



## **Eliminating Distractions: Sound Decisions from the Ground Up**

Dow Polyurethane Technology: Carpet Backing

## **Eliminating Distractions: Sound Decisions from the Ground Up**

### **Improve Workplace Acoustics**

Something is hindering productivity improvements in today's workplace, and it sounds like noise distractions are part of the problem. A study by the American Society of Interior Designers (ASID) has reported that distractions are a significant factor in the productivity equation, further defining conversational distraction and uncontrolled noise as the primary categories.<sup>1</sup> One aspect of the ASID study evaluated the role and performance of carpeting in acoustic management, reporting, "Acoustic properties of a flooring system are strongly influenced by the addition of cushion in the commercial workplace." It was further noted that commercial carpet with integral cushion provides "both superior acoustical and ergonomic properties."

Carpet with polyurethane cushioned carpet backing serves as an effective noise reducer by minimizing the sound of foot traffic, providing effective absorption of airborne sound, and reducing sound transmission to rooms below. Based on acoustical studies and field experience, carpet with an integral polyurethane cushion can play an important role in a comprehensive noise management program.

### **Open Office Plan Breaks the Sound Barrier**

Office walls have been steadily coming down over the past three decades in response to evolving needs in the workplace. In addition, companies have invested heavily in new technology, all with expectations of greater productivity and positive impact on the bottom line. However, the intended benefits have not been fully realized, and the cost is significant. This is reinforced in work published by noted ergonomics consultant Dan MacLeod, CPE, which includes a rule of thumb equating one minute of time per day in the workplace to a value of roughly \$100 over the course of a year.<sup>2</sup> When multiplied across a company's workforce, it is clear that even small improvements in productivity can be economically attractive.

In many cases, potential gains have been offset by productivity losses due, in part, to noise. The results of the ASID study suggest that the problem is widespread. In fact, the study includes a survey in which an alarming 70% of the respondents (workers or employees) felt their productivity would increase if workspaces were less noisy. Underscoring the problem, a follow-up survey reported in the study found that "business executives were largely unaware of noise problems in the workplace and, in fact, 81 percent were unconcerned about office noises." Apparently, the complaints of the workers are being lost in the din of the office.

Some now see the open office as strictly an economic play, providing a vehicle for cost and space savings at the expense of occupancy quality.<sup>3</sup> Others maintain the original vision of positive cultural changes and employee satisfaction. Whether the rationale is to promote better teamwork or simply to increase the number of people per square foot, open office layouts and the associated noise issues aren't going away any time soon. It is a situation that demands attention, a view shared by many, including Case Runolfson, CFM, vice president of facilities management for the Irving Group in Washington, D.C.

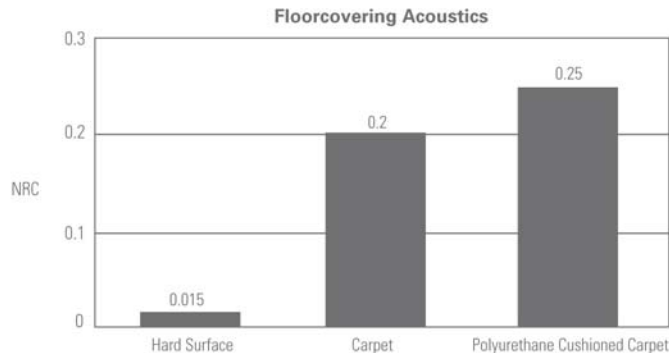
Runolfson recently commented on the situation, stating that, “Effective sound suppression is the most difficult challenge remaining in the open-seating-plan work environment.” With an eye towards solutions, he noted the benefits of a properly specified carpet-cushion composite from the perspective of both acoustic management and the improved carpet appearance retention and life cycle.

## A Step in the Right Direction

Achieving the optimum productivity improvement requires a comprehensive approach, specific to a facility and organization. As with all complex issues, a good starting point is to learn as much as possible.

One source of uncontrolled noise in the workplace comes from the surface noise generation of walking traffic, commonly referred to as “footfalls.” The distraction level has worsened as workstations and walkways have become closer in proximity. High-density open-office plans may have traffic lanes weaving in and around the placement of desks and computer stations, increasing the potential that those on foot disturb those at their desks. Carpet with polyurethane cushioned carpet backing serves not only as an effective noise reducer by minimizing the sound of foot traffic, but also provides effective absorption of airborne sound and reduces sound transmission to rooms below.

Studies reported by the Carpet and Rug Institute (CRI), The Dow Chemical Company (“Dow”) and others clearly show the acoustic benefits of the carpet-cushion composite as compared to hard-surface floors or carpet alone. For example, consider the Noise Reduction Coefficient (NRC) measurements of products evaluated in an acoustics study conducted by Dow. The NRC is a standard metric describing the overall sound-absorbing characteristic of a material. R. Kring Herbert, FASA, an expert in architectural acoustics with Ostergaard Acoustical Associates, notes, “A material with an NRC of 0.25, for example, absorbs about one-fourth of the sound that hits its surface.” As shown in the Floorcovering Acoustics graph below, the carpet with the integral polyurethane cushion was found to provide a 25% improvement in NRC over the same style of carpet without cushion (0.25 vs. 0.20), a finding consistent with results in other studies.



“Depending on the specific carpet construction, it can be an effective sound absorber at high frequencies and make a space sound less bright,” according to Herbert. The ASID study includes a subtler observation, noting that the soft floor covering “contributes more than the measurable noise reduction values, creating an aesthetic ambiance conducive to

lowered voices, heightened privacy, and reduced distraction.” It is advisable to seek expert advice to understand acoustic characteristics for specific products that may vary from the results presented here.

Through studies such as that conducted by ASID, carpet with an integral polyurethane cushion has been recognized for outstanding acoustic and ergonomic characteristics. Properly designed and implemented, a comprehensive noise control program can have a positive impact on productivity by reducing time-consuming distractions.

<sup>1</sup> American Society of Interior Designers (1999). Sound solutions: Increasing office productivity through integrated acoustic planning and noise reduction strategies [online]. Available: <http://www.asid.org>.

<sup>2</sup> MacLeod, D. How business can increase profits with good ergonomics [online]. Available: [http://www.ergoexpo.com/new/increase\\_profits.html](http://www.ergoexpo.com/new/increase_profits.html) (February 22, 2001).

<sup>3</sup> Duffy, F. (1997). *New Office*. Conran Octopus Limited.

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