



ADHESIVES SUPPLEMENT

Presented by
Floor Covering Weekly

Sponsored by
The Adhesive and Sealant Council, Inc.

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How to choose the right glue

Specification often depends on site, supplier suggestions

Just about every adhesives manufacturer serving the flooring business offers a “good,” “better” and “best” variation of their products. Regardless of the formulation, the performance of the material depends largely upon its ability to durably and successfully bond substrates in a manner acceptable to installers.

“There is a difference between some brands and others,” noted Ted Egan, president, Parabond Products. “Proprietary products including static dissipative tile require a more sophisticated adhesive. Other flooring products with unique backings also fall into this category, necessitating the development of specialty adhesives.”

Determining the type of adhesive to use often depends on the manufacturer’s specification. For example, carpet backing and intended application (such as heavy commercial, light industrial, residential) are prime considerations for carpet adhesive selection. “The anticipated traffic level is also paramount,” added Greg Wood, vice president of sales and marketing at Advanced Adhesive Technologies. “Proper application rates, pattern matching and subfloor condition must be considered by the contractor when selecting an adhesive for direct or double glue installations.”

Knowing the type of backing and substrate the carpet is bonded to is equally important. “For instance, a stiff-backed carpet going over concrete must have strong re-bond and moisture and alkali resistance capabilities,” noted Mike Crouch, executive vice president, W.W. Henry Co.

Vinyl flooring installation typically requires one of two specialty adhesives, depending on whether the floor is going over a porous or non-porous subfloor, experts say. For instance, SBR latex-based adhesives are used for mineral, felt- or paper-backed sheet vinyl flooring, while SBR latex-based pressure-sensitive adhesives are specified for vinyl composition tiles. Acrylic latex-based adhesives (and pressure sensitive adhesives) are required for homogeneous vinyl sheet and tiles.

“Pressure-sensitive adhesives are being used more and more due to the ‘instant’ grab they offer,” said Grace Gilbreath, technical director for XL Adhesives, noting these products have improved to the point of replacing many wet-lay adhesives.

If the required adhesive is not used to install the floor, it may void manufacturer warranties. Mannington, a manufacturer of various floor coverings, “highly recommends” its branded adhesives be used when installing its floors. “We private label adhesives because we have quality control of every batch of our adhesive,” said Terry Fitzpatrick, manager of installation services.

Adhesives makers say they stand behind their products if used in place of a product recommended by the flooring manufacturer. “For those of us that don’t have an alliance with a mill, that’s how we battle the war with warranty protection,” said Jeff Johnson,

vice president of marketing at Capitol USA. “Some installers try to short-circuit the process; they may use a cheap glue on a high-end woven Axminster carpet. It’s those kind of things that become an issue, the misuse of product rather than bad product.”

Geography is a prime consideration as well. There are certain states, such as California, that regulate the use of solvent based products. In VOC-compliant markets, they have gone to using solvent-free subfloor adhesives, observers say. Nonetheless, there are minimum temperature requirements and/or increased air emissions that affect the use of waterborne products.

Another critical factor affecting flooring adhesives specification is a product’s track record. Despite variations in price and performance across the board, observers say a large contingent of installers are reluctant to deviate from products with which they previously had success.

“Distributors will promote the products they sell, but they also are quick to relate to failures,” said Jim Walker, CEO and executive director of the International Certified Floorcovering Installers Association. “The Internet has also become a valuable tool as installers can now log on to find which adhesives are failing and which provide the best service.”

Gaining acceptance from the installation community is critical to the success of any adhesive. This is especially difficult in an industry where old work habits die hard. Price remains a prime consideration of cost-conscious installers, experts say, although adhesives makers claim the latest products are competitively priced. [FCW](#)

You get what you pay for

Product quality goes a long way to ensure successful tile installation

The type of adhesive you use depends on where you're tiling, what you're tiling on and how experienced you are at tiling.

The primary adhesives used on tile floors are thinset mortars. Thinsets come in powder form and must be mixed with either water, liquid latex or an acrylic additive depending on the type. Thinsets are considered harder to work with because they must be mixed to the right consistency before using.

“Many commercial installers continue to use the thinsets and mortars (powders) for the tougher jobs over mastics,” said Steve Chase, director of marketing and sales at All Purpose Adhesive. “The current specs of Type 1 call for a minimum bond strength and water resistance in today's mastics. But real-world conditions call for enhanced performance in the toughest commercial applications.”

Thinsets have a stronger bond and are more flexible than organic mastics. They can also support a lot of weight, thus, they are often used for floor tile installations. Thinsets can be used in wet areas as well as those exposed to heat. “Newer polymer formulations have come out offering such things as a self-leveling thinset in which the notches slump much easier, allowing better coverage,” said Dave Gobis, executive director, Ceramic Tile Education Foundation. “Other formulations have come out that allow setting and waterproofing all in one application, high bond and flexural value over wood and even a few that set under water.”

Organic mastics are the most commonly used adhesives by do-it-yourselfers because they are premixed and ready to use, considered easier to work with and less time consuming than thinsets. Mastics should not be used in areas that will get wet or will be exposed to extreme heat. “Until recently, there were few if any mastics recommended for installation of any tile over 8 x 8 in size, and never porcelain, in a flooring application,” Gobis said. “Now mastic- or glue-type adhesives have joined the ranks of ‘good’, ‘better’ and ‘best’ [qualities] and the accompanying price structure.”

What separates the product categories in good, better, best is performance enhancement. “If you want better or outstanding performance, spend accordingly,” Gobis suggested. “What you are paying for is progressively better chemical formulations that will increase your installed performance of the floor system.”

There are specific performance requirements under the American National Standards for Setting Materials, ANSI A118. Manufacturers design their products to meet the basic requirement and are typically sold under the “good” category, Gobis said. For example, “if a A118.4 Latex Modified Thinset Mortar has a minimum requirement of 150 psi shear strength,” he said, “a thinset rated good under this product classification would meet, and

possibly exceed by a small margin, that requirement. Such a product would be suitable for any project requiring a latex modified product.”

An example of that application would be porcelain tile installed over concrete in a doctor’s private practice entryway. “But take the same tile and install it in the main entry of the medical clinic, where traffic has increased ten fold. This is a good place to use a ‘better’ product,” Gobis said. “The better product will have a higher bond strength, maybe 300 psi, and is warranted by the increased foot traffic plus occasional deliveries using hand carts and wheelchairs.”

End users need to know and carefully evaluate the substrate and performance criteria desired, experts say, and budget to make an appropriate decision on both method and product. “There are two basic types of glue: Type 1 for floors and walls, and Type 2 for walls only,” Gobis said. “Until recently, most were recommended for tile no bigger than a 6 x 6 or 8 x 8, and never porcelain. New adhesives have recently been introduced, and several more are going to be introduced that address all these areas.” [FCW](#)

Ceramic adhesive spreading tips

Use a water-proof mastic to install tile in an area that will be exposed to water.

Epoxy adhesives are also available, but their drying times can be difficult to control. They are more appropriate in areas where high impact strength and chemical resistance are required, such as for a darkroom. Before applying the adhesive, carefully read the manufacturer's instructions for drying time so you don't spread any more than you can work with before it sets.

Spread the adhesive on the floor using the flat side of the applicator. Then flip the trowel around to the notched side and run it at a 45-degree angle.

Use a trowel that is deeply notched enough so the peak of the adhesive is as thick or nearly as thick as the tile thickness. Only spread as much adhesive that can be worked with before it sets.

Source: Doityourself.com

The Ps & Qs of gluing wood

Q: How do I get dried adhesive off the top of the floor?

A: Adhesive removal is easiest when the adhesive is still wet. The best way to remove dried adhesive from the top of a wood floor depends on the adhesive used. Most dried adhesives can be removed using mineral spirits, but polyurethane-based adhesives cured on top of the floor are not affected by mineral spirits.

Q: May I use your adhesives over a subfloor that has radiant heat?

A: Yes, any of our wood flooring adhesives can be used over radiant heated floors. Franklin Concrete Primer is recommended for lightweight concrete. We suggest the system is turned off for a day or so before installation. This process ensures the adhesive will provide the necessary working time to install the floor. Once the floor is in place, the system can be turned back on, and the adhesive will not be affected by the radiant heat system operating temperature. The radiant heating system cannot exceed 85° F during normal use.

Q: How long until I may walk on the floor?

A: In general, excessive walking on the floor should not occur for several days. In particular, the floor should not be exposed to heavy traffic or furniture until the adhesive is near full strength. While polyurethane adhesives generally reach full strength within two days, other adhesives can take a week or more.

Q: What size trowel do I use to apply this adhesive?

A: For installing tongue-and-groove plank flooring, Franklin recommends a V-notched trowel with notches 1.4-inch deep and 3.16-inch wide. For our polyurethane products, those notches are spaced so the center of one notch is 11.16 inches from the center of the next, and the coverage is about 60 square feet per gallon. For our other adhesives, the center of one notch is 1.2 inch from the center of the next, and the coverage is about 45 square feet per gallon. For installing parquet flooring, we recommend a 1.8-inch square notched trowel that provides about 65 square feet per gallon coverage for all of our adhesives. To install plywood, use a 1.4-inch square notched trowel.

Source: Franklin International

For suppliers, education is job No. 1

Staying current on changes is critical to ensure success

Tougher clean-air regulations are reportedly forcing flooring adhesives makers to switch to environmentally friendly waterborne or polyurethane systems. And while the use of solvent-based glue containing high volatile organic compounds (VOCs) has declined, the industry is finding it still has a long way to go in terms of educating the marketplace.

“Installers require more information on the flooring they are going to be installing and the properties of the adhesive,” said Grace Gilbreath, technical director for XL Adhesives. “Many of the adhesives they have used for years are not designed for the new backings being introduced into the market.”

The fact that changes in adhesives technology and performance characteristics are occurring so rapidly means it is increasingly important for flooring contractors, retailers and installers to be aware of the factors impacting performance, experts say. “It is very challenging for installers and retailers to stay current on adhesives information,” said Jim Walker, executive director and CEO of the International Certified Floorcovering Installers Association (CFI). “If they choose not to be informed, the risk of job failure increases drastically.”

This makes it imperative, if not challenging, to keep distributors and installers abreast of changes affecting adhesives specification and performance, such as environmental regulations and job-site conditions. Adhesives makers say they have this covered by providing distributors with, among other things, training, marketing and merchandising support. “We probably do about 50 seminars a year with distributors,” reports Joe Lazzaro, product manager for Bostik Findley.

Though concrete statistics are hard to pin down, industry estimates indicate there are approximately 100,000 to 250,000 flooring installers in the United States. “It is a difficult process to find them,” said Jeff Johnson, vice president of marketing at Capitol USA.

In addition to providing the do’s and don’ts about their products, adhesives makers sponsor and participate in training programs with flooring manufacturers, distributors and trade organizations. Bostik Findley’s Lazzaro recommends flooring contractors, retailers and installers contact their local distributors to find out more about these sessions.

Other manufacturers also stress the importance of structured educational programs. Franklin International, for example, offers two-day, hands-on seminars quarterly at its Columbus, Ohio, headquarters.

Parabond Products provides buyers and sellers with information on its products via flyers, videotapes and the Internet. This technical support is complemented with on-site training available to Parabond customers.

Similarly, Chapco Adhesives conducts training seminars periodically at distributor locations, where customers can learn about new and updated products. “We supplement that by having our regional salespeople travel with distributor salespeople when they’re making calls to retailers,” said Fred Jacobs, vice president of sales. “This gives distributor salespeople a chance to update their skills and the technical information they need about Chapco products.”

But manufacturers are not the only ones driving education efforts. Further data is available through industry trade organizations. “Seminars are always available at the CFI convention and chapter meetings that provide information,” Walker said. “And as new information becomes available, CFI immediately shares this with our members.”

Job-site failures related to adhesives can be an ugly and messy situation for all parties involved. Fortunately, job failures related to adhesives performance are reportedly down considerably since the late 1980s and early 1990s, when manufacturers reformulated products to comply with new regulations on VOCs.

“Adhesive claims are rare today,” said Jim Johnson, vice president of sales and marketing at T&A Supply Co., a Kent, Wash., distributor. “It’s generally an application area or misapplication that results in a bond failure.” [FCW](#)

Distributors balance volume, quality ratio

Profit vs. volume issue impacts wholesalers' inventory mix

Adhesives is a small but integral part of any flooring distributor's product mix. Understandably, wholesalers may inadvertently neglect this business as they focus on marketing core products and items with higher margins.

“Quite frankly, with our six locations, some of our branches are much better at capturing this business than other branches,” said Fred Jaeckle, president and CEO of Jaeckle Wholesale, a Madison, Wis.–based flooring distributor. “There are a lot of distributors that are very successful servicing only this type of business.”

Like floor coverings, industry members say product quality will impact both customer satisfaction and profitability with adhesives. But this is where the business philosophy splits like a fork in the road.

Some distributors take the road less traveled by selling value over price. Others deploy the age-old tactic of selling low to generate volume, namely with commodity products.

While there are customers willing to pay top dollar for adhesives, the paradox is flooring installers are often creatures of habit. According to industry watchers, many installers are unwilling to try new, better quality adhesives because they are comfortable with tried-and-true formulations. Meanwhile, price sensitive mechanics may purchase the least expensive adhesives to minimize their own costs.

Further compounding matters is a fragmented customer base adhesives makers and distributors find difficult to reach. In addition to installers, this mixed bag includes flooring retailers, contractors and workrooms. “They all need to be managed as separate channels with services and prices, etc.,” explained Jim Johnson, vice president of sales and marketing at T&A Supply, a Kent, Wash.–based flooring distributor. “The challenging aspects for us are getting the information out there because the business is so fragmented.”

There are many kinds of formulations and methodologies capable of bonding or joining various substrates, which makes it essential for flooring distributors to understand their suppliers' product lines. Each formulation produced by adhesives makers is unique, and many variables affect specification, such as temperature, humidity and porosity of the subfloor. “It's almost impossible for the installer to remain current on the latest developments in adhesives,” said Jim Walker, CEO and executive director of the International Certified Floorcovering Installers Association (CFI), “mostly because the average installer does not have the chemical background, time or resources to learn what he should regarding the chemical composition of adhesives.”

Major distributors often leave no stones unturned when putting together a product mix. There are adhesives available for every floor installation type and condition, and different qualities to meet any need or budget. “We have found there are distributors that will only

want to carry base-grade adhesives because the demographics of their customers will dictate low prices and low quality,” said Jeff Johnson, vice president of marketing at Capitol USA. “Then again, there are distributors who cater to a high-end, high-performance customer base, and a low-end, contract-grade adhesive never hits their shelves.”

With so many features to weigh, it is not uncommon for distributors to offer more than one adhesive brand of the same quality. “This type of thing happens when an installer finds an adhesive he likes; he is reluctant to change to a different brand,” Jaeckle said. “Sometimes the differences between brands are real, and sometimes they are just perceived.”

Indeed, some industry members believe there are too many “me too” adhesives in the marketplace, where the only distinguishing feature is the brand. This “sameness,” experts say, has forced some distributors to rely on frequent markdowns to ring up more sales — a race they’re bound to lose to Home Depot and other big boxes that can slash prices further because their costs are lower.

“Unfortunately, I think there isn’t enough innovation at the manufacturer level,” T&A’s Johnson said. “I think that’s one of the driving issues — that maybe the channel is not fully realizing full margin opportunities because of a lack of significant product differentiation.”

Not so, according to adhesives makers contacted by *FCW*. Vendors claim many of the latest formulations either equal or exceed solvent adhesives in areas such as bonding and quick-tack ability. “It’s up to us to promote why our products are better,” said Joe Lazzaro, product manager for Bostik Findley. “We try to focus on performance. If all products were identical, you wouldn’t have a price differential.”

Despite these efforts, there remains a contingent of installers reluctant to deviate from products with which they’re familiar. But observers say this wall of resistance is slowly crumbling as more homeowners, architects and designers become more eco-conscious. Suppliers are also doing what they can to address these installers’ concerns. “The manufacturing community continues to introduce new and novel ways of applying adhesives that eliminate the problems of the past,” Capitol’s Johnson said. *FCW*

Adhesives suppliers design with ‘green’ in mind

New technologies aim to comply with environmental legislation

Despite a recession and growing uncertainty about the days ahead, flooring adhesives manufacturers are bullish about business in 2003. Nonetheless, the industry faces many of the same challenges that impacted sales growth and product development over the years.

Vendors report that research and development is being driven largely by new environmental regulations — particularly in California — and the need to fulfill everchanging installer needs and flooring manufacturers’ specifications. The challenge for adhesives makers is to develop formulations that adhere to these requirements, a tall order considering that environmental regulations change almost every year.

“Thanks to the continuing R&D invested in green products, today’s adhesives are superior in every way to the older solvent-based or –containing formulas,” said Greg Wood, vice president of sales and marketing at Advanced Adhesive Technologies. “Adhesives continue to improve in performance, such as tack times, bond strength, extended working windows, ease of application, moisture resistance and other key areas.”

Experts say adhesives companies serving the flooring market have already made a complete transition from solvent to low and no-solvent systems. “But it’s always a struggle and challenge to convert people from solvent-based to water- based counterparts because they handle differently,” noted Jeff Johnson, vice president of marketing at Capitol USA.

Many of the latest water-based and polyurethane adhesives are marketed as being either equal or exceeding solvent-based adhesives in such areas as bonding and quick-tack ability. For instance, W.W. Henry Co. claims its GreenLine GL62 is the first high-performance carpet adhesive that has almost no discernible odor and the lowest level of VOCs of any product on the market (as measured by Carpet and Rug Institute criteria).

GreenLine was designed to install difficult carpet backings in heavy traffic areas, can be used for all carpet backings except vinyl, offers a long working time (yet has no open time required over most substrates) and offers superior bond strength.

“GreenLine represents the first time a flooring adhesives manufacturer has developed technology that reduces emissions levels so dramatically while maintaining high performance levels,” said Mike Crouch, executive vice president. “Helping to improve indoor air quality is quickly emerging as a key issue in the flooring and building industries, especially in healthcare facilities and schools.”

DriTac Adhesive Group’s 7500 line is a VOC-free moisture- cure urethane adhesive specially formulated to provide high initial tack, low odor and excellent permanent adhesion. The water-resistant adhesive, which provides some vapor-retarding characteristics to wood flooring installations, was specified for the glue-down

groundwork for the new James Naismith Memorial Basketball Hall of Fame and Museum in Springfield, Mass. “The [contractor] company that won the bid was familiar with how it performed in the field, and the installers were comfortable with the product,” said Wade Verble, national sales manager. “The major chemical difference is the 7500 has no calculated VOCs.”

Parabond Products is the exclusive licensee of Microban’s antimicrobia technology for use in its premium grade adhesives for carpet, resilient and hardwood. The technology, built in during the manufacturing process, is utilized for Parabond commercial, industrial and consumer products.

Each formulation produced by adhesives makers is unique, experts say, so there are many variables affecting adhesives specification, such as temperature, humidity and porosity of the subfloor. In response to some of the difficulties experienced with water- based adhesives for hardwood flooring, W.F. Taylor has developed Meta-Tec technology to be a one-part reactive, cross-linking adhesive that is not moisture- or humidity-dependent and serves as an alternative to urethane- based wood flooring adhesives.

The technology is incorporated into Taylor 2071 Tuff-Lok X-Link, a high solids, cross-linking, waterproof wood flooring glue, and Taylor 2061 Tuff-Grip TPS, a cross-linking transitional pressure-sensitive wood flooring adhesive. “It’s more of an installer-friendly product and can be used in varying conditions, whether it’s high humidity, low humidity or somewhere in between,” said Jack Raidy Jr., president.

Meta-Tec offers fast green strength and cure rate, a moisture-proof cured adhesive film comparable with urethane- based glues, easy wood surface clean-up and an air driven cross-linking system that does not lead to waste where product cures upon storage in the container. [FCW](#)

Industry walks a very fine line

New adhesives address IAQ issue without impacting on performance

As manufacturers continue to reformulate flooring adhesives, they are facing a difficult challenge: creating environmentally friendly products without compromising performance characteristics.

“We are continuing to lower VOC levels for adhesives in all flooring sectors,” said Greg Wood, vice president of sales and marketing at Advanced Adhesive Technologies. “Our R&D efforts, in conjunction with our vendor partners, strive to develop new compounding systems to reduce the indoor air quality (IAQ) impact while enhancing the performance of the adhesives.”

The stakes are high, experts say, as this balancing act requires a much more focused and attentive commitment to R&D. “As we improve our technology in this industry, the challenge is to provide products that meet the application needs of the contractor while still being less harmful,” said Tom Cassutt, director of research and development and product services for Mapei. The company offers a wide selection of solvent-free floor covering adhesives, including its Ultra/Bond Eco185, a high-tack, latex-based carpet adhesive, and Ultra/Bond Eco 290, an ultra- white, non-staining, acrylic based resilient sheet goods adhesive.

Adhesives makers are closely monitoring the latest environmental regulations enforced in Southern California — and with good reason. The Southern California Air Quality Management District (SCAQMD) is aiming to significantly reduce the amount of VOCs released into the air. What makes these developments worth watching is California air quality regulations are usually adopted by other states to comply with the Federal Clean Air Act.

“Indoor air quality has emerged as a key issue in the flooring and building industries, especially in government facilities and schools,” observed Mike Crouch, executive vice president, W.W. Henry Co. “Lowering emission levels in flooring adhesives can contribute to improving indoor air quality during remodeling.”

Once states adopt new regulations for air pollution, manufacturers serving these areas will be required to reformulate products that do not comply. “The next-generation technology includes those adhesives that are compliant with strict air quality guidelines, including those from SCAQMD,” said Shamsi Gravel, Bostik Findley Flooring Group product manager, carpet and vinyl flooring products.

To comply with environmental regulations, some manufacturers are using alternatives such as vinyl polymers and 100-percent solids systems as they move away from traditional, solvent-containing adhesives. Others are developing bonding systems based on “hybrid” technologies, meaning they combine attributes from existing chemistries to create a single formulation that addresses long-standing application issues.

“Polyurethanes and hybrids have become the next generation of adhesive technology,” said Mark Schroeder, marketing manager, Franklin International. “They have achieved varying levels of success in real-world environments and will likely continue to gain acceptance.”

Another major consideration of the next-generation flooring adhesives is reducing installation time. This enables mechanics to move quickly from job to job while allowing immediate occupancy on site, the latter of which is a high priority for commercial customers. For example, AAT’s Universal Adhesive Sprayer US-1 can help installers save time and money because it applies adhesive much faster than troweling, according to the company. A double-sided spray wand allows users to comfortably control the spray application.

Previous environmentally compatible formulations often required installers to give up performance expectations when switching from traditional adhesives. But manufacturers claim technology has improved to a point where there is little difference in performance characteristics between older, solvent- containing and new, “green” adhesives. This includes performance in such critical areas as bonding and quick-tack ability.

“Side by side comparisons of a solvent- based, green product may prove that the green product is as good, if not better,” Bostik Findley’s Gravel said. “Although today’s green technology is proven to do the job, it’s often the end user’s mindset that really needs to be addressed.”

As is the case with any new product, industry members say it will take time to determine if the latest glue systems take hold. [FCW](#)

Guidelines for carpet adhesive installation

The following are guidelines from the Carpet and Rug Institute for carpet adhesive installation over concrete.

Site conditions: The environment in which the carpet is to be installed must be controlled with the temperature between 65° and 95° F and relative humidity from 10 percent to 65 percent. The slab temperature should not be less than 65° F. These conditions must be maintained for at least 48 hours before, during and after the installation.

Floor preparation: The concrete must be inspected to determine the special care that might be required to make it a suitable foundation for carpet. All cracks, holes, joints and protrusions must be adequately addressed to ensure a smooth, finished appearance and prevent accelerated wear.

Concrete must be cured; clean and dry; and free of paint, dirt, grease, oil, curing or parting agents and other contaminants, including sealers, that may interfere with the bonding of the adhesive. Whenever a powdery or porous surface is encountered, a primer compatible with the adhesive to provide a suitable surface for the glue-down installation should be used. Patching compounds must be compatible with the adhesive selected and latex- or polymer-fortified.

Primers: The use of primers on floor surfaces is generally not necessary — except for sanded, dusty, porous or acoustical surfaces. Priming cannot overcome moisture conditions and must not be used for that purpose. When used, primers must be thin, fast drying and compatible with adhesives, which should be applied only after primer is dry. Where lightweight or acoustical concrete is used, refer to the manufacturer's recommendations for the proper primer to be used before carpet is installed.

Liquid adhesive removers: There are liquid adhesive removers available that effectively remove cutback or emulsion adhesive residue from subfloors. However, there is evidence these products may adversely affect the new adhesive or floor covering.

Testing of concrete subfloor prior to adhesive installation: The owner or general contractor must submit to the flooring contractor a written report on moisture and surface alkalinity of the slab to determine its suitability as a substrate for the material to be installed.

Moisture testing: Concrete floors, even with adequate curing time, can present an unacceptable moisture condition by allowing excessive amounts of moisture vapor to pass through to the surface. This can be a problem even on suspended concrete floors. All concrete floors should be tested for moisture emission rate by utilizing an anhydrous calcium chloride moisture test kit.

This quantitative method is precise and must be conducted carefully, with strict attention to the test kit manufacturer's detailed instructions. The moisture emission rate is expressed in lbs./1,000 sq. ft./24 hours. Because the calcium chloride test for emission rate requires three days to conduct, proper installation planning is a must.

An emission rate of 3 pounds (1.4 kg) or less is acceptable for most carpet. In the range from 3 to 5 pounds (1.4 to 2.3 kg), carpet with porous backings can usually be installed successfully, though the risk of moisture-related problems increases.

Alkalinity testing: A pH range of 5 to 9 is satisfactory. A reading above 9 requires corrective measures.

Source: CRI-104, Standard for Installation of Commercial Carpet

Installers crave the best of both worlds

Glues based on 'hybrid' technologies address long-standing application issues

Ever since the federal government banned the manufacture of certain solvents some 10 years ago, adhesives makers have scrambled to develop alternative products. This proved to be a tough nut to crack, as installers preferred the performance and workability of tried-and-true formulations. Throw in thorny competitive issues and you have an industry that is continually reinventing itself to provide bonding solutions while complying with ever-changing environmental regulations.

“In the adhesives market, the technologies aren’t mixing. They are evolving,” observed Joe Lazzaro, product manager at Bostik Findley. “Manufacturers are making their current technologies better.”

Industry watchers say there is a movement within the wood flooring industry that stands to impact how future adhesives are developed for other uses. Glue makers are developing bonding systems based on “hybrid” technologies, meaning they combine attributes from existing chemistries — such as polyurethane, waterborne and hot melts — to create a single formulation that addresses long-standing application issues. “If we are able to take performance properties from one technology type and successfully blend it with those from another type, the end result, hopefully, is a better product,” said Mark Schroeder, marketing manager at Franklin International.

Waterborne and moisture-based urethanes (MCUs) are considered the two leading technologies for wood flooring adhesives. For years, adhesives makers tinkered with formulations so they could offer a better mousetrap. Research and development (R&D) efforts focused largely on increasing moisture and alkali resistance, cross-linking and solids content for waterborne adhesives. Meanwhile, MCU adhesives makers attempted to improve trowel-ability and clean up, characteristics offered by water-based products.

“Every manufacturer knows about the perfect properties of an adhesive,” Bostik Findley’s Lazzaro said. “The hard part is trying to use existing technologies to get there.”

By utilizing existing technologies, adhesives makers can bypass costly R&D investments associated with developing new, alternative chemistries. This, industry watchers say, is what makes such developments worth watching. “Hybrid products are generally not expensive to pursue from an R&D standpoint and do not entail major changes to the existing manufacturing process,” said Jack Raidy Jr., president, W.F. Taylor.

Franklin International is combining high quality polyurethane hot-melt adhesives with an efficient, cost-effective application system to create the HiPURformer Advanced Bonding System. The glue system utilizes many of the positive attributes found in several adhesives and combines them into one formula. “It’s a cross-linking, moisture-cured urethane coupled with a hot melt,” explained Brian Roberts, technical sales manager, Flooring Construction Products Division.

Observers say the rising number of wood flooring manufacturers and exotic species entering the U.S. market is creating new opportunities as well as challenges for adhesives makers. For example, “bamboo is becoming much more popular, and there are different bamboo manufacturers, qualities and coatings put on the backs of them,” said Yale Block, president of Basic Adhesives. “So there’s a whole host of new variables.”

Waterborne, considered the leading formulative technology, is marketed as being equal or better than solvent adhesives in such areas as bonding and quick-tack ability. But temperature, humidity and porosity of the subfloor affect both “open time” and “working time”. “Obviously, if you can reduce the amount of water in a hardwood adhesive, you reduce the occurrence of cupping and end-lifting,” Bostik Findley’s Lazzaro said. “But the issue is how high can you get that solids content and still have an adequate open time.”

Waterborne adhesives marketed as “high solid” contain roughly 10 percent to 40 percent water. The trade-off, however, are high-solids products compromise open time, the period when the floor is laid down. While 30 minutes is considered sufficient open time for a hardwood flooring installation, experts say that figure can be reduced substantially, depending on the amount of solid materials in the adhesive.

Adhesives makers expressed optimism about developing high-solid adhesives with extended open times. “That’s what we’re trying to figure out,” Lazzaro said. “Our Durabond acquisition has helped us develop some unique water-based adhesives technology we will use to develop new hardwood adhesives if market conditions change.”

Basic Adhesives offers a line of waterborne, pressure-sensitive adhesives for hardwood flooring that offer an almost unlimited open time. “One reason installers like our adhesive is if the floor has a hollow spot, when people walk over it, it re-attaches itself and sticks,” Block said. “If you’re using a urethane or water-based adhesive, there’s nothing you can do about that [situation] except make the actual repair.”

While wood flooring adhesives makers say they are committed to turning installers on to new formulations, they also must gain acceptance from flooring manufacturers. After all, these companies recommend which type and/or brand to use with their materials. If the specified adhesive is not used to install the floor, it may void manufacturer warranties. “So this is a very powerful incentive to the installer to use the manufacturer’s adhesive,” Block said.

The new adhesives must also be seen and demonstrated to distributors and installers, among others, so they can understand their value and benefits. “We found out first-hand how difficult this is,” Bostik Findley’s Lazzaro said. “In 1996, when 1,1,1 trichloroethane was banned, we had a new technology that was drastically different, and it took us five years to switch over most of the contractors.” [FCW](#)

Sheet vinyl adhesive installation

The first part of the new sheet vinyl floor to be secured is the seam. This is done by applying the adhesive along the floor between the two sections of flooring.

First, gently fold back one section and temporarily tape it back out of the way. Draw a pencil line along the edge of the other section to mark the seam line. Gently fold back the second section and tape it out of the way.

Apply a band of adhesive to the floor surface along the seam line, using the recommended notched-tooth metal trowel. Remember that the old floor needs to be clean and free of wax. Check the manufacturer's recommendations at this point. Some require only a 3-band (11.2 inches on either side of the pencil line) while others may require as much as 6 inches of adhesive 3 on either side of the seam.

Apply the adhesive all along the pencil line to about 1.2-foot away from any cabinets. You want to stop the adhesive here, so once the seam is pressed together and rolled, you will be able to fold back the flooring under the cabinets to apply adhesive there. You have to glue the areas under cabinets. You cannot get a staple gun under the cabinet overhang.

Lay one piece into the adhesive, and then the other. Make sure the edges of the vinyl are tight against each other. If you don't, you'll get a condition called "ledging" where one side rides up higher than the other. Dirt can build up here and draw attention to the seam. Now go over the seam with a rolling pin or seam roller to press the vinyl into the adhesive and eliminate ledging.

To prevent moisture from getting under the floor along this seam, use a special seam sealer kit. Read and follow the instructions carefully. When applying solvent, hold the bottle at the proper angle and don't wipe up any of the excess. It will dissolve, and you won't see it after a short time. Give the seam a few hours to set up before walking on it. Use the adhesive, as instructed, on the perimeter areas that are visible without a molding or in areas where you are unable to use your staple gun. Roll the edge back and apply the adhesive in the proper amount with the notched trowel or manufacturer's suggested applicator, and press it into place with the roller.

This type of vinyl floor, being perimeter bonded, will now contract slightly, tightening like a drumhead over the next 24 to 48 hours. Because of this, wait until the floor has contracted to its final tension before moving furniture and appliances back onto it. [FCW](#)

Source: Doityourself.com

Adhesive criteria for green label

Low-VOC-emitting adhesives are a critical part of maintaining good indoor air quality (IAQ) during the installation process. The Carpet and Rug Institute (CRI) reports that its IAQ Adhesive Testing Program's green label products are a major part of a low-VOC gluedown installation. Manufacturers continue to invest in new technologies, systems and processes to create products that are friendly to the environment.

CRI has instituted a testing program to identify low-VOC floor covering adhesives. The program tests for chemical emissions using an independent laboratory that specializes in indoor air quality testing.

Adhesive products that meet the emissions criteria are allowed to display the program's green and white label. Carpet manufacturers, installers and end users seeking a low-emitting adhesive can confidently select those bearing the label, CRI officials said. Products are re-tested regularly for continued compliance.

Adhesives are used more often in commercial settings to adhere carpet to the floor. In residential settings, adhesives are used primarily where the carpet is installed over a concrete subfloor.

Tested adhesives fall into a number of categories, such as latex multi-purpose floor adhesive, pressure-sensitive floor adhesive, vinyl-backed floor adhesive, latex seam adhesive, vinyl-backed seam sealer, cove base adhesive, "tackless" cushion adhesive and contact adhesive. The CRI criteria for the adhesive testing program are based on a maximum emission factor as follows:

Source: Carpet and Rug Institute

| | |
|----------------------------------|-----------------------------|
| Total Volatile Organic Compounds | 10.00mg/m ² ● hr |
| Formaldehyde | .05mg/m ² ● hr |
| 2-Ethyl-1-Hexanol | 3.00mg/m ² ● hr |

Waterborne or polyurethane?

Experts offer the pros and cons on working with each formulation

As responsible adhesives manufacturers strive to develop cleaner indoor air quality products, they must also give equal attention to delivering the same level of performance found in solvent-containing formulations.

While a number of approaches have been taken in producing new, low-VOC formulations, most glue makers have turned to waterborne and polyurethane products to comply with regulatory drivers.

There are, however, pros and cons for using each formulation as well as various factors that impact their performance and specification.

“Polyurethanes are the ultimate in adhesive technology, but that is a double-edged sword,” said Jim Walker, CEO and executive director of the International Certified Floorcovering Installers Association.

“First, they bond very well, but then again they are extremely difficult to remove. Second, they certainly work well to install a floor, but so do their water-based counterparts at a considerably lower cost.”

Many polyurethane adhesives offer excellent adhesion strength, flexibility, green grab, a long working time and low amount of VOCs. Because they contain no water, polyurethane is considered ideal for use with wood flooring, a natural material sensitive to excessive moisture. Polyurethanes can cure rapidly in the presence of moisture, which allows them to perform over a wet subfloor.

While polyurethanes offer excellent performance characteristics, like any adhesive, there are potential downsides. Similar to waterborne formulations, the environmental conditions of the job site determine how fast these products dry. A certain amount of humidity is required for them to stick.

A level subfloor is required when using polyurethanes because these products do not offer the same “green grab” as solvent-based products. This requires the installer to set the floor into the adhesive on time, or it will diminish the bond. And some spots may dry faster than others, which may create hollow spots between the wood flooring and subfloor.

“Polyurethanes can tack up very quickly, but that is usually not a problem and actually works to your advantage,” said Steve Seabaugh, technical director for the National Wood Flooring Association and owner of Seabaugh Custom Flooring, Cape Girardeau, Mo. “You don’t want the glue to stay wet forever because you can have a lot of movement with the floor.”

While retail prices of polyurethanes have dropped in the past two years to a point where they are competitive with many waterbased products, manufacturers contend these adhesives are well worth it. Some manufacturers claim these products can last the life of the floor while others say installers gain more mileage — offering roughly 15 more square feet per gallon — than water and solvent-based adhesives.

“I’m aware that some competitive products out there are not as expensive as they used to be, which makes polyurethanes a little more attractive,” said Jeff Johnson, vice president of marketing at Capitol USA.

While waterborne products do not exhibit as aggressive a green grab as solvent-based adhesives, they do provide many benefits to installers, such as excellent sheer strength and being easy to spread and clean up. The water-based products reportedly gaining prominence in the marketplace are the ones offering high solid content. Waterborne adhesives cure through water evaporation, so they work best in low-humidity areas.

But there are environmental factors that affect the use of these products. Temperature, humidity and porosity of the subfloor affect open and working times. For this reason, waterborne adhesives are considered regional products, with specification dependent largely on environmental conditions.

Waterborne products are among the least expensive flooring adhesives, which makes them a favorite of flooring retailers and installers in price sensitive markets. Special care is necessary when utilizing waterborne adhesives because they contain water.

For example, if water-based products are not well agitated, the adhesive particles could settle out of the water carrier fluid. Too much agitation, or excessive pumping rates, can trap air bubbles in the adhesive, resulting in unevenness or gaps in the adhesive when applied. And if the installer inadvertently uses the wrong trowel, or spreads more adhesive than required on the subfloor, that can cause physical distortion in the wood.

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