What is the maximum allowable level for moisture in gypsum board? —via e-mail

I get this question regularly, and there’s been a running dialogue on the topic on AWCI’s Net-Forum on the Internet at www.awci.org/net-forum/awci/a. Basically there are no industry-wide standards regarding the moisture content of gypsum board. The Gypsum Association’s publication GA-238 explains that moisture meters that are typically used in the field are incapable of giving reliable readings. Often damp gypsum board may give a reading of 15 to 20 percent moisture, when in actuality if the gypsum did contain that much moisture, it would more resemble a paste than a board. But here’s what several industry experts have offered on the topic:

Mark Fowler of the Northwest Wall and Ceiling Bureau writes: “The NWCB in Seattle has a guide specification that calls for gypsum board moisture content of 0.4 percent on a gypsum scale (12 percent on a wood scale) or less before taping should begin. It is critical to note that the environmental conditions of the room/building are more significant than a simple one-time moisture meter reading. A system that has been wonderful in the Pacific Northwest is a desiccant dehumidification system to provide dry warm air and remove moisture from the building.”

Michael Moore of Temple Inland, Inc. writes: “The paper of gypsum board will pick up moisture before the core does. This is one reason moisture meters are not reliable. The moisture in the paper can vary and will coincide with the humidity on each day until it is sealed with paint or some related sealer. Higher moisture content in the paper (from high levels of humidity or direct contact with moisture) will cause the wallboard to become more pliable and appear to be soft and difficult to work with. Proper ventilation or removal of high levels of humidity will bring the board back to a more stable and usable state.”

And finally, Jason Fell of the Drywall Information Trust Fund explains: “I have found that moisture meters are like throwing darts in a dark room—you know you hit something, but what did you hit! The same goes for my moisture meter—I know by its readings if we have moisture on or in the gypsum board, but how much is still a guess. I have found a simple ‘field test’—it’s not scientific or approved by ASTM, but it will tell you more about your gypsum board than any meter will. Take a knife, separate the core from the face paper, then grab the paper with your thumb and finger and let it rip. What you want to see is the plies of paper in your hand without gypsum core on the back of the paper you just tore off. For this to work, the gypsum board must be basically dry. Then take a good look at the core, if it is stuck to the paper. If you find this condition in several areas, you may have damaged gypsum board. I always tell my people, ‘Don’t call me when the gypsum board is wet, call me when you think it’s dry.’ Most gypsum board will dry out fine if the job conditions allow this to happen; however, damaged gypsum board can be a serious problem in today’s world.”

And in today’s world, that means that one is well advised to avoid the conditions that promote the growth of mold. According to Mold: Cause, Effect and Response, published by the Foundation of the Wall and Ceiling Industry (and available for download at www.awci.org/mold-series-1.pdf), “Moisture content is the weight of water in the material divided by the weight of the material in a dry condition, and is expressed as a percentage. For example, water activity of 0.80, which is prime for mold growth, corresponds to the moisture contents of the following building products: brick (0.1 percent to 0.9 percent), gypsum wallboard (0.7 percent), cement (1 percent), wallpaper (11 percent) and soft wood (17 percent).”

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