Ceiling Materials for the Information Age
Today’s offices, whether part of the “New Economy” or the more traditional bricks-and-mortar economy, require increased flexibility in space utilization and staff mobility. The popularity of cubicles and shared office spaces, along with increasingly frequent staffing fluctuations and resultant changes in wiring and cabling, have presented workplaces with a number of challenges. In addition, issues like noise levels and indoor air quality are having a growing impact on the working environment of the 21st century and may even threaten productivity.

The Price of Being Connected

Fax machines, phone lines, Internet access and general computer infrastructures have transformed offices into a complex mesh of wires and cables. Businesses, recognizing a need to contain their wiring, have looked up to find a solution.

Suspended ceilings created a pocket of space—the plenum—to house and conceal wires and cables. Although this allowed businesses to become connected without a visible display of wires and cables, it didn’t eliminate the need to access wiring and cabling with ease. In fact, there was an even greater need to minimize disruption to the workplace while maintaining the ability to adopt new technological advances and meet continued office expansion needs.

In reviewing ceiling needs, several priority “Information Age” needs emerge.

First, ceiling products must allow easy and often frequent access to the plenum. This implies a relatively lightweight tile of manageable size.

Next, the ceiling tiles must be resistant to scratches, nicks, punctures, indentations, chipping and flaking caused by frequent moving, often by unskilled workers unfamiliar with ceiling products. In other words, installing or modifying office wiring/cabling should not create undue concern about damaging the ceiling and incurring repair costs.

Third, ceiling tiles must resist soiling and be easily cleanable to compensate for frequent handling and/or mishandling.

It’s not impossible to find a ceiling tile that matches up to such requirements. In fact, one type of ceiling tile produced by a special forming and curing process—what we refer to as a cast ceiling product—is now enjoying a renaissance in interest due to its ability to meet these needs.

Is Work Making You Sick?

According to the U.S. Environmental Protection Agency and its Science Advisory Board, indoor air pollution ranks among the top five environmental risks to public health. In addition, the U.S. Occupational Safety and Health Administration estimates that approximately one out of three Americans who work in non-industrial buildings such as offices are exposed to poor indoor air quality in their workplaces.

Exposure to indoor air pollutants can cause asthma attacks and a variety of respiratory infections such as pneumonia. Productivity losses from Sick Building Syndrome symptoms, estimated to be approximately 2 percent among office workers, cost an estimated $50 billion per year.

Ceiling products must be evaluated in
terms of their ability to contribute to or reduce indoor air quality. Factors include the following:

- Many ceiling tiles are extremely porous and thus are capable of holding and trapping a number of potentially harmful pollutants such as fungi, mold, allergenic agents, dirt and bacteria.

- Recognizing these issues, ease and frequency of cleaning become extremely important. People in today’s offices find it easy and practical to maintain many types of cast ceiling tiles and therefore reduce employee exposure to indoor air pollutants. As a point of fact, many professional cleaning services can clean ceilings in less time than it takes to begin painting, with little or no business interruption (they often work after hours when employees have left the premises), and for a fraction of the cost of replacement. Cleaning prevents allergens and other potentially hazardous materials from building up and posing a threat to employees.

**Too Loud to Think?**

Noise from phones, fax machines, copiers, computers and employees themselves can create an atmosphere rich with sound but poor for concentration. With more employees sharing less space and separated merely by cubicles, noise can become a huge distraction with a significant and costly impact on workplace productivity.

Offices are also faced with another problem. The plenum area extends beyond the boundaries of individual offices and therefore can carry noise from one room to another, including noise that can travel to and from conference and boardrooms, private offices, bathrooms and corridors.

Sound absorption and noise reduction are important considerations. The proper choice of ceiling tile can help combat noise issues in the workplace. Look for the following characteristics to identify...
performance levels that suit your specific needs:

- Some products offer a surface designed for maximum sound absorption and noise reduction. Evaluate the NRC (noise reduction coefficient) measurement for the products you are considering.

- A high CAC (ceiling attenuation class) measurement of sound transmission from room to room through the plenum will assure greater privacy for areas outside or adjoining an open office space.

- Note that the presence of the Underwriters Laboratories Inc. (UL) mark indicates that the ceiling product has been tested and manufactured in compliance with designated safety and performance standards, such as acoustical performance.

Ceiling products designed for open and flexible office space design that meet the above standards have sometimes lagged in aesthetic value. Due to ongoing product development, though, ceiling tiles previously regarded as more functional than attractive have been improved to the point that they actually enhance office appearance while achieving the more practical goals outlined above. Following are some criteria to consider:

**Color options.** Selected ceiling products now come in an array of colors ranging from office neutrals to more lively metallic shades.

**Coloration technology.** Integral core coloration, which is a process that treats ceiling tiles and panels throughout rather than coating them, results in panels that closely match the surface color throughout. This can keep colored panels attractive longer by visually minimizing nicks and scratches.

**Textures.** The serviceable types of cast/molded tiles and panels we have discussed now come in an array of textures
and also lend themselves to a more monolithic look

Sag protection. Look for tiles and panels that meet more stringent standards for sag protection, with the additional protection of 10-year warranties.

**The Bottom Line**

Companies constantly grapple with ways to be more cost efficient. One way for businesses to achieve this is to reduce costs in the physical office space. To summarize features and cost/benefits outlined earlier, we should evaluate ceiling products for durability, ease and expense of maintenance, ease of replacement, noise mitigation and longevity of coloration. Another factor to consider is the capacity for high light reflectance. This feature reduces energy costs associated with lighting office spaces and results in considerable savings to the employer.

There’s no need to sacrifice design for functionality and performance in a ceiling product if customers and specifiers outline and prioritize needs and “wants.” The decision may well be that cast or molded products can help the customer achieve longer product life, support indoor air quality, mitigate office noise and stay within budget, while providing an attractive office environment that promotes productivity and efficiency

**About the Author**

Jerry Vuich is product manager, ceilings, for BPB Celotex. BPB Celotex manufactures and markets interior wall and ceiling products for use in residential and commercial buildings. BPB Celotex is part of the global family of BPB plc, one of the world’s largest interior systems manufacturers, with operations in more than 45 countries.