CODE REQUIREMENTS FOR STRUCTURAL COMPOSITE LUMBER (SCL)

Q: What do the 2024, 2021, 2018 and 2015 International Building Code (IBC) and International Residential Code (IRC) require for structural composite lumber (SCL) products?

A: IBC Section 2303.1.10 and **IRC** Section R502.1.5 give the code requirements:

> **IBC** **2303.1.10 Structural Composite Lumber.** Structural capacities for structural composite lumber shall be established and monitored in accordance with **ASTM D5456**. (emphasis added)
>
> **IRC** **R502.1.5 Structural Composite Lumber.** Structural capacities for structural composite lumber shall be established and monitored in accordance with **ASTM D5456**. (emphasis added)

Q: What does ASTM D5456 require?

A: ASTM D5456 *Standard Specification for Evaluation of Structural Composite Lumber Products* includes requirements for: wood species, wood element size and shape; adhesive and production parameters; initial qualification sampling, mechanical and physical tests, analysis, and design value assignments. Ongoing quality control and quality assurance, third-party oversight by a qualified agency, and qualifications for agencies providing third-party oversight are also included. All of these requirements are interrelated and must be met to comply with the code:

> **ASTM D5456** **6. Qualification**
> 6.1 Samples for qualification testing shall be representative of the population being evaluated.
>
> **7. Determination of Allowable Design Stresses**
> 7.1 Allowable design values developed in this section are consistent with engineering practice in building construction.
>
> **8. Independent Inspection**
> 8.1 A qualified agency shall be employed by the manufacturer to audit the quality assurance program and inspect the production process of the plant without prior notification or with minimal prior notification. The audit and inspection shall include review and approval of the plant's quality assurance program and inspection of randomly selected products and QC data. When production is sporadic, the qualified agency shall communicate with the manufacturer to schedule inspections to coincide with production.
> 8.2 *Qualified Agency*—A qualified agency is defined to be one that:
> 8.2.1 Has been accredited by an International Accreditation Forum (IAF) member accreditor as meeting ISO/IEC 17020 requirements;
> 8.2.2 Has access to the facilities and trained technical personnel to verify that the grading, measuring, species, construction, bonding, workmanship, and other characteristics of the products as determined by inspection, sampling, and testing comply with all applicable requirements specified in this specification;
> 8.2.3 Has procedures to be followed by its personnel in performance of the inspection and testing;
> 8.2.4 Has no financial interest in, or is not financially dependent upon, any single company manufacturing the product being inspected or tested; and

8.2.5 Is not owned, operated, or controlled by any such company.

9. Manufacturing Standard
9.1 A manufacturing standard, subject to the approval of the qualified agency, shall be written and maintained by the manufacturer for each product and each production facility. This specification shall include provision for quality assurance.

Q: The IBC and IRC don't include design capacities for structural composite lumber – where can they be found?

A: Because each manufacturer produces a proprietary product with a unique production process, design capacities are established separately. A manufacturer typically obtains a code evaluation report (or similar name) from a third-party certification agency accredited to ISO/IEC 17065 by an International Accreditation Forum (IAF) accreditor. The code evaluation report typically contains a description of the materials evaluated, design information, and recommendations and limitations regarding the use of the product. Information typically includes general design guidance, beam capacities, and allowable connector design and placement. In addition, the code evaluation report may include information about use of the structural composite lumber product in certain applications such as rim joists, structural diaphragms, and fire-resistance-rated assemblies.

Q: How does the Building Official or Authority Having Jurisdiction (AHJ) determine compliance to the Code for a structural composite lumber product?

A: While not specifically required by ASTM D5456, industry practice is for each member to be clearly and properly identified by product name, company name or logo, plant location or number, qualified agency name or logo, and a means for establishing the date of manufacture. In addition, reference to the code evaluation report is typically marked on each conforming member.

Q: What questions should be asked of your structural composite lumber manufacturer?

A: 1) Do you have a code evaluation report from an ISO/IEC 17065 accredited agency?
2) Have your design values been established per ASTM D5456 by a Qualified Agency?
3) Who is the Qualified Agency overseeing the production of your structural composite lumber?
4) Is your Qualified Agency name or logo clearly marked on your product?