

## IBM Plywood Pallet Specification

### PN 25P1098

(OD: 1000 mm x 1200 mm x 114 mm)

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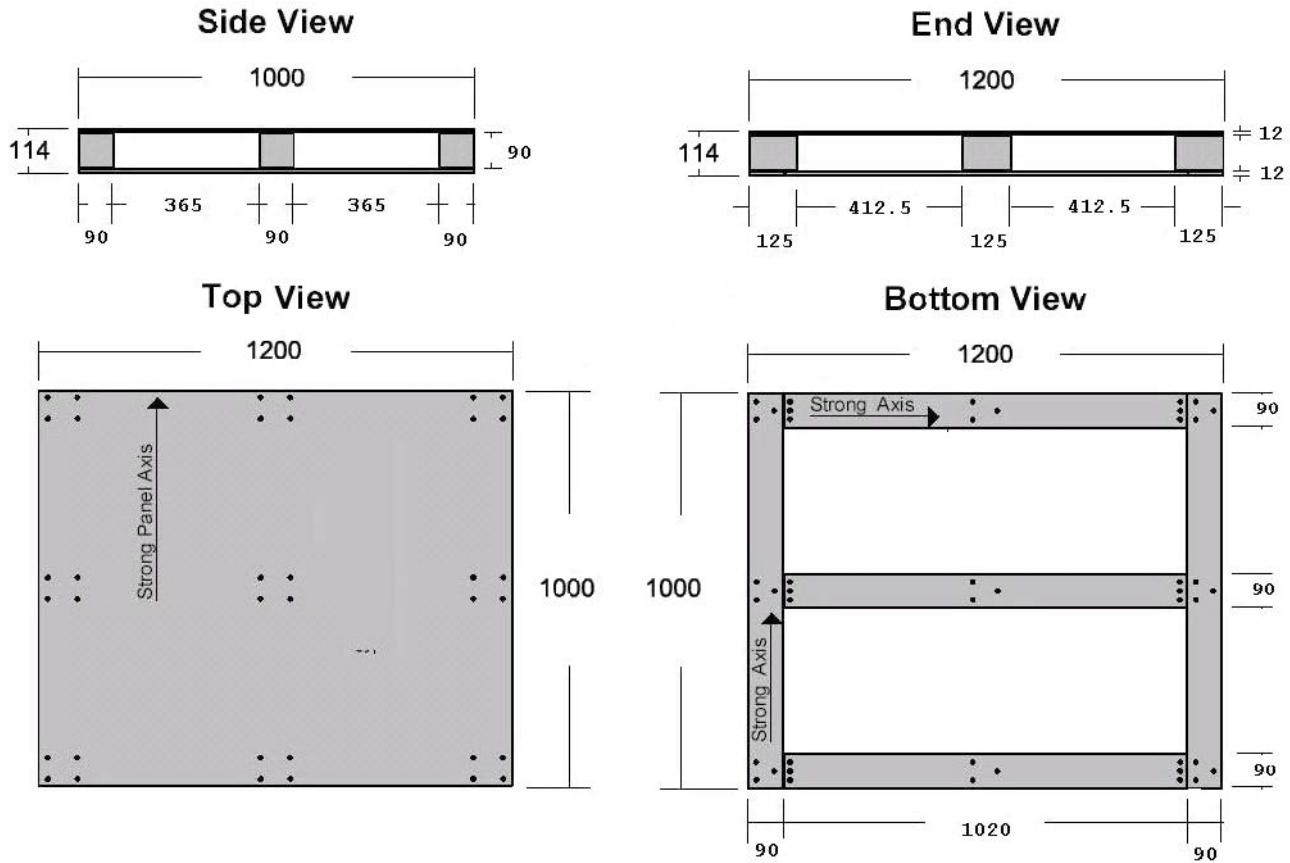
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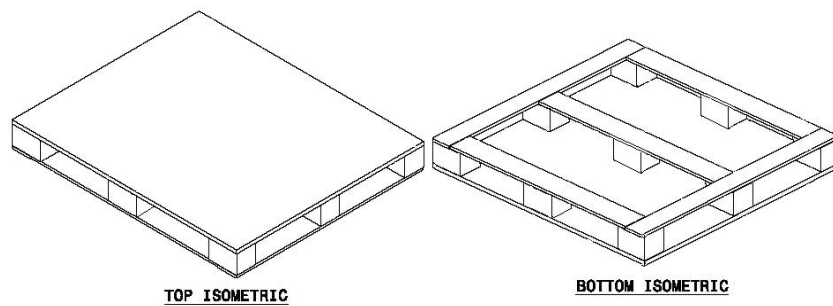
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## 1.0 PN 25P1098 Reference Drawings

### 1.1) Pallet OD: 1000 mm x 1200 mm x 114mm.



Arrows indicate the plywood grain direction (strong panel axis).



## 2.0 Pallet Material Specifications and Requirements

### 2.1) Pallet Design: Plywood Block Style, Full Perimeter, Full 4 way entry, Block Overlap Perimeter, New Manufacture.

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## 2.2) MATERIAL LIST and MINIMUM Requirements Table:

PN 25P1098 Footprint: 1000mm x 1200mm MATERIAL LIST and MINIMUM Requirements	Top Deck	Bottom Deck	Bottom Deck	Blocks **
Quantity per Pallet	1	2	3	9
Dim: Length x Width	1000 x 1200 (39.4" x 47.2")	1000mm x 90mm (39.4" x 3.5")	1020mm x 90mm (40.2" x 3.5")	125mm x 90mm (5.0" x 3.5")
Dim: Thickness	12 mm (15/32", 0.47")	12 mm (15/32", 0.47")	12 mm (15/32", 0.47")	90mm (3.5")
Grain - strong panel axis	runs along 1000 direction	runs along 1000 direction	runs along 1020 direction	-
<b>Exposure Durability Class:</b>	<b>Exposure 1</b>	<b>Exterior</b>	<b>Exterior</b>	<b>Exposure 1</b>
<b>Moisture Content:</b>	<b>19% or less</b>	<b>19% or less</b>	<b>19% or less</b>	<b>19% or less</b>
<b>Plywood Panel Grade:</b> per Voluntary Product Standard PS 1, VPS PS 2 or IBM approved standard	<b>Rated Sheathing, C-D</b>	<b>Rated Sheathing, C-C</b>	<b>Rated Sheathing, C-C</b>	<b>Rated Sheathing, C-D</b>
<b>Veneer Grades (Face/Inner/Back):</b>	<b>C/D/D</b>	<b>C/C/C</b>	<b>C/C/C</b>	<b>C/D/D</b>
<b>Tight Knots (maximum):</b>	<b>64mm (2.5")</b>	<b>38mm (1.5")</b>	<b>38mm (1.5")</b>	<b>64mm (2.5")</b>
<b>Knot Holes (maximum):</b>	<b>64mm (2.5")</b>	<b>25mm (1")</b>	<b>25mm (1")</b>	<b>64mm (2.5")</b>
<b>Glue Type/Adhesive (Interior+Exterior Panels):</b>	Exterior Waterproof only	Exterior Waterproof only	Exterior Waterproof only	Exterior Waterproof only
<b>Fasteners:</b> Fasteners are required for both Block assembly and Pallet Construction.	meet Minimum criteria in ASME MH-1, part 3	meet Minimum criteria in ASME MH-1, part 3	meet Minimum criteria in ASME MH-1, part 3	meet Minimum criteria in ASME MH-1, part 3
<b>Material:</b>	<b>Hardened steel</b>	<b>Hardened steel</b>	<b>Hardened steel</b>	<b>Hardened steel</b> or "Stiff Stock"
<b>Type:</b>	<b>Helically Threaded</b>	<b>Helically Threaded</b>	<b>Helically Threaded</b>	<b>Helically Threaded</b>
<b>Length (minimum):</b>	<b>76mm (3.0")</b>	<b>76mm (3.0")</b>	<b>76mm (3.0")</b>	<b>90mm (3.5")</b>
<b>Wire Diameter (minimum):</b>	<b>3.0mm</b> (0.12") 11 gauge	<b>3.0mm</b> (0.12") 11 gauge	<b>3.0mm</b> (0.12") 11 gauge	<b>3.0mm</b> (0.12") 11 gauge
<b>Head Diameter (minimum):</b>	<b>7.19mm +0.08</b> (0.28"+0.003)	<b>7.19mm+0.08</b> (0.28"+0.003)	<b>7.19mm+0.08</b> (0.28"+0.003)	<b>7.19mm+0.08</b> (0.28"+0.003)
<b>MIBANT Angle (bend resistance):</b>	<b>36 maximum</b>	<b>36 maximum</b>	<b>36 maximum</b>	<b>36 maximum</b>
<b>Counter-sink Nail Heads:</b>	<b>2mm (0.06")</b>	<b>1.5mm (0.06")</b>	<b>1.5mm (0.06")</b>	As required
<b>Number of Nails (minimum):</b>	(* ) Attach Top Deck to Blocks using 4 per block.	(* ) Attach Bottom Strips to Blocks using 3 connection (6 per corner block).	(* ) Attach Bottom Strips to Blocks using 3 connection (6 per corner block).	(* ) Block Assembly Construction: min. 2 nails per plywood block. To attach Decks to Block: min. 7-10 nails per block from both sides.
<b>Nail Patterns/Positions:</b> Do not attach decks to blocks by nailing into vertical edges. (* ) For block construction and nailing reference the "APA A211A - Plywood for Pallet Blocks" at <a href="http://www.apa.org">http://www.apa.org</a> .	(* ) Attach Deck to Blocks using offset nailing pattern, 13mm (0.5") to 19mm (0.75") from block edge.	(* ) Attach Deck to Blocks using offset nailing pattern, 13mm (0.5") to 19mm (0.75") from block edge.	(* ) Attach Deck to Blocks using offset nailing pattern, 13mm (0.5") to 19mm (0.75") from block edge.	(* ) Block Asm Construction: 2 nails from one side, min. 1" from edge. To attach Decks to Blocks: offset nailing pattern, 13mm (0.5") to 19mm (0.75") from block edge.

**\*\* Note about plywood blocks:** With prior approval from the IBM Packaging Engineering Department, OSB or Solid Medium Density Fiberboard (MDF per ANSI A208.2) blocks made with exterior glues may be substituted for the Plywood blocks.

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**2.3) Minimum Performance Criteria:**

Unless otherwise specified herein, general use pallets must be designed and built per the minimum performance requirements of EIPS2000, section 7 and at minimum EIPS-1 compliant. The complete engineering specifications and Pallet Design System (PDS) analysis (or alternatively complete EIPS performance testing results) must be made available upon request. For requirements consult the current version of the Electronics Industry Pallet Standard (EIPS) Task Group Specifications at <http://packaging.hp.com/eips>.

For example only: The EIPS2000 Sept 2003 specification includes, but is not limited to, these requirements:

Core Requirements per EIPS 2000 (EIPS-1, section 7) or IBM approved equivalent	“Full Size” Pallet Minimum Requirements
Pallet must be rectangular/square when comparing diagonal measurements	Within 6.4mm (0.25")
Racking Performance per ASTM D1185 (Racked across Length + Width)	454kg (1000 lbs), Maximum Deflection 13mm (0.5")
Fork-lift Tine Performance per ASTM D1185	454kg (1000 lbs), Maximum Deflection 13mm (0.5")
Static Stacking Performance (Warehouse) per ASTM D1185. Stacked 4 high, 454kg (1000 lbs) per pallet.	1800kg (4000 lbs), Maximum Deflection 6mm (0.25")
Conveyor Performance per ASTM D1185	454kg (1000 lbs), Maximum Deflection 6mm (0.25")
Access by Pallet Jack Wheels (to easily navigate)	If required, Chamfer bottom deck board greater than 18mm thickness.
Durability:	<b>Meet Requirement "a" OR Requirements b, c, and d.</b>
a) PDS Durability Rating: (PDS™ Pallet Design Software)	PDS score < 25.
b) Corner Drop per ASTM D1185	12 drops at 1m (40"), Max. Diagonal Deformation of 1.5%
c) Tine Tip Impacts on Block Ends per ASTM D1185	3 impacts at 30cm (12"), no failures
d) Tine Heel Impacts on Leading Ends per ASTM D1185	3 impacts at 120cm (48"), no failures

**2.4) IMPORTANT: Must meet requirements and be marked per IBM Engineering Specification PN 37L8024 "Wooden Packaging, Material Treatment and Marking Requirements" regardless of origin or destination.**

Note: Plywood components manufactured using a "Cold Press" must comply with ISPM-15 requirements.

**2.5) All components in the pallet must individually conform to IBM Engineering Specifications 5897660. "Restricted Heavy Metals" (<100ppm of Cadmium, Lead, Mercury, and Hexavalent Chromium).**

**2.6) Item must meet requirements of IBM Engineering Specification 46G3772 "IBM Environmental Requirements for Materials, Parts, and Products."**

**2.7) Material Selection and Finishing: All wood must be free of bark and apparently free of live plant pests. Parts to be delivered to IBM clean, free of mold, and dry.**

**2.8) Must conform to GA21-9261-x (latest level) "IBM Packaging Requirements Manual" PN 31L5345, for packing and marking instructions.**

**2.9) New Suppliers must submit pre-production samples and performance certification (PDS drawing, test results, etc) for IBM approval.**

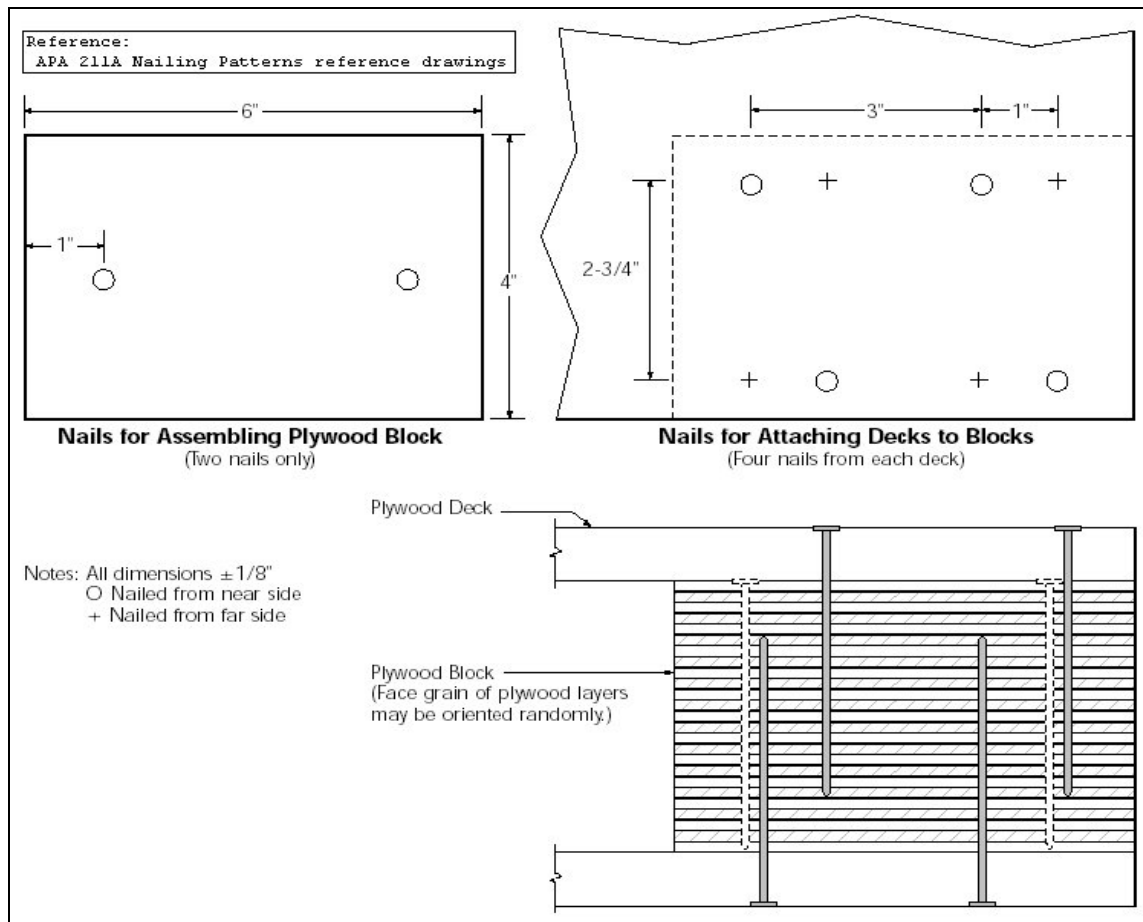
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## Appendix A: Block Construction & Nailing

(\*) APA - The Engineered Wood Association's website has several publications available for download at <http://www.apa.org>. Helpful publications are available on the topic of Plywood, OSB, block construction and nailing. These include but are not limited to: "APA A211A-Plywood for Pallet Blocks", "Voluntary Product Standard PS 1 - Construction and Industrial Plywood", "Voluntary Product Standard PS 2 - Performance Standard for Wood Based Structural Use Panels", and the "Plywood Design Specification". Important: Reference the current versions of these publications by downloading from the APA website.

Below is an example block construction and nailing guide, the actual (current) drawing is Provided in the Publication "APA A211A-Plywood for Pallet Blocks" at <http://www.apa.org>.



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