

**NC Department of Insurance
Office of the State Fire Marshal - Engineering Division
1202 Mail Service Center, Raleigh, NC 27699-1202
919-647-0000**

T&G wood ceilings acceptability as a plastic insulation thermal barrier

Code: 2018 North Carolina Residential Code
Section: R316.4 Thermal barrierⁱ

Date: August 17, 2023

Question:

Can decorative T&G wood ceilings of nominal 3/4-inch thickness be assumed to be equivalent protection as the 23/32-inch wood structural panel cited in R316.4?

Answer:

No.

Although the same thickness, the two materials called out prescriptively--gypsum and wood structural panels--are sheet materials which have relatively few linear feet of seams. There is no known test data that has indicated an equivalence for T&G ceilings to the 23/32 structural panel's thermal barrier properties. The specific requirement for gypsum or structural panels has been in the code for many cycles, and has not been expanded to include items that have many more linear feet of seams that could leak liquified plastic under fire scenarios, and may require many more fasteners that could also transmit heat to the underlaying plastic insulation.

However, if a test report from a listing company indicates an equivalency to the prescriptive code, then that report can be cited, and used in that given installation. The report would be something like an ICC-ESR report, Intertek report or report from an equivalent nationally recognized testing agency.

Question 2:

Can an intumescent coating, applied at the thermal barrier rate as defined in the spray-foam manufacturer's listed instructions, be applied on the exposed attic foam to separate it from the interior of the building, and then the T&G wood ceiling be placed over the top?

Answer:

Yes.

If the intumescent coating, as defined by the manufacturer's listed instructions is applied, then the T&G ceiling can be placed over it. If the coating in and of itself meets the thermal barrier requirement, the wood ceiling would not detract or lessen the performance.

Keywords:

Tongue and groove

ⁱ**R316.4 Thermal barrier.** Unless otherwise allowed in Section R316.5, foam plastic shall be separated from the interior of a building by an *approved* thermal barrier of not less than 1/2-inch (12.7 mm) gypsum wallboard, 23/32-inch (18.2 mm) wood structural panel or a material that is tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.