

The Growing Popularity of Suspended Acoustical Ceilings Keeps Armstrong World Industries on The Cutting Edge



Armstrong offers a variety of wood and wood accent ceilings. This one, with a Honey finish, shows the beveled tegular cirrus inserts.

By Michael J. Major

The '90s have been a great period for Armstrong Cork—the 1890s that is, for the 140-year-old company now known as Armstrong World Industries, Inc. has had a long and varied history.

Back in the 1890s the company was making bottle stops. It was so successful that it had an over-abundance of cork shavings that company officials sought to put to good use. The search resulted in the introduction of linoleum from the United Kingdom to the United States, as well as the use of scrap cork for insulation for ice boxes and cork board for the acoustical treatment of ceilings and walls.

The big evolutionary change from a cork tile that adhered to plaster to the current acoustical lay-in panel took place about a quarter century ago. Until that time, ceilings were basically monolithic slabs of drywall or plaster, which made access difficult to the increasing amount of fire sprinkler, HVAC and other apparatus that were being placed above the ceilings.

As explains Gary C. Graziano, AIA, Armstrong's manager of commercial new business development, "The driving force behind the acceptance of the modular grid system was the flexibility

with which it both provided access and fire code compliance."

Since this type of ceiling was originally acoustical in its orientation, it is perhaps natural that it is now commonly referred to as an acoustical or suspended/acoustical ceiling. But, as Graziano points out, it is now more properly called a suspended lay-in ceiling of which the acoustical solution is but one application.

The suspended lay-in ceiling has been capturing a lion's share of the commercial market; the main competitor is drywall, with plaster now holding only small segments. But the amount of the share can vary



Armstrong offers a variety of ceiling modules and designs such as coffers and concealed tiles.

widely. For instance, 80 percent of office ceilings are lay-in, while only 20 percent of hospitality ceilings are. "As people discover the benefits of lay-in ceilings, their popularity spreads," Graziano says.

Armstrong Remains Strong

Armstrong holds a large share of the market for lay-in ceilings made of mineral fibre, which is the main material. The two other large players in this arena are USG and Celotex. Secondary lay-in ceilings, made of metal, wood and fiberglass are also manufactured by Armstrong, as

well as a number of smaller companies that make these niche products. They are niche products, at least, in the United States. Metal and wood are prevalent throughout the rest of the world for, as Graziano says, "mineral fibre has not been around as long."

Armstrong is a Fortune 500 company with about 20,000 employees and annual revenues of \$2.7 billion. From its Lancaster, Pa., headquarters it directs about 100 manufacturing and sales operations worldwide in every developed and major developing country, and can ship anywhere in between. The company manufactures a range of products, including flooring, ceramic tiles,

pipe insulation, gasket materials, textiles, adhesives and furniture. Its suspended lay-in ceilings and acoustical walls are part of the company's building products division.

Here are some of the many benefits of the suspended lay-in ceiling, as pointed out by Graziano. "It's very easy to plan," he says. "All of the standard modules are easy to customize. You don't need to do a lot of paper planning. The modules integrate with other building systems, for example, HVAC." If the architect doesn't know where the lights will be or where the walls are, he can make changes up to the last minute. If he knows the height of the ceiling plane and particular perfor-

mance characteristics like fire rating, NRC, etc., he can leave many other details to the construction phase when more is known about the building and its occupants. The contractor, in turn, has considerable flexibility in this regard. All this, Graziano says, can save time and money.

This ceiling also creates a very inexpensive plenum, or space between the building ceiling and structure, where it is easy to get at the wiring, HVAC, sprinkler and other systems. Graziano maintains the lay-in system can result in the plenum acting like a duct that reduces or eliminates the need for return air ducting. It also reduces HVAC costs because of the use of smaller equipment. Because of the 80 percent light reflection in the panels, lower wattage is required, and lights can be used more efficiently, providing with more options for lighting designs.

“Some people think they are saving money by doing spaces without a ceiling, but there’s much more space to heat or cool without the benefit of insulation,” Graziano says. “There’s also the cost of additional fireproofing, acoustical treatment, lighting, HVAC and painting all the exposed elements, all of which can exceed the cost of a suspended lay-in system.”

More Benefits

Another benefit to this ceiling is its light weight, which does not increase the structural requirements for the base of the building. It is especially good in this regard for renovation. The suspended lay-in system has a low profile so that if the floor-to-substructure clearance is not great, a new ceiling can be installed at a code-legal height. The space between the two can be as little as 3½ inches.

“One of the nice things about suspended lay-in systems is the variety of in-fill panels,” Graziano says. “You can fine-tune the suspension system with infill panels to

relate to specific performance requirements, such as acoustical, fire protection, design or even budgetary constraints."

This type of ceiling, Graziano says, enables value engineering. "You can reduce wall and soffit framing costs," he explains. "You can construct the steel stud framing system to the underside of the ceiling suspension system without the aggravation and expense of going through to the underside of the building structure. After the first cost of installation, reconfiguration becomes fairly easy if the building occupants need to change the space." Graziano adds that a benefit unique to Armstrong is that you can attach drywall and create perimeter borders and soffits at much less cost than conventional stud framing systems, with further savings of both time and money.

"The suspended lay-in ceiling system is easy to access, installs

quickly, is prefinished and relatively dust free compared to drywall," Graziano says. "Of all ceilings it has the lowest first cost and lowest life cycle cost, and it is easy to replace even at the end of its useful life."

There are many ways to make this ceiling a pleasant sight, and Armstrong has more design options than anyone else. There are three primary modules: 12-inch by 12-inch, 2-foot by 2-foot and 2-foot-by-4-foot, and a variety of others. There are, again, four basic materials: mineral fibre, fiberglass, metal and wood; plus five basic finishes: paint, fabric, vinyl, metal and wood. There are 11 basic colors, 12 grid profiles, 31 edge details and 38 face or substrate options, "all of which," Graziano says, "can be combined in thousands of different ways to satisfy any aesthetic need."

Armstrong also has concealed accessible tile systems, and also provides custom finishes, modules

and edges for certain types of jobs. "The ceiling is a good way to hide ugly building substructures, and it's easy, fast and inexpensive to update and change," Graziano says. "In many cases, the ceiling costs less money than people spend to replace their carpeting."

The need for better acoustics was among the original use-drive for the lay-in ceiling. Armstrong has a variety of acoustical options, such as high NRC panels (a light, open substrate) to reduce sound in one room, or high STC panels (a dense, compact substrate) to prevent sound transmission from one room to the next, as well as some variations in between.

Armstrong's acoustical test facility, only one of 10 labs of its kind in the country, is outfitted with features such as an anechoic room, a small and a large reverberation room, an open plan testing room and one of only two two-room test ceiling

chambers in the United States for the testing of sound transmission.

Safety also is built into the suspended ceilings. All the commercial panels have a class A rating for retarding fire spread, and can get a one-hour time-design UL fire rating if coupled with certain building assemblies. There are systems specially rated for seismic performance to withstand earthquakes, in-fill panels designed for impact resistance and others to meet high humidity and wet environments. Different variations have met requirements for clean manufacturing or clean work process environments such as labs or operating rooms. Germ-retardant panels for health-care facilities have been treated with an Intersept additive. Some have approval from the United States Department of Agriculture for use in food processing, and others for Coast Guard or other marine applications.

This ceiling system also improves comfort and productivity in any working environment, whether office, retail, manufacturing or education. There's more thermal control for a more even temperature, better lighting and better acoustics for either privacy or focusing sound, such as in a lecture hall.

Armstrong's acoustical walls complement the ceilings. They also are made with a material similar to mineral fibre, with hundreds of different fabric faces, as well as good acoustical properties.

Benefits for Contractors

Some of the benefits specific to contractors, Graziano says, include the possibility of higher margins because the system is easier to handle and install, and can be done much more quickly—in one day—

as opposed to a typical five-day dry-wall job. Since there's less dust, there is less risk of injury than from drywall. Also, if drywall is used, it can be readily attached to Armstrong's suspension system, saving a lot of time and labor risk over conventional black iron and steel stud framing systems.

Armstrong has a wide distributor and installer base with more than 100 sales reps in the United States. Graziano also reports that Armstrong will support contractors with designs or working drawings for special jobs, and will also provide support for a contractor trying to sell any particular job so that he can receive the best possible margin for the work performing. *CD*

About the Author

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