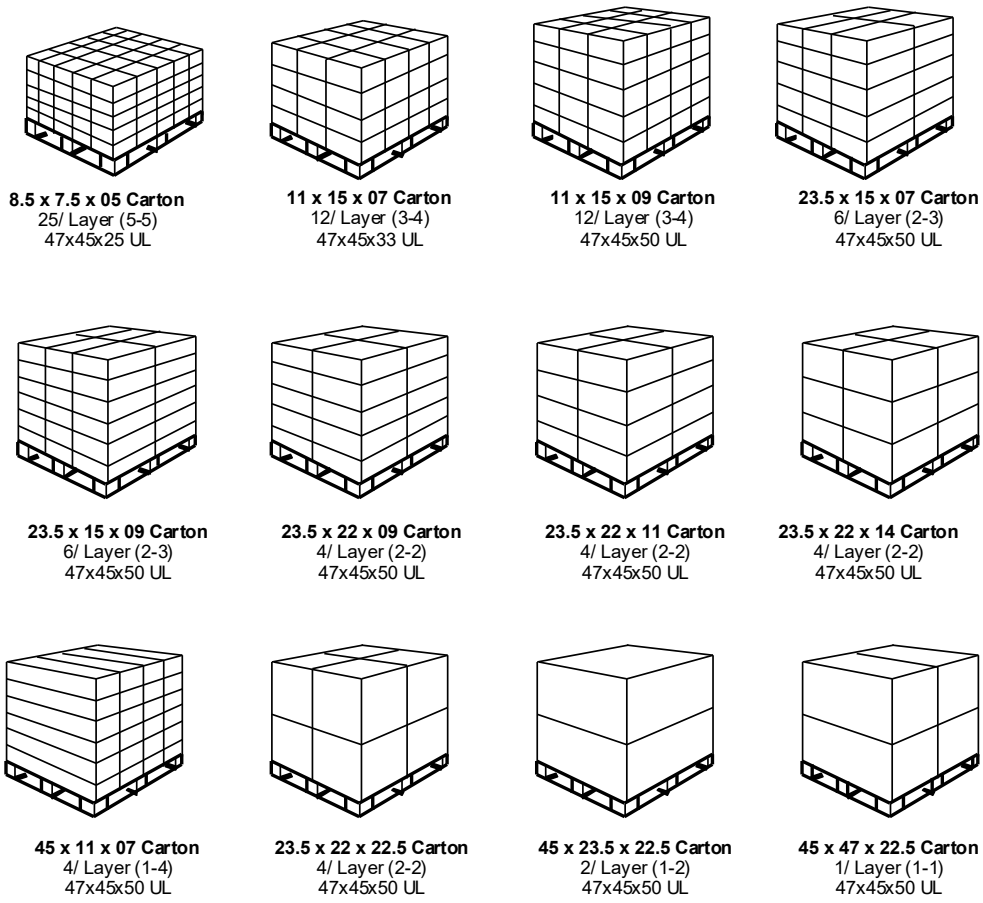
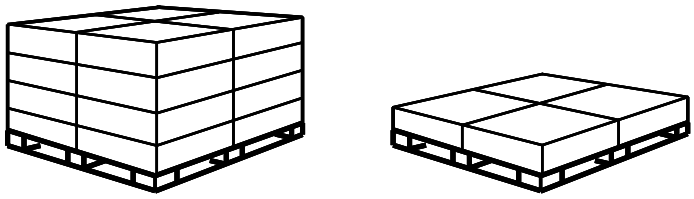


Figure 12. Standard manual hand tote/carton unit load configuration

Properly Palletized Unit Load (Leveled Layers)



Unacceptable Palletized Unit Load (Pyramid)

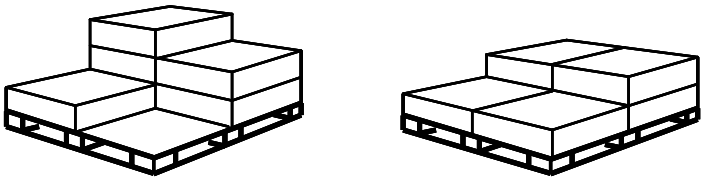


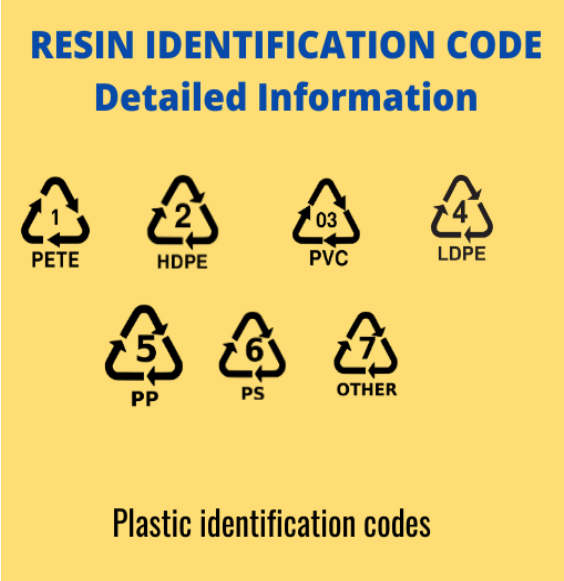
Figure 13. Example and non-example of palletization

6.5 Custom Containers

When a part size does not fit within a standard container dimension or pallet footprint, a custom container may be required. Suppliers with components requiring custom packaging design are to contact Wabash at MHEngineering@onewabash.com.

7.0 Dunnage Recycling

All plastic materials **must** be recyclable and need to be marked with the standard symbol in accordance with SAE standard J-1344 (www.sae.org). Certain restricted materials may be acceptable on an exception basis depending on the destination regulations. Contact Wabash at MHEngineering@onewabash.com to request approval.



1. PET – Polyethylene Terephthalate
2. HDPE – High Density Polyethylene
3. PVC – Polyvinyl chloride
4. LDPE – Low-Density Polyethylene
5. PP – Poly Propylene
6. PS – Poly Styrene
7. OTHER plastics
    - ABS, Nylon, Polycarbonates

Figure 14. Plastic identification symbols & names

8.0 Standard Bulk Pallet Boxes

Pallet bulk boxes can be used when manually handled tote containers cannot be used to accommodate a part size or weight, see chart below for approved standard pallet box sizes.

Container		Exterior Dimensions			Interior Dimensions			Type	Load Capacity		Cubic Volume	
		L:	W:	H:	L:	W:	H:	grade	kg	lb	m	ft
STD Bulk Pallet Container	in	36	30	25	34.0	28.3	18.3	TW (HSC)	340	750	2.55	8.37
	mm	914.4	762.0	635.0	863.6	718.8	464.8					
	in	47	30	25	45.3	28.3	18.3	TW (HSC)	340	750	4.13	13.54
	mm	1193.8	762.0	635.0	1150.6	718.8	464.8					
	in	47	30	33	45.3	28.3	26.3	TW (HSC)	227	500	4.28	14.04
	mm	1193.8	762.0	838.2	1149.4	718.8	668.0					
	in	47	45	25	45.3	43.3	18.3	TW (HSC)	227	500	6.61	21.70
	mm	1193.8	1143.0	635.0	1149.4	1099.8	464.8					
	in	47	45	33	45.3	43.3	26.3	TW (HSC)	227	500	9.33	30.61
	mm	1193.8	1143.0	838.2	1149.4	1099.8	668.0					
	in	52	45	33	50.3	43.3	26.3	TW (HSC)	227	500	10.36	33.99
	mm	1320.8	1143.0	838.2	1276.4	1099.8	668.0					
	in	58	45	33	56.3	43.3	26.3	TW (HSC)	227	500	11.58	38.00
	mm	1473.2	1143.0	838.2	1428.8	1099.8	668.0					
	in	67	45	33	65.3	43.3	26.3	TW (HSC)	227	500	13.45	44.13
	mm	1701.8	1143.0	838.2	1657.4	1099.8	668.0					

Figure 15. Standard bulk pallet container chart

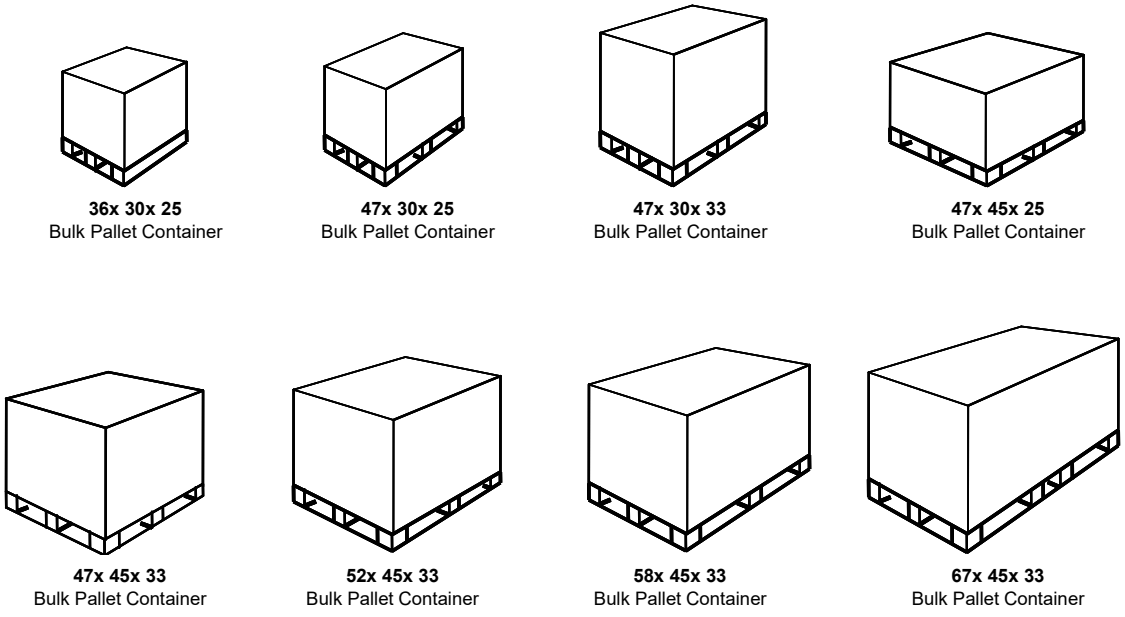


Figure 16. Standard bulk pallet container examples

8.1 Bulk Pallet Box Utilization

When utilizing this style of container, Wabash recommends that 95% of the interior volume or up to the weight capacity of the container be utilized to maintain packaging integrity during handling. This will allow for the optimizing of cubic freight without exceeding maximum container weight capacities.

8.2 Stack Height

Corrugated pallet boxes **must** be designed with sufficient strength to withstand a minimum of two (2) high stacking to 100 inches (2,540 mm) under full load. Container stack heights may vary depending on unit load height dimensions and ocean container or dry van selection.

8.2.1 Corner Supports and Bulk Pallet Box Stacking

Due to potential long cycles in transportation, Wabash recommends corner supports to ensure carton integrity. Corner supports **must** have sufficient strength to withstand stacking conditions under full load during the transit and storage processes. The preferred option is corrugated material. Paper tubes, build-up block, roll-ups, and formed fiber angled board are also acceptable materials. Wabash allows wooden corner supports when heavy loads are expected. All wooden dunnage **must** comply with the U.S Government Certification as noted in section 5.2.

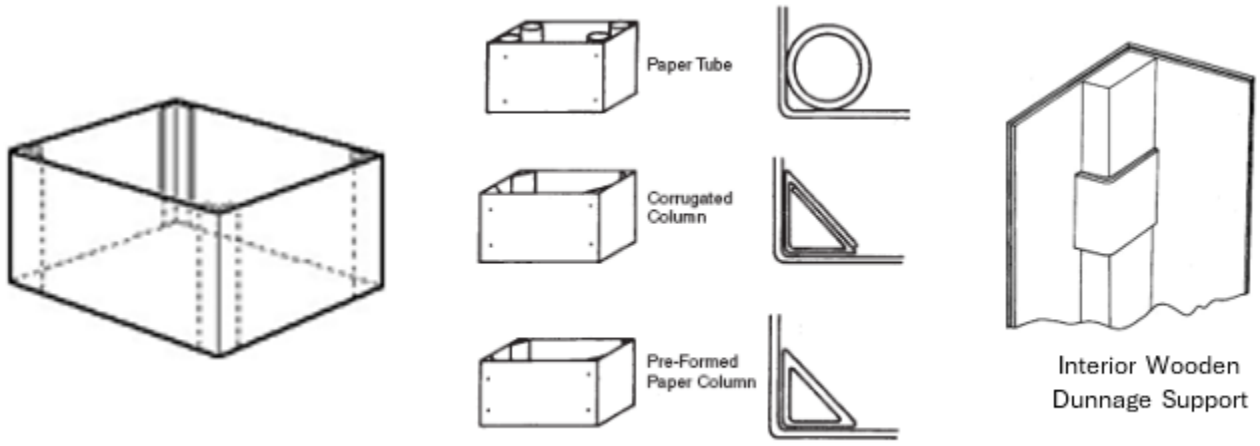


Figure 17. Example corner support placement and types

8.3 Bulk Pallet Box Closure

Container lids are required and **must** be secured during shipping and handling. Securement utilizing banding and/or shrink-wrap film is recommended for securing the container and lid during handling and transportation.

9.0 Unit Load Containment

The preferred method of containment is polyester (plastic) strapping to contain the unit load. The use of shrink-wrap film (non-PVC) is acceptable and recommended to increase load integrity. Metal banding is restricted and requires Wabash approval. All excess strapping must be trimmed no more than 2 in. (51mm) its strap point to ensure safety while handling. It is the supplier's responsibility to secure all unit loads with adequate banding in accordance with the strapping manufacturers recommendations.

10.0 Quality & Part Integrity

Packaging materials used **must** be free of damage and/or be repaired or replaced prior to shipment. Wabash requests limiting the use of individually wrapped or bagged parts unless necessary to protect the integrity of the part(s). The utilization of partitions and/or interweaving dunnage is to be designed to allow for ease of material handling during removal and minimize waste. Bundling/Kitting of parts may be considered to reduce the risk of entanglement during transportation.

The supplier **must** ensure that parts and packaged shipments are received by Wabash in acceptable, damage free conditions, and **without corrosion** through the overall process to the point of use. It is the supplier's responsibility to consider corrosion protection of critical part surfaces.

Rust inhibitors in the form of oils, VCI and desiccants are to be utilized to reduce the risks of corrosion and oxidation on raw and GNSK galvanized coated metals. Increased heat and humidity levels during long term storage may contribute to accelerated corrosion. Oil based inhibitors **must** be approved by Wabash. Use of desiccant bags is acceptable. Please refer to section 4.6 for information regarding Safety Data Sheets.

Corrosion prevention is recommended when:

Environments that are typically a constant high temperature and high relative humidity.

Material that may experience extended storage and extreme weather conditions.

Three types of materials for corrosion prevention:

VCI: (volatile corrosion inhibitor) is a low density polyethylene film with special multi-purpose corrosion inhibitors infused in the film.

Oil with Additives: is a petroleum liquid based sheet metal processing lubricant and preservative used as a corrosion preventive spray on steel.

VCI Emitter: is used as a multi-metal corrosion inhibitor where oil or VCI film is not desirable. Typical applications would be in bulk part packaging or as a supplement to insure coverage in addition to VCI film and or oil. An emitter can have the form of a VCI treated small cork disk or as a small porous bag.

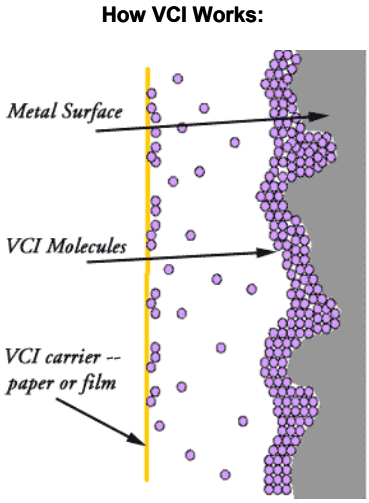


Figure 18. Example of VCI

Desiccant bags and/or absorbers can be used to reduce the level of moisture in the air. Desiccants come in various forms and can be considered for use in several applications such as transportation and manufacturing, and together with packaging materials. Use of desiccants should be limited and **must** be of a non-toxic substance; clay-based materials are the most widely used substance. Desiccants **must** be in compliance with European Union Commission Decision 2009/251/EC2 which prohibits the use of desiccants with concentrations of Dimethyl Fumarate (DMF) greater than 0.1 mg/kg (0.1 ppm) (Decision - 2009/251 - EN - EUR-Lex).

Wabash recommends that the corrosion inhibitor's life expectancy be a minimum of six months when parts are shipped overseas or 3 months otherwise. These durations may be modified by Wabash depending on the commodity, mode of transport, and storage requirements.

11.0 Labeling Requirements

Suppliers **must** ensure that all material shipping packaging and unit loads are correctly labeled with the proper Automotive Industry Action Group (AIAG), AIAG B-10 identification labels, and when required, utilize the appropriate federal and local government labeling guidelines. (http://www.aiag.org) All labeling and documentation is expected to be clearly printed in the English language. Handwritten labels are **not** permitted.

Cartons/containers shipped on a pallet **must** be properly palletized and labeled. Unit loads **must** use a Master Label to identify the total contents of a multiple carton/container load of the same part number. One label is required per part number. The label should be placed on the unit load in such a manner that when the pack is broken apart the label is discard (i.e., attach to outside of shrink-wrap or affix to the banding). Each carton, container, and unit load **must** be labeled on two adjacent sides.

Suppliers, both internal and external, **must** use the label formats detailed in the following sections when shipping to all Wabash facilities in North America. These standards are based on prior automotive standards and are intended to help develop a supplier's ability to comply with a simple labeling format prior to roll out of more complex QR codes in the future. WABASH decided to minimize the impact of a new label to their suppliers by using a similar format, known as the Wabash B10 label, following the Automotive Industry Action Group (AIAG) AIAG B-10 identification label standards. Should additional labeling be required by federal and local governments, follow their label formatting guidelines. (http://www.aiag.org)

11.1 Labeling Hardware and Software

Wabash recommends the use of bar-coding software and hardware, which allow flexibility in label generation. Printers need to produce labels that meet AIAG specifications and tolerances. Thermal printers and laser printers are strongly recommended. Wabash does **not** allow dot matrix printers to be used, as bar-coded data can become skewed. Not all Wabash plants may use every field on the labels, but label printing applications need to be able to support printing all fields if required.

11.2 Sample Label Approval

At the start of the packaging approval process (see 4.1), suppliers should submit initial sample labels. This sample label **must** be sent in pdf format and be easily readable. Written approval will be sent from Wabash to the supplier once the label format is tested and approved.

11.3 Label Size and Material

Wabash requires the label medium to be white with black printing. The size of the label medium can be determined by a combination of the data requirements, size of the container and the printing technology used. For most shipping containers, a label size of 4 inches x 6 inches (101.6 x 152.4 mm) will meet most packaging requirements. A smaller, alternative label size of 4 inches x 2 inches (101.6 x 50.8 mm) should be used only when the container is not large enough to accommodate the 4 inch x 6 inch label. Sub-Pack label sizes will be determined by the package size and printing capabilities utilized. Adhesive label medium types may be pressure sensitive or dry gummed. Adherence to the package substrate **must** be assured and wrinkle-free until received at final shipping destination. Contact roxana.mack@onewabash.com for any questions related to these requirements.

11.4 Types of Packaging

Wabash has three types of packaging, described below.

1. **Outer packaging** represents a container that will contain multiple packages of single materials (inner packages). This packaging will utilize two MASTER LABELS applied to adjoining corners or opposite sides depending on the packaging.
    a. Two additional MIXED LOAD LABELS may be required on the outer packaging by Wabash when the container or pallet contains differing parts numbers.
    b. Quantities of materials may be the same or different.
2. **Inner packaging** represents the smallest shippable packaged units of material, for example smaller boxes on a pallet, bags in a bin(s), etc. This packaging will utilize two (2) CONTAINER LABELS applied to adjoining corners or opposite sides depending on the packaging.
3. **Sub-Packaging** represents material that is packaged in smaller packages (sub-packs) within a single pack carton with the intention of being utilized or consumed during the manufacturing process. This packaging utilizes two (2) SUB-PACK LABELS applied to adjoining corners and should be easily accessible to facilitate scanning of the bar codes on the labels when removed from the outer packaging/carton.

11.5 Types of Labels

Wabash utilizes five types of labels depending on how material is packaged for shipment.

1. **Container Labels** are used to identify a single pack containing the same part number. This is the most used shipping & parts identification label.
2. **Master Labels** are used for containers, pallets, skids, etc., holding two or more packs of the same part number per divisional requirements. Each individual package should still contain a container label within the outer package.
3. **Mixed Load Labels** are used for identifying a single skid/pallet load of multiple single packs of different part numbers.
4. **Dual Parts Labels** are used for identifying a load of material that is typically shipped in pairs, such as lefthand & righthand, top & bottom, or other combinations. Dual part labels may be required based on specific Wabash requirements.

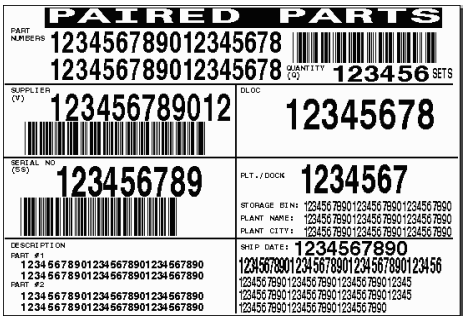
5. **Sub-Pack Labels** are used to identify sub-packaged parts of identical part numbers within another container.

Container Label

Master Label

Mixed Load Label

Dual Parts Label



Sub-Pack Label

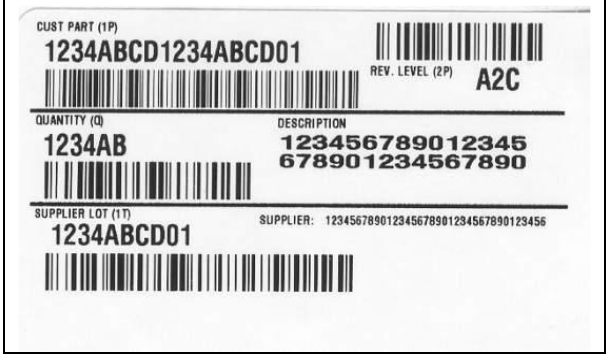


Figure 19. Example label types

11.6 Label Items

The following table shows the required data fields & identifier for each of the Wabash labels.

DATA IDENTIFIER	DATA FIELD DESCRIPTION	CONTAINER	MASTER	MIXED	DUAL PARTS	SUB-PACK
	LABEL TYPE		X	X	X	
(P)	WABASH PART NUMBER	X	X		X	X
(Q)	QUANTITY	X	X		X	X
(K) (15K)	PURCHASE ORDER NUMBER OR PULL SIGNAL NUMBER\KANBAN ID	X				
(3S) – Container (4S) – Master (5S) – Mixed	SERIAL NUMBER	X	X	X	X	
	PLT/DOCK	X	X	X	X	
(1T)	LOT NUMBER *	X				X
	SHIP DATE		X	X	X	
	ENGINEERING CHANGE/REVISION LEVEL *	X				X (2P)
	MANUFATURING DATE	X				
	WABASH PART DESCRIPTION	X	X			X
(V)	SUPPLIER SHIP FROM SUPPLIER NUMBER	X	X	X **	X	
	SUPPLIER FREE SPACE	X	X	X		
	SUPPLIER LOCATION'S NAME	X	X	X	X	X
	SUPPLIER LOCATION'S ADDRESS	X	X	X	X	
	COUNTRY OF ORIGIN	X	X			
	CUSTOMER NAME			X **		
	CUSTOMER STREET ADDRESS, CITY, STATE AND POSTAL CODE			X **		

Figure 20. Required fields and identifiers for each label type

*Some Wabash locations may not use LOT NUMBER or ENGINEERING CHANGE/REVISION LEVEL information. If this information is not provided to the supplier on the Wabash Purchase Order, the supplier is not required to place this information on the CONTAINER LABEL.
**MIXED LABEL – Supplier ship from Wabash supplier number will be located under the label type, with the customer's name and address information below it, followed by the serial number, plt/dock, & ship date.

11.7 Label Field Definitions and Data Area Characteristics

11.7.1 Use of Data Identifiers

A data identifier contains one or more characters in parentheses to define a general category type or specific use of bar-coded data. The bar-coded field needs to start with the data identifier and will identify the type of information encoded in that symbol. Care **must** be taken that the bar-coded data has the proper data identifier. The data identifier shall be printed in human readable characters in parentheses under the title for the appropriate data area. The data identifier **cannot** be included in the human readable interpretation of the bar-code symbol. All lengths specified in the following sections do **not** include the data identifier within the bar-coded fields. Using additional bar code symbols on shipping packages is encouraged. Under no circumstance may other supplier labels cover the required Wabash label.

11.7.2 Text Lines-Per-Block (LPB)

The height of text characters is defined by using a unit of measure called Lines-Per-Block, rather than inches, millimeters, or points. This enables the printer of the label to determine the actual height and font of text for a given LPB. Eight sizes may be specified for text, ranging from one to eight Lines-Per-Block. The exact character heights corresponding to the eight text sizes should be chosen by the label designer based on the capabilities of the printing process. Labelers need to choose a single height for each of the eight sizes so that clear distinctions will be evident between text sizes. Figure 21 shows suggested point, inch, and millimeter sizes. Human readable characters should be as large as possible to fit the given space and maximum number of characters within the specified field. Fields **must not** at any time overlap. Suppliers should avoid printing characters so high and narrow that they are difficult to read.

Lines Per Block	Max. Characters Per Line	Point	Inches	MM
1 LPB	8	64	0.90	22.0
2 LPB	18	32	0.40	11.0
3 LPB	28	20	0.25	7.0
4 LPB	34	16	0.20	5.0
5 LPB	42	12	0.15	4.0
6 LPB	48	10	0.12	3.0
7 LPB	59	8	0.10	2.0
8 LPB	68	6	0.08	1.5

Figure 21. LPB conversions

11.7.3 Block Information Designations for All Label Types

- **Top Block Left – Part #: CUST (P)**
  - The part number shall be the Wabash part number.
    - Maximum length of eighteen alphanumeric characters.
  - The human readable part number characters shall be **bold** and a minimum of
    - 2 LPB high – CONTAINER LABEL
    - 3 LPB high – MASTER LABEL
    - 3 LPB high for each part – DUAL PARTS LABEL
  - The bar-code symbol for the part number shall be directly below the human readable characters
    - Should be a minimum of 2 LPB and contain the data identifier (P) at the beginning of the bar-code – CONTAINER & MASTER LABELS
- **Top Block Right – Quantity (Q)**
  - Maximum length for the quantity field is six characters.
  - The human readable quantity characters shall be **bold** and a minimum of
    - 2 LPB – CONTAINER & MASTER LABELS
    - 4 LPB – DUAL PARTS LABEL
  - The bar-code symbol shall be printed directly above the human readable characters and shall be a minimum of 2 LPB and contain the data identifier (Q).
  - Field data shall **not** start with a zero in the human readable or bar-code following the data identifier.
  - CONTAINER & MASTER LABELS Unit of measure shall appear in human readable form, printed after the human readable portion of the quantity field with a maximum length of three characters and a minimum of 6 LPB.
    - Unit of measure is assumed to be pieces – PC.
    - Unit of measure for other commodities will be transmitted to supplier in DELFOR or DELJIT EDI, or Wabash Purchase Order (MASTER LABEL only).
  - DUAL PARTS LABEL unit of measure shall appear as SETS, not the total of both parts.
  - Note: both top blocks are reserved for a 1 LPB inverse printing area for the label type, “MIXED LOAD”.
- **2nd Block Left**
  - CONTAINER LABEL – KANBAN (15K) or P.O. (K)
    - This section of data varies by Wabash facility. In the case of Kanban Number (also known as Pull Signal) if included in EDI transmission to supplier, the Kanban Number and the corresponding bar code with the correct field title and data identifier, should be in this area. If the Kanban Number is not provided to the supplier, the Purchase Order Number assigned by Wabash should be in this area, again with the correct field title and data identifier.
      *The default will be the Purchase Order Number assigned by Wabash.
    - This field has a maximum length of twelve alphanumeric characters, the human readable characters shall be bold and a minimum 2 LPB high. The bar code symbol for this item shall be directly below the human readable characters, shall be a minimum of 2 LBP high, and shall contain the data identifier of (K) for Purchase Order Number or (15K) for Kanban Number. For Kanban info, use KANBAN (15K) for box title. For Purchase Order info,

use P.O. (K). It may be necessary to use Code 128 for the bar code field if your Wabash customer plant has longer data to be represented.

- MASTER, MIXED LOAD, & DUAL PART LABELS – SUPPLIER (V)
  - Supplier Ship from supplier number field as provided by Wabash. The bar code field has a maximum length of twelve alphanumeric characters + Data Identifier of "V". The human readable characters shall appear above the bar code and be bold and a minimum 2 LPB high. The title and data identifier symbol for the Supplier Ship from supplier number field shall be directly to the left of the human readable characters.

- **2nd Block Right**
  - CONTAINER LABEL – REV LVL (2P)
    - The human readable revision level, also known as the Engineering Change Number, shall be a minimum of 5 LPB. The bar code symbol shall be directly after the human readable characters, contain the data identifier (2P) at the beginning and be 3 LPB. The maximum field length shall be three characters alphanumeric. Some Wabash locations may not use Engineering Change number information.
  - CONTAINER, MASTER & DUAL PART LABELS – DLOC*
    - The DLOC information indicates delivery location where the material will be stored internally at a Wabash division. The maximum length shall be eight (8) characters, with the human readable text "DLOC" being bold, and a minimum 2LPB for MASTER LABEL and 3 LPB for the CONTAINER & DUAL PART LABELS.
    - For the CONTAINER LABEL, this information will be below the REV LVL.
    - This data is typically from the EDI segment PCI 11Z.
    - *DLOC may be optional for some Wabash divisions.
  - MIXED LOAD LABEL – CUSTOMER SHIPPING INFORMATION
    - Line 1: Wabash plant name with a minimum height of 4 LPB, maximum of thirty-six characters alphanumeric. Line 2: Wabash plant street address, minimum height of 4 LPB, maximum of thirty-six alphanumeric characters. Line 3: Wabash plant city, state, and postal code on one line, a minimum height of 4 LPB, maximum of thirty-six alphanumeric characters.
- **3rd Block Left – SERIAL #**
  - Each shipping container or pack shall have a unique number called a serial number. This number is assigned by the supplier, not Wabash, and does not necessarily need to be in sequential order. This unique number helps link the bar code data on the labels to EDI for traceability. The serial number shall **not** be repeated to Wabash on another label within a twelve-month period.
  - The serial number has a maximum length of nine alphanumeric characters and is preceded with the following data identifier.
    - 3S – CONTAINER LABEL
    - 4S – MASTER LABEL
    - 5S – MIXED LOAD & DUAL PART LABELS
  - The human readable serial number characters shall be **bold** and a minimum of 2 LPB.
  - The bar code symbol for the serial number shall be directly below the human readable characters and shall be a minimum of 2 LPB, except for the MIXED LOAD LABEL, where it will be a minimum of 7LPB.
- **3rd Block Right – PLT/DOCK & LOT NO:**

- Line 1 – Indicates Plant and Dock designation. The data shall be **bold** and a minimum of 2 LPB for all labels, except the CONTAINER LABEL being a minimum of 3 LPB. The maximum length of this section is seven characters. The data comes from the EDI LOC+11 segment.
- CONTAINER LABEL ONLY - LOT NO is a supplier assigned lot control number. If used, the human readable characters shall be a minimum of 5 LPB, and a maximum length of ten characters. The barcode symbology used shall be code 128 and be 4 LPB with a data identifier of (1T) preceding the data. The human readable characters should be directly below the barcode. The title LOT NO.(1T) should precede the human readable content.
- Lines 2-4 shall be used by EDI Certified suppliers. Data requirements will vary by division. Suppliers not EDI certified should try to populate this data as accurately as possible. A heading on each used line denoting what is represented in the data element shall be used and shall be a minimum of 7 LPB in size and **not** more than twelve characters in length. The last character of the heading should be a colon (:).
- Line 2: If used, the data shall be a minimum of 5 LPB high, with a maximum length of thirty characters. The data comes from the EDI PCI 13Z segment, and its title shall be “STORAGE BIN:”, and be a minimum of 5 LPB.
- Line 3: If used, the data shall be a minimum of 5 LPB high, with a maximum length of thirty characters. The data comes from the EDI PCI 14Z segment, and its title shall be “PLANT NAME:”, and be a minimum of 7 LPB.
- Line 4: If used, the data shall be a minimum of 5 LPB high, with a maximum length of thirty characters. The data comes from the EDI PCI 15Z segment, and its title shall be “PLANT CITY:”, and be a minimum of 7 LPB.

- **4th Block Left**
  - CONTAINER, MASTER & MIXED LOAD LABELS – supplier free space
    - Population of this block is left to the discretion of the supplier.
  - DUAL PART LABEL – part description area
    - Part description fields have a maximum length of sixty characters for each part and shall be bold and a minimum 6 LPB. The title shall be “DESCRIPTION PART #1” and “DESCRIPTION PART #2" and a minimum of 6 LPB.
- **4th Block Right – PART & SUPPLIER INFORMATION BLOCK**
  - Contains: Ship Date, Part Description, Supplier Name, Supplier City, State, Zip, and Country of Origin.
  - Ship Date shall be the date the material ships from the supplier’s location, shall be a minimum of 6 LPB, and in the format MM/DD/YYYY. It shall also be preceded by the heading "SHIP DATE:" and a minimum of 7 LPB.
  - The part description has a maximum length of forty characters and shall be bold and a minimum of 5 LPB high with the heading "DESC."
    - For EDI certified suppliers, the part description from the customer’s PCI 17Z segment should appear here. If a supplier is not certified, it should represent the part description the customer dictates.
  - Supplier Name shall be a minimum of 4 LPB high, with a maximum length of thirty-six characters. Supplier Street shall be a minimum of 7 LPB in height with a maximum of thirty-six characters. Supplier City, State, Postal code, and Country of Origin shall be on one line and be a minimum of 7 LPB high, with a maximum

length of fifty characters. The characters “MADE IN:” should appear before the country name. Population of this block is left to the discretion of the supplier.

- **Sub-Pack 1st Block Left – CUST PART (1P)**
  - The part number shall be the Wabash part number.
    - Maximum length of eighteen alphanumeric characters.
  - The human readable part number characters shall be **bold**.
  - The bar-code symbol for the part number shall be directly below the human readable characters.
- **Sub-Pack 2nd Block Right – REV. LEVEL (2P)**
  - The human readable revision level shall be three characters alphanumeric in length, **bold,** and below the bar code symbol.
  - The bar code symbol shall be directly above the human readable characters and contain the data identifier (2P) at the beginning.
- **Sub-Pack 3rd Block Left – QUANTITY (Q)**
  - Maximum length for the quantity field is six characters.
  - The human readable quantity characters shall be BOLD and below the block title QUANTITY (Q).
    - Unit of measure is assumed to be pieces – PC.
  - The barcode symbol shall be printed directly below the human readable characters and shall contain the data identifier (Q).
    - Field data shall **not** start with a zero in the human readable or bar-code following the data identifier.
- **Sub-Pack 4th Block Right – DESCRIPTION**
  - This is the Wabash part description and has a maximum length of thirty **bold** characters.
- **Sub-Pack 5th Block Left – SUPPLIER LOT (1T)**
  - LOT NO is a supplier assigned lot control number (if/when needed).
  - The title SUPPLIER LOT (1T) should be located above the human readable **bold** alpha-numeric characters.
  - The barcode shall be below the human readable character and contain the data identifier (1T) at the beginning.
- **Sub-Pack 6th Block Right – SUPPLIER**
  - This is the suppliers name and has a maximum length of thirty-six characters.
  - This should be the same size text as the SUPPLIER LOT (1T) title.

11.8 Restriction Symbols

Use of visual restriction symbols is acceptable for manually handled and/or standard bulk type containers. In general, during the container manufacturing process, packaging fabricators apply standardized formatted symbols to the exterior of a container depicting, fragile, directional arrows, maximum weight, and/or stack height restriction. This practice and use of self-adhering labels is acceptable.

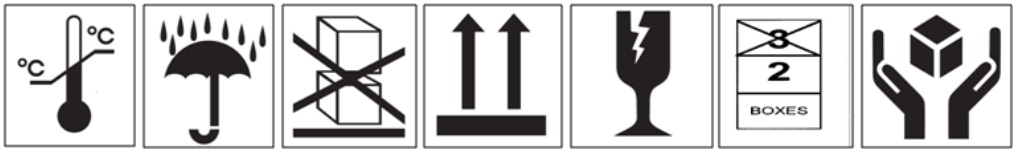


Figure 22. Example restriction symbols

12.0 General Transportation

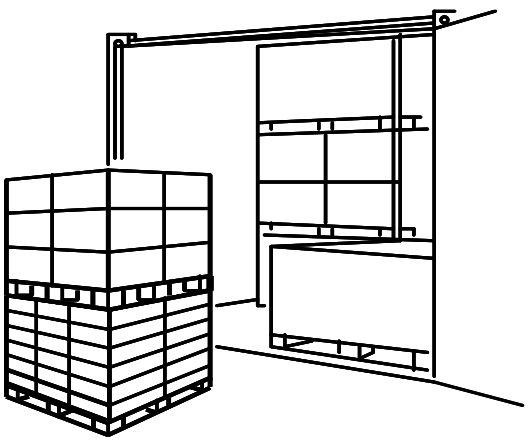
Packaging design specifications such as size, weight and stack-ability drastically impact the cost of transportation. Standard shipping transportation modes are truck load carrier, ocean transport, and rail car. Packaging design specifications for international shipments have been developed to allow for standardization and maximum utilization within standard sea-containers. It is expected that when using this shipping method a 95% cubic utilization is to be maintained, with the only exception being the gross payload capacity restrictions of the sea-container.

12.1 International Transportation

International transportation typically uses ocean containers to transport materials. When shipping in these containers, different dimensional parameters need to be considered to ensure maximum utilization. International shipping method for components assembled in a foreign country may require a supplier to pack and ship in specific densities or assemblies.

12.1.1 Engineered Load

In maximizing sea-container utilization, engineered loads may need to be developed. Unit load palletization **must** follow the preferred pallet sizing identified in section 5.3.



Optimized Ocean Container
Maximized Cubic Utilization

Figure 23. Example ocean container packing

Equipment		Interior Dimensions			Door Opening			Tare Wt.		Payload	
		in	ft.	m	in	ft.	m	kg	lb	kg	lb
40' High Cube	L:	471.3	39.3	11.97				2,900	6,393	29,600	65,256
	W:	92.1	7.7	2.34	92.1	7.7	2.34				
	H:	105.5	8.8	2.68	101.2	8.4	2.57				
40' Standard	L:	474.5	39.5	12.05				3,084	6,799	27,400	60,406
	W:	92.1	7.7	2.34	89.8	7.5	2.28				
	H:	93.3	7.8	2.37	89.4	7.4	2.27				
20 ' Standard	L:	232.7	19.4	5.91				1,900	4,189	22,100	48,722
	W:	92.1	7.7	2.34	89.8	7.5	2.28				
	H:	93.3	7.8	2.37	89.4	7.4	2.27				
Overall unit load dimension MUST be developed to fit (High Cubic) sea-container interior door opening dimensions; not to exceed 470 x 90 x 100 (in) 11.93 x 2.28 x 2.54 (m)											

Figure 24. Ocean container specifications chart

12.1.2 Bracing and/or Bulkhead Requirement

All sea-container dead spaces greater than three inches (3” - 76.2mm) **must** be braced by wood or bulkheads to avoid shifting during transit. Wood bracing **must** meet the ISPM-15 regulatory specification when used (see 5.2).

Figure 25. Example wood bracing

13.0 Consolidation Point

Suppliers shipping and processing through a Wabash consolidation point or third-party logistics (3PL) are responsible for communicating their Packaging Checklist Form to Wabash for each part number shipped.

13.1 Conformance

It is the part supplier’s responsibility to purchase prototypes and all expendable packaging, including dunnage, for production or test validation. Also, non-conformance packaging requiring repacking and/or packaging design modification, is the part supplier responsibility.

13.2 Consolidation Center Requirements

Consolidation center operations are responsible to sponsor packaging trial test review validations, develop ULD data and packaging load instructions, manage inventory control, monitor and facilitate issues and concerns through Wabash, coordinate and manage the inventory change process, ensure FIFO processing, and that damage free containers are shipped through to the point of use.

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Appendix 2. Packaging Checklist Form

WABASH™

Supplier Packaging Checklist Form

Supplier Information

Supplier Name: _____ Packaging Contact: _____
Supplier Address: _____ Contact Phone Number: _____
Vendor Code: _____ Contact E-Mail Address: _____

Part Information

Part Number: _____ Part Length (in): _____
Part Description: _____ Part Width (in): _____
Is part PPAP approved? ☐ Yes ☐ No Part Height (in): _____
If no, Target Date: _____ Part Weight (lbs): _____

Primary Package Information

Category: ☐ Returnable ☐ Expendable Dunnage Desc: _____
Type: ☐ Manually Handled Container ☐ Bulk Container ☐ Band & Block ☐ Other
# of Parts Per Container: ☐ Pcs. ☐ Lbs. Container Length (in): _____
Empty Container Weight: Container Width (in): _____
Loaded Container Weight: Container Height (in): _____

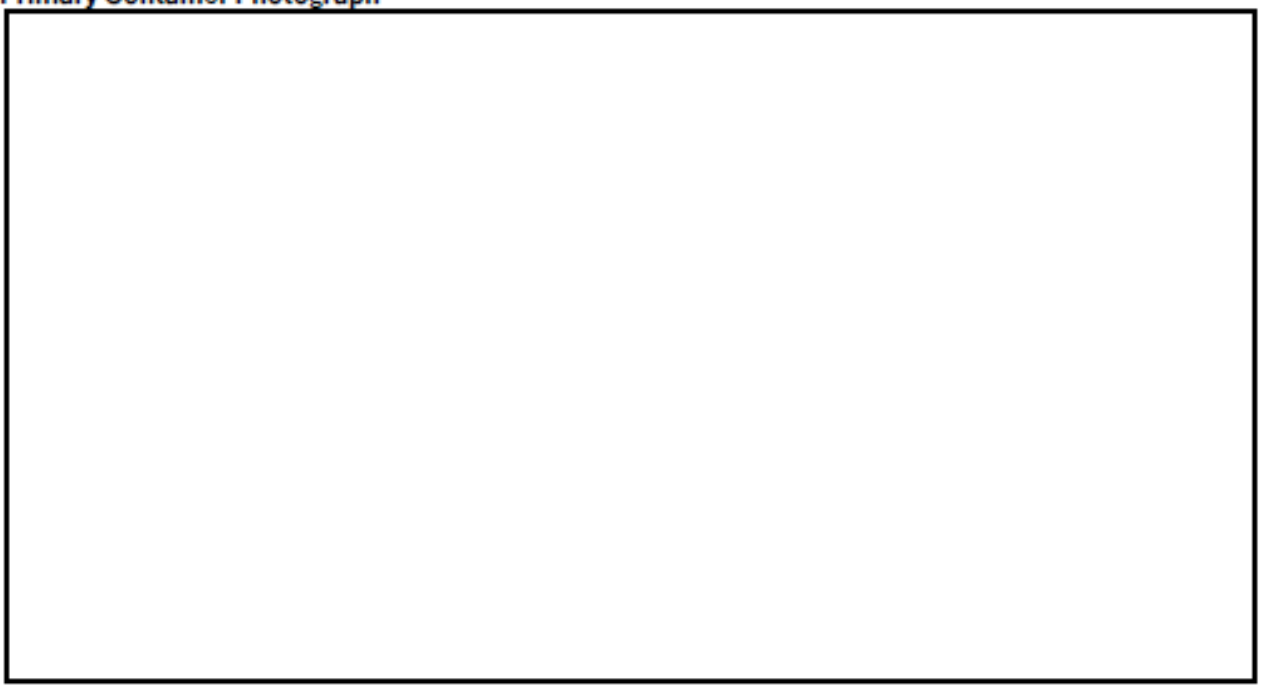
Secondary Package Information

Category: ☐ Returnable ☐ Expendable Dunnage Desc: _____
Type: ☐ Manually Handled Container ☐ Bulk Container ☐ Band & Block ☐ Other
# of Parts Per Container: ☐ Pcs. ☐ Lbs. Container Length (in): _____
Empty Container Weight: _____ Container Width (in): _____
Loaded Container Weight: _____ Container Height (in): _____

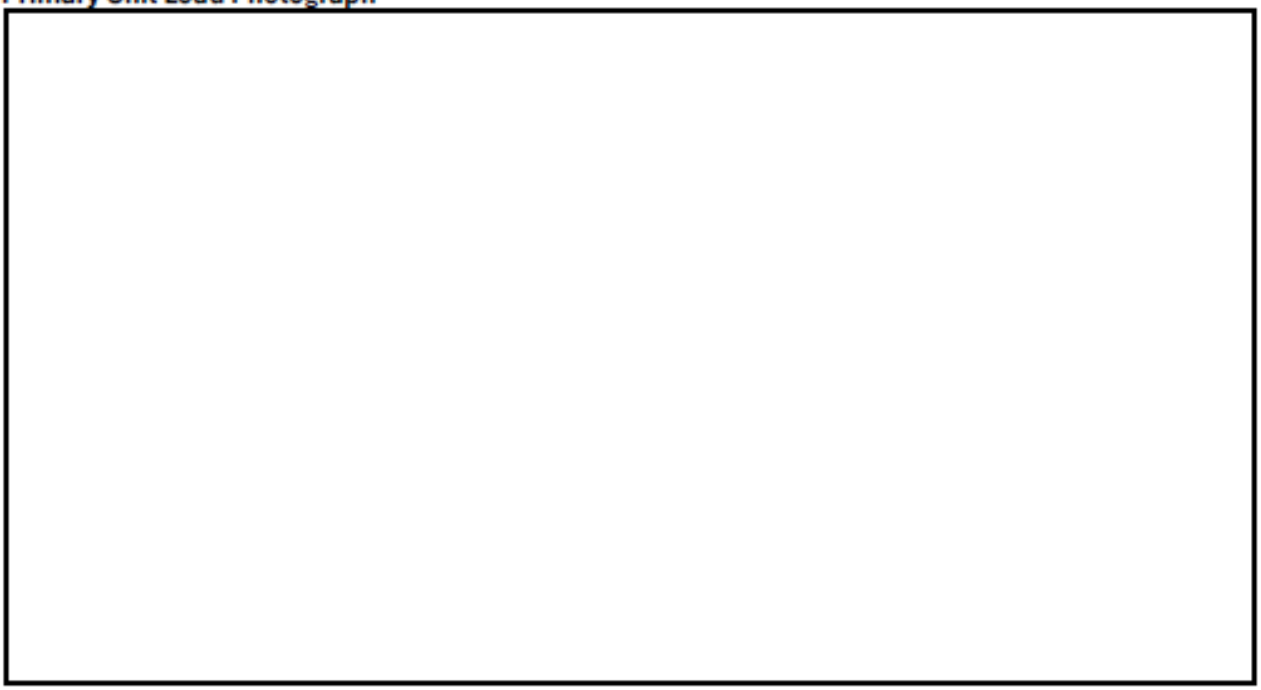
Pallet Information

Type: ☐ Returnable ☐ Expendable ☐ Wood ☐ Plastic ☐ Corrugated
Entry Type: ☐ 2-Way Entry ☐ 4-Way Entry Pallet Length (in): _____
Pallet Width (in): _____
Containers per Layer: Pallet Height (in): _____
Layers per Pallet: Empty Pallet Weight (lbs): _____
Containers per Pallet: Loaded Pallet Weight (lbs): _____
Parts per Pallet: ☐ Pcs. ☐ Lbs. Loaded Pallet Height (in): _____
Method of Securement: ☐ Banding ☐ Stretch Wrap ☐ Other: _____
Securement Material Type: _____

Primary Container Photograph



Primary Unit Load Photograph



Secondary Container Photograph

Secondary Unit Load Photograph

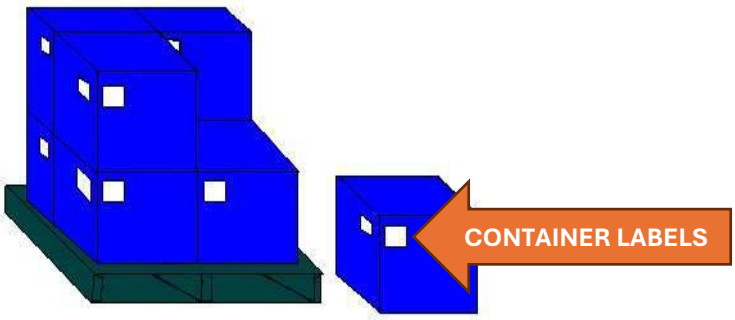
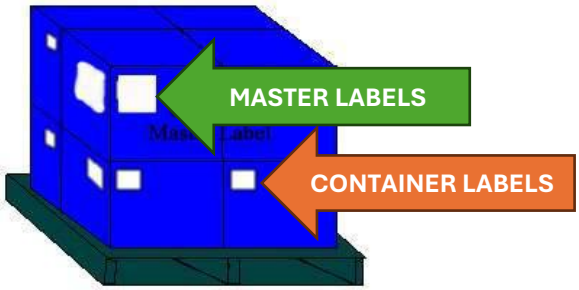
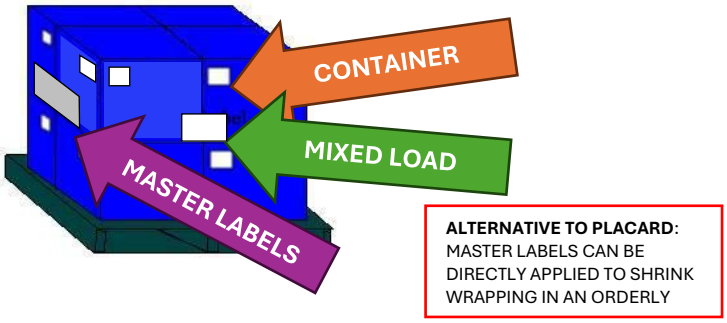
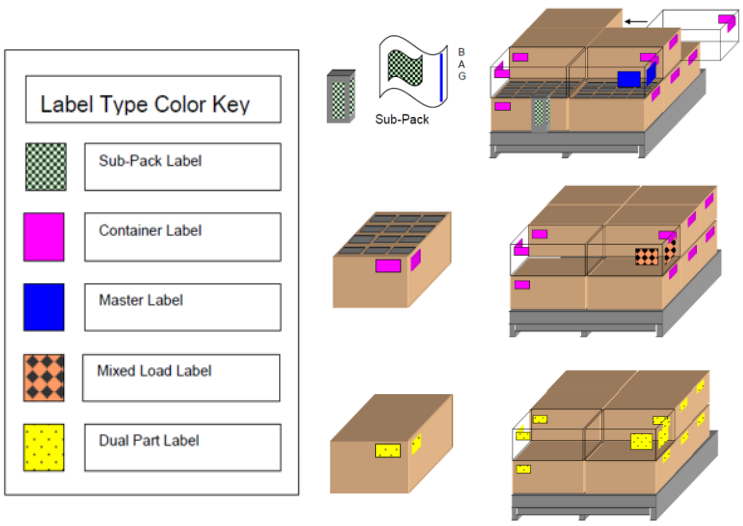
Submission Date: _____ **Approval Date:** _____

Supplier: **Wabash:**

_____ _____

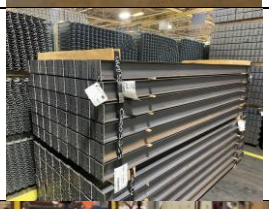
Name **Title** **Name** **Title**

Appendix 3. Label Placement Examples

<table>
<tr>
<td> 
</td>
<td>Example 1
Group of packages with container labels and a single package labeled only with container labels. Pallet is not ready for shipment.</td>
</tr>
<tr>
<td> 
</td>
<td>Example 2
Pallet with master labels attached on shrink-wrap, ready for shipment. Notice the multiple container labels on each individual inner package.</td>
</tr>
<tr>
<td> 
</td>
<td>Example 3
Pallet with mixed load. Individual boxes labeled with container labels. Once load is shrink-wrapped, attach a single mixed load label to one side. On the adjacent side attach a cardboard placard with all the individual master labels.</td>
</tr>
<tr>
<td> 
</td>
<td>Example 4
Sub-Pack labels will be placed on adjacent sides of the sub-pack container, then placed into a larger container. The larger container is labeled in same manner as figure 1, and then master label applied as in figure 2.
For mixed load and dual part sub-packs, follow labeling practices from figure 3.</td>
</tr>
</table>

Container

BASKET, WIRE MESH CONTAINER Tag one visible piece near top or utilize label holder. If placards are available on two adjacent sides, identical labels shall be located on the placards.	
METAL BIN or TUB Tag one visible piece near top or utilize label holder. If placards are available on two adjacent sides, identical labels shall be located on the placards.	
PALLET BOX Identical labels shall be located on two adjacent sides.	
TELESCOPE or SET-UP CONTAINERS Identical labels shall be located on two adjacent sides of the outer box. Some applications may also require a label on the inside box.	
BUNDLE Identical tags shall be located at each end.	
BAG Place one label at the center of the bag face.	
ROLL Hang one tag 2 inches (51 mm) from end of material.	
RACK Tag one (1) visible piece near top or utilize label placard(s) on rack when available.	
BOX or CARTON Identical labels shall be located on adjacent sides.	

CARTONS on PALLET Identical Master Load or Mixed Load labels shall be used on adjacent sides.	
DRUMS, BARRELS or CYLINDERICAL CONTAINERS Identical labels shall be located on the top and near the center of the side.	
BALES Identical labels shall be located at the upper corner of an end and the adjacent side (wraparound label acceptable).	
SINGLE COIL Identical labels shall be located on the inside and outside of each coil.	
SLIT COILS Identical labels shall be used. Locate one on the inside of each coil and one on the outside of each coil.	
TUBING and BARS Identical labels shall be used. Attach one to each end of the bundle.	
SHEETS/CUT LEGNTHS/BLANKS Identical labels shall be located on two adjacent sides.	
RETURNABLE CONTAINERS Refer to applicable AIAG standards.	