

## Roseburg Engineered Wood Products and Formaldehyde

### RigidLam® Laminated Veneer Lumber (LVL) and RFPI®-Joists

Roseburg RigidLam®LVL is manufactured to the U.S. Structural Composite Lumber (SCL) standard, ASTM D 5456 and Roseburg RFPI®-Joists are manufactured to the U.S. I-joist standard, ASTM D 5055. These standards require the use of exterior exposure, moisture resistant adhesives. All grades of RigidLam LVL are manufactured with phenol-formaldehyde based adhesive systems and contain no added urea-formaldehyde resins. All series of Roseburg RFPI-Joists (inclusive of LVL flanged I-joists and solid sawn lumber flanged I-joists) are manufactured with phenol-formaldehyde, phenol-resorcinol-formaldehyde and/or melamine formaldehyde based adhesive systems and contain no added urea-formaldehyde resins. These exterior exposure adhesives form a chemically stable bond that emits such low amounts of formaldehyde gas it is often indistinguishable from background levels. Because these adhesives have long demonstrated very low emission levels, there are no U.S. standards or regulations governing formaldehyde emissions for laminated veneer lumber or prefabricated wood I-joists. California Air Resources Board (CARB) Regulation Section 93120.1 Definition (8) specifically excludes Structural Composite Lumber that is manufactured to the requirements of ASTM D 5456-06 and prefabricated wood I-joists that are manufactured to the requirements of ASTM D 5055-05. The federal law regarding formaldehyde emissions, which went into effect on June 1<sup>st</sup>, 2018, takes the same stance as CARB and specifically excludes I-joists and SCL, which includes LVL. I-joists and LVL are also excluded from the U.S. HUD Manufactured Housing Standard because they are not a plywood or particle board product and are manufactured with a phenolic adhesive system.

Since there are no U.S. standards requiring the monitoring of emissions from I-joists or LVL, there are no standard test procedures either. However, in order to confirm low emission rates of formaldehyde, various I-joist and LVL products, including RFPI-Joists and RigidLam LVL, have been tested based on test procedures for panel products in accordance with the ASTM E1333 Large Chamber Test method. The results of those tests confirm that RFPI-Joists and RigidLam LVL emit formaldehyde gas at levels well below 0.1 parts per million (ppm). As a reference, the HUD requirement is no more than 0.2 ppm for plywood or 0.3 ppm for particleboard.

It is important to note that even though the adhesives are rated for exterior exposure, the finished Roseburg LVL and I-joist products are designed and warranted for dry-use applications (i.e. where the average equilibrium moisture content of solid-sawn lumber is less than 16%).

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