

Electronics Industry Pallet Specification

Written By:

The EIPS Task Group

A subcommittee of the Institute of Packaging Professionals
Task Group Website: <http://packaging.hp.com/eips>

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1.0 Foreword

This document has been jointly authored by members of the Electronics Industry Pallet Specification (EIPS) Task Group. This special interest group was formed in November, 1998 and set-up as a branch of the Protective Packaging for Electronic Equipment (or P²E²) subcommittee which itself is a branch of the Institute of Packaging Professionals. Refer to these websites for more details: <http://packaging.hp.com/eips> <http://www.iopp.org>

2.0 Objective

This document is meant to establish “standardized” parameters and guidelines for usage by pallet designers and manufacturers when specifying and building material handling pallets for use in the electronics industry with primary emphasis at this time on the computer industry.

3.0 Purpose and Scope

The purpose is to reduce total supply chain costs by improving the quality and consistency of pallets used within the **computer industry** integrated supply chain. It is intended that this will be achieved through the application of this VOLUNTARY specification by the organizations which are part of this supply chain; including, but not limited to :

Component Suppliers	→	Manufacturers and OEM's	→	Resellers, Distributors	→	Retailers	→	Reverse Logistics
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a. **Component Suppliers:** Companies which are key to the process since they are often the originator of the pallet that should be used throughout the pipeline. They ship parts, subassemblies, and/or finished goods to other manufacturers or direct to selling organizations.

b. **Manufacturers/OEMs:** These are the major computer manufacturers or companies contracted by them known as “Original Equipment Manufacturers” (OEM's) or “Third Party Manufacturers” (3PM's) which manufacture finished goods from parts either supplied to them or built themselves.

c. **Resellers / Distributors:** Organizations who buy large quantities of goods from Manufacturers and may reconfigure per customer order.

d. **Retailers:** Organizations that receive finished goods from manufacturers mostly in customer ready condition.

e. **Reverse Logistics:** Organizations involved in lease returns, salvage operations, and so on. These organizations may be branches of the large manufacturers or vended operations controlled by them. They may be involved in the end-of-life management of the pallet, reuse, or recycling and so on.

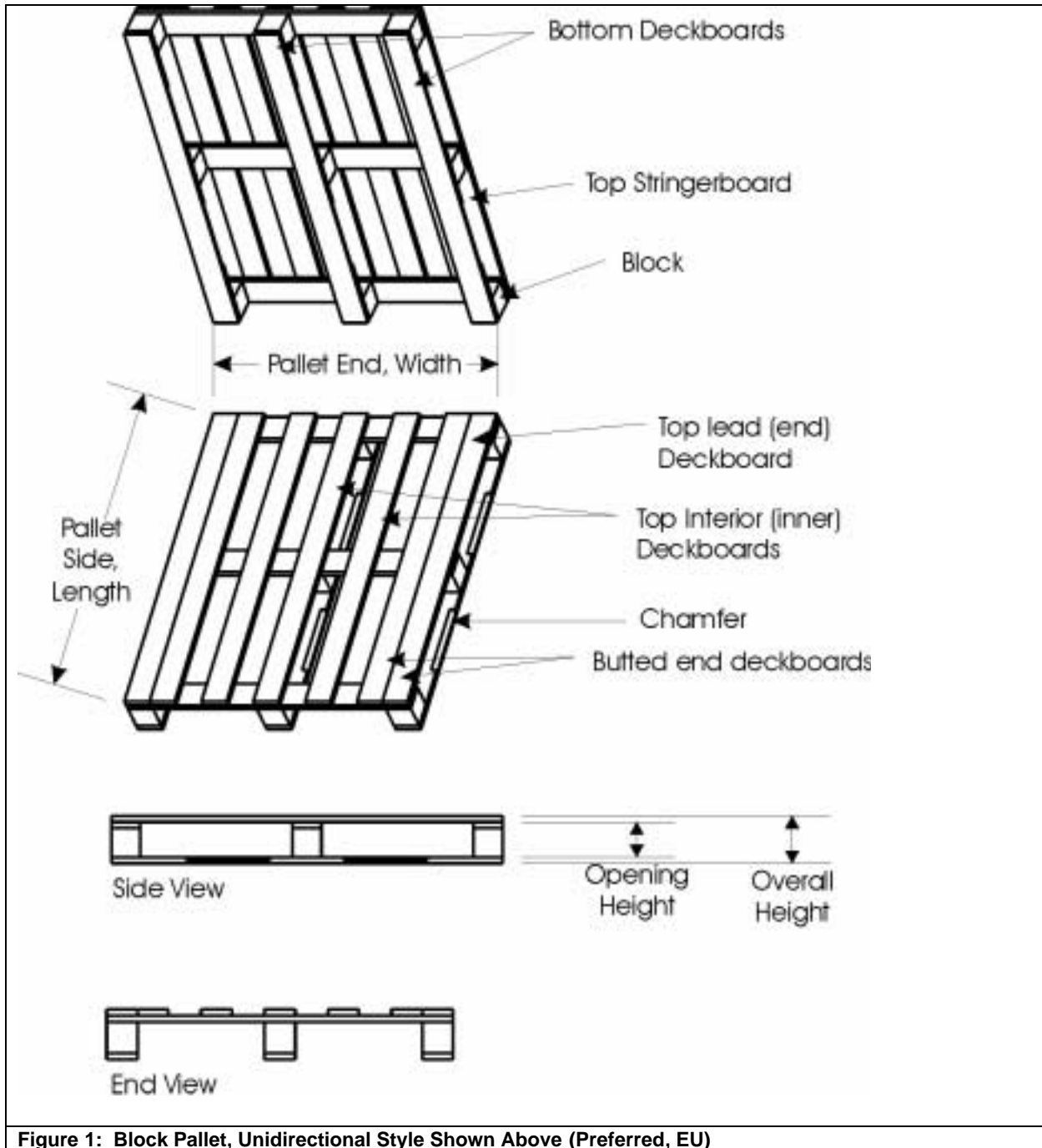
4.0 Pallet Design Requirements

Table 1: Preferred Sizes and Configurations (Stringer Board dimension is listed first)*

Preferred (EU): Unidirectional base, Non-Reversible, Full 4-way entry Block Style (Ref. Figure 1),	Preferred (non-EU): Full Perimeter base, Non-Reversible, Full 4-way Entry Block Style (Ref. Figure 2)	Not Preferred: Unidirectional, Non-Reversible, Partial 4-way entry Stringer Style (Ref. Figure. 3)
0.8 x 1.2m “Euro Pallet Style” or 1.0 x 1.2m “Industrial Pallet”	1.0 x 1.2m “Industrial Pallet”	1.2 x 1.0m (do NOT use for Europe)
* Users should confirm with their industry partners which configuration they prefer. Not all sizes and configurations will necessarily be acceptable to any given recipient.		

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Custom Sizes: Other deck dimensions are approved providing that these dimensions reduce the cost of the supply chain by ensuring better fit to transport containers relative to the size of packaging placed on the pallets and if performance attributes match that of the standard sizes and configurations listed above. Custom pallets should be reserved for situations wherein the pallet load consists of a single package or product or for point to point closed loop situations managed separately from the International Pool System. For bulk shipping or general purpose palletization the preferred sizes highlighted above should be used. Industry partners are to accept shipments from each other on certified standard pallets of the preferred size and style without question.



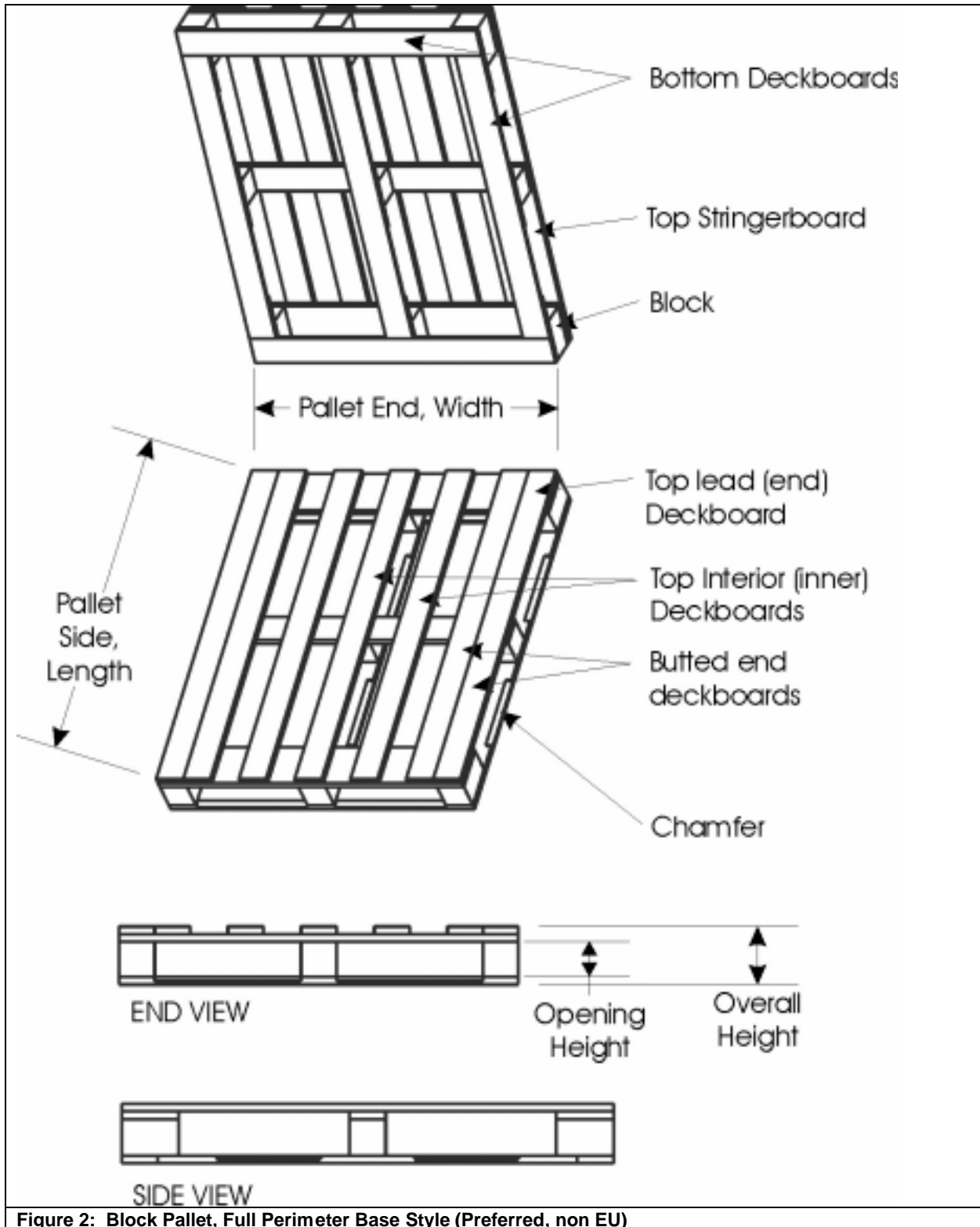


Figure 2: Block Pallet, Full Perimeter Base Style (Preferred, non EU)

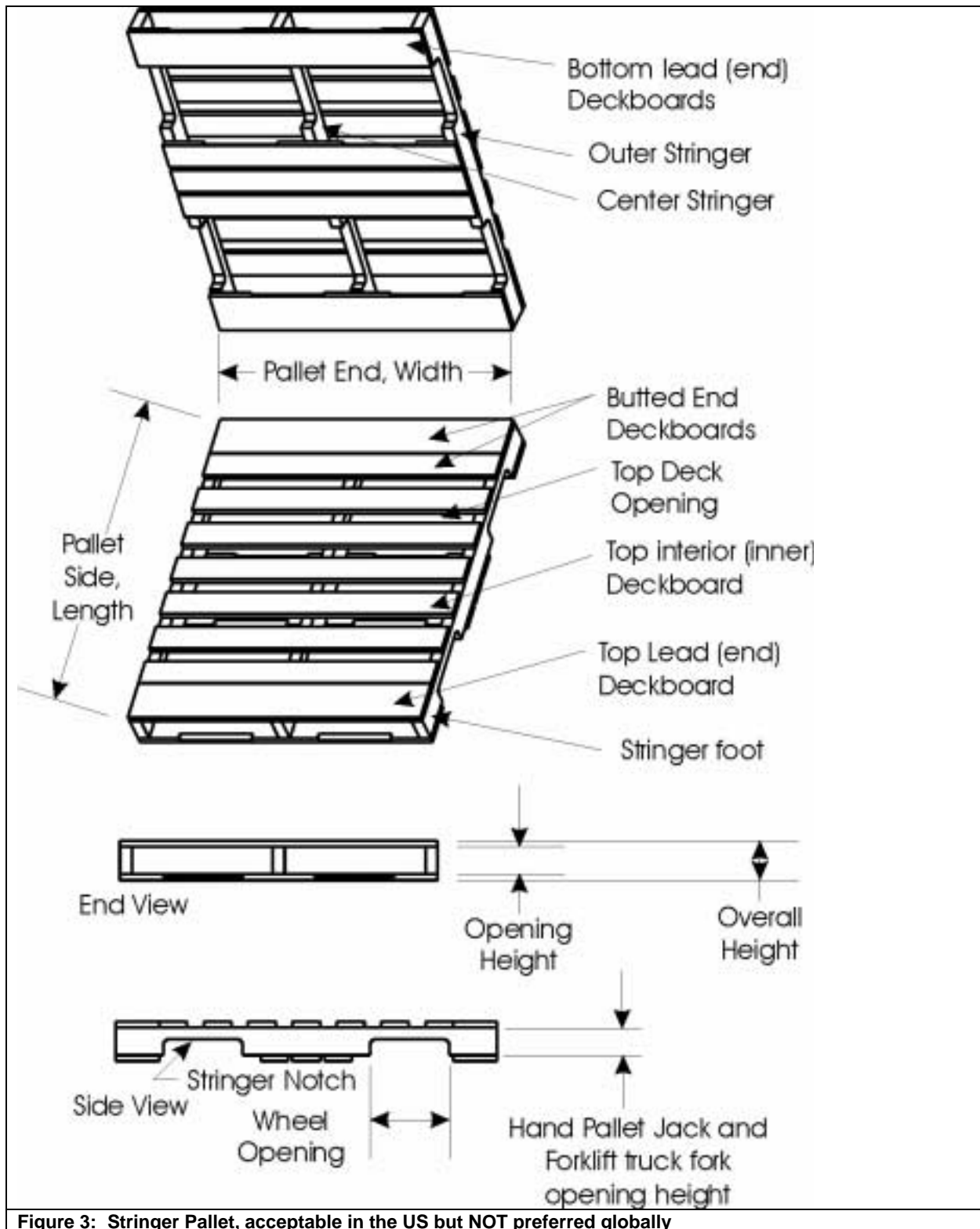


Figure 3: Stringer Pallet, acceptable in the US but NOT preferred globally

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4.1 Minimum Access Dimensions for Lift Equipment

Pallets should be designed to ensure maximum flexibility with regard to mechanical equipment used for lifting and moving the load. Fork lifts, motorized pallet jacks, and manual pallet jacks should all be able to lift and move the load. See Table 2 on page 8 for detailed dimensions.

4.2 Expendable vs. Reusable Pallets

It is preferred that pallets be designed to ensure reusability. The pallet should be capable of surviving at least one complete cycle through the supply chain, not merely one trip to your customer. It is the intention of this committee that pallets be designed in such a manner that scrap pallets are minimized and that the vast majority of pallets be standard such that they can be reused with confidence. Arrangements for the return and reuse of standard and custom pallets should be made where economical and all partners to this effort should be willing to cooperate on a reverse logistics process where appropriate.

4.3 Preferred Materials

While non-manufactured wood continues to be the predominant choice for pallets, there are compelling reasons to consider other types of materials for pallet construction. This becomes even more critical due to growing concerns regarding pest migration. The EIPS proposal is to implement a worldwide reusable pool system. A performance level specification for pallets is used rather than a material specification because the committee does not wish to exclude particular material. Total program costs will be viewed as the key measure for comparison purposes.

4.4 Treatment for Infestation Requirements

If any amount of non-manufactured wood is used in the construction of the pallet, it must meet the following minimum requirements in order to be certified for International use. These requirements may be superseded by International Regulations. It should be noted that use of slipsheets for all trans-ocean shipments eliminates the costs and needs for pallet treatment and helps progress towards regional pallet pooling systems. These requirements are intended to match the proposed "International Standards for Phytosanitary Measures" being drafted by the International Plant Protection Convention (IPPC). This specification will be reviewed and revised as necessary after that standard is released. Refer to USDA / APHIS websites for current information.

- **Coniferous Species**, trade term "Softwood": If the pallet contains any amount of non-manufactured coniferous wood, those components must be heat treated to a minimum core temperature of 56C (133F) for a minimum of 30 minutes.

Note: Pallets constructed in this way would also get the "HT" marking (ref. Section 8.0).

- **Non-Coniferous Species (ref. "NC")**, trade term "Hardwood": If the pallet contains any amount of non-manufactured non-coniferous wood, those components must be heat treated to a minimum core temperature of 56C (133F) for a minimum of 30 minutes. See NC portion of section 8.0 for exceptions.

Note: Pallets constructed in this way would also get the "HT" marking (ref. Section 8.0).

4.5 Weight

The minimum weight within the established performance criteria is the goal. 23 kg (50 lbs.) is a target maximum weight for the 1.0m x 1.2m and 0.8m x 1.2m sizes.

5.0 Pallet Certification Process

Pallets intended for general usage with the electronics industry which meet the design and performance parameters defined herein may be certified by the pallet manufacturers, and may be marked as such. Nonstandard pallets must not be marked as being certified.

Prior to usage of any certification markings on a given pallet design, detailed specifications, drawings, and test results for pallet to be certified shall be submitted to EIPS for approval.

EIPS Specification 12-21-01.pdf

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Pallets should be submitted to one of the approved testing facilities recognized by the EIPS group. The bottom pallet of a pallet stack is often damaged during the rigors of transportation when shipping to test facilities, and therefore it is highly recommended that the bottom pallet of each stack be expendable or an extra sample.

The following are the number of sample pallets recommended for testing;

5.1 Prototype Testing

Three (3) samples should be submitted for preliminary tests of racking, conveyor, and corner drop performance. These are typically the most severe tests for most pallet designs. It is suggested that successful prototype testing be completed before proceeding to certification testing.

5.2 Certification Testing

Thirty-five (35) samples should be submitted. This represents 3 replicate tests for each of the test procedures outlined in this protocol.

NOTE: The Pallet Design System (PDS) is acceptable instead of sample testing for all wooden pallets.

Approved Testing Facilities

Virginia Tech University Center for Unit Load Design Blacksburg, Virginia John Clarke, Director 540-231-5370 E-mail: unitload@vt.edu http://www.unitload.vt.edu/	San Jose State University College of Applied Sciences San Jose, California Albert Elboudwarej , Ph.D. 408-924-3210 http://www.sjsu.edu/depts/packtech/index.htm
Michigan State University School of Packaging East Lansing, Michigan S. Paul Singh, Ph.D. 517-355-9580 E-mail: singh@msu.edu http://www.pkg.msu.edu	Clemson University Department of Packaging Science Clemson, SC 29634-0370 Jorge Marcondes, Ph.D. Scott Whiteside, Ph.D. (864) 656-6937 (864) 656-6246 Jorgem@clemson.edu wwhtsd@clemson.edu http://virtual.clemson.edu/groups/pkgscil/

6.0 Environmental Considerations

In concert with the generally accepted environmental hierarchy of “reduce, reuse, recycle” the pallets should incorporate a relatively high degree of recycled content, preferably post-consumer. Secondly, the designs should be capable of reuse. Lastly, the designs should consider the ultimate disposal and recycling of the materials used to construct the pallet. Avoid permanent commingling of dissimilar materials unless it can be demonstrated that it will not inhibit recycling of the pallet at the end of its useful life. Pallet manufacturers are expected to demonstrate “product stewardship” and be an active partner in the eventual recovery and recycling of the pallets.

The construction or manufacturing processes shall not include the use of CFC’s, HCFC’s, or halogenated flame retardants, or intentionally introduced heavy metals (mercury, lead, hexavalent chromium, or cadmium). The total composition must not include in excess of 100ppm (0.01%) of incidental amounts of these heavy metals.

Although Chemical Pressure Impregnation (CPI) is approved by international plant protection organizations to mitigate the threat of infestation, pallets constructed of such materials ARE NOT in compliance with this specification. The reason is that such treatment presents a secondary hazard to the environment since the chemicals used in this process (copper chromated arsenate) render the wood unsafe to burn or recycle.

7.0 Minimum Performance Requirements

The EIPS specification is currently based on performance, and not prescriptive, requirements. Both expendable (EIPS-1) and multiple use (EIPS-2) pallets can be certified as EIPS pallets. All EIPS certified pallets must meet the core performance requirements outlined in Table 2. Multiple use pallets must also meet the durability requirements in Table 3. Expendable pallets must meet the durability requirements in Table 4. Wood pallets may be certified to the EIPS specifications based on analysis with the Pallet Design System (PDS) computer program. Non-wood pallets and pallets that cannot be analyzed through PDS shall be certified to the EIPS specifications based on physical testing performed by approved laboratories at the expense of the pallet manufacturer (see section 5.0).

Table 2: Core Requirements: Applicable to all standard pallets

		1.0 x 1.2m	0.8 x 1.2m
1	Pallet Size	1.0 x 1.2m	0.8 x 1.2m
2	Preferred Base Configuration	Unidirectional	Unidirectional Only
3	Accessibility (Fork Lifts, Pallet Jacks)	Full 4-way Entry	Full 4-way entry
4	Top Deck Coverage	60% min.	60% min.
5	Bottom Deck Coverage	35% min.	35% min.
6	Minimum Vertical Clearance Under Top Deck per ISO-6780	95mm (3.75")	95mm (3.75")
7	Maximum Vertical Clearance Under Top Deck per ISO-6780	156mm (6.14")	156mm (6.14")
8	Maximum Width of Center Posts or Stringers per ISO-6780	160mm (6.3"), 100mm (4" preferred if possible)	160mm (6.3"), 100mm (4" preferred if possible)
9	Minimum Width between outer Posts/Stringers per ISO-6780	720mm (28.3")	720mm (28.3") on 1.2m 590mm (23.2") on 0.8m
10	Maximum Overall Height per ISO-6780	165mm (6.5")	165mm (6.5")
11	Target Maximum Gross Weight	22.7kg (50 lbs.)	22.7kg (50 lbs.)
12	Fasteners (if used)	Meet minimum criteria in ASME, MH1, part 3	Meet minimum criteria in ASME, MH1, part 3
13	Racking Performance per ASTM D1185 (Racked across length and width)	454kg (1000 lbs.), Max. Deflection 13mm (0.5")	454kg (1000 lbs.), Max. Deflection 13mm (0.5")
14	Forklift Tine Performance per ASTM D1185	454kg (1000 lbs.), Max. Deflection 13mm (0.5")	454kg (1000 lbs.), Max. Deflection 13mm (0.5")
15	Static Stacking Performance (Warehouse) per ASTM D1185. Stacked 4 high, 454kg (1000 lbs) per pallet.	1800 kg (4000 lbs.), Max. Deck Deflection 6mm (0.25")	1800 kg (4000 lbs.), Max. Deck Deflection 6mm (0.25")
16	Conveyor Performance per ASTM D1185	454kg (1000 lbs.), Max. Deck Deflection 6mm (0.25")	454kg (1000 lbs.), Max. Deck Deflection 6mm (0.25")
17	Coefficient of Friction: Top Deck with Cartons	0.40 minimum (VTU Test)	0.40 minimum (VTU Test)
18	Coefficient of Friction: Under Deck with Forks	0.40 minimum (VTU Test)	0.40 minimum (VTU Test)
19	Coefficient of Friction: Bottom deck on Steel	0.40 minimum (VTU Test)	0.40 minimum (VTU Test)
20	Coefficient of Friction: Stacked Empty Pallets	0.40 minimum (VTU Test)	0.40 minimum (VTU Test)
21	Inertness (related to Infestation Problems): Preference is for constructions not requiring chemical treatments or APHIS certifications to comply with international pest regulations	Required	Required
22	Fire Safety (related to Fire Marshal Reqmts): Preference is for constructions not requiring unusual facilities requirements for fire safety. This can be an issue with plastic pallets. Ref. Factory Mutual 4995	a) No Halogenated Flame Retardants b) Identify special storage requirements or commodity classifications if applicable.	a) No Halogenated Flame Retardants b) Identify special storage requirements or commodity classifications if applicable.
Note: The suggested load for all strength tests is corrugated boxes (400x600mm) to fill out the pallet completely and stacked 5 layers high. Dead loads may be used for the stack test.			

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Table 3: Durability Requirements for Reusable (Pool Type) Pallets (EIPS-2)

Wood Pallets assessed with the PDS computer program must meet a durability ratings shown below which is equivalent to 10 or more trips (or 50 individual handlings) to first repair. Non-wood pallets or those not assessed with the PDS program must meet the requirements in b, c, and d.

Requirement	1.0m x 1.2m	0.8m x 1.2m
a. Durability Rating (PDS score if used)	25 or more	25 or more
b. Corner Drop per ASTM D1185	12 drops at 1m (40"), Maximum Diagonal Deformation of 1.5%	12 drops at 1m (40"), Maximum Diagonal Deformation of 1.5%
c. Tine Tip Impacts on Block or Stringer Ends per ASTM D1185	3 impacts at 30 cm (12"), no failures	3 impacts at 30 cm (12"), no failures
d. Tine Heel Impacts on Lead Edges per ASTM D1185	3 impacts at 120 cm (48"), no failures	3 impacts at 120 cm (48"), no failures
Notes: 1. The suggested load for all strength tests is corrugated boxes (400x600mm) to fill out the pallet completely and stacked 5 layers high. Dead loads may be used for the stack test. 2. The "European Pool Pallet" (i.e. "Euro Pallet", 0.8x1.2m) meets the physical performance requirements of this specification and may be used whenever an EIPS-2 pallet of that size is specified. However, additional treatments may be required if intending to use these pallets for exports.		

Table 4: Durability Requirements for Expendable Pallets (EIPS-1)

Wood Pallets assessed with the PDS computer program must meet a durability rating of between 1 and 19 which is equivalent to 1 to 9 trips (or less than 50 individual handlings) to first repair. Non-wood pallets or those not assessed with the PDS program must meet the requirements in b, c, and d.

Requirement	1.0m x 1.2m	0.8m x 1.2m
a. Durability Rating (PDS score if used)	<25	<25
b. Corner Drop per ASTM D1185	3 drops at 1m (40"), Maximum Diagonal Deformation of 1.5%	3 drops at 1m (40"), Maximum Diagonal Deformation of 1.5%
c. Tine Tip Impacts on Block or Stringer Ends per ASTM D1185	3 impacts at 15 cm (6"), no failures	3 impacts at 15 cm (6"), no failures
d. Tine Heel Impacts on Lead Edges per ASTM D1185	3 impacts at 60 cm (24"), no failures	3 impacts at 60 cm (24"), no failures
Note: The suggested load for all strength tests is corrugated boxes (400x600mm) to fill out the pallet completely and stacked 5 layers high. Dead loads may be used for the stack test.		

Table 5: Pallet Use Conditions, applicable to all standard pallets

Requirement	1.0m x 1.2m	0.8m x 1.2m
Temperature (Distribution Environment) ¹	-25C to +45C (-13F to +113F)	-25C to +45C (-13F to +113F)
Stacking (Dynamic / In Transit)	2.5m (100 inches)	2.5m (100 inches)
Stacking (Static / Warehouse Storage)	5.0m (200 inches)	5.0m (200 inches)
Transportation Modes	Air, Ocean, Truck	Air, Ocean, Truck
Food Contact / Refrigerated Storage	No	No
Material Handling: Conveyors	Yes	Yes
Material Handling: Cranes / ASRS	Yes	Yes
Material Handling: Lift Equipment	Yes	Yes
Warehouse Storage: Open Racks	Yes	Yes
Note: ¹ Temperatures ranging from -25C to -40C (-13F to -40F) or from 45C to 60C (113F to 140F) may be encountered at rare times in the distribution network. However, for purposes of practicality testing will not be required at these extremes. Users requiring testing to those extremes must conduct those tests separate from EIPS Certification testing.		

8.0 Pallet Marking Procedures

This marking procedure shall be used to mark pallets certified as meeting this specification . This implies the certification markings for treated materials meet all regulatory requirements associated with their use. For instance, materials marked as heat treated have in fact been treated to the specified minimum temperature and duration per regulatory requirements (56C for 30 minutes). Furthermore, the supplier making this assertion can support it with auditable documentation from the treatment facility as required. If governmental regulations are released which conflict with this section then compliance with the regulation shall take precedence.

Scope	Pallets made from any amount or any combination of manufactured or non-manufactured wood components. See also "EIPS Certification Logo" for pallets meeting this specification but which are not made from wooden components.
Objectives	To implement a common marking procedure globally and to identify and use only approved and properly treated materials as required for exports to regulated countries.
Marking Procedure	The marking shall consist of the pest free symbol where justified (HT only at this time), the material classification (or bug free symbol), the country of manufacture, and the supplier designation. Mark the pallet, skid, crate, or other wooden packaging assembly a minimum of one time on an exterior vertical surface. Duplicate information on the opposite exterior surface is recommended. Use 19 mm (0.75") minimum characters. Printing may be done with ink jet printing, heat stamping, paint stencil, or other similar permanent and indelible method. The default color should be black or other maximum contrasting color if appropriate. Do not use red or orange colors since these colors are used with labeling of dangerous goods. If vertical surfaces provide insufficient space for the markings then scale the characters accordingly or apply them to a top horizontal surface provided that at a minimum the material classification and pest free symbol (if appropriate) is repeated on two opposite vertical surfaces. It is also allowed to print the information on multiple lines or break up the information, for instance spread across three separate blocks on a block style pallet. See Figure 6 for an example.

Material Classification Requirements and Markings

A given item shall only carry ONE classification regardless of how many different materials are included in the construction. Follow this list in sequence, the item should carry the marking of the first scenario that matches exactly. Very careful consideration must be given for assemblies which contain a mixture of materials as explained below. For instance, even if the majority of the construction consists of MWPM components, the marking shall relate to the non-manufactured wood component that exists (if any) and any permanent treatment (if any) that was done to it.


Untreated Coniferous or if Material Composition is Unknown		
XX	Material Composition Requirements	Example
Must Contain	ANY amount of non-manufactured coniferous wood components which have definitely been untreated or the treatment history is unknown. Example: Old pallets or crates or those which have been refurbished with a variety of reused pallet components.	<p style="font-size: 2em; color: blue;">No Marking</p> <p>The pest free symbol must <u>not</u> be used for untreated coniferous or materials in which the composition cannot be confirmed.</p>
May Contain	Any amount less than 100% of total composition of treated non-manufactured wood (coniferous or non-coniferous), MWPM, and/or non-wooden material.	
Must <u>Not</u> Contain:	Not Applicable	

Important: Painted over symbols or no symbols at all are signals that the particular item requires additional treatment prior to export or must not be used for export.

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Non-Coniferous, Untreated		
NC	Material Composition Requirements	Example
Must Contain	ANY amount of non-manufactured, <u>untreated and unprocessed</u> non-coniferous wood (or "hardwood") or leaf bearing type species of wood. Examples: Oak, Alder, Aspen, Maple, etc. . These are subject to Asian Longhorned Beetle infestation.	<div style="border: 1px solid black; padding: 5px; display: inline-block; text-align: center;"> No Symbol </div> NC-?? Substitute Country Initials for ?? In the marking above (ex. "US"). The pest free symbol must <u>not</u> be used for untreated non-coniferous wood.
May Contain	Any amount of MWPM and/or any heat treated non-coniferous wood and/or non-wooden material..	
Must Not Contain:	Any amount of coniferous wood	
Note: Although this specification seeks to achieve global compliance, untreated non-coniferous wood is still acceptable to the majority of countries and therefore will be allowable for those shipments. This exception will be reviewed after release of the proposed International Plant Protection Convention (IPPC) harmonized standard which is expected to be approved in March 2002. Reminder: Shipments of NC to the US from China must still be treated (heat or fumigation).		

Heat Treated Coniferous, Non-Heat Treated Non-Coniferous		
HTC-NHTNC	Material Composition Requirements	Example
Must Contain	ANY amount of non-manufactured heat treated coniferous wood mixed with any amount of non-heat treated non-coniferous wood.	US-??? HTC/NHTNC The pest free symbol must <u>not</u> be used for constructions which contain any amount of non-heat treated NMWP.
May Contain	Any amount less than 100% of total non-coniferous composition of heat treated NC, MWPM or non-wooden material.	
Must <u>Not</u> Contain:	Any amount of non-heat treated coniferous wood.	
Note: Substitute the assigned facility number for the ??? In the marking shown.		

Coniferous and/or Non-Coniferous, Heat Treated		
HT	Material Composition Requirements	Example
Must Contain	ANY amount of properly heat treated non-manufactured wood which by definition has been heated to a core temperature of at least 56C (133F) for a minimum of 30 minutes and that documentation certifying that fact has been provided by the treatment facility to the package/pallet manufacturer and can be traced to the production of that specific package, pallet, and so on.	 US-??? HT (Agency Logo) The pest free symbol must be used for heat treated wood whether coniferous or non-coniferous or a combination of these two only when this stamp has been provided by an authorized grading agency. Omit the bug free symbol and agency logo if an official stamp has not been provided.
May Contain	Any amount of MWPM and/or non-wooden material.	
Must Not Contain:	Any amount of untreated non-manufactured wood (Coniferous or Non-Coniferous)	
Note: Substitute the assigned facility number for the ??? In the marking shown.		

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Note: There is no marking for fumigation at this time. However, the proposed IPPC standard does acknowledge the use of Methyl Bromide fumigation as an equivalent measure to heat treatment. If fumigation is done it should be marked "MB" in place of "HT". Some countries may require certificates of fumigation generally issued by the fumigator and endorsed by a Government approved Agency (not required by the IPPC standard). Also, there is no marking provided for Chemical Pressure Impregnation (CPI or CI) since this material is not approved by the EIPS task group and is not a recognized treatment per the IPPC standard.

Note: Use of kiln dried lumber is acceptable provided that it meets the temperature and duration requirements (56C for 30 minutes) to meet the definition of "heat treated". Such materials are usually mill stamped "KD-HT" or "HT". Dry lumber alone is not a reliable indication of proper heat treatment nor are materials mill stamped "KD".

Manufactured Wood Packaging Material		
MWPM	Material Composition Requirements	Example
Must Contain	ANY amount of manufactured / processed wood components. Example: A pallet or crate made with any amount of Oriented Strandboard (OSB), plywood, strawboard, masonite, particle board, paper overlaid veneer (POV) or combination of these. These all meet the definition of manufactured wood packing materials as defined by the Animal and Plant Health Inspection Service (APHIS). Such materials are NOT regulated.	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p style="text-align: center; margin: 0;">No Symbol</p> </div> <p style="font-size: 2em; margin: 0;">US-???</p> <p style="font-size: 2em; margin: 0;">MWPM</p>
May Contain	Any amount of non-wooden material.	Even though MWPM is pest free, the pest free symbol should <u>not</u> be used at this time because it is technically not a regulated material.
Must <u>Not</u> Contain:	Any amount non-manufactured wood of any type whether treated or not	
<p>Note: Substitute the assigned facility number for the ??? In the marking shown. .</p> <p>Note: Plywood/OSB/Masonite, and so on are considered "manufactured wood" because it has been processed under extreme heat and pressure. Assembling a pallet from cut lumber is not considered "manufactured" with regard to pest migration regulations.</p>		

Supplier / Mfg. Facility Designation	<p>Required: To identify the final assembly supplier of the pallet, package, crate and so on:.</p> <p>An official facility registration number (3 characters) provided by the National Plant Protection Organization (a Govt. Authorized Agency) must be used if available. If this process is not yet established in your country or location then one of the following should be used instead.</p> <ol style="list-style-type: none"> 1. A minimum 5 character abbreviation of the supplier's name... -or- 2. A minimum 3 digit abbreviation followed by 2 numeric digits to distinguish unique manufacturing facilities of that supplier. -or- 3. The supplier's logo if this can be easily distinguished. The logo can also be followed with a two (2) digit number to identify a specific facility of that supplier. -or- 4. The full name of the supplier if this can be accommodated in the space available. <p>The name shall be that of the final assembly location which built the pallet or package and shipped it for use. Take care to ensure that the code chosen does not resemble one of the material classifications.</p>
Part Number	<p>Required: The alphanumeric part number of the pallet (usually seven characters) which is specified by the pallet purchaser/user. The Part number should be 19 mm (0.75") characters.</p>

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Engineering Change Number	Optional: The six digit alphanumeric "EC" number which may distinguish a different design for items with the same part number. This may be important to some locations and it is their prerogative to specify it if they wish. If the EC level is included, use the prefix "EC" in front of the number to identify it. The EC number may be smaller in size using 13mm (0.50") characters.
Reusable Pool System Symbol	Optional / Restricted: For instance, the familiar "EUR" symbol associated with the European pool system pallets (such as "Euro Pallets") or any other similar program previously established or future program. This marking to be placed as specified by that system. Only pallets meeting the design and construction requirements of the marked pool system are to carry that symbol. Note: Unless the material type and treatment is marked on a "Euro Pallet" it should not be exported to a regulated country.
EIPS Certification Symbol / Logo	Required: Graphical symbol provided by the EIPS committee of the Institute of Packaging Professionals (IoPP). This applies to all pallets tested and certified to this specification regardless of material composition.



Figure 4: EIPS-1 Symbol (Expendable)



Figure 5: EIPS-2 Symbol (Reusable)

Example Marking of a Wooden Block Style Pallet

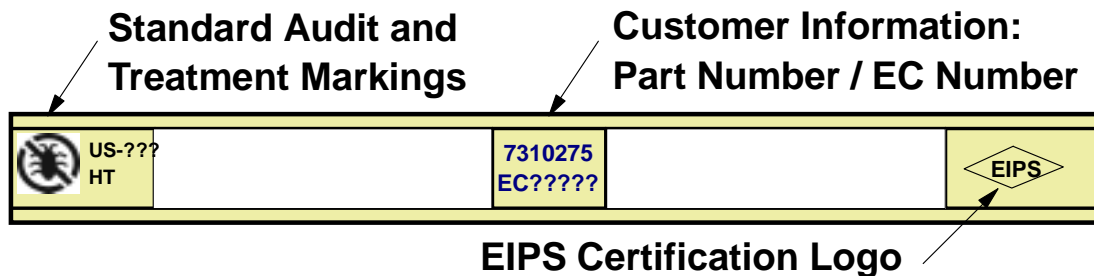


Figure 6: The marked Information is required on **at least** one exterior **vertical** surface as shown. Duplicate information on the opposite side is recommended but to date has not been mandated by the regulations.

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Pest Free Symbol

The following symbol is the approved marking for regulated non-manufactured wood packing materials (NMWP) that have been properly treated by an authorized agent. Its appearance on a pallet indicates full compliance to ALL international regulations aimed at preventing pest migration. It shall be printed as large as practical but at least **38 mm** (equivalent to the total height of the text portion of the markings). The design has been optimized for stenciling purposes but the same artwork should be used regardless of the method of application.



Important Reminder:

This symbol is NOT to be used at this time for non-regulated materials even if they are inherently pest free.

Points of Emphasis

1. Aside from the EIPS certification symbol, do not mark pallets which are clearly not of wooden origin unless that assembly does have wooden components somewhere else in the assembly. For instance, if a package consisted of a plastic pallet and a plywood crate on top of it then the appropriate wood classification marking should be placed on a vertical surface of the wooden crate portion, not the plastic base pallet. It is not necessary to mark corrugated or plastic items.
2. Completely paint over preexisting markings if the species, origin, or treatment cannot be affirmed. By default, anything marked this way or unmarked cannot be used for export to a regulated country.
3. If refurbishing a pallet which has already been marked, obliterate, cover up, or remove the original marking and then instruct suppliers to turn this side to the inside so that it will not likely be observed. Any marking appearing on an inside surface is not to be used for inspection or operational purposes.

References

USDA's APHIS Web site: <http://www.aphis.usda.gov/ppq/swp>
National Wooden Pallet and Container Association <http://www.nwpc.com>
Draft IPPC Standard: http://www.aphis.usda.gov/ppq/pim/standards/WoodPack_rev2.PDF

9.0 References

This is a summary list of referenced standards in this document.

Document Number	Description / Title
ISO 3166	Codes for the Representation of Names of Countries
ISO 6780	Flat Pallets for Materials Handling - Principle Dimensions and Tolerances
ASTM D1185	Pallets and related structures Employed in Materials Handling and Shipping
Factory Mutual 4995	Commodity Classification of Idle Plastic Pallets (May 1992)
Legend / Sources:	
ISO = International Organization for Standardization (http://www.iso.ch), ASTM = American Society of Testing and Materials (http://www.astm.org) Factory Mutual Insurance (http://www.fmglobal.com)	

10.0 Related Publications

This is a list of other prominent publications related to pallets which may be useful to users of this specification.

Document Number	Description / Title
ISO 3676	Packaging -- Unit Load Sizes -- Dimensions
ISO 3394	Dimensions of Rigid Rectangular Packages, Transport Packages
ASTM F680	Standard Test Method for Nails
JIS Z 0161	Dimensions of Unit Load Sizes
UIC 435-2	Euro Pallet Specification (Copyright by Intl. Union of Railways 16, rue Jean Rey 75015 Paris France)
ASME MH1	Pallets, Slip Sheets, and Other Bases for Unit Loads
ASME MH1, Part 1	Definitions of Terminology Covering Pallets and Related Structures
ASME MH1, Part 2	Sizes of Wood Pallets
ASME MH1, Part 3	Wood Pallets
ASME MH1, Part 4	Export Pallets
ASME MH1, Part 8	Slip Sheets
ASME MH1, Part 9	Wood Pallets for US Government Use
Factory Mutual 8-24	Loss Prevention Data -- Idle Pallet Storage (September 1992)
Legend / Sources:	
ISO = International Organization for Standardization (http://www.iso.ch), ASTM = American Society of Testing and Materials (http://www.astm.org) ANSI = American National Standards Institute, (http://www.ansi.org), ASME = The American Society of Mechanical Engineers, (http://www.asme.org), JIS = Japanese Industrial Standard, 1-24, Akasaka 4, Minato-ku, Tokyo 107 Japan DIN = Deutschland Institute for Normalization (Germany) EPAL = European Pallet Association (http://www.epal-pallets.org/index.htm) Factory Mutual Insurance (http://www.fmglobal.com)	

11.0 Terminology

Following are common terms used in the pallet industry which may or may not be included in this specification.

Term	Definition
Banding Notch	See "strap slot"
Block	Rectangular, square, or cylindrical deck spacer, often identified by its location within the pallet -- corner block, end block, edge block, inner block, center or middle block
Block Pallet	A type of pallet with blocks between the pallet decks or beneath the top deck
Butted Deck board	An inner deck board placed tightly against an adjacent lead deck board.
Bottom Deck	Assembly of deck boards comprising the lower, load bearing surface of the pallet.
Captive Pallet	A pallet intended for use within the confines of a single facility, system or ownership; not intended to be exchanged.
Chamfered Deck boards	Deck boards with edges or one or two faces beveled, either along the full or specified length of board or between the stringers or blocks, allowing easier entry by pallet jack wheels.
Closed Distribution System	Shipping system restricted to moving goods between specified plants and facilities.
Coniferous Wood	Derived from coniferous species of wood which are needle bearing trees such as Pine, Spruce, and Fir. These are also known in the trade as "softwoods" even though it has nothing to do with wood density. Many coniferous species are susceptible to infestation by the pinewood nematode.
Non-Coniferous Wood	Derived from non-coniferous (or deciduous) species of wood which are broadleaf bearing trees such as Oak, Aspen, Maple, Alder, and Poplar. These are also known in the trade as "hardwoods" even though it has nothing to do with wood density. Many hardwoods are susceptible to infestation by wood boring insects such as the Asian Long horned Beetle.
Deck	One or more boards or panels comprising the top or bottom surface.
Deck Mat	Assembly of deck boards and stringer boards, forming the deck of a block pallet.
Deck board	Element or component of a pallet deck, oriented perpendicular to the stringer or stringboard.
Deck board Spacing	Distance between deck board supports (stringers, stringer boards, or blocks)
Deflection	The amount of deformation or bending in a pallet or pallet component under load
Double Face Pallet	A pallet with top and bottom decks
Drive Screw Nail	Helically threaded pallet nail
Engineered Wood	Products made from processed or manufactured wood. For instance, plywood and oriented strand board. Although made from wood these are not considered "non-manufactured wood" with regard to quarantine regulations.
Exchange Pallet	A pallet intended for use among a designated group of shippers and receivers where ownership of the pallet is transferred with the ownership of the unit load; common pool pallet.
Expendable Pallet	A pallet designed for a single trip to the receiver wherein it is disposed ("one way").
Fastener	A mechanical device for joining pallet components such as nails, screws, bolts, or staples.
Flush Pallet	A pallet with deck boards flush with the stringers or blocks along the sides of the pallet.
Fork Entry	Opening between the decks, beneath the top deck or beneath the stringer notch to admit forks.
4-Way Block Pallet	A pallet with openings at both pallet ends and along pallet sides sufficient to admit hand pallet jacks; full four-way entry pallet.
Free Span	The distance between supports in a warehouse rack.
4-way Entry (Full)	Implies that it is a block style vs. Stringer style pallet.
4-way Entry (Partial)	Implies that it is a stringer style pallet with fork notches in the stringers.
Full Perimeter Base	A pallet which has bottom deck boards on all four sides on the outside edges of the pallet. See also Unidirectional base.
Hand (wheel) jack opening	Space provided in the bottom deck to allow pallet jack wheels to bear on the floor.
Hardened Steel Nail	Heat treated and tempered steel pallet nail with a MIBANT angle between 8 and 28 degrees.

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Hardwood	An industry term meaning wood from non-coniferous or broad leaved species of trees. This does not mean that it is always harder than some coniferous (softwood) species.
Heat Treated	Implies that the wood has been heated to a specific core temperature and duration. 56C for 30 minutes is typically the minimum temperature and duration in order to be considered "heat treated". Note: "Kiln Dried" may or may not have achieved minimum temperature requirements to be considered heat treated; conversely, something that is heat treated is not necessarily "dry" (< 20% moisture).
Helically Threaded Nail	Helically (continuous spiral) threaded pallet nail. See also drive screw nail
Joint	Intersection and connection of components, often identified by location within the pallet as the end joint, center joint, and corner joint.
Kiln Dried	Implies that the wood has been dried in a kiln to a moisture content of less than 20% by weight. Usually this also means that the temperature achieved also meets heat treatment requirements but not necessarily.
Pallet Length	Refers to the stringer or stringboard (in block pallets) length; it also refers to the first dimension given to describe the pallet. I.e. 48" x 40", where 48" is the pallet stringer / stringboard length.
Manufactured Wood Packing Materials (MWPM)	Materials which by virtue of the way they are made are not pathways for pest migration. Examples: Plywood, oriented strandboard (OSB), paper overlaid veneer (POV), masonite, and particle board. Such materials are not regulated and are therefore compliant with international regulations aimed at preventing pest migration.
MIBANT Angle	The bend angle in a fastener shank when subjected to a MIBANT test.
MIBANT Test	Morgan Impact Bend Angle Nail Tester: a tool used in the lumber industry as an indication of impact bend resistance of nails and staples. See ASTM F680 "Standard Test Methods for Nails."
Non-Manufactured Wood Packing (NMWP)	All packing materials (pallets, crates, dunnage, and so on) that are made from any amount of dimensional lumber whether treated or not. Many countries require such materials to be heat treated, chemically treated, or fumigated to prevent pest migration.
Non-Reversible Pallet	A pallet with bottom deck board configuration different from the top deck and therefore should not be inverted for use.
Notch	Cutout in lower portion of the stringer to allow entry for the fork tine, usually 9" in length and 1-1.5" in depth.
Notched Stringer	A stringer with two notches spaced for fork-tine entry. A pallet made with these is considered a partial 4-way entry pallet.
Opening Height	The vertical distance measured between decks, or from the floor to the underside of the top deck, or from the floor to the top of the stringer notch.
Overall Height	The vertical distance measured from the floor to the top of the pallet.
Pallet Jack	Hand-propelled, wheeled platform, equipped with a lifting device for moving palletized unit loads.
Racked Across Deck boards	Maximum load carrying capacity and deflection of a pallet where the rack frame supports the pallet only at the ends of the deck boards.
Racked Across Stringers	Maximum load carrying capacity and deflection of a pallet where the rack frame supports the pallet only at the ends of stringers.
Recycling / Refurbishment	The process of repairing a discarded and salvaged pallet.
Returnable / Reusable Pallet	A pallet designed for multiple cycles requiring infrequent maintenance (Pool Pallets are returnable / reusable).
Reversible Pallet	A pallet with identical top and bottom decks.
Skid	A pallet having no bottom deck.
Softwood	An industry term meaning wood from coniferous or needle bearing species of trees. These are not necessarily softer or lower density than some hardwood species.
Solid Deck Pallet	A pallet constructed with no deck board spacing.
Solid Wood (see NMWP)	Implies that the wood is raw lumber and the processing done to it has been limited to one or more of the following -- dimensional cutting, debarking, heat treatments, chemical treatments, and kiln drying. New Term: Non-Manufactured Wood Packing
Span	The distance between stringer or block supports.
Strap Slot	Recess or cutout on the upper edge of the stringer or the bottom of the top deck board to allow tie-down or a unit load to the pallet deck with strapping / banding. Also called the banding notch.
Stringer	Continuous longitudinal solid or notched beam component of the pallet used to support deck components.

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Stringer board	In block pallets, the solid board member extending for the full length of the pallet perpendicular to deck board members and placed between deck boards and blocks. The length of the stringer board defines the length (or first) dimension of the pallet.
Two-way Entry Pallet	A pallet with unnotched solid stringers allowing entry only from two opposite ends.
Unidirectional Base	A pallet with bottom deck boards on two parallel outside edges and perhaps in the center and open to the floor on the adjacent sides. (typical of the "Euro Pallet").
Wing Pallet	A pallet which has deck boards which extend beyond the edge of the stringer.

See Separate File for Appendix A: EIPS Test Report Form (File Name: EIPS Spec Appendix A.doc)