New SP Structural Grades

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Drivers for Change

“In-grade” testing programs
- 10 years since first study

Market changes
- Frame & Truss industry much larger now

Truss industry feedback
- Stiffness variability and nail holding

Improved mill / grading technology
Grade settings
- not considered optimum by producers
R&D Program: >$1m\(^*\)

Major MGP in-grade study
- 5000 sticks from 12 mills

Lower grade study
- 5000 sticks from 13 mills

Supporting projects such as:
- CSIRO properties and thresholds model
- 45mm strength study
- Continuous monitoring technology

*FWPRDC funded

Research Outcomes

- Unchanged strength – stiffness relationship
- More accurate grading than previous
- Stiffness variability quantified
- Subtle changes in plantation resource
- Grade settings generally not optimum
- Potential for new lower stress grade
- No strength increase for 45mm material
- Upgraded quality assurance technology
Evaluation

Large data base
- R&D and industry information

Review process
- Industry committees established
- Truss and frame industry consulted
- Variety of options evaluated

Key decisions
- Four new “SP” grades
- Stiffness variability control
- Industry Standard

Industry Standard IS 107

Publicly available document

Product
- Independent Certification
- Mandatory grade marking

Manufacture
- Manufacturing Specification
- Minimum QA Requirements

Design properties
Design properties approach

Traditional
- Technical evaluation and analysis
SP Grades inputs
- Technical data
- Resource
- Production
- Market
No right or wrong solution
- “Best fit” national outcome sought

Design properties process

CSIRO model
Stiffness
- Grade settings based on stiffness
- Resource considered
- Market needs considered
Strength
- Production / QA considerations
- Properties derived from research data
Independent review
SP grade design properties

<table>
<thead>
<tr>
<th>Grade</th>
<th>Stiffness E (MPa)</th>
<th>Strength f_{b,t,s,c} (MPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Bending</td>
</tr>
<tr>
<td>SP1</td>
<td>14,500</td>
<td>36</td>
</tr>
<tr>
<td>SP2</td>
<td>12,000</td>
<td>26</td>
</tr>
<tr>
<td>SP3</td>
<td>9,200</td>
<td>16</td>
</tr>
<tr>
<td>SP4</td>
<td>7,000</td>
<td>10</td>
</tr>
</tbody>
</table>
SP grade applications

Four grades formulated to cater for a broad range of high and low end-use applications:

- **SP1**
  - Lowest strength and stiffness variability
- **SP4**
  - Highest strength and stiffness variability

Choose the grade to suit the end-use

Some of the Benefits of SP Grades

- Grades and properties are more closely aligned with the resource
- An inclusive, comprehensive and consistent system. F4 and F5 Pine to be replaced by SP4
- Variability control on SP1,2,3 will result in improved predictability of truss deflections
- Improved mill quality control processes
- Mill production can better match market demand
**Mill Production can better match Market Demand**

<table>
<thead>
<tr>
<th>Grade</th>
<th>F4/F5</th>
<th>MGP10</th>
<th>MGP12</th>
<th>MGP15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Demand (based on BIS and ABS data)</td>
<td>14%</td>
<td>54%</td>
<td>25%</td>
<td>7%</td>
</tr>
</tbody>
</table>

**Projected mill recovery**

<table>
<thead>
<tr>
<th>Grade</th>
<th>SP4</th>
<th>SP3</th>
<th>SP2</th>
<th>SP1</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP grades (one example mill)</td>
<td>9%</td>
<td>57%</td>
<td>28%</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Improved Marking**

* A major benefit of the SP grades

- The grade will be marked at 1200 centres along the stick
- At least once per stick, the manufacturer's name, mill number, QC and other information will be shown
- Colour marking is for mill use only
What grade for what application?

Rules for Substitution

<table>
<thead>
<tr>
<th>Grade Specified</th>
<th>MGP Substitute</th>
<th>SP Substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP1</td>
<td>MGP15</td>
<td>-</td>
</tr>
<tr>
<td>SP2</td>
<td>MGP12</td>
<td>-</td>
</tr>
<tr>
<td>SP3</td>
<td>MGP10</td>
<td>-</td>
</tr>
<tr>
<td>SP4</td>
<td>MGP10</td>
<td>-</td>
</tr>
<tr>
<td>MGP15</td>
<td>-</td>
<td>NA</td>
</tr>
<tr>
<td>MGP12</td>
<td>-</td>
<td>SP1</td>
</tr>
<tr>
<td>MGP10</td>
<td>-</td>
<td>SP2</td>
</tr>
</tbody>
</table>
Cost Indications

- Nail-plate suppliers and major fabricators have done cost comparisons
- Analyses show zero or minimal impact
- Obviously this will depend on the prices from your supplier for each grade

Sawmills

- Preparation for mill production involves:
  - Revised QC manuals and procedures
  - New grader settings
  - Capex for marking equipment
  - Production runs and in-mill testing to confirm properties
- Each Pine supplier will have their own view on how to go to market (timing, pricing, range). Discuss with your supplier
- SP grades expected to be available from August 2006
- F-graded Pine may no longer be produced for framing
- Some mills may not produce SP1
Frame and Truss Plants

- Mitek, Pryda and Multinail are installing design capability into their software
- Plan your transition early to take advantage of the substitution rules

Merchants

- Decisions need to be taken on what grades to stock
- Assess impact on inventory
- Strategies for handling future orders for MGP
Builders and Designers

- Start changing specifications and designs

Treated Framing

- Blue Pine will become available in SP grades

- Other treatments (LOSP, etc.) are also compatible with SP production
Other Issues

1. Not all mills may change to SP grades.

2. Timing – is there ever a good time for this change?

Conclusion

• The SP system has a number of advantages to all segments in the industry

• The market will decide

• Start planning now
Technology Transfer

- Funding assistance through FWPRDC government and Industry money
- A partnership with pine processors that have their own complementary market education plans
- Not a marketing Plan - R&D elements

The Plan

- Research & Resources
  - Mainly FWPRDC funded
  - Independent Property Review
  - Variability Study
  - Industry Product Std IS 107
  - Various SP guides
  - Project management, TDA NSW
- Implementation
  - Mainly Industry Funded
  - Span Tables in 3 forms, CD, web-based and limited printed through
  - PPoint presentations DVD with voiceover
  - Website & 1800 phoneline
Seminar Program

• State Programs- TDA(NSW), Timber Qld, BDA(NSW), TDA(SA), TTPB, TPC (WA ) and Vic (TPC)
• National Programs- AIBS, Standards Australia
• Frame and Truss and Builder – June/July
SP in Standards & BCA

- SP grades ahead of standards and codes
- Compliance with SP properties, responsibility of producers and span tables through TQ certification via use of AS1684 software (Timberspan) – Reaching certifiers critical.
- Australian Building Codes Board have agreed on BCA callup for 2007 on basis of satisfying BCA Protocol process.