

3M's collaborative culture leads to breakthrough adhesives

A collaborative research effort between two different businesses – the Industrial Adhesives and Tapes Division and the 3M ESPE Division – has resulted in new breakthrough industrial adhesives. [3M™ Scotch-Weld™ Low Odor Acrylic Adhesives DP8805NS and DP8810NS](#) offer significant benefits over conventional acrylics in productivity, performance, cost savings, and health and safety.

Industrial Adhesives and Tapes' search for a better acrylic adhesive led scientists Kalc Vang, project manager, 3M Adhesives and Sealants Business Lab, Industrial Adhesives and Tapes, and Mike Kropp, lead product development specialist, Industrial Adhesives and Tapes, to reach out to 3M ESPE, where researchers had developed a fast-setting, low-odor dental composite material with a long record of successful use. In a collaborative effort spearheaded by Zach Thompson, senior research engineer, Corporate Research Materials Laboratory, researchers from the two divisions worked together to adapt the chemistry behind the material into a next-generation industrial adhesive.

“The material developed by 3M ESPE was the solution we were looking for, since it was fast-curing, did not give off a pungent odor, and had high-impact resistance and durability,” said Brian Brady, global marketing manager, Industrial Adhesives and Tapes. “We were able to use it to develop a ‘better mousetrap’ that

not only addresses industry concerns but adds performance benefits including a much faster cure time and longer shelf life.”

In fact, 3M™ Scotch-Weld™ Low Odor Acrylic Adhesives offer an incredibly fast cure rate, reaching structural strength in about nine minutes — just half the time of ordinary acrylic adhesives.

With an extended 18-month shelf life and no refrigeration required, 3M™ Scotch-Weld™ Low Odor Acrylic Adhesives provide more than double the shelf life of conventional acrylic adhesives, and can be stored at lower costs.

These benefits are significant as acrylic adhesives are useful in a wide range of applications in industries such as transportation, metalworking, plastics/composites, and sign manufacturing. For example, acrylic adhesives are used in the assembly of a bus, adhering metal skin to a metal frame.

Acrylic adhesives are popular because of their ability to perform jobs such as bonding to both plastics and metals, even adhering securely even to oily or contaminated surfaces. Despite their advantages, traditional acrylic adhesives come with drawbacks that customers are increasingly looking to avoid.

“In the world of acrylic adhesives, there are a few Achilles heels: high odor, brittleness, and a brief shelf life,” said Brady. “These factors inconvenience users and create efficiency and safety concerns, so 3M worked to find a new solution

that would eliminate the drawbacks without reducing the effectiveness of the adhesive.”

Not only do 3M™ Scotch-Weld™ Low Odor Acrylic Adhesives have higher impact resistance on plastics and metals, they also provide excellent shear and peel performance, and improved adhesion to many plastics and metals, expanding the range of applications for which acrylic adhesives can be used.

3M™ Scotch-Weld™ Low Odor Acrylic Adhesives are also non-flammable, making them even more facility friendly.

As Brady explained, “These products are a prime example of how 3M is continually working to bring innovation to the marketplace.”