

PALLET DESIGN SYSTEM Version 5.0

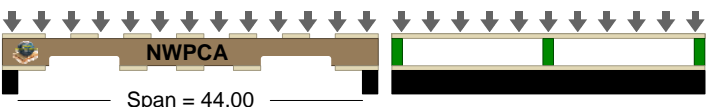
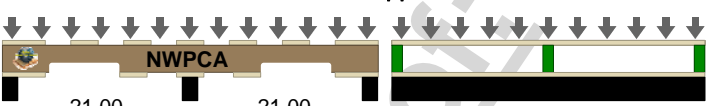
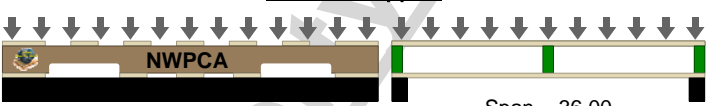
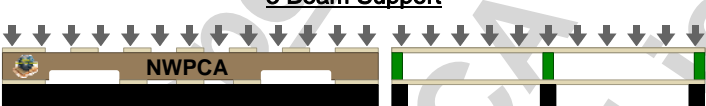
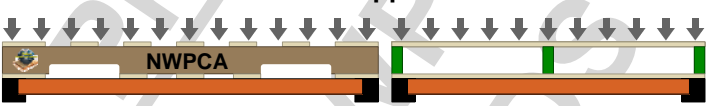
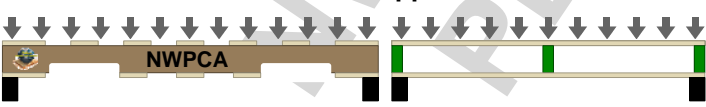
Pallet Structural Analysis (1/2)

Customer:
Company Name of Customer

Prepared by:
Pallet Professional and NWPCA Member
PDS License: 50 Printed: February 14, 2012

Pallet ID: Stringer-Class Pallet Example
Classification: 48.00 x 40.00, Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Multiple-Use, New Manufacture
Pallet Treatments: ISPM-15 Compliance: Heat Treatment (HT)

General Load Type: Uniformly Distributed - Full Pallet Coverage
Unit Load Weight Variability: Medium
Service Environment: Dry Environment (EMC <= 19%)

Support Condition	Safe Maximum Load	Deflection at Maximum Load	User Specified Deflection Limit	Maximum Load for Deflection Limit	Critical Member
<p>Racked Across Length 2 Beam Support</p> 	1558 lbs.	0.51 in.	0.75 in.	NA	Center Stringer
<p>3 Beam Support</p> 	3234 lbs.	0.16 in.	----	----	Interior Top Deckboard
<p>Racked Across Width 2 Beam Support</p> 	1629 lbs.	0.90 in.	0.75 in.	1005 lbs.	Interior Bottom Deckbd
<p>3 Beam Support</p> 	3332 lbs.	0.16 in.	----	----	Interior Top Deckboard
<p>Shelf Support</p> 	4225 lbs.	0.16 in.	----	----	Interior Top Deckboard
<p>4 Corner Support</p> 	1195 lbs.	1.53 in.	----	----	Lead Bottom Deckbd

The recommendations from PDS are based on the NWPCA's continuing program of laboratory and field research. They represent the best available engineering information compiled to date. However, the quality of workmanship, the input data, and the conditions in which pallets are used may vary widely. Therefore, the Association cannot accept responsibility for pallet performance or design as actually constructed. Wood pallets manufactured to this PDS design are for the sole purpose of storing and/or transporting material.

Under no circumstance should any person stand, step, or lean upon them or otherwise use them for support.

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PALLET DESIGN SYSTEM Version 5.0

Pallet Structural Analysis (2/2)

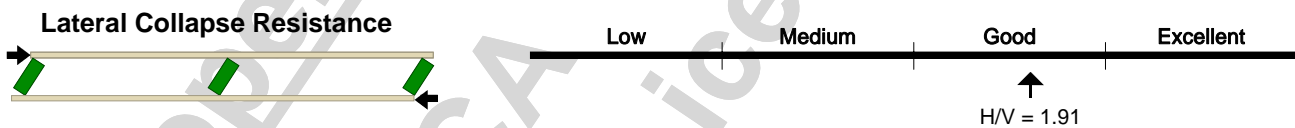
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Pallet ID: Stringer-Class Pallet Example
Classification: 48.00 x 40.00, Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Multiple-Use, New Manufacture
Pallet Treatments: ISPM-15 Compliance: Heat Treatment (HT)

General Load Type: Uniformly Distributed - Full Pallet Coverage
Unit Load Weight Variability: Medium
Service Environment: Dry Environment (EMC <= 19%)

Support Condition	Safe Maximum Load	Deflection at Maximum Load	User Specified Deflection Limit	Maximum Load for Deflection Limit	Critical Member
<p>Forklift Support Enter and Lift from Pallet End</p>	2498 lbs.	0.32 in.	----	----	Interior Top Deckboard
<p>Warehouse Storage Stacked 1 Unit Load High</p>	5223 lbs.	0.19 in.	----	----	Interior Top Deckboard
<p>Stacked 4 Unit Loads High</p>	1934 lbs. per pallet	0.19 in.	----	----	Interior Bottom Deckbd



Pallet Design System (PDS)

Developed and owned by:
National Wooden Pallet and Container Association (NWPCA)

Research and development for early versions of PDS were conducted in cooperation with:
 Center for Unit Load Design, Virginia Tech Department of Wood Science and Forest Products;
 U.S.D.A. Forest Service and Forest Products Laboratory; APA - The Engineered Wood Association;
 Software Technologies Laboratory, Virginia Tech Department of Industrial and Systems Engineering

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PALLET DESIGN SYSTEM Version 5.0

Pallet Durability Analysis

Customer:

Company Name of Customer

Prepared by:

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PDS License: 50 Printed: February 14, 2012

Pallet ID: Stringer-Class Pallet Example

Classification: 48.00 x 40.00, Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Multiple-Use, New Manufacture

Pallet Treatments: ISPM-15 Compliance: Heat Treatment (HT)



Pallet Service Life Analysis

The **Pallet Service Life Analysis** simulates a series of forces and impacts applied to the pallet during each handling cycle. The frequency and severity of these impacts are estimates based on laboratory measurements, warehouse observations, and the Virginia Tech FasTrack Handling Cycle. The resistance to damage and the damage level requiring component repair or replacement are based on laboratory testing and the NWPCA Uniform Standard for Wood Pallets.

Service Environment Conditions:

Average Handling and Treatment, Medium-Duty Loads, Dry Environment (EMC <= 19%)

Predicted Service Life: 9 Cycles

Predicted Cycles until First Repair: 3

Results from Handling Cycle Simulation

Pallet Components		Cycles To First Repair	Cycles To First Replacement	Number of Times Replaced	Limits Pallet Service Life	Relative Component Damage during Simulation
Top Leadboards	(2)	3	5	1	Yes	
Top InteriorBoards	(5)					
Bottom Leadboards	(2)	3	5	1	Yes	
Bottom InteriorBoards	(3)					
Exterior Stringers	(2)	4	9			
Interior Stringers	(1)					

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Pallet Physical Property Analysis

Customer:

Company Name of Customer

Prepared by:

Pallet Professional and NWPCA Member

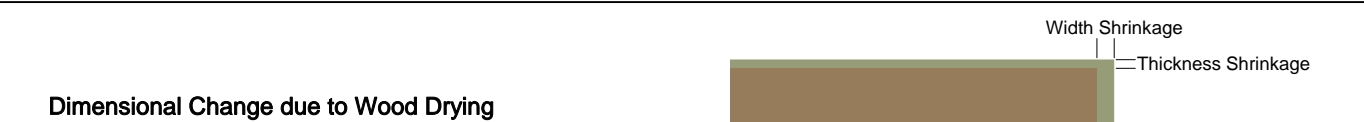
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Pallet ID: Stringer-Class Pallet Example

Classification: 48.00 x 40.00, Stringer-Class, Double-Face Non-Reversible, Partial 4-Way, Multiple-Use, New Manufacture

Pallet Treatments: ISPM-15 Compliance: Heat Treatment (HT)

Average Pallet Weight	At Manufacture	At 25% MC	At 19% MC	At 15% MC	At 12% MC
	59 lbs.	41 lbs.	39 lbs.	38 lbs.	37 lbs.



Component	Original Dimension	Shrinkage from Manufacture to 19% MC	Shrinkage from Manufacture to 15% MC
Top Deckboards	0.625 in. Thickness	0.014 in. (+/- 0.004 in.)	0.020 in. (+/- 0.006 in.)
	3.500 in. Width	0.078 in. (+/- 0.023 in.)	0.113 in. (+/- 0.033 in.)
	5.500 in. Width	0.123 in. (+/- 0.036 in.)	0.178 in. (+/- 0.052 in.)
Stringers	3.500 in. Height	0.078 in. (+/- 0.023 in.)	0.113 in. (+/- 0.033 in.)
	1.375 in. Width	0.031 in. (+/- 0.009 in.)	0.044 in. (+/- 0.013 in.)
Bottom Deckboards	0.625 in. Thickness	0.014 in. (+/- 0.004 in.)	0.020 in. (+/- 0.006 in.)
	3.500 in. Width	0.078 in. (+/- 0.023 in.)	0.113 in. (+/- 0.033 in.)
	5.500 in. Width	0.123 in. (+/- 0.036 in.)	0.178 in. (+/- 0.052 in.)

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