HARDWOOD MARKET REPORT

Industrial Lumber Products, Looking Ahead

HARDWOOD MANUFACTURERS ASSOCIATION

2014 National Conference and Expo
March 14, 2014
Take Care of the Low Grade Lumber. High Grade Lumber Will Take Care of Itself.
Low Grade is Doing Just Fine!
1999

Grade Lumber Markets 59.6%

Industrial Markets 40.4%

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2013

Grade Lumber Markets 40.0%

Industrial Markets 60.0%

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Hardwood Lumber Consumption by Major US Market

<table>
<thead>
<tr>
<th>Year</th>
<th>Grade Lumber Markets</th>
<th>Industrial Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>59.6%</td>
<td>40.4%</td>
</tr>
<tr>
<td>2013</td>
<td>40.0%</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

12.9B' = Billion Board Feet
8.55B' = Billion Board Feet

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Exports = 17.2% of the volume of all Eastern US hardwood consumption, 42.8% of all grade lumber markets, and 54.9% of the volume of mid- to upper-grade markets.
Manufacturing Capacity Utilization

Average Capacity Utilization
1972 - 2012: 78.7%

Highest rate of utilization this series -
April 2007: 79.1%

Jan. 2006: 79.1%

Lowest rate of utilization -
May and June 2009: 64.0%

Jan. 2014: 76.0%

Source: Federal Reserve
Graph: Hardwood Market Report
<table>
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</thead>
<tbody>
<tr>
<td></td>
<td>3.8</td>
<td>3.7</td>
<td>3.6</td>
<td>3.5</td>
<td>3.0</td>
<td>3.2</td>
<td>3.26</td>
<td>3.27</td>
<td>3.64</td>
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</table>

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![Bar Chart showing billion board feet from 2005 to 2013](chart.png)
## World Economic Outlook Updated Projections

<table>
<thead>
<tr>
<th>(%) change unless otherwise noted</th>
<th>Year over Year Projections</th>
<th>Year over Year Projections</th>
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<tbody>
<tr>
<td><strong>World output</strong></td>
<td></td>
<td></td>
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<tr>
<td>World output</td>
<td>3.0</td>
<td>3.7</td>
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<tr>
<td>Advance economies</td>
<td>1.3</td>
<td>2.2</td>
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<tr>
<td>United States</td>
<td>1.9</td>
<td>2.8</td>
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<tr>
<td>Euro Area</td>
<td>-0.4</td>
<td>1.0</td>
</tr>
<tr>
<td>Germany</td>
<td>0.5</td>
<td>1.6</td>
</tr>
<tr>
<td>France</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td>Italy</td>
<td>-1.8</td>
<td>0.6</td>
</tr>
<tr>
<td>Spain</td>
<td>-1.2</td>
<td>0.6</td>
</tr>
<tr>
<td>Japan</td>
<td>1.7</td>
<td>1.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.7</td>
<td>2.4</td>
</tr>
<tr>
<td>Canada</td>
<td>1.7</td>
<td>2.2</td>
</tr>
<tr>
<td>Other advanced economies</td>
<td>2.2</td>
<td>3.0</td>
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<tr>
<td>Emerging and developing economies</td>
<td>4.7</td>
<td>5.1</td>
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<tr>
<td>Central and Eastern Europe</td>
<td>2.5</td>
<td>2.8</td>
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<td>Commonwealth of Independent States</td>
<td>2.1</td>
<td>2.6</td>
</tr>
<tr>
<td>Russia</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Developing Asia</td>
<td>6.5</td>
<td>6.7</td>
</tr>
</tbody>
</table>

Source: International Monetary Fund

Chart: Hardwood Market Report
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<tbody>
<tr>
<td></td>
<td>0.85</td>
<td>0.96</td>
<td>0.92</td>
<td>0.94</td>
<td>0.89</td>
<td>0.89</td>
<td>0.98</td>
<td>1.04</td>
<td>1.11</td>
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</table>

Source: Railway Tie Association

Graph: Hardwood Market Report
<table>
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<tr>
<td>Ties</td>
<td>0.85</td>
<td>0.96</td>
<td>0.92</td>
<td>0.94</td>
<td>0.89</td>
<td>0.89</td>
<td>0.98</td>
<td>1.04</td>
<td>1.114</td>
<td>1.139</td>
<td>1.186</td>
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</table>

![Billion Board Feet Chart](chart.png)

**Source:** Railway Tie Association

**Graph:** Hardwood Market Report
Crosstie Production and Inventory
Six Month Moving Average
(Thousand Ties)
Appalachian Green 4/4 #2A Red Oak and 7x9 Crossties

Current Dollars

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Price Per MBF

Appal 4/4 2A Red Oak Green
High End of Range - Southern Appalachian Ties
<table>
<thead>
<tr>
<th>Board Road/Mat</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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</thead>
<tbody>
<tr>
<td>Timbers</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>0.20</td>
<td>0.05</td>
<td>0.08</td>
<td>0.12</td>
<td>0.16</td>
<td>0.37</td>
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</table>

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Board Road/Crane Mat Industry Overview

Market Sectors
• Oil and gas drilling sites
• Marine platforms and decking
• Pipelines
• Electric transmission/generation
• Bridges
• Excavation support
Board Road/Crane Mat Industry Overview

Product names

- Crane mats
- Bridge mats
- Pipeline mats
- Digging mats
- Road mats
- Swamp mats
- Timber mats
- Laminated mats (not for track equipment)
Board Road/Crane Mat Industry Overview

Material Use by Market Sector
Widely varied among manufacturers

1. Pipelines
2. Oil/petroleum extraction
3. Electric transmission/generation
4. Bridges
5. Ranking indistinguishable for all others
Board Road/Crane Mat Industry Overview

Supply Stream –
Raw materials for mat construction

• Large sawmills, vertically integrated in producing raw materials and assembling mats
• Mat builders that purchase lumber and timbers. These mat builders may or may not be sawmills.
• Sawmills that sell lumber and timbers to mat builders – directly or indirectly
• Brokers that purchase and resell lumber and timbers to mat builders and refurbishers.
Board Road/Crane Mat Industry Overview

Supply Stream – Sales and distribution of board road and mats

• Direct shipments from builder to job site
• Shipments to warehouse or trans-load facility
• Delivery destination may or may not be that of the customer who place the order
Board Road/Crane Mat Industry Overview

Distribution Stream –
Types of customers
• Construction contractor
• Engineering firm
• Utility company
• Distributor
• Broker
• Competitor mat builder
Board Road/Crane Mat Industry Overview

Distribution Stream –

Who is the customer?

Specifically, who is the person that determines the exact needs for mat products, quantities, and timing of delivery?

Is it the person who calls to place the order?

Does the manufacturer know who to call to solicit business or gauge the marketplace?
“There is no defined matrix for projecting demand, except to monitor oil and gas field construction and extraction.”
There is also no method to monitor total inventory combined of mats in the field, at distribution locations, and at the manufacturer.
North American shale plays
(as of May 2011)

Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
Updated: May 9, 2011
Figure 10. Total energy production and consumption, 1980-2040

(quadrillion Btu)

<table>
<thead>
<tr>
<th>Year</th>
<th>History</th>
<th>2012</th>
<th>Projections</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>75</td>
<td>91</td>
<td>100</td>
<td>106</td>
</tr>
<tr>
<td>1990</td>
<td>80</td>
<td>100</td>
<td>115</td>
<td>120</td>
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<tr>
<td>2000</td>
<td>100</td>
<td>116</td>
<td>130</td>
<td>135</td>
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<td>2010</td>
<td>110</td>
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</tr>
<tr>
<td>2020</td>
<td>120</td>
<td>130</td>
<td>145</td>
<td>150</td>
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<tr>
<td>2035</td>
<td>130</td>
<td>140</td>
<td>160</td>
<td>170</td>
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<tr>
<td>2040</td>
<td>140</td>
<td>150</td>
<td>170</td>
<td>180</td>
</tr>
</tbody>
</table>

**Consumption**

- Net imports: 16%
- Projections: 3%
- Projected growth: 4%
Figure 12. U.S. petroleum and other liquid fuels supply, 1970-2040

(million barrels per day)
Figure 11. U.S. energy production by fuel, 1980-2040

(qquadrillion Btu)

<table>
<thead>
<tr>
<th></th>
<th>History</th>
<th>2012</th>
<th>Projections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td></td>
<td>31%</td>
<td>38%</td>
</tr>
<tr>
<td>Renewables</td>
<td></td>
<td>11%</td>
<td>12%</td>
</tr>
<tr>
<td>Crude oil and natural gas plant liquids</td>
<td></td>
<td>22%</td>
<td>20%</td>
</tr>
<tr>
<td>Coal</td>
<td></td>
<td>26%</td>
<td>22%</td>
</tr>
<tr>
<td>Nuclear</td>
<td></td>
<td>10%</td>
<td>8%</td>
</tr>
</tbody>
</table>

1980-2040
2013

Grade Lumber Markets 40.0%

Industrial Markets 60.0%

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US Single-Family Housing Starts
with Projections through 2015

Sources: US Census Bureau and NAHB
Graph: Hardwood Market Report

- 2010: 471,000 Units
- 2011: 434,000 Units
- 2012: 537,000 Units
- 2013: 622,000 Units
- 2014: 767,000 Units
- 2015: 1,169,000 Units

* Forecast
Thank You

Hardwood Market Report

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