PRODUCT REPORT®

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Power Joist® I-Joists
Anthony-Domtar, Inc.

PR-L261
Issued January 19, 2007

Products: ADI-40, -60, and -80 Prefabricated Wood I-Joists (APA Custom Product L-261)
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Plant: Anthony-Domtar, Inc., 1195 Peoples Road, Sault Ste. Marie, Ontario, Canada P6C 3W7
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1. Basis of the product report:
   - 2006 International Building Code: Section 104.11 Alternative Materials
   - ASTM D 5055-04 recognized by the 2006 International Building Code and International Residential Code
   - 2005 National Building Code of Canada: Section 2.3 - Alternative Solutions, Division C
   - Performance Standard for APA EWS I-Joists, PRI-400
   - APA Reports T2001P-41, T2002P-3, T2002P-19, T2003P-32, T2003P-53, T2003P-64B, T2005P-54, T2005P-56, and T2005P-102

2. Product description:
   Power Joist® I-joists are made with lumber flanges and OSB web in accordance with the in-plant manufacturing standard approved by APA.

3. Design properties:
   Table 1 lists the design properties for Power Joist® I-Joists. The allowable spans for Power Joist® I-joists shall be in accordance with the recommendations provided by the manufacturer (http://www.anthonyforest.com/powerjoist.shtml) and with APA Z725 (http://www.apawood.org/level_b.cfm?content=pub_main) for depths contained in the PRI Series.

4. Product installation:
   Power Joist® I-joists shall be installed in accordance with the recommendations provided by the manufacturer (see link above) and APA D710 (see link above). Permissible web holes and cantilever reinforcements shall be in accordance with the recommendations provided by the manufacturer, and with APA D710 for depths contained in the PRI Series.

5. Fire-rated assemblies:
   Fire rated assemblies shall be constructed in accordance with the recommendations provided by the manufacturer (see link above), and with APA W305 (see link above) for depths contained in the PRI Series.

6. Limitations:
   a) Power Joist® I-joists shall be designed in accordance with the code using the design properties specified in this report.
   b) Power Joist® I-joists are limited to dry service conditions where the average moisture content is less than 16 percent.
   c) Power Joist® I-joists are produced at Anthony Domtars' facility under a quality control program inspected by APA.
   d) This report is subject to periodical review and reexamination.

7. Identification:
The Power Joist® prefabricated wood I-joists described in this report are identified by a label bearing the manufacturer's name (Anthony Domtar, Inc.) and/or trademark, the APA assigned plant number (1058), the product type, the APA-EWS logo, the report number L-261, and a means of identifying the date of manufacture.

Table 1. Design Properties (Allowable Stress Design) for Power Joist® I-Joists [a]

Joist Designation	Also Qualified For	EI[b] (10^6 lbf-in.^{2})	M[c] (lbf-ft)	V[d] (lbf)	IR[e] (lbf)	ER[f] (lbf)	K[g] (10^6 lbf)
9-1/2" ADI-40	9-1/2" PRI-40	193	2,735	1,120	2,160	1,080	4.94
11-7/8" ADI-40	11-7/8" PRI-40	330	3,545	1,420	2,500	1,200	6.18
14" ADI-40	14" PRI-40	482	4,270	1,710	2,500	1,200	7.28
16" ADI-40	16" PRI-40	657	4,950	1,970	2,500	1,200	8.32
9-1/2" ADI-60	9-1/2" PRI-60	231	3,780	1,120	2,160	1,080	4.94
11-7/8" ADI-60	11-7/8" PRI-60	396	4,900	1,420	2,500	1,200	6.18
14" ADI-60	14" PRI-60	584	5,895	1,710	2,500	1,200	7.28
16" ADI-60	16" PRI-60	799	6,835	1,970	2,500	1,200	8.32
11-7/8" ADI-80	11-7/8" PRI-80	547	6,940	1,420	2,760	1,280	6.18
14" ADI-80	14" PRI-80	802	8,360	1,710	3,020	1,280	7.28
16" ADI-80	16" PRI-80	1,092	9,690	1,970	3,020	1,280	8.32

[a] The tabulated values are design values for normal duration of load. All values, except for EI and K, shall be permitted to be adjusted for other load durations as permitted by the code. Values for Limit States Design in Canada are available from the manufacturer.
[b] Bending stiffness (EI) of the I-joist.
[c] Moment capacity (M) of the I-joist, which shall not be increased by any code allowed repetitive member use factor.
[d] Shear capacity (V) of the I-joist.
[e] Intermediate reaction (IR) of the I-joist with a minimum bearing length of 3-1/2 inches without bearing stiffeners.
[f] End reaction (ER) of the I-joist with a bearing length of 1-3/4 inches without bearing stiffeners. Higher end reactions are permitted. For a bearing length of 4 inches, the end reaction may be set equal to the tabulated shear value. Interpolation of the end reaction between 1-3/4- and 4-inch bearing is permitted. For end reaction values over 1,550 lbf bearing stiffeners are required.
[g] Coefficient of shear deflection (K). For calculating uniform load and center-point load deflections of the Power Joist in a simple-span application, use Eqs. 1 and 2.

Uniform Load: $$\delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K} \quad [1]$$

Center-Point Load: $$\delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K} \quad [2]$$

Where:
δ = calculated deflection (in.),
ω = uniform load (lbf/in.),
P = concentrated load (lbf),
ℓ = design span (in.),
EI = bending stiffness of the I-joist (lbf-in.^{2}), and
K = coefficient of shear deflection (lbf).

APA – The Engineered Wood Association is an accredited certification body under ISO 65 by Standards Council of Canada (SCC) and an accredited inspection agency by the International Code Council (ICC) International Accreditation Service (IAS) under ISO/IEC 17020. APA is also an accredited testing organization recognized by IAS and SCC under ISO/IEC 17025. APA is a recognized testing laboratory by Miami-Dade County, and a Product Testing Laboratory, Product Quality Assurance Entity, and Product Validation Entity by the Florida Department of Community Affairs (DCA).

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