Fire Tests − Fire Construction
Noncombustibility

In the National Fire Protection Association's NFPA 101 Code for Safety to Life from Fire in Buildings and Structures, a noncombustible material is defined as a material that, "in the form in which it is used and under the conditions anticipated, will not aid combustion or add appreciable heat to an ambient fire." Materials are tested for noncombustibility in ASTM E 136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C. The test exposes small samples of the material to a stream of air heated to 750° C, (1382° F). The material is deemed noncombustible if:

1. Sample temperatures at no time exceed 780° C, (1436° F).

2. There is no flaming after 30 seconds.

3. Once the sample loses 50% of its weight, there's no flaming and sample temperatures never exceed 750° C, (1382° F). ASTM E 136 is an extremely strict test and under its criterion, few building materials qualify as noncombustible. Two USG Interiors products which do are CERAMIC HERITAGE and most THERMAFIBER insulation products.

In regard to gypsum wallboard, the product's paper facing prevents it from passing ASTM E 136. However, because it does have a demonstrated ability to perform in fire rated assemblies, the NFPA has placed it in a special classification called limited−combustible This category distinguishes gypsum wallboard from other, more highly combustible products. To qualify as limited−combustible, a material must have a noncombustible structural base or core, a surface less than 1/8 in. (0.3 cm) thickness and a flame−spread rating of 50 or less.

This last requirement can be confusing because the three national model building codes, (ICBO's Uniform Building Code, SBCCI's Standard Building Code and BOCA's National Building Code), all allow composite materials that meet the NFPA's definition of limited−combustible, to be classified as noncombustible.