U.S. glulam producers prepare for Norway invasion

MOST likely, the majority of glulam beams you sell are the traditional 24F-1.8E North American glulam, manufactured by companies such as Springfield, Or.-based Rosboro (Douglas fir), Anthony Forest Products, El Dorado, Ar. (southern pine), and Vancouver, Wa.-based Calvert Co.

Recently, the West Coast Lumber Inspection Bureau received North American code approval for a new glulam manufactured from Norway spruce, which comes from Austria.

Norway spruce laminated beams are accepted for certain applications and equal to some structural values of the more popular existing products from Northern American glulam makers. However, domestic manufacturers claim that while they may appear on the surface to be perfectly suitable, in many cases they may not be.

Published sales literature claims that although they've been code approved, glulam beams made from Norway spruce are a"passive" substitute for engineered wood products that builders can specify. This isn't entirely true, argue domestic producers.

"They aren't being brought in for malicious reasons and are being sold and installed with good intentions, though they are being improperly introduced to the marketplace," says Rosboro's Geoff Crandlemire.

Claims suggest that Norway spruce beams have the same strength and stability of Douglas fir, weigh less than southern yellow pine, and are more workable and cost-competitive than LVL or PSL.

"There's nothing 'wrong' with it. But, there are certain design specs that aren't the same as a Doug fir 24F beam," says Doug Calvert, Calvert Co. "Our concern is there will be a misconception in the industry that it's the same—since it's being marketed as such."

Photo courtesy of Finnforest USA

While the import has some of the design values of North American Doug fir laminated beams, such as the capacity for certain jobs and ability to carry a load and perform, it's reportedly missing crucial values.

None of the Norway spruce beam values match LVL, PSL or higher strength (30F) products like Rosboro's BigBeam, Anthony's Power Beam, or Calvert's GL3000. There are also installation and performance issues.

"With 24F Douglas fir or southern pine, builders use the beam that was specified, eliminating the need for additional materials," says Crandlemire. "With beams made from Norway spruce, specified as 24F, builders would literally have to increase the size of the glulam somehow, whether that be adding more lumber, or using stronger, different hangers—and that's if it was even engineered to begin with."

Kerlin Drake, v.p. of marketing, Anthony Forest Products, concurs: "If the supplier or builder installs Norway spruce beams the same way as domestic production, there will be many cases of code non-compliance." That said, if the beams are "properly designed for each loading and span combination by a competent EWP supplier or engineer, the effects of unequal design values would be taken into consideration. We just want it to be clear that they are not a passive substitution for domestic glulam."

U.S. manufacturers say another factor that might come up when using the Norway spruce beam is that builders have to make sure their project is engineered for it. If not, they will have to increase the bearing end, and use bigger posts and different hangers, as opposed to a Doug fir or southern pine beam.

Each part of the building industry chain has had some confusion about how the Norway spruce beams work and act in load-bearing situations.

"Builders make purchasing decisions daily, and it is the manufacturer's obligation to help guide them to

products that are readily code accepted and easy to install," says Drake. "The builder has to know of the unequal design values and the affect on code accepted installation or callbacks will happen."

And what about others in the chain? All are affected, says Crandlemire. "The designer specs a job for Doug fir or southern pine, determining spans, size, and bearing. The builder then goes to their supplier, who supplies him with the Norway spruce glulam beam the supplier received at a discount."

Crandlemire feels the homeowner ultimately gets the bad end of the deal. "Many times, it's only realized that a substitute beam was used after it's been installed. Then the beam needs to be torn out or other structural materials need to be added," he says. "Ultimately, the wholesaler ends up losing the money they saved on the cheaper product since they have to re-supply the proper product to the builder."

Domestic producers' wariness does not surprise Carsten Kullik, whose Kullik & Rullmann AG began selling German glulam beams in the U.S. and other world markets more than 10 years ago. "We also experienced trouble with the U.S. manufacturers when we came to the market," he says. "They gave up the cause, so to speak, after they recognized that we were working properly to bring our product to the market and making sure we were in compliance with all building code requirements."

Kullik agrees that "U.S. customers need assistance by experienced suppliers assisting with proper design calculations and software." Those who want to substitute Norway spruce glulams simply because of price is not their targeted market. Customers should have an application that benefits from the species' lighter weight, ease of nailing, and aesthetics, and, Kullik emphasizes, they must be "willing to work with our distribution partner, Finnforest USA, to properly design each beam for the application in a safe and reliable manner. After so many years in the U.S. market, we know the imporance of the building code approvals for product market acceptance as well as the importance of having a third party agency that is well known and recognized as a glulam certifying agency."

Bottom line: do your homework. If you're a builder, talk to your yard person before specifying glulam beams made from Norway spruce. If the beams you are getting for your job are specified for 24F, make sure they can handle the loads. If you're a buyer or supplier, check with your manufacturer rep on the above issues and how they might affect your liability, installation and engineering.

"We need to educate the industry that's its not the same and those using it for their projects or those selling it need to know that it shouldn't be passively installed the same as 24 F 1.8E product," says Calvert.

Adds Crandlemire: "We're not criticizing the functionality of beams made from Norway spruce. We just want builders, wholesalers and engineers to be aware that design values are different and this could affect performance and increase their liability."

Specific Differences in Norway Spruce Glulams

According to the latest information sheet from APA EWS, "without a careful engineering analysis of the design on a case-by-case basis, substitution of imported glulam could lead to a red-tagged inspection or structural failure, both situations for which the dealer/supplier can be held liable."

Following are specific instances on what action should be taken if substituting Norway spruce for 24F-1.8E Douglas fir and southern pine beams.

Property Difference	Affected Applications	Action Needed
11% lower shear capacity	All shear-critical applications, including: • Glulam supporting other beams on hangers or point loads from the structure above • Cantilevered or continuous span beam over intermediate support	Engineer must analyze
28% reduction in bearing capacity	All beam applications, including: • Simple span beam and reactions • Intermediate reaction points for cantilever and continuous span beams • Metal hangers designed for Douglas fir or southern pine bearing	Reconfigure design of supporting structure with: • More cripple studs • Larger posts • Different connection details
22% lower reverse tension stress	Any time when the top of the beam is loaded in tension, including: • Short cantilevers • Continuous span floor beams • Beams inadvertently installed upside down • Load reversals due to high wind load situations	Engineer must analyze
12% lower specific gravity	When anything is connected to the beam, including: • Floor and roof diaphragms with wood structural panels nailed directly to the beam • Metal hangers designed for Douglas fir or southern pine beams • Lighting • Sprinklers • HVAC equipment	Engineer must consider: • Additional fasteners • Larger or custom hangers • Reduced hanger capacity • Redesigning all load-bearing connections–nail, bolt or screw–for reduced fastener capacity

—Chart courtesy of APA EWS