

# Realtà MAPEI

AMERICAS



**Waterproofing for  
the construction  
industry**



**ISSUE 25**

Every waterproofing solution • 2017 trade shows • Mapelastic® waterproofs the world • MAPEI Flexcolor™ 3D grout

## Keeping things dry



**Luigi Di Geso**  
President and CEO,  
MAPEI Americas

“Keeping things dry” in the construction industry generally means waterproofing. Waterproofing bridge columns keeps the internal structural iron from rusting. Waterproofing residential bathrooms keeps the area around the shower from developing mold and the supporting timbers from rotting. Waterproofing soil keeps erosion from occurring under buildings. And the list goes on.

In this issue of *Realta MAPEI Americas*, we talk a lot about waterproofing. You may be astonished by how varied MAPEI’s waterproofing solutions are and how many different products and systems we have. Whether your project is residential, commercial, industrial or related to infrastructure, MAPEI can help to keep it dry.

Sales of waterproofing products, along with all our other system solutions, have helped MAPEI to grow this past year. In fact, we grew quite a bit faster than the economy in North America. You can read all about it in our article on “Economic trends and MAPEI growth in North America” (Pages 6-8).

This edition also talks about the 2017 trade shows that we’ve participated in to date. It’s always exciting to meet with our customers, vendors, colleagues and even our competitors in large venues where everyone is talking about the same thing – whether it is concrete, flooring in general, or specifically tile and stone. Take a stroll through the write-ups on World of Concrete, The International Surfaces Event and Coverings 2017, to read what’s new from MAPEI.

One great new product that we introduced at Coverings this year is **MAPEI Flexcolor™ 3D**, an exciting new grout with translucent and iridescent effects. You can read all about it and get a look at the colors/effects of this impressive ready-to-use grout on Pages 15-17.

As we progress through our 80<sup>th</sup> year in business, MAPEI has many new plans for growing and expanding. We hope you enjoy the ride with us. We’ll make every effort to keep you and your projects “dry” and successful along the way.

Sincerely,

A stylized, handwritten signature in black ink, likely belonging to Luigi Di Geso.

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Waterproofing for the construction industry

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# DON'T LET THE WATER IN

MAPEI has waterproofing solutions for every need

Apartment balconies in Budapest. A swimming pool in Hong Kong. An airport in Mumbai. The Singapore harbor. A petroleum supply wharf in France. A bridge in Miami. A museum in New York City. A famous fishing pier in California. An automobile assembly plant in Buenos Aires. An auto route in Quebec City. A mall in Los Angeles. A hotel in London. A university in Connecticut. A technology center in Louisiana. A resort on the island of Guam. A law office in Chicago. A residential subdivision in Florida. The Ritz-Carlton in Montreal. Condominiums in Monterrey.

Enough already! What do all these different construction projects have in common? They, and thousands of others, all needed to keep water at bay, and MAPEI met that need with one or more of its wide array of waterproofing products.

MAPEI prides itself on being a company of complete system solutions. The company provides a waterproofing solution for every category of the construction industry it serves – residential, commercial, industrial, infrastructure, sports facilities, hospitality, healthcare, public buildings and urban design.

## Products that meet the need

### Underground waterproofing

Waterproofing often begins underground. In MAPEI's Underground Technology Team (UTT) product division, a basic offering is the **Mapeplan** series of synthetic waterproofing membranes that come in rolls measuring 65.6 feet (20 m). These membranes can be used to waterproof drill-and-blast tunnels, open-cut tunnels and underground structures.

MAPEI has recently added the **Plastimul** series of solvent-free, quick-drying, low-shrinkage, high-flexibility bitumen waterproofing emulsions. **Plastimul** products can be used for waterproofing foundations, basements and underground garages from the outside, as well as load-bearing walls.

Various accessories and support products for underground waterproofing are also available.

### Waterproofing for concrete used in construction

External liquid and sheet membranes aren't the only methods used for waterproofing concrete. MAPEI/GRT provides an internal membrane as part of its admixture offering. **Krystol Internal Membrane™ (KIM®)** waterproofing admixture for concrete is a chemical admixture in dry powdered form, effective in creating waterproof concrete. KIM is used in place of externally applied surface membranes to protect against moisture transmission, chemical attack and corrosion of reinforcing steel.

When combined with fresh concrete, the unique Krystol® technology reacts with un-hydrated cement particles to form millions of needle-like crystals. Over a period of weeks and months, these crystals grow, filling the naturally occurring pores and voids in concrete, and permanently blocking the pathways for water and waterborne contaminants. Later, if cracks form due to settling or shrinkage, incoming water triggers the crystallization process and additional crystals form, filling cracks and ensuring that the structure's waterproofing barrier is maintained and protected.

In addition to filling the pores and capillaries of the concrete matrix with crystals, KIM enhances the natural hydration process by intensifying and prolonging the hydration of the cementing materials. This reduces the size and number of capillary pores within the concrete matrix, making it dramatically less porous, and improving strength and durability characteristics.

### Below-grade waterproofing

MAPEI supplies two forms of below-grade waterproofing membranes, depending on whether a blindside or a positive-side application is required.

**Mapeproof™** waterproofing membranes (for blindside applications) are composed of sodium bentonite encapsulated between two polypropylene geotextile fabrics. **Mapeproof SW**, designed for sites where contaminated or salt groundwater is present, also contains a proprietary polymer to ensure that the membrane performs as designed when hydrated. The nonwoven fabric is needle-punched through to the woven fabric, with thousands of fibers mechanically locking the sodium bentonite clay in place.



*Mapeproof SW*

After backfill is placed and confined under pressure, **Mapeproof HW** hydrates and forms a monolithic waterproofing membrane when exposed to moisture.

The swelling characteristics of the sodium bentonite clay in **Mapeproof HW** can seal small concrete cracks caused by ground settlement, concrete shrinkage or seismic action. **Mapeproof HW** also forms a strong mechanical bond to concrete when the concrete is poured onto the nonwoven geotextile fibers.

For traditional positive-side waterproofing, **Mapethene™ HT** and **Mapethene LT** are 60-mil-thick, self-adhering sheet waterproofing membranes. Each is composed of across-laminated polyethylene film 4 mils thick, which is laminated onto a proprietary rubberized asphalt 56 mils thick. The **Mapethene** products can be used for vertical and horizontal waterproofing on structural foundation walls and decks.

MAPEI also carries a complete line of accessories for its below-grade waterproofing products.

### Waterproofing exteriors and interiors with the **Mapelastic®** family

The **Mapelastic** family of waterproofing products first came onto the construction scene 30 years ago, when MAPEI introduced the original product **Mapelastic** to the Italian market. This flexible, cementitious waterproofing membrane was designed for use in permanently protecting concrete and masonry. It also offers protection against chemical attack from de-icing salts, sulfates, chlorides and carbon dioxide.



*Mapeproof HW*

Since its introduction, **Mapelastic** has covered more than 3.767 billion square feet (350 million square meters) of concrete – from balconies and swimming pools to dams and bridges. **Mapelastic** is used mainly for exterior waterproofing of concrete, where its uses are practically limitless:

- Waterproofing of concrete irrigation canals and water containment structures
- Waterproofing of retaining walls, foundations and precast concrete elements embedded in the ground when protected with a drainage board approved by local building codes
- As a protection barrier against the effects of carbonation on concrete pillars and concrete beams for road and railway bridges, etc., after they have been structurally repaired with MAPEI's **Planitop®**, **Planigrout®** or **Mapecem®** families of repair mortars
- For protecting structures having an insufficient layer of concrete covering over reinforcement steel
- Protection of concrete surfaces that can be exposed to seawater, de-icing salts and sulfates
- Protection of cement-based renders and concrete with shrinkage-produced cracks from the infiltration of water and aggressive airborne chemicals
- As a flexible smoothing and protective layer for concrete structures, including those subjected to deformation under load, such as precast panels and beams
- Waterproofing of patio decks, balconies and swimming pools that are then covered with a suitable wear surface, coating or finish





**Mapelastic Smart**, one of the first subsequent products developed for the *Mapelastic* line, is a cementitious membrane for protecting new concrete structures, concrete structures repaired with **Mapecem** or **Planitop** mortars, renders with hairline cracks and any cementitious surface subject to vibrations and the subsequent cracking. *Mapelastic Smart* also is designed to be used as an intermediate waterproofing membrane on such hydraulic projects as channels and faces of dams as well as swimming pools, basins, storage tanks, balconies and terraces.

Making the transition to use on interiors, MAPEI developed **Mapelastic 315**. This trowel-applied, flexible, fiber-mesh-reinforced waterproofing and crack-isolation membrane can be installed under ceramic tile or stone on indoor/outdoor residential, commercial and industrial intermittent wet and submerged applications. *Mapelastic 315* provides an exceptional barrier to prevent water from migrating into other areas, making it ideal for multi-family or multi-story buildings where high-quality waterproofing is imperative to prevent water damage in rooms adjacent or below. It is also excellent for submerged applications such as swimming pools, spas, fountains, water features and steam rooms that are then completely covered with ceramic tile or stone.

**Mapelastic AquaDefense** is MAPEI's premiere waterproofing (and crack-isolation) membrane for use on interior construction, though it can also be used on exterior facades, floors, ceilings and submerged surfaces such as freshwater pools, fountains and water features. This advanced liquid-rubber membrane comes in a premixed formula, is quick-drying and is installed under ceramic tile and stone to provide a thin, continuous barrier against water. For common problem areas like coves, corners, cracks and drains, it can be combined with MAPEI's optional **Reinforcing**

**Fabric** or **Mapecband™** accessories (cove roll and drain flash) to provide additional protection. *Mapelastic AquaDefense* dries after about 30 to 50 minutes and is then ready to receive any MAPEI polymer-modified or epoxy mortar. *Mapelastic AquaDefense* has been selected by The Villages, a residential mega-development in Central Florida, as its waterproofing product of choice for the more than 100 homes that their contractors complete every month (see the full story on Pages 21-23 in this issue).

**Mapelastic HPG**, a specialty product in the *Mapelastic* family, is a ready-to-use, highly flexible, liquid acrylic waterproofing membrane for installation under ceramic tile or stone on residential and light commercial interior floors and walls. Applied with a roller, trowel or brush, *Mapelastic HPG* has excellent compatibility with cement-based mortars. When installed with MAPEI's **Fiberglass Mesh**, *Mapelastic HPG* can also be used as a crack-isolation membrane. It can be applied over existing in-plane cracks up to 1/8" (3 mm) as part of a one-coat system and for handling up to an additional 1/8" (3 mm) in-plane movement when applied at the appropriate application thickness as part of a two-coat system.

The *Mapelastic* family continues to grow at MAPEI's research headquarters in Italy, where two new products have been added to the line. **Mapelastic Turbo** is a two-component, rapid-drying, elastic cementitious mortar for waterproofing terraces and balconies, including at low temperatures and on substrates that are not completely dry. **Mapelastic Foundation** has been developed as a two-component, flexible, cementitious mortar for waterproofing concrete surfaces subject to negative and positive hydraulic lift. Available only in Europe at this time, these additional *Mapelastic* family members may eventually be introduced in the Americas.



## Other techniques for stopping water intrusion

In line with MAPEI's efforts to meet construction needs in many situations, other products have been developed that provide alternate techniques for stopping water intrusion.

**Idrostop™** is a pre-formed, expandable, hydrophilic rubber strip that can be used to produce watertight construction joints in civil, industrial and hydraulic construction. Construction joints created with *Idrostop* are watertight up to 5 atmospheres of pressure. Unlike materials made of alternate composition that lose efficiency in repeated wet/dry cycling, *Idrostop*'s unique composition allows it to maintain performance even in aggressive environments.

**Planiseal® Plug** quick-setting mortar is specially designed for stopping active leaks on horizontal and vertical concrete surfaces in interior or exterior applications.

**Planiseal Plus** is suitable for repairing concrete precast pipes, cracks and joints in concrete foundations, tanks, pools, fish ponds, irrigation canals, etc. It eliminates active leaks under pressure quickly and effectively.

The **Resfoam™** series of polyurethane-based products are useful in stopping a variety of water intrusion issues:

- **Resfoam HL 35** is a single-component, water-activated hydrophilic polyurethane used for sealing cracks or joints in concrete structures that are subject to continuous moisture exposure. Its ability to absorb water up to 800% of its own mass allows *Resfoam HL 35* to be used for large water-inflow applications, such as manholes or below-grade structures with active water leaks.

- **Resfoam HB 45** is a solvent-free, MDI-based polymer system that reacts with water. Upon application, it reacts to form a closed-cell polyurethane grout that will not shrink, and provides an elastomeric waterproof barrier, sealing infiltration points against water intrusion in concrete structures.

- **Resfoam SS 75** is a low-viscosity, hydrophobic polyurethane used for soil stabilization in a variety of water-bearing soils. The low viscosity of *Resfoam SS 75* provides for effective penetration of the earth, adding structure and stabilization by encapsulating the granules and subsequently forming a rock-like mass.

## A final word

Even MAPEI's new **Mapeguard® UM** underlayment membrane for crack suppression under ceramic tile and stone installations has a waterproofing component, allowing it to perform over challenging substrates such as young concrete and plywood subfloors.

MAPEI's outlook has expanded far beyond the powdered mortars and grouts first introduced into the Americas when the company opened its initial international plant in Laval, Quebec, nearly 40 years ago. Waterproofing is just one example of how a commitment to innovative research and development has enabled MAPEI to meet construction needs with complete system solutions.



# ECONOMIC TRENDS AND MAPEI GROWTH IN NORTH AMERICA



## Economic trends in North America

The gross domestic product (GDP), an indicator of the size of a country's economy, is growing in North America. Projections by the Federal Reserve Board and Federal Reserve Bank presidents in March 2017 indicate that the U.S. GDP is growing at a rate of 2.1% and will continue to do so throughout 2017 and into 2018.<sup>1</sup> The Canadian GDP is expected to grow by 1.9% during this same period.<sup>2</sup>

The construction industry in the United States is also showing solid growth, with an overall forecasted 2017 increase of 6.5%

over 2016 numbers. The Non-Residential Construction Forecast by Associated Builders and Contractors (ABC) calls for a 5.3% increase in total non-residential construction in 2017 (Table 1), while the residential market shows a 6.4% rise in new home construction spending and a 9.6% increase in home improvement spending (Table 2).

Construction prospects in Canada have risen, too. Total construction spending for all sectors is forecast to increase by 2.4% in 2017. New residential construction is expected to grow 2.2% Canada-wide, while non-residential construction (commercial, industrial and institutional) may increase by as much as 4.5%.



## MAPEI is growing faster than the economy

MAPEI North America's growth rate for the first quarter of 2017 is 14% above the same period in 2016. "This is resoundingly positive news due to the fact that 2016 itself was a banner year for revenues in this subsidiary," said Luigi Di Geso, President and CEO of MAPEI North America.

"I feel strongly that the efforts we have made over the past several years to add new sales representatives, new technical representatives and new architectural representatives have enabled us to reach and service our customers better than we ever had in the past. And, our innovative products continue to meet the highest technological standards as we seek to provide solutions for our customers' needs today and in the future."

From this leadership stance, MAPEI has moved steadily forward, introducing new categories of products from MAPEI Group into the North American market, as well as expanding current operations and acquiring additional manufacturing capacity.

The acquisition of GRT (General Resource Technology) helped to anchor MAPEI in North America as a provider of concrete admixtures. "GRT has helped to increase revenues with its own products as well as those from MAPEI. Another strong benefit has been that GRT has also elevated MAPEI to a new level of visibility as a player in the construction business in the U.S. and Canada," Di Geso said.

Though the majority of MAPEI North America's business continues to be in its flooring lines – installation systems for tile and stone, carpet, wood and vinyl – the subsidiary is now supplying the industry with systems for construction that takes place below those surfaces. Below-grade waterproofing systems were introduced into American markets in 2016 and are now beginning to produce positive results. The products in this category are manufactured from raw materials supplied in part by sister company Polyglass USA.

MAPEI North America is going deeper into construction with the Underground Technology Team (UTT) and its products for underground construction work. Building on MAPEI's global achievements with this technology, the UTT team is already experiencing successes in this sector, which encompasses tunnels, mines and other underground construction.

MAPEI is also expanding its portfolio with products that have been certified for the marine transportation industry. The portfolio includes products for surface preparation, waterproofing, flooring installation, sound reduction and resin deck coatings used in marine transportation.

A complete line of **Mapefloor™ CPU** cementitious and resin floor coverings is being introduced into North America this year. This family of polyurethane-cement mortars, plus a finishing coat, has been designed to

**Table 1:** U.S. Non-Residential Construction Forecast for 2017-2018

Spending Put-In-Place (billions of \$)	Estimated \$	Forecast % Change	
	2016	2017	2018
<b>Non-Residential Total</b>	407.5	5.3	4.1
<b>Commercial Total</b>	168.2	5.8	3.4
<b>Office</b>	68.1	6.5	4.3
<b>Retail &amp; Other Commercial</b>	73.1	5.6	3.1
<b>Hotel</b>	27.0	4.5	2.2
<b>Industrial Total</b>	75.1	6.6	3.4
<b>Institutional Total</b>	164.2	4.3	5.0
<b>Health</b>	41.3	2.8	3.3
<b>Education</b>	89.8	5.2	5.5
<b>Religious</b>	3.7	1.8	2.5
<b>Public Safety</b>	8.0	-3.0	4.0
<b>Amusement &amp; Recreation</b>	21.4	6.7	6.9

Forecast: American Institute of Architects, January 25, 2017  
Data source: American Builders and Contractors, December 2016

**Table 2:** Residential Construction Spending through February 2017

February 2017 Construction Spending				
	Total Private Residential (\$ in billions)	Single Family	Multi-Family	Home Improvement Spending*
<b>February</b>	\$484.7	\$253.8	\$63.5	\$159.1
<b>January</b>	\$476.1	\$251.1	\$62.2	\$162.8
<b>2016</b>	\$455.7	\$248.1	\$58.3	\$149.2
<b>M/M change</b>	1.8%	1.2%	2.0%	2.7%
<b>Y/Y change</b>	6.4%	3.4%	10.6%	9.6%

Forecast: The Virginia Tech – U.S. Forest Service February 2017  
Housing Commentary: Section I  
Data source: <http://www.census.gov/construction/c30/pdf/privsa.pdf>; 4/3/17

provide high resistance to chemicals, making the products ideal for use in industrial applications in the food and beverage industry.

“MAPEI North America has recently ramped up operations in its manufacturing facilities to support the increased production fueled by the escalation in sales,” Di Geso stated. Additions include new powder plants in Dalton, Georgia (March 2017), and Logan Township, New Jersey (April 2017). A new plant in Chicago will be completed by the fourth quarter of this year (October 2017). Expansions are underway to double production capacity with new production lines in Fredericksburg, Virginia (September 2017), and San Bernardino, California (June 2018).

“As operations expand in the Americas, so does the need for talented, experienced personnel. Since January 1, 70 new employees have joined MAPEI North America,” Di Geso noted.

Reiterating the important role played by the sales, technical and architectural representatives, Di Geso concluded, “All the new

products and technologies for MAPEI North America are carried to our customers by our well-trained and dedicated sales teams. All the sales representatives came together at the beginning of 2017 in an intensely focused MAPEI North America sales meeting. During the training, motivational speeches and networking between representatives from different regions, the entire sales force re-committed to the goal of generating \$1 billion in annual revenues for MAPEI by the end of 2020.”

The products, processes and people of MAPEI North America are going strong as MAPEI celebrates its 80<sup>th</sup> anniversary. In the words of MAPEI Group CEO and avid cycling enthusiast Dr. Giorgio Squinzi, “We keep on pedaling!”

<sup>1</sup> U.S. Economic Indicators - Source: <https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20170315.pdf>; 3/16/17

<sup>2</sup> Economic Outlook, National Bank of Canada Economics and Strategy Group, 12/31/16

**Table 3:** U.S. and Canadian Economic Forecasts for 2017

U.S. Economic Forecast										
	2016 Q3 actual	2016 Q4 forecast	2017 Q1 forecast	2017 Q2 forecast	2017 Q3 forecast	2017 Q4 forecast		2016 forecast	2017 forecast	2018 forecast
Real GDP growth (q/q % chg. SAAR)	3.2	2.3	1.8	2.2	2.3	2.0		1.6	2.2	2.4
CPI (y/y % chg.)	1.1	1.7	2.1	2.0	2.1	1.9		1.2	2.1	2.2
Core CPI (y/y % chg.)	2.2	2.2	2.0	2.0	2.0	2.0		2.2	2.0	2.2
Unemployment rate (%)	4.9	5.0	5.0	5.0	5.0	5.0		4.9	5.0	4.7

Canadian Economic Forecast										
	2016 Q3 actual	2016 Q4 forecast	2017 Q1 forecast	2017 Q2 forecast	2017 Q3 forecast	2017 Q4 forecast		2016 forecast	2017 forecast	2018 forecast
Real GDP growth (q/q % chg. SAAR)	3.5	1.8	2.0	2.4	1.4	1.9		1.3	1.9	1.7
CPI (y/y % chg.)	1.2	1.5	1.6	1.7	2.0	2.0		1.4	1.8	2.0
BoC core CPI (y/y % chg.)	1.9	1.9	1.6	1.4	1.6	1.9		2.0	1.6	1.8
Unemployment rate (%)	7.0	7.2	7.2	7.1	7.1	7.0		7.1	7.1	6.9

Source: Economic Outlook, National Bank of Canada Economics and Strategy Group, December 2016



# TRADE SHOW WRAPUP: NEW PRODUCTS AND NEW MOMENTUM



## The International Surface Event (TISE) West 2017

This year's attendance at TISE in Las Vegas, Nevada, was 37,055, an increase of 7% over the 2016 headcount. Visitors to the trade show were upbeat and enthusiastic about flooring opportunities in both the residential and commercial sectors of the construction market.

A big highlight of the MAPEI booth was the celebration of the company's international 80th birthday. MAPEI North America is celebrating the anniversary by giving away some high-tech presents to contractors who use MAPEI's high-tech products. The grand prize is an Arctic Cat Wildcat X recreational off-highway vehicle with side-by-side seating. The first runner-up can choose an Arctic Cat Alterra 700 ATV or an Arctic Cat ZR 6000 Sno Pro ES snowmobile. The second runner-up will

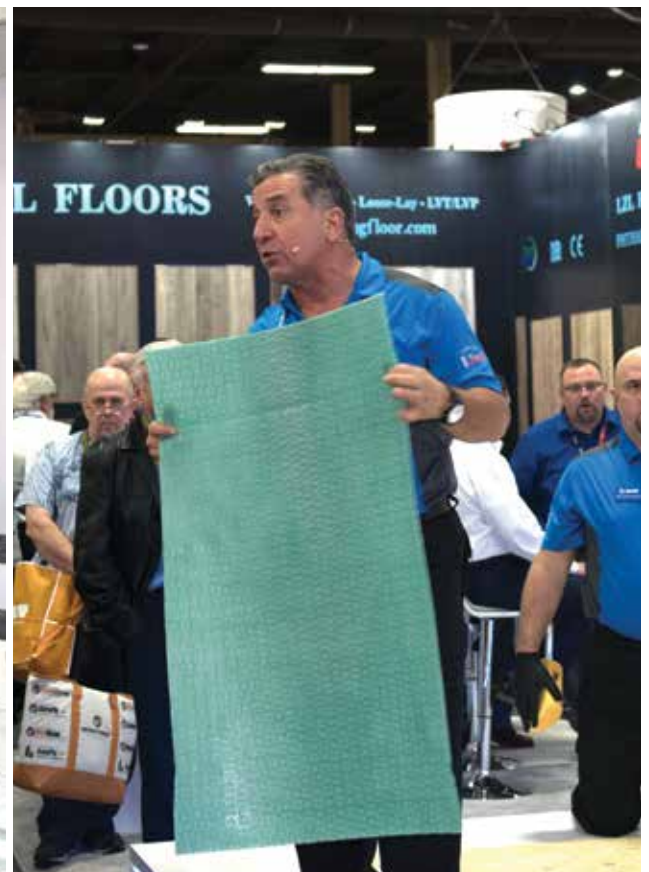
receive a Colnago V1-R road bike. And the third runner-up will be presented with a DJI Phantom 4 Quadcopter drone with camera. "After 80 years, MAPEI is stronger than ever as the world leader of materials for construction and flooring. Contractors' support is MAPEI's greatest reward, and we're celebrating our high-tech legacy by giving high-tech gifts to them," said Steven Day, Director of Operational Marketing.

At the MAPEI booth, TISE attendees saw Sam Biondo and the MAPEI Demo Team demonstrate new **Mapeguard® UM** underlayment membrane for tile and stone. **Mapeguard UM** is a waterproofing and vapor-pressure-equalizing underlayment membrane that suppresses cracks under ceramic tile and stone installations, in both residential and commercial applications.

It is designed to perform over challenging substrates, such as young concrete and single-layer 3/4" (19 mm) plywood subfloors with joist spacing of up to 19.2" (49 cm) on center.

Visitors also got to see demonstrations of **Ultraplan® Extreme 2** self-leveling underlayment. It is especially formulated for leveling interior horizontal concrete surfaces where environmental controls are not operational or the building is not enclosed.

In addition, MAPEI's Floor Covering Installation Systems group introduced **Ultrabond ECO® 373**, a universal pressure-sensitive multi-flooring adhesive. It was designed for the installation of a wide variety of resilient flooring types. **Ultrabond ECO 373** has been specifically formulated



## The International Surface Event (TISE) West 2017

to provide extended working time (up to 12 hours) and can be applied using a trowel or roller, depending on the level of tack that is required for the flooring that is being installed.

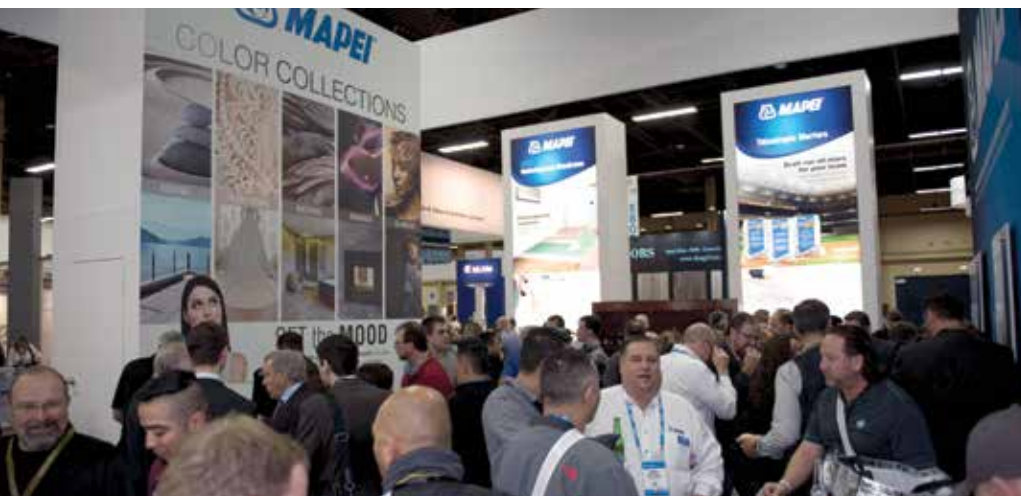
MAPEI was well represented at TISE West with speakers giving presentations at the conference portion of the program. Topics included “Large and Heavy Tile Mortars – Inside the New ‘H’ Rating in ANSI,” presented by Technical Services Manager

Jim Whitfield, and “Designing with Natural Stone (for architects and designers),” presented by Michael Granatowski, National Sales Manager for Architectural and Commercial Projects.

On Thursday afternoon, MAPEI hosted its traditional VIP Hospitality Event in the MAPEI booth. The event was so well attended that there were lines waiting to enter the booth for most of the event. This hospitality event is held each year to show

MAPEI’s appreciation for its distributors, contractors and architectural/design guests. The company’s 80th anniversary was celebrated with cupcakes decorated with an “80” symbol and edible glitter over MAPEI-blue frosting. Everyone enjoyed the festive spirit of the event.

In 2016, TISE West was a part of Design & Construction Week, co-located with the NAHB International Builders’ Show (IBS) and the National Kitchen & Bath Association’s Kitchen & Bath Industry Show (KBIS). In 2017, however, the Design & Construction Week took place in Orlando, Florida, a week before TISE West. The IBS and KBIS shows brought together more than 80,000 builders, general contractors, remodelers, designers, flooring professionals and product specifiers from around the globe. MAPEI participated with a booth at the event, even as TISE West preparation was underway in Las Vegas.







## The World of Concrete 2017



The World of Concrete trade show took place at the Las Vegas Convention Center from January 17-20. Attendance was down from 60,000 in 2016 to 50,000 in 2017. This decrease occurred because the triennial international show for the construction industries, CONEXPO-CON/AGG, took place in 2017. (CONEXPO-CON/AGG was also attended by MAPEI divisions.)

Both the MAPEI Concrete Restoration Systems (CRS) Division, which included Below-Grade Waterproofing, and the Concrete Admixtures Division, represented by GRT, had booths at World of Concrete. MAPEI also announced the company's celebration of its 80<sup>th</sup> anniversary via a giveaway contest (see description in The International Surface Event writeup on the previous page).

In the South Hall of the Convention Center, the CRS division displayed its portfolio of restoration products and below-grade waterproofing offerings in a new booth this year. Using a modular design, the new space provided two meeting rooms, a storage room for literature, and a mixing room for the MAPEI Demo Team. In addition, elevated stations held applied samples, which were a focus of conversations between MAPEI representatives and attendees.

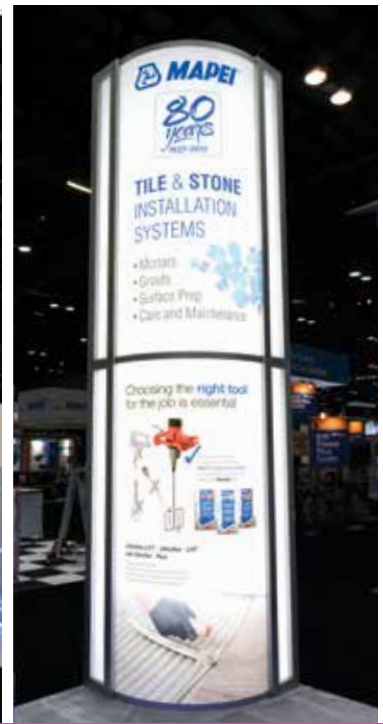
The center of the popular MAPEI booth was occupied by a demo stage where Pierre Hebert, MAPEI Technical Services Manager for Canada, and his demo team showed the features and benefits of MAPEI concrete repair mortars (such as **Planitop® 11 SCC**), screeds (**Topcem™ Premix** and **Topcem Pronto**), products for structural strengthening (as exemplified by **Carboplate™**) and coatings and sealers (**Planiseal™ WR** and **Planiseal WR 40**).

In the North Hall, the MAPEI/GRT sales team met with customers from around the country, as the Concrete Admixtures division continues to grow from a regional to a national supplier for concrete contractors on large projects. The MAPEI representatives highlighted superplasticizers for ready-mix concrete and products such as **Polychem 850** multi-range water-reducing admixture.

This year at World of Concrete, MAPEI introduced its Cement Additives division (C-ADD) with a presence in the MAPEI/GRT booth. Dr. Hugh Wang, Technical Manager for the C-ADD division in the Americas, was on hand to speak with cement producers about MAPEI's grinding aids and other products that can help reduce the amount of energy required to produce cement, thus lowering the cement factories' carbon footprint.

MAPEI also held a VIP hospitality event in the CRS booth. Many contractors stopped by to congratulate MAPEI leadership on the 80<sup>th</sup> anniversary of the company. MAPEI thanked visitors to the event for their patronage.





## Coverings Trade Show 2017

Coverings, the international tile and stone expo, was booming this year, with more than 28,000 attendees. This figure equals a 9% increase over 2016 attendance when the show was held in Chicago, and a 10% increase over the 2015 show in Orlando. Over 90 countries were represented by 1,100 exhibitors in 465,000 square feet (43 200 m<sup>2</sup>) of space at the Orange County Convention Center in Orlando.

MAPEI's booth was a hot spot at the show, thanks in part to the launch of **MAPEI Flexcolor™ 3D**, a ready-to-use translucent specialty grout with an iridescent effect. MAPEI Flexcolor 3D comes with 10 different effects, including metallic shades, neutrals and colors. The characteristics of this innovative grout drew designers, contractors and the media to demonstrations held in the booth, and they stayed afterward to collect brochures, color charts and applied samples. MAPEI gave away tiny flash lights that highlighted the iridescent effects, and these quickly became a collector's item at the show.

MAPEI Technical Services Director Dan Marvin blogged about the popularity of MAPEI Flexcolor 3D: "I've been attending Coverings for more than 20 years and have never seen a product make a bigger splash right out of the gate than Flexcolor 3D. We introduced it at our booth this year and I spent most of my time talking about it, both in the booth and everywhere I went on the show floor. Customers, contractors,

tile manufacturers... everywhere I went, everyone was talking about Flexcolor 3D."

Another popular product at the MAPEI booth was new **Mapeguard UM**, a lightweight, waterproofing and vapor-pressure-equalizing underlayment membrane that provides crack suppression for use under ceramic tile and stone installations. Contractors and installers asked many questions about the membrane and are already recommending it to colleagues and co-workers because it functions as an uncoupling membrane that can be used with polymer-modified mortars.

There were over 65 conference sessions at Coverings 2017, and MAPEI Technical Services personnel played an important role. Technical Services Director Dan Marvin sat on a panel that introduced the new standards for thin (gauged) large tile panels and engaged in the hands-on workshop that followed the discussions. Cris Bierschank, Sustainability Manager for MAPEI Americas, and Mikaela Decio, Environmental Sustainability Manager for MAPEI Italy, participated on a panel titled "Health, Safety, Environment, Design: Selling Tile Sustainability." Bierschank also gave two mini lectures on "Beginner Blogging: Simple Tips for Connecting with Customers."

MAPEI attended a number of the Ceramics of Italy functions during Coverings, including their annual press conference

and presentation of the Ceramics of Italy Tile Design Competition Awards. Of special note, the Award for the Institutional Category was given to the Jerome L. Greene Science Center project in New York, NY, designed by the Renzo Piano Building Workshop. The project used Casalgrande Padana tiles as well as MAPEI tile and stone installation systems throughout the jobsite. At the reception following the press conference, the Confindustria Ceramica North American Distributor Award was presented to Garden State Tile of New Jersey, a distributor of MAPEI products.

A very special part of Coverings 2017 was the Installation Design Showcase, sponsored by the National Tile Contractors Association (NTCA). Each year, the showcase features live installations of tile in a variety of applications; and this year the tile was installed in three "tiny houses," an increasingly popular lifestyle trend in the U.S. Coverings visitors get to see the value installers bring to the beautification of a home with tile. MAPEI participated again this year by providing installation materials for one of the tiny houses (see details of the Installation Design Showcase in the following article, pages 13-14).

Overall, the 2017 trade shows were very successful for MAPEI, and a repeat performance is anticipated in 2018.





# MAPEI PLAYS BIG ROLE IN TINY HOUSE AT COVERINGS



"Tiny houses" took center stage at this year's Coverings, the largest global tile and stone exhibition in North America. The Orlando show highlighted an Installation Design Showcase, which features National Tile Contractors Association (NTCA) Five-Star contractors at work installing tile in selected vignettes.



Tiny House #2 designer Kim Lewis and the installers from Visalia Ceramic Tile, Inc.



MAPEI tile and stone installation products were used in the Installation Design Showcase for the seventh year in a row. Since the showcase's inception in 2010, MAPEI has been a supporter and supplier of this ingenious program established by the NTCA.

The Installation Design Showcase allows tradeshow attendees to visit three vignettes that have been designed by selected architects. During the first days of the show each year, visitors see the tile being installed in the vignette. Near the end of the show, the NTCA hosts an "unveiling" that allows everyone to see the beautiful outcomes and listen to commentary by the designers and installers.

This year's Installation Design Showcase featured the live installation of tile in three tiny houses, which are compact living spaces that maximize function and style. Adam Money, the developer of the Orlando Lakefront RV park community, partnered with Coverings for the initiative.

Each tiny house highlighted a different design aesthetic and was equipped with live streaming video. This allowed attendees to see the work from start to finish from outside the home. Tiny House #1 was a nature-inspired "West Michigan House," Tiny House #2 was the vintage-style "Retro Bungalow" and Tiny House #3 was the geometrically inspired "Vitruvian – An Imitation of Nature."

MAPEI played a significant role in providing installation mortars and grouts for Tiny House #2. The 175-square-foot (16,2-m<sup>2</sup>) Retro Bungalow was designed by Kim Lewis Designs of Austin, Texas, and installed by NTCA Five Star Contractor Visalia Ceramic Tile, Inc., of Visalia, California. Various Italian tiles from the Ricchetti Group and Atlas Concorde were used to create the vibrant one-of-a-kind home.

The Palm Springs-inspired Retro Bungalow tile was set with **MAPEI Ultralite™ Mortar**, which carries the Green Squared Certified designation of the Tile Council of North America (TCNA). **MAPEI Ultralite Mortar** is a premium, lightweight, polymer-modified mortar specifically designed for ease of application with large-and-heavy tile. Large three-dimensional tiles by Atlas Concorde were used on the walls throughout the kitchen, living room and loft to create a fluid appearance. These large 3D Ultra Blade White Matt tiles offered a dynamic aesthetic without taking up space. Ricchetti Group provided the large 18" x 36" (46 x 91 cm) tiles from their Cerdisa collection that were installed on the floor throughout the bungalow with **MAPEI Ultralite Mortar** and **Ultracolor® Plus FA**.

Completing a tiny-house renovation in three days also required a rapid-setting grout. **Ultracolor Plus FA** is a color-consistent, stain-resistant, fast-setting "all-in-one" grout that can be used in place of traditional sanded and unsanded grouts. **Ultracolor Plus FA** is formulated with 10% recycled content, making it another of MAPEI's family of Green Squared Certified installation products.

Using sustainable products in a tiny house contributes to the reduction in carbon footprint and life-cycle emissions, and the mortar and grout used in this showcase offer proven sustainability. MAPEI is the first installation systems manufacturer to have mortars and grouts certified by the TCNA's Green Squared Certified program for tile and installation products. These products have passed rigorous testing to prove that the products and the processes used to manufacture them are sustainable and environmentally friendly.

The Installation Design Showcase vignettes showed that tile is exceptionally versatile. For the shower walls, 15-3/4" x 31-1/2" (40 x 80 cm) Rosa pink tiles from Atlas

Concorde's Magnifique collection added a splash of color reminiscent of tile styles from the 1950s. In addition to the Rosa tiles, other focal point tiles were grouted with **Ultracolor Plus FA**, including the aqua-colored glass backsplash tiles in the kitchen and the gray mosaic tiles on the bathroom walls.

Tiny houses are strategically designed with multifunctional surfaces in mind. In the Retro Bungalow kitchen, the sink also functions as a cutting board or as extra counter space. The countertop was custom-made by Sam Bruce, President & Operations Manager of Visalia Ceramic Tile Inc., using large tile from Atlas Concorde to produce the marble effect. The stairwell to the overhead loft can act as optional seating or a book holder.

Building three fully functional homes for Coverings inside the Orlando Convention Center was a first for the Installation Design Showcase. In past years, the vignettes from the Installation Design Showcase were torn down after the show, but this year's tiny houses will serve another sustainable purpose. They will be transported to the Orlando Lakefront RV park community, where they will be rented out to tourists as bed-and-breakfast spaces. These three new homes will add to the charm of the community's College Park area for years to come.

Held in Orlando, Florida, in April, Coverings 2017 drew more than 1,100 exhibitors from 40 countries. The show is acclaimed for featuring the best in tile trends and cutting-edge innovations from around the world. The Installation Design Showcase featuring the tiny houses was a welcome addition to the show this year.



# INTRODUCING A DAZZLING NEW GROUT!



Let your grout colors  
take flight with

**MAPEI**  
**Flexcolor**<sup>TM</sup>  
**3D**



At Coverings 2017, MAPEI introduced a brand-new grout in its ready-to-use grout technology line. **MAPEI Flexcolor<sup>TM</sup> 3D** will give designers the opportunity to add multi-faceted effects to their tile options for clients.

*MAPEI Flexcolor 3D* is a professional-grade, ready-to-use (RTU) translucent specialty grout with an “iridescent effect” finish. It is offered in 10 designer colors with translucent characteristics that not only reflect but also refract light. This allows the grout to transition in color to complement the tile color. The “translucent effect” is most noticeable with the color Crystal Moon (#201), while the other nine colors exhibit a more pronounced “iridescent effect.”

*MAPEI Flexcolor 3D*'s nearly translucent neutral base color, Crystal Moon, takes on the color of whatever tiles surround the grout joint, varying with changes in tile color and displaying a slight natural iridescence. Some glass tile designs exhibit this effect more than others. The other nine color effects in *MAPEI Flexcolor 3D* grout possess an added iridescent quality that shines through gold, silver and copper metallic hues as well as green and blue glass shades and the neutral-tinted “Frosted Glass.”





“WE THINK DESIGNERS WILL USE THESE GROUTS TO LEAD TILE IN A WHOLE NEW DESIGN DIRECTION”

*MAPEI Flexcolor 3D* is formulated with the latest innovation in recycled glass-bead aggregate, which ensures color consistency, ease of cleanability and improved workability. In addition, this grout can be used on sensitive tile surfaces once they have been tested. It requires no sealer and cures naturally from evaporation.

*MAPEI Flexcolor 3D* can be used in commercial and residential interior installations of porcelain, ceramic, glass and natural-stone tiles. The largest market for this designer grout is expected to be kitchen backsplashes and bathroom mosaic accent tiles in residences, as well as special glass mosaic elements in restaurants, hotels, civic buildings and other public spaces.

The dense surface structure of the grout helps to prevent water-based stains on the grout surface. Installers will see an added benefit, as comparison testing of *MAPEI Flexcolor 3D* versus traditional Portland-cement grout has verified that *MAPEI Flexcolor 3D* requires 65% less time to install than powder grouts.

“With the introduction of the *MAPEI Flexcolor 3D* collection, MAPEI is offering designers a new design horizon when it

comes to tile,” said David Mowery, Business Manager, TSIS Color Products & *UltraCare™* for MAPEI North America. “Providing these effects in a ready-to-use grout will open the *MAPEI Flexcolor 3D* collection to an audience beyond a small niche market. We think designers will use these grouts to lead tile in a whole new design direction.”

Mowery added, “The popularity of glass mosaic tile with an ‘iridescent’ finish has been the recent rage in tile showrooms across the Americas. When it is grouted with our *MAPEI Flexcolor 3D*, a dazzling, one-of-a-kind tile design comes to life.”

MAPEI Technical Services Director Dan Marvin noted, “I’ve been attending Coverings for more than 20 years and have never seen a product make a bigger splash right out of the gate than *Flexcolor 3D*. We just introduced *Flexcolor 3D* at the show this year, and I spent most of my time talking about it, both in our booth and everywhere I went on the show floor. Customers, contractors, tile manufacturers... everywhere I went, everyone was talking about *Flexcolor 3D*.” The MAPEI Demo Team, led by MAPEI’s National Presenter Sam Biondo, demonstrated the product for hundreds of people during the show.



## “WHEN A COORDINATING COLOR IS CHOSEN, THE GROUT HELPS TO TURN A VERY NICE KITCHEN BACKSPLASH INTO A ‘WOW’ BACKSPLASH”

Marvin commented, “This ready-to-use grout is translucent, meaning it lets light pass through it. Nine of the 10 *Flexcolor 3D* colors are also translucent and iridescent, so they reflect some of the light back at different angles. What this means practically is that the grout highlights the colors of the tiles around it. Where the tiles are dark, the grout appears darker. Where the tiles are light, the grout appears lighter. When a coordinating color is chosen, the grout helps to turn a very nice kitchen backsplash into a ‘Wow’ backsplash that grabs the attention.”

Because it's part of the *Flexcolor* family of grouts, *MAPEI Flexcolor 3D* is based on acrylic technology that eliminates the need to mix multiple components together and is ready to use right out of the pail it is packaged in. It is also easy to clean and stain-resistant.

From a sustainable perspective, *MAPEI Flexcolor 3D* contains glass beads that are made of recycled bottle glass, giving this grout up to 70% recycled content. This characteristic qualifies *MAPEI Flexcolor 3D* to be added to MAPEI's line of TCNA Green Squared Certified grouts and mortars, letting designers select a system of Green Squared tiles, mortars and grouts for their sustainable projects. *MAPEI Flexcolor 3D* is also LBC Red List Free and can meet LEED requirements for low VOCs and “regionally manufactured” products.

While there aren't any ANSI standards for ready-to-use grouts in place at this time, *MAPEI Flexcolor 3D* meets the stain-resistance standards for epoxy grouts and the compressive-strength requirements of cement grouts.

“I can tell from all the buzz of everyone who saw the product at Coverings that *Flexcolor 3D* is going to be a game changer for glass and mixed-media mosaic installations,” Marvin noted.



**201** Crystal Moon



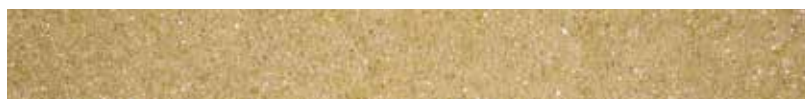
**202** Frosted Glass



**203** Star Dust



**204** Pure Steel



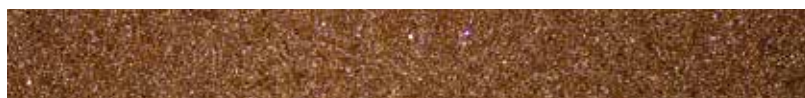
**205** Frozen Fire



**206** Golden Rose



**207** Champagne Bubbles



**208** Copper Dawn



**209** Morning Dew



**210** Forever Sky

Grout colors shown here may not accurately represent the actual color of the installed grout because of jobsite conditions, product preparation, installation methods, lighting, and the type of tile or stone utilized. In addition, because these color samples may alter over time, MAPEI recommends periodic replacement of samples. Consequently, MAPEI makes no representation, warranty or guarantee of any kind regarding the color, texture, appearance or suitability of our grouts. For those characteristics, MAPEI excludes all express or implied warranties including, but not limited to MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE.



# THE BASICS OF RESIDENTIAL WATERPROOFING

MAPEI's Product Support Team answers thousands of phone calls and electronic inquiries from customers every year, many of them about the waterproofing of showers and baths. In this article, we will examine the typical questions received about waterproofing in a residential bathroom and some of the advice given in response to these questions.

**Q:** If I'm tiling my shower, why do I need waterproofing?

**A:** A common misconception is that tile and grout are the waterproofing for a shower. Countless bathrooms have been built with a tile layer over gypsum board. Unfortunately, countless showers have also failed with this approach. Failure to waterproof leads to water damage, mold growth, and rotten framing that must be replaced. Tile and grout are not intended to be the primary waterproofing of a shower. A properly constructed shower or wet area should have either a vapor barrier under the wall surface, or waterproofing over the vertical and/or horizontal substrate (but not both, which can create a "moisture sandwich" that leaves nowhere for the moisture to go).

**Q:** I'm using a waterproof backer-board, so why would I need *another* waterproofing membrane?

**A:** Cement board is porous. It's also one of the most common products we see installed incorrectly. Seams must be taped and the correct fasteners used (with no drywall screws.) If the wrong fastener is used, moisture makes its way to the incorrect fastener, which starts to rust. If a white marble or other sensitive material is used, the rusted fasteners can cause a reddish stain to develop on some stones. Cement board can also "wick" water from the floor due to capillary action.

Other boards, such as foam and coated gypsum boards, also give the perception of being a "plug-and-play" solution. Unfortunately, the pesky problem of seams and fasteners remains. Even if the board is waterproof (some are, while some are merely "resistant," so check with the manufacturer), it must still be attached to the wall and mated with other pieces. All of these openings provide a route for water to move behind the substrate, and all of these issues must be addressed. Surface waterproofing is an ideal solution that keeps the water out of the substrate when the waterproofing properly installed.

**Q:** How far up the wall does my waterproofing need to extend?

**A:** Ideally, the waterproofing should extend above the shower head. For steam showers, steam-shower-approved waterproofing must be continuous and even include the ceiling. When a liquid waterproofing membrane is used as a shower pan liner, the membrane must continue from the walls to the pan without any breaks.

**Q:** How do I tie the waterproofing into the drain?

**A:** Unfortunately there is no one “right” answer to this question. It is critical to follow the methods as outlined in the TCNA Handbook for Ceramic, Glass and Stone Tile Installation, the drain manufacturer’s instructions, and the Technical Data Sheet for the waterproofing you have selected. The great thing is that you can give MAPEI a call and we’ll walk you through the nuances. See our Website for contact details.



**Q:** Is a slope critical?

**A:** While the slope of the floor in a shower may not seem like a “waterproofing” method in the traditional sense of the word, it plays the most critical role in moving water to the drain. The tile industry requires a drop of 1/4" (6 mm) per 1 foot (0,30 m) of distance traveled, and even more of a drop when pebbles or other smaller and/or uneven tiles will be used on the floor.

**Q:** How do I know if the waterproofing is sufficient?

**A:** Manufacturers give guidance on their Technical Data Sheets about how to install the products. Liquid-applied membranes have a target thickness that must be met. Sheet membranes rely on seam overlaps to perform properly. Once you have installed the waterproofing and allowed it to dry, but before you tile the shower, you can conduct a “flood test.” This involves closing off the drain, adding water, and allowing the water to sit in the enclosure for 24 hours. If the level doesn’t drop (mark the level in an out-of-the-way place with a marker), then the waterproofing is sufficient.

**Q:** How far outside of the shower should the waterproofing extend?

**A:** If the shower is curbed (in other words, if it has a physical ledge or “curb” keeping water inside the shower), the waterproofing should extend to the outer side of the curb and approximately 2" (5 cm) onto the floor. With today’s trend toward curbless showers, there is a high likelihood that water will move outside of the shower. Ideally the entire bathroom should have a waterproof layer (and a secondary drain), especially when installing a curbless shower. Check your local building codes.

**Q:** Do I need to waterproof the walls above a bathtub?

**A:** If there is no shower head present, bathtub walls will not routinely be affected by water and do not need to be waterproofed. If the bath also serves as a shower, even with a hand-held shower fixture, the walls should be waterproofed to a point above the showerhead.



**Q:** What about seams, corners and changes in plane?

**A:** Often installers only coat the seams and corners with a liquid waterproofing membrane. This practice does not conform to industry standards or manufacturers’ directions for correct use of their products. We also see failures when corners and changes in plane are grouted instead of caulked. The industry recommends that all inside corners be kept free of grout and then caulked. This will allow the tile to expand when heated by the warm water of the shower without causing the grout to crumble or crack. The caulk acts as secondary waterproofing to keep water in the tub or shower instead of allowing it to come in contact with the substrate.



**Q:** What MAPEI products are recommended for waterproofing?

**A:** The most widely used MAPEI waterproofing product for residential applications is **Mapelastic® AquaDefense**, a roller-applied liquid waterproofing that dries to form a highly resistant barrier to the movement of water and is rated for steam showers. *Mapelastic AquaDefense* can be used in conjunction with an optional reinforcing fabric that is perfect for corners and to cover seams. MAPEI also manufactures **Keracaulk®** caulk in a sanded as well as unsanded version to coordinate with our grouts. MAPEI’s **Mapesil™ T** (ideal for showers, swimming pools, fountains and expansion joints) is a silicone sealant with a matte finish that also is color-matched (and offered in a clear color) to match our grouts. For other helpful problem-solvers in the MAPEI family of products, a quick call or email to our Product Support Team can steer you in the right direction.

Anyone installing in wet areas can benefit from paying attention to the basics of waterproofing. By knowing the answers to these common questions, you’re well on your way to a beautiful shower or bath installation that will give decades of problem-free service. Have a question you don’t see here? Contact our Product Support Team by phone or email. You can find their contact information at our Website or on our MAPEI app.



**About the author:**  
Dan Marvin

Dan is the Director of Technical Services for MAPEI Americas. Dan has more than 20 years of technical expertise in the tile industry and sits on technical committees for TCNA, CTDA, ASTM, ANSI, and the Handbook for Tile and Stone Installation. He works closely with these committees to improve existing standards and create new ones as the industry continues to evolve.



# Mapelastic<sup>®</sup> AquaDefense



## ROLL WITH THE BEST

Versatile, easy-to-use  
waterproofing membrane

**Mapelastic AquaDefense** is a premixed, liquid-rubber, quick-drying waterproofing and crack-isolation membrane for installation under ceramic tile or stone. Whether applied with a roller or brush, it dries within 30 to 50 minutes, bonding easily to flat, curved and irregular surfaces. This versatility makes it user-friendly for a wide range of applications:

- Residential and commercial interior/exterior floors, walls and ceilings
- Residential and commercial submerged applications
- Industrial interior floors and walls
- Approved for steam showers and steam rooms



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# SHOWCASING BEAUTIFUL SURFACES FOR RETIREES' DREAM HOMES

The Street of Dreams™ design showroom  
for The Villages® – The Villages, FL, USA

**Overview:** MAPEI supplied all the setting materials used in The Villages® “Street of Dreams™” home design showrooms. Flooring contractors, who complete more than 100 residences a month in The Villages community, used MAPEI tile-setting and floor-covering products in the showrooms.

Living in The Villages® community is a dream come true for many active adults seeking a retirement location in a sunny climate. Near or at the top of the list of “fastest-growing communities” in the United States for the past several years, The Villages has flourished to a present population of 157,000 residents. Contractors for The Villages complete more than 100 residences per month. Since the beginning of 2016, the developers of The Villages community have introduced buyers to the opportunity to build the home of their dreams from the moment they purchase their new dwelling.

The new Street of Dreams™ is where building that dream home begins. It is a 10,000-square-foot (929-m<sup>2</sup>) showroom filled with an almost infinite number of choices for exterior and interior design. Once a purchase is made, the new owners meet with a design consultant who walks them through a wide range of vignettes that show different possibilities and spark ideas for their own home.

At the design consultants’ “imagination stations,” the latest technology helps to produce the ultimate custom-built “specification” of a resident’s vision. Alternatives not shown in the showroom can be viewed on a large, wall-mounted flat-screen monitor to add an even more customized touch. When the clients walk out of the Street of Dreams building, they know they will be moving into a turnkey home that won’t need after-market renovations.





To make the showrooms a true “Street of Dreams,” The Villages started with a reception area that features a “great room” and kitchen vignette, suggesting design ideas from cabinetry to “brick” fireplace tiles and the trendiest large-format tile for the floors. Three of the flooring installers who work for the general contractors employed by The Villages worked on the different showrooms and with the wood-look plank tile that connects the various areas in the Street of Dreams.

## MAPEI at work on the jobsite

Over the years, the developers of The Villages community have worked with general contractors and subcontractors to refine the materials used in the construction of the homes. MAPEI has worked hard to continually provide new and innovative products that met The Villages’ high standards for performance, durability and efficiency on the jobsite.

From the original use of **Ultraflex™ 1** and **Ultraflex 2** mortars, plus **Keracolor® S** and **Keracolor U** grouts in the early 2000s, the tile installers have migrated to using **Ultraflex LFT™** and **Ultraflex LHT®** to set today’s trendy large-format tiles. At present they are using **Ultracolor® Plus** efflorescence-free grout and are currently shifting to **Ultracolor Plus FA** (fine aggregate) grout, which will allow them to use the same grout for all floor and wall tiles.

MAPEI has also developed its grout color palette into 5 color collections. These color collections will offer design consultants an innovative tool to help the new homeowners in choosing colors that reflect their personal sense of style.

For the Street of Dreams, the contractors used **Mapecem® Quickpatch**, **Primer L™** and **Novoplan® 1 Plus** self-leveling

underlayment to prepare the concrete substrates in all the vignettes and common areas.

In a forward-thinking move, felt was applied over the substrates, using **Ultrabond ECO® 185** to glue it down. This process will allow for easy changes in the tile to keep the Street of Dreams fresh and attractive to clients.

Before setting the tiles, the installers applied **Mapeguard® 2** over **MAPEI SM Primer™** for crack isolation. The developers of The Villages community have a strong commitment to following industry standards, so they used **Mapelastic® AquaDefense** liquid waterproofing membrane in addition to **Reinforcing Fabric** for corners and plane changes for waterproofing the bathrooms.

The large-format tiles on floors were set with **Ultraflex LFT** mortar. Installers love this mortar’s creamy consistency and ease of application. They also appreciate its non-slump formula, which allows them to place the large and heavy tiles more uniformly, without the lippage that can occur when a large area is covered by a single tile. The installers are experiencing the same benefits from **Ultraflex LHT**, which they are now beginning to use for setting large and heavy tiles.

For counter backsplashes and wall tiles that were a part of the design element in many of the vignettes, the installers used **MAPEI Ultralite™ Mortar Pro**. The weight of this thin-set/medium-bed mortar is only half that of traditional mortars, making it ideal for installations of wall tile.

**Ultracolor Plus** grout was used throughout the showrooms to ensure there was no efflorescence or color inconsistencies to mar the beauty of the tiles.



Wood is an ever more popular design element today, and the wood flooring in the vignettes was installed with MAPEI's **Ultrabond ECO 995**. One of *Ultrabond ECO 995*'s strongest features is its built-in moisture vapor emission control for concrete slabs. This element of the adhesive is a strong advantage for installations over new concrete in a fast-track construction process.

Customized design, solid construction and a great warranty are hallmarks of The Villages' success. The developers work with the

best contractors and installers in their area, and strict attention is paid to compliance with industry standards, resulting in solid construction. The developers stand behind their work with their homeowners' warranty. Their positive interactions have led to many happy residents and enthusiastic referrals. Now, the Street of Dreams has provided the custom design element that will help to give future residents their dream homes.

## TECHNICAL DATA

**The Street of Dreams™ design showroom for The Villages® –**  
The Villages, FL, USA

**Architects:** The Villages® Design Department

**Period of construction:** 2015-2016

**Years of MAPEI involvement:** 2015-2016

**Where MAPEI products were used:** MAPEI adhesives were used for the wood flooring in the common areas of the showroom. Tile and stone in each of the dream home vignettes was set with MAPEI mortars and grouts, and bathrooms were waterproofed with *Mapelastic AquaDefense*, while *Mapeguard 2* was used for crack isolation wherever needed.

**Client:** Holding Company of The Villages, Inc.

**General contractor:** Holding Company of The Villages, Inc. (project developer)

**Tile and stone installers:** Great Lakes Carpet & Tile; Fred Nickel Tile; Blackton, Inc.

**Floor-covering installers:** Great Lakes Carpet & Tile; Fred Nickel Tile; Blackton, Inc.

**Project manager:** Joe Hanson – The Villages

**MAPEI distributors:** Wheeler Division of J.J. Haines, Marjam Supply Company, Trinity Tile, Blackton Inc.

**MAPEI coordinators:** Jim Moffitt, Jon Shoemaker

### MAPEI Products

Waterproofing in bathrooms: *Mapelastic AquaDefense*, *Reinforcing Fabric*

Crack isolation where needed: *MAPEI SM Primer*, *Mapeguard 2*

Surface preparation in vignettes and common areas: *Mapecem Quickpatch*, *Primer L*, *Novoplan 2 Plus*

Setting and grouting tiles on walls and floors of vignettes:  
*MAPEI Ultralite Mortar Pro*, *Ultraflex LFT*, *Ultraflex LHT*, *Ultracolor Plus*

Installation of wood flooring in the common areas of the showrooms:  
*Ultrabond ECO 995*

Adhering felt to substrate: *Ultrabond ECO 185*



# BUILDING FOR SCIENTIFIC PROGRESS



Jerome L. Greene Science Center  
– New York, NY





**Overview:** MAPEI products were used exclusively in the ceramic tile installations at Columbia University's Jerome L. Greene Science Center. The tiles were set with **Ultraflex™ LFT™**, and the joints were filled with **Ultracolor® Plus** grout.

The Jerome L. Green Science Center at the Manhattanville campus of Columbia University was built to take us into new frontiers of medicine. According to the University, "At the Jerome L. Greene Science Center, hundreds of the world's leading researchers will tackle the most exciting scientific challenge of our time: understanding how the brain works and gives rise to mind and behavior."

Housed within the Greene Science Center, the Zuckerman Mind Brain Behavior Institute brings together nearly 1,000 scientists from across many departments at Columbia University who will collaborate on research, teaching and public programming. Their goal is a deeper understanding of the brain, which promises to transform human health and society.

Effective treatments for disorders like Alzheimer's, Parkinson's, depression and autism promise an enormous impact. "Just as science was transformed in the 20th century by the decoding of DNA, science in the 21st century will be transformed by decoding the human brain," said Eric Kandel, MD, co-director of the Zuckerman Institute.

The Greene Science Center is the first of several buildings to be completed on the Manhattanville campus. The University press office reports, "The nine-story, 450,000-square-foot [41 806 m²]

structure is the largest that Columbia has ever built and the biggest academic science building in New York City." Designed by the world-renowned Renzo Piano Building Workshop, in association with Davis Brody, LLP, and Body Lawson Associates of New York, the science center has led us to expect great things of its construction. In fact, the center won the Ceramics of Italy 2017 Tile Design Competition in the Institutional category.

## MAPEI at work on the jobsite

Jantile, Inc., of Armonk, New York, won the bid to install the ceramic tile throughout the project. As always, coordination with other trades played a role in the installation, but thanks to general contractor Lend-Lease, with whom Jantile frequently works, all went smoothly.

The main challenge dealt with accurate transitions from space to space. Because the Jantile crew was working with such large tiles over large expanses of open space, and because the glass facades shed so much light on the space, the installers had to be exceptionally careful with lining up tiles with each other and with other surfaces on each of the eight levels.

The first and largest component of the project for Jantile was the preparation of the space prior to setting tile. The core structure of the building is steel with a glass facade for the shell. Because the subsurface was steel, each of the eight upper floors had to be prepared with a mud bed measuring 2.5" (6,3 cm) in thickness. First, the crews put down a slip sheet and covered it with mud and wire reinforcement. The installation crews then combined MAPEI's **Planicrete® AC**, a liquid latex admixture, with their mud bed mix to enhance its performance.



Once the mud bed cured, it was covered with **MAPEI SM Primer™** and **Mapeguard® 2**, a thin, lightweight crack-isolation and sound-reduction sheet membrane. **Mapelastic® 400** was also used for waterproofing in the restrooms.

Casalgrande Padana tile was installed over 78,000 square feet (7 246 m²) of space on the upper eight levels of the nine-story building. In the corridors and open expanses, MAPEI's *Ultraflex LFT* mortar and *Ultracolor Plus* grout were used to install 40,000 square feet (3 716 m²) of *Pietre etrusche capalbio* tiles from Casalgrande Padana's Pietre Native Series measuring 24" x 48" (61 x 122 cm) and 18" x 36" (46 x 91 cm). An additional 38,000 square feet (3 530 m²) of 12" x 24" (30 x 61 cm) floor tiles and 12" x 12" (30 x 30 cm) wall tiles from the Pietra Native series were set in public restrooms in the building. Once again, the setting materials were *Ultraflex LFT* and *Ultracolor Plus*. A custom mix of mosaic tiles from Vitra were used as a decorative feature in the restrooms, also set with the MAPEI products. All tiles and installation products were provided by MAPEI distributor Protile Distributors, Inc.

The installers worked from shop drawings that had been approved by the architects. The work in the restrooms took one to two months, and was done intermittently as each floor became ready. The large, open expanses were completed over a continuous six-month period. When restrooms and floor expanses were ready at the same time, 8 to 12 Jantile installers worked the site.

One particularly interesting and unique challenge was met with a series of MAPEI products. The metal stairways connecting each floor were designed to be covered with the large-format Casalgrande Padana tiles. To get the ultimate bond between the ceramic tiles and metal stairs, the installers began by coating the metal surface with **Primer E™** 100%-solids epoxy primer to enhance the bond with **Mapecem® Premix** cement-based mortar for subfloor preparation work, which was layered on top of it. The tiles were then set into the *Mapecem Premix* using *Ultraflex LFT*.

Project manager Don Durnell summed up this fascinating but challenging installation: "Coordination by experienced people throughout the entire process is what allowed us to accomplish this feat. We depended on the experience and expertise of our long-time employees to get the job done right." MAPEI is proud to have been a part of the job.



## TECHNICAL DATA

**Jerome L. Greene Science Center** – New York, NY (USA)

**Architects:** Renzo Piano Building Workshop, Davis Brody Bond LLP and Body Lawson Associates

**Period of construction:** 2015-2016

**Year of MAPEI involvement:** 2016

**Where MAPEI products were used:** MAPEI's *Planicrete AC* was used to prepare the mud bed on all floors where tile was set with *Ultraflex LFT* mortar and grouted with *Ultracolor Plus* grout. The public restrooms were first waterproofed with *Mapelastic 400*. *Mapeguard 2* was used on all floors for crack isolation and sound reduction. Metal stairs were prepared with *Mapecem Premix* and *Primer E* before the tiles were set.

**Client:** Columbia University

**General contractor:** Lend-Lease

**Tile and stone installer:** Jantile, Inc.

**Project manager:** Don Durnell – Jantile, Inc.

**MAPEI distributor:** Protile Distributors, Inc.

**MAPEI coordinator:** Matt Hess

### MAPEI Products

Mud bed mix on all floors: *Planicrete AC*

Waterproofing in restrooms: *Mapelastic 400*

Surface preparation on all floors: *Mapeguard 2*, *MAPEI SM Primer*

Surface preparation on metal stairs: *Mapecem Premix*, *Primer E*

Setting and grouting on floors and metal stairs: *Ultraflex LFT*, *Ultracolor Plus*

# MAPEI TEAMS WITH BASKETBALL ARENA



Golden 1 Center, home of the Sacramento Kings  
– Sacramento, CA, USA

**Overview:** Surface preparation, waterproofing and tile/stone installations were carried out at the Golden 1 Center, which is home to the Sacramento Kings basketball team. *MAPEI Ultralite Mortar Pro* and *Ultracolor Plus* grout were used for setting the tiles, while *Ultraplan 1 Plus* was used to level the playing court.

Surface prep, waterproofing and tile-setting products from MAPEI helped to welcome the Sacramento Kings basketball team to their new home at Golden 1 Center arena in downtown Sacramento, California.

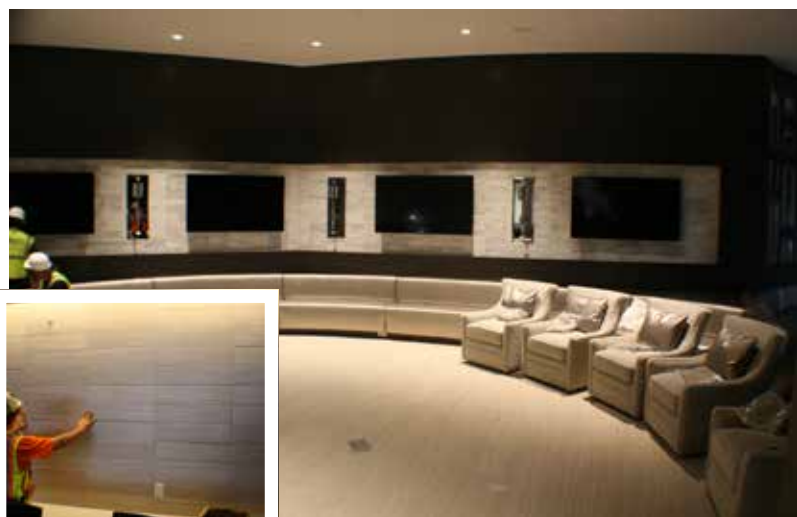
One of the oldest professional basketball franchises in the United States, the Sacramento Kings team has traded names and moved from coast to coast since its formation in Rochester, New York, in 1923. Finally settling in Sacramento in 1985, the NBA professional team has cycled through two previous arenas before moving into its new home at Golden 1 Center in May 2016.

The construction of Golden 1 Center included regionally sourced materials, ranging from glass to recycled aluminum to potentially precast concrete (composed of sand from San Benito, CA, and rocks of Sierra limestone). Additionally, Golden 1 Center utilized only wood certified by the Forest Stewardship Council (FSC), an international standard of quality and responsible forest management.

The arena is partially powered by a rooftop solar array, part of the Sacramento Kings ownership's goal to have Golden 1 Center become the most technologically advanced arena in the country. The arena earned LEED Platinum certification in September 2016.

Some of the most well-known names in the construction industry were involved in the development of this project. AECOM, ranked #1 in *Engineering News-Record's* "Top 500 Design Firms," brought all the elements of sustainability and green building to its architectural design. General contractor Turner Construction Company, with its international reputation, turned the dream to life through its innovative and adept project management.





## MAPEI at work on the jobsite

Turner, in turn, selected Fischer Tile & Marble, Inc., the oldest family-owned company in Sacramento (established in 1906) to install the tile and stone throughout the lobby, food courts, restaurants and owner suites that surround the arena. Daltile served as the distributor for the tile and MAPEI installation materials used throughout the project.

Capital Commercial Flooring was contracted to put in the luxury vinyl plank and other resilient flooring used in player/owner service areas. They performed the surface preparation by applying MAPEI's **ECO Prim Grip™** primer on the concrete substrate and then using **Ultraplan® 1 Plus** quick-setting self-leveling underlayment to level 13,000 square feet (1 208 m<sup>2</sup>) of flooring under the practice courts and the surrounding offices and service spaces. To ensure an ultra smooth surface, the installers applied **Planiprep™ SC**, a cementbased skimcoating and patching compound that smooths minor surface variations and defects on common substrates.

The crews from Fischer Tile & Marble found that they needed to do only a small amount of surface preparation. They began by using **Mapecem® Quickpatch** for minor ramping between different substrate levels and screeding around difficult areas, such as drains that needed sloping.

Next, the installers used **Mapelastic® WaterStop** (a waterproofing product manufactured by MAPEI exclusively for Daltile) to waterproof the substrates beneath all tiles on bathroom floors in players' locker

rooms, owners' bathrooms and public restrooms; and for walls and floors alike of showers, steam rooms, saunas and hot tubs in the players' workout/physiotherapy areas.

The Fischer crews set a wide variety of tile and stone from Daltile with **MAPEI Ultralite™ Mortar Pro** and grouted with **Ultracolor® Plus** grout. In addition to the more common large-format Italian porcelain tile from the Veranda Series that was used to cover floors in the players'/owners' locker rooms and work areas, examples of the craftsmanship of the Fischer installers included several specialty installations and custom cuts.

Elevare "Lunar" white field tile was installed on the walls of the over-the-counter restaurants in the food court and in the players' bathrooms. However, in some areas in the players' area, the 4" x 16" (10 x 41 cm) tiles were custom-cut to produce hexagonal tiles that were set above the sinks in the bathrooms. In one specialty owner's lounge, the front of the bar was inset with the Elevare tiles cut to form diamond shapes set in a geometric pattern.

One eye-catching wall in a players'/owners' lounge was set with random sizes of a honed "Brun" limestone mosaic in a large chevron pattern. The **Ultracolor Plus** grout perfectly set off the individual mosaics.

In the restrooms of the Lexus Lounge, 1,100 square feet (102 m<sup>2</sup>) of 2" x 3" (5 x 7,5 cm) "Urban Bluestone" limestone wedge mosaic tiles made a dramatic background for the mirrors and other fixtures. The Fischer crews completed a unique installation along a



1,000-square-foot (92,9-m<sup>2</sup>) curved wall of the lounge by installing Island Stone's 2" x 24" (5 x 61 cm) "Rice White" marble strip cladding. The textured tile provides a rustic background for large flat-screen TVs that allow owners and their guests to see the action from the comfort of the lounge.

Many more specialty tiles – glass, metallic and porcelain – were installed by the Fischer crews as they used their experience and their passion for Sacramento's only major league sports team to transform the architects' creativity into the Kings' new home. MAPEI is proud to see its products used on such a well-designed and expertly executed project.

## TECHNICAL DATA

**Golden 1 Center, home of the Sacramento Kings** – Sacramento, CA (USA)

**Architect:** AECOM

**Period of construction:** 2014-2016

**Year of MAPEI involvement:** 2016

**Where MAPEI products were used:** MAPEI's surface preparation products were used throughout the building for self-leveling, patching, skimcoating and waterproofing. *MAPEI Ultralite Mortar Pro* and *Ultracolor Plus* grout were used to set a wide variety of tiles in all the entertainment areas and the players' behind-the-scenes spaces.

**Client:** City of Sacramento and Sacramento Kings basketball team

**General contractor:** Turner Construction Company

**Tile and stone installer:** Fischer Tile and Marble, Inc.

**Floor-covering installer:** Capital Commercial Flooring

**Project manager:** Jay Fischer – Fischer Tile and Marble, Inc.

**MAPEI distributor:** Daltile

**MAPEI coordinator:** John Benvenuti

### MAPEI Products

Self-leveling under practice court and office areas: *Ultraplan 1 Plus*

Waterproofing in restrooms and other wet areas: *Mapelastic WaterStop*

Surface preparation for tile and floor covering: *Mapecem Quickpatch, Planiprep SC*

Setting and grouting on floors and walls throughout the venue: *MAPEI Ultralite Mortar Pro, Ultracolor Plus*



# WATERPROOFING AND MOISTURE VAPOR CONTROL ARE NOT THE SAME THING

A lot has been discussed in this issue of *Realta MAPEI Americas* about waterproofing, but is that the same as moisture vapor control? To answer that question, we first need to revisit some basic physical chemistry classes from high school and recall the differences between the three main forms of water.

Water, like many chemical compounds, has three forms or conditions: solid, liquid and gas. The characteristics of the three forms depend on the amount of energy that the compound contains.

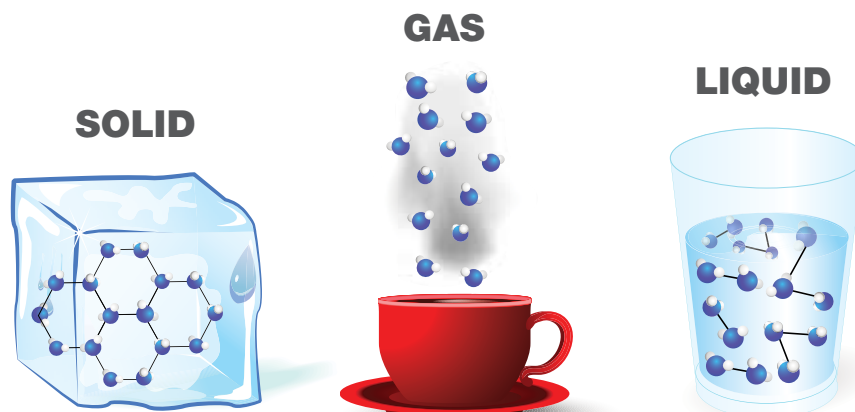
- Low energy creates the solid phase; and in water's case, this is what we call ice. Solid water, or ice, is a condition where the energy of the water molecules is low enough that they can consolidate into a crystalline structure and take a rigid form.
- Liquid water is created when energy builds up inside the molecules and the crystalline structure becomes fluid and random.
- When the energy of the system becomes high enough, individual water molecules will leave their fluid state and become a gas that we call water vapor.

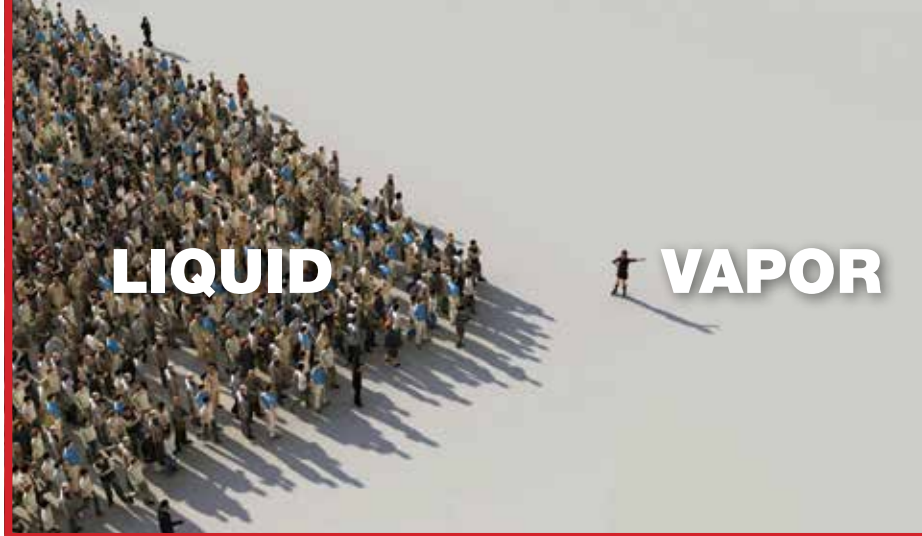
Here's the key takeaway that we need to capture from this rudimentary discussion on the various states of matter: Solids and liquids are composed of many molecules grouped together, whereas gases or vapors are typically single molecules in a high-energy state.

In order to explain more clearly the difference between liquid waterproofing and moisture vapor control, we can make an analogy about the actions of liquid and gaseous water. Imagine liquid water as a



Solids and liquids are composed of many molecules grouped together, whereas gases or vapors are typically single molecules in a high-energy state.





very large group of really good friends who always hold hands when everywhere they go, and then imagine moisture vapor as a single individual who has had more than his share of double espressos. If we put these two sets of individuals into two separate rooms each with only one door to let them out, we will see two very different actions.

As you might imagine, the really good friends holding hands are going to have a difficult time getting through the door as a group. In fact, unless they break their hold on each other and let a single individual go through the door at a time, they are all probably going to be stuck in that room for a long time. On the other hand, the room containing the single energetic individual will be vacant as soon as the door is opened.

This analogy illustrates why a membrane that can contain a single energetic molecule (moisture vapor) must be much more complex than a membrane that holds back a large group of linked molecules (liquid water).

In essence, waterproofing is somewhat easier to accomplish than blocking moisture vapor. When we consider that liquid water molecules are somewhat “sticky” and would rather stay together than turn into a gas, we can better understand why waterproofing is easier than moisture control.

Liquid water can be contained by membranes that can “breathe,” while moisture vapor cannot be controlled by anything less than a glass-like barrier. This is the fundamental difference between waterproofing membranes and moisture vapor barriers. Waterproofing membranes can, in fact, breathe slightly whereas moisture vapor barriers do not. So a moisture-vapor barrier can work as a waterproofing compound, but the opposite is not true in general.

Let’s briefly look at the various product types available for waterproofing and moisture

vapor control. Waterproofing materials in the ceramic installation market are typically water-based acrylic latex products that are rolled onto a substrate, or two-component cement-based materials that are troweled on. Both of these membrane types are extremely good at controlling liquid water and can be found in applications ranging from shower surrounds to pool linings.

Acrylic, water-based membranes dry by coalescence, much like exterior paint. Cement-based membranes cure by hydration for the most part along with polymer coalescence. These two types of membranes create their own waterproofing membrane that can control liquid water very well; but water vapor can find its way through the films’ micro-cavities, which are the direct result of the application and curing mechanism.



Waterproofed concrete showing water beading on surface



Below-grade waterproofing membranes designed to protect from liquid water intrusion

Another type of product used for exterior concrete waterproofing is silicate in nature. Silicate compounds are sometimes called “water-glass” and are typically the salt of a silicate in an alkaline water dispersion. These compounds penetrate into the micro-cavities of the concrete surface and cross-link with residual calcium oxide to create calcium silicate hydrate. CSH helps to densify the surface of the concrete and reduce its porosity, thereby making it more waterproof.

Moisture vapor barriers, on the other hand, are typically made from cross-linking epoxy systems. These compounds, when reacted, make a highly cross-linked, very dense, glass-like film that is perfect for containing and controlling moisture vapor. Other chemical compounds are used for moisture vapor control, but in general the requirement is to create a glass-like material with high cross-link density that blocks vapor transmission across its barrier surface.

In summary, waterproofing deals with the creation of a barrier for liquid water that is often not sufficient for blocking moisture vapor. You can wear a raincoat (waterproofing) in the middle of a storm and still have damp skin due to the humidity (moisture vapor). In comparison, moisture vapor barriers are like standing behind the large picture window in your home looking out at the torrential downpour while you stay cool and dry.

MAPEI manufactures waterproofing membranes to keep liquid water away from flooring installations as well as moisture vapor control barriers to keep out the gaseous water.



#### About the author:

Jeffrey B. Johnson

Jeffrey is the Business Manager for MAPEI’s Floor Covering Installation Systems line. Jeffrey brings to the industry more than 25 years’ experience in product development and marketing in floor-covering installation. Practical experience in the construction industry and as a bench chemist gives Jeffrey a unique and exciting perspective on surface preparation, moisture mitigation and floor-covering installation.



# BELOW-GRADE WATERPROOFING IS A 'SYSTEM' – NOT A 'PRODUCT'



In the waterproofing sector of the commercial construction market, one of the most frequent questions asked of waterproofing manufacturers is, “What is the best waterproofing product I can buy?” Unfortunately, the answer is not so straightforward.

The most accurate answer is, “There is no ‘best waterproofing’ product. The best product is more often a system, and the system depends on the specific project.”

A very important consideration is where the project is being built. Is it being constructed in Florida, where the water table can routinely be as shallow as 2 feet (0,61 m)? Or is it in Minnesota, where downward traveling water from snowmelt may be your primary concern? Additionally, is it being constructed in an urban area, with existing streets and buildings already adjacent to the site or is it being constructed in a suburb, where there is room for the structure to be dug out onto surrounding land?

Another important consideration is when the waterproofing is going to be installed. Will it be applied in Arizona during July with daily highs of over 100°F (38°C) or in North Dakota during November with the highs

never expected to reach over 40°F (4°C)?

Considering just these two basic concerns, it quickly becomes apparent that one waterproofing product cannot be “best” for all projects.

This is why it is important to understand that waterproofing for a commercial structure must be viewed as a system, not as a product. Consider these concerns:

- While waterproofing a perfectly flat wall may sound simple enough, how does the contractor address the areas where utilities such as electrical and plumbing pipes enter and exit the building?
- What happens at the bottom of the wall, where the wall meets the footing?
- How is the membrane terminated at the top of the wall, to ensure that surface water cannot get behind the waterproofing membrane?

It is all of these “additional” conditions that necessitate the use of multiple products, which work together to create a waterproof system for the structure.

The most basic example of a waterproofing system would be the use of a “contact

adhesive” or “primer” being applied to a wall prior to the application of a self-adhered sheet waterproofing membrane. In this scenario, the two products (contact adhesive and membrane) are used in combination to improve the overall effectiveness of the waterproofing by significantly improving the adhesion between the membrane and the substrate; this ensures that the membrane will remain in place prior to and during backfill and if moderate post-construction movement takes place.

In addition to the development of various waterproofing products and accessories, the industry has also gained a greater understanding of “why” and “where” structures leak. As such, taking a system approach allows the contractor to bring together a combination of products, each with unique properties, strengths and limitations, to address the most critical areas of a foundation including:

- Wall-to-footing connections
- Penetrations
- Cold-pour joints
- Tie-backs
- Inside and outside corners
- Membrane terminations
- And more...

## The system approach

The following examples illustrate how using a system approach with **Mapethene™ HT** or **Mapethene LT**—self-adhered rubberized asphalt membranes for positive-side (i.e., exterior-side) waterproofing – ensures that a combination of the right products, used in the right locations, provides a far superior solution than any single product could.

### Example 1: Detailing non-structural cracks in a concrete foundation

A wall must be properly prepared prior to the installation of any waterproofing membrane. This includes detailing cracks so that the waterproofing membrane has a continuous and acceptable surface to which it can be applied. The following CAD illustration shows how this is accomplished.

As shown in **Figure 1**, cracks in a concrete foundation wall smaller than 1/16" (1,5 mm) can simply be detailed with a membrane strip and covered with the field waterproofing membrane. Conversely, cracks that are 1/16" (1,5 mm) and larger must be routed out and filled with a flexible sealant that is compatible with the membrane. In this example, one-component polyurethane sealant **Mapeflex™ P1** is applied and allowed to cure. Then, as with the smaller cracks, a detail strip of **Mapethene** is installed prior to the placement of the field waterproofing membrane. Finally, as is always the best practice, the waterproofing

system is protected by having a drainage composite installed on the outboard side of the membrane.

### Example 2: Wall-to-footer transition and footer termination

A more complex, yet probably the most common, condition experienced in below-grade waterproofing is shown below in **Figure 2**. It involves the junction where the below-grade vertical wall meets the building's footer (i.e., the horizontal base).

As the wall and footing are constructed in separate concrete pours, creating a "cold pour joint," this junction is one of the most critical details in the waterproofing system. As such, prior to the junction even being formed, the use of MAPEI's **Idrostop™ 25** expanding waterstop is placed between where the footing and wall will meet. The **Idrostop 25** serves as a last line of defense, should the balance of the waterproofing system be damaged post-application.

Following the creation of the wall-to-footer junction, **Mapeflex P1** polyurethane sealant is placed at the inside corner that is formed, creating the cant bead between the wall and footing. This cant bead serves two purposes. First, it provides an additional layer of protection, inboard of the membrane, so that if the membrane is accidentally damaged prior to or during backfill, a layer of protection remains. Second, applying any sheet-type

product into a 90-degree inside turn can be challenging at best. The potential for "bridging" to occur, where the membrane transitions from the wall to the footer prior to reaching the bottom of the wall, is great. This void or "bridge" is a weak point where a puncture can easily occur during or prior to backfill and behind which water can laterally migrate. Thus, by creating this **Mapeflex P1** cant bead, a challenging 90-degree turn is transformed into two much more manageable 45-degree turns (i.e., wall to cant bead and then cant bead to footer).

Following the application of the **Mapeflex P1** cant bead, a **Mapethene** detail strip measuring 9" (22,5 cm) wide is applied. This will provide a double layer of the **Mapethene** waterproofing membrane over this critical joint. The field **Mapethene** membrane is then installed, extending out onto the footer past the detail strip.

As a final step, self-adhered waterproofing membrane terminations must always be addressed so as to not expose the substrate-to-membrane seam directly to any hydrostatic head (i.e., water) pressure. **Mapethene Mastic** or **Mapeflex P1** is applied, as a final layer of protection, on top of the field waterproofing membrane along the entire seam where the **Mapethene** membrane terminates on the footer and on all **Mapethene** membrane seams, extending 12" (30 cm) in both directions from the footer-to-wall interface.

Figure 1

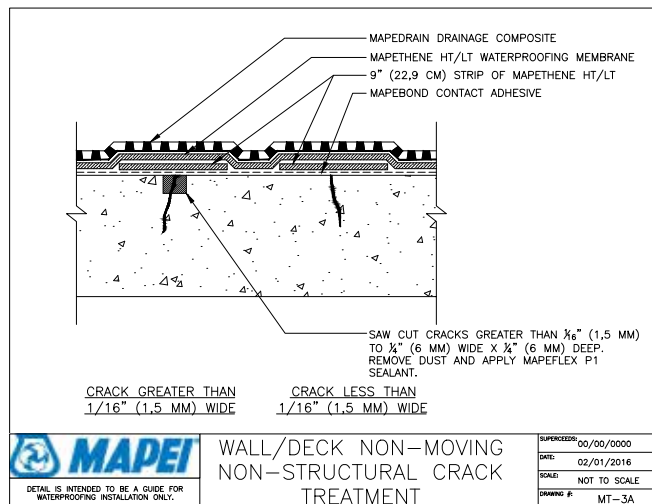
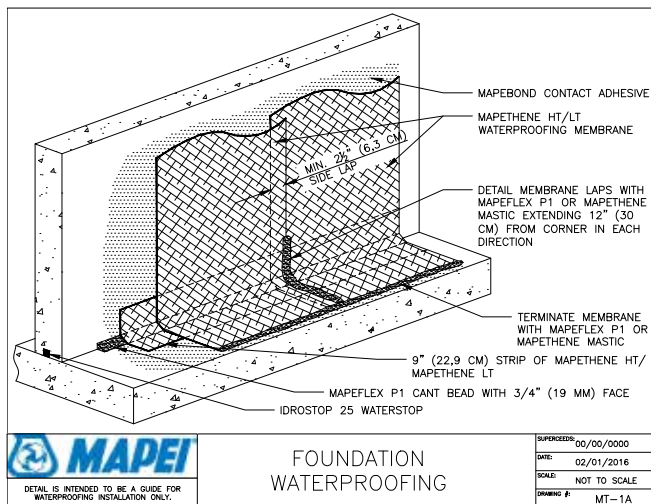


Figure 2





### Example 3: Pipe penetrations

A pipe penetration through a concrete foundation wall is a bit more challenging for the waterproofing system. Consider that, essentially, a hole is purposely being put in a below-grade wall, but there is still a need to prevent water from entering the structure. By taking the same “system” approach to this condition, a waterproof result can still be achieved.

If a pipe is installed through the concrete forms before the concrete is poured, then it should be wrapped with MAPEI's *Idrostop* 25 expanding waterstop (see **Figure 3**).

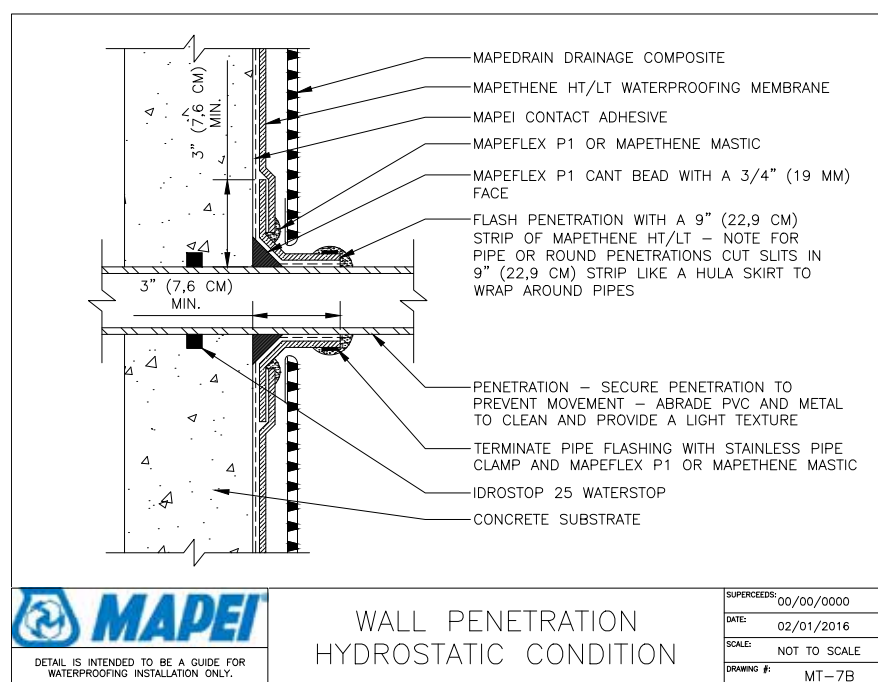
After the concrete wall is poured and the forms are removed, a sealant cant is installed around the pipe, to eliminate the 90-degree turnout onto the pipe. This is similar to the wall-to-footer example previously described. Then, a 9" (22,5 cm) strip of *Mapethene* membrane, cut halfway through like a “hula skirt,” is wrapped around the pipe, with the “skirt legs” extending out onto the wall.

The waterproofing membrane flashing is terminated with a pipe clamp and covered with mastic. Lastly, the field waterproofing membrane is installed and cut tight to the pipe penetration, detailed with mastic and protected with a drainage composite.

While these examples illustrate just a few of the typical conditions one will encounter on a commercial waterproofing project, they highlight the importance of a “waterproofing system” approach. This approach ensures that the best product or accessory is used on each step and that each product is compatible with the one that follows. Based on its extensive knowledge of where and why commercial buildings leak, MAPEI has created more than 100 CAD Details that show, step-by-step, how to create the best waterproofing system for each specific project condition. They are available on MAPEI's Website on the “Tools for Architects” page.



**Figure 3**



**About the author:**  
Harold Hays

Harold is the Technical Services Manager for MAPEI's Below-Grade Waterproofing division. He provides technical assistance to sales reps, waterproofing contractors, general contractors, distributors, architects, consultants and building owners on below-grade waterproofing, above-grade waterproofing (in the horizontal plane), and air and vapor barriers. Harold has worked in the Building Envelope Systems market for 15 years and has been in the construction industry for 37 years. He is an active member of The Sealant, Waterproofing and Restoration Institute (SWR Institute) and the Roof Consultants Institute (RCI).

## Mapedrain™ TD Drainage Composite

### High-Strength, High-Flow Drainage Composite for Foundations

*Mapedrain TD Drainage Composite* is a high-strength, three-dimensional modular drainage and collection composite for foundations. It consists of a nonwoven filter fabric that is bonded to and wrapped around a molded polypropylene core, minimizing fabric intrusion into the drainage channels that can be caused by overburden pressure. The filter fabric allows water to pass freely into the drainage core, which provides hydrostatic relief while preventing the passage of soil or sand particles that might clog the core. *Mapedrain TD Drainage Composite* is designed to replace a conventional gravel-covered pipe drain.

#### Features and Benefits

- Lightweight and easy to install
- Provides cost savings and eliminates the need for aggregate backfill
- Eliminates the traditional pipe-and-gravel “French drain” system around the base of the foundation, saving time and labor
- Provides up to three times the flow capacity of aggregate or sand
- High compressive strength withstands backfill pressure
- Channels water away from installed waterproofing systems
- Native soils can be used over *Mapedrain TD Drainage Composite*
- Geotextile filter fabric ensures no-clog drainage by preventing intrusion of soil, concrete or construction grout into the flow channels.
- Unaffected by permanent immersion in water, bacteria, dilute acids and alkalis
- Offers below-grade relief of hydrostatic pressure against foundation and retaining walls, when connected to a passive gravity drain or operational sump pump
- The drain core is 40% post-industrial recycled polypropylene.

#### Uses

- Applications requiring a high-flow composite with high compressive strength
- For below-grade vertical foundation structures, retaining walls and blindside applications
- Use with *Mapedrain* panels and *Mapedrain TD Fittings*.



#### Product Performance Properties

Laboratory Tests	Results
<b>Core</b>	
Thickness – ASTM D1777	1" (2,5 cm)
Compressive strength – ASTM D1621	9,500 psf (455 kNm <sup>2</sup> )
Flow (hydraulic gradient = 1) – ASTM D4716	30 g/min/ft (372 L/min/m)
<b>Retention Fabric</b>	
Apparent opening size (AOS) – ASTM D4751	70 U.S. sieve (0,212 mm)
Grab tensile – ASTM D4632	100 lbs. (0,45 kN)
CBR puncture – ASTM D6241	250 lbs. (1,113 kN)
Flow – ASTM D4491	140 gal/min/ft <sup>2</sup> (5 704 L/min/m <sup>2</sup> )

#### Shelf Life

Shelf life	1 year when stored in original, unopened packaging at 73°F (23°C)
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Protect product from UV light exposure. Store on a skid or pallet, and cover with polyethylene or tarp. Do not double-stack pallets.

#### CSI Division Classification

Subdrainage	33 46 00
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#### Packaging and Coverage

Roll: 12" x 165 ft. (30 cm x 50,3 m), covering 165 lin. ft. (50,3 m <sup>2</sup> )
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# BALANCING PERFORMANCE WITH SUSTAINABILITY

MAPEI flooring installation products are tested for both



In this highly competitive marketplace, an installer's reputation is "king." The failure of one or more jobs can quickly ruin a seasoned installer's years of hard work. Finding installation products with a proven track record on a variety of projects – residential, commercial and institutional – results in a happy customer, money in the bank and a good reputation. That is why installers often have such fierce loyalty to a particular product and/or brand.

In order to get an installer to try and eventually switch to a new brand, product manufacturers understand that their products must perform consistently, improve the quality of the installation and ultimately improve the bottom line. Often an installer will try a new installation product, only to set it to the side and root around in his truck, looking for that patching compound or VCT adhesive that he "knows" will do the job without a failure or subsequent customer callback.

At this point in product evolution, the introduction of "sustainable chemistry" has added another layer to the complexity of installation products. Manufacturers took a huge leap as they began to move away from solvent-based adhesives to water-based formulas. It also represented a new learning curve for installers in the field to adjust to these new adhesives.

In the 1980s, MAPEI championed the importance of "sustainable chemistry" with the introduction of the **Ultrabond ECO®** line of adhesives, which dramatically reduced or eliminated volatile organic compounds (VOCs). Soon the entire flooring industry recognized the importance of low-VOC adhesives, along with other sustainable practices, such as reducing, reusing and recycling natural resources.



## The American Institute of Architects

### Why sustainability is important

"Sustainability is a key element of the architecture profession's approach to design in the 21st century as it tackles the compounding global challenges of resource availability, water quality and increasing pollution. It is part of an architect's approach to protecting the health, safety and welfare of the public. Community sustainability goals are fulfilled in large part by an architect's ability to create practical solutions to the challenges posed by climate change, population growth and the pursuit of more connected, healthier communities."

– American Institute of Architects' Website

As a result, the construction industry was ready for a more formalized approach to sustainability. In 1993, the United States Green Building Council (USGBC) was born. USGBC's goal has been to step back and look at a building's entire design, construction and operation from a sustainability standpoint, providing the incentives (bronze, silver, gold and platinum certifications attained by meeting system credits) to encourage building design that uses fewer resources and promotes human health.

That is why the design phase of a project is key to promoting "project ownership" of the entire installation system. Today, many sustainable programs are beginning to include the installer/contractor in the design phase, recognizing that product application and installation methods are just as important as product selection. It is the installer who ensures that all of the design decisions made at the drafting table are adhered to during the installation, bringing the design and the built world together.

No matter what type of project is being specified, key areas of performance and sustainability should be addressed to ensure a project that will last its intended life cycle, while promoting a healthier environment for the occupants. The best products will have well-balanced support data that includes the following:

- **Product Data Sheet:** A product's performance criteria (ANSI, ASTM, ISO, ICC-ES, IAPMO, DOT) based on test data and standards; it should also show features, benefits, limitations and application requirements
- **Product regulatory compliance:** Data communicated in the Safety Data Sheet (SDS) related to federal and state requirements, including labeling and transportation
- **Environmental Product Declaration (EPD):** A concise environmental product performance report based on Life Cycle Analysis (LCA) to demonstrate the environmental impacts of a product from extraction of raw materials and processing to distribution, use and end of life
- **Health Product Declaration (HPD), Cradle to Cradle (C2C) Manufacturer's Inventory:** Programs that focus on disclosure of a product's ingredients – both "intentional" and "residual" – in a range from 1,000 ppm down to 100 ppm
- **Living Building Challenge (LBC) "Red List Free":** A list within the LBC program that a specifier will often consult to ensure that certain chemicals are not in the products they are specifying (such as isocyanates and phthalate plasticizers)
- **VOC content per South Coast Air Quality Management District (SCAQMD) Rule #1168 for adhesives and sealants or Rule #1113 for architectural coatings:** Data demonstrating a product's potential to release VOCs into an occupied space given specific environmental conditions
- **VOC emissions per the California Department of Health, Section 01350:** A "real world" application, using a chamber test that simulates the conditions in an occupied building and quantifies both the VOCs and chemicals emitted into the air

When manufacturers balance the high-performance characteristics of their products with sustainable characteristics that avoid the depletion of natural resources, they are providing the best products for every project.



#### About the author:

Cris Bierschank

Cris is the Sustainability Manager for MAPEI North America. As a LEED Green Associate and a member of the International Living Future Institute (ILFI), he assists customers involved in sustainable projects, such as LEED and Living Building Challenge (LBC). As a member of MAPEI's Technical Services Department, Cris helps in writing and developing the company's training programs and technical documents, and contributes to MAPEI's social media and technical blog. His 33 years of experience in field engineering and training include collaboration on numerous global installation projects, and during his past 13 years with MAPEI, Cris has applied his experience to the construction and flooring industry.



# REPAIRS, WATERPROOFING AND PAVER-SETTING AT THE PIER

**Challenge:** Years of exposure to sun and a salt-water environment led to degradation of the pier at a famous tourist spot, leaving it in desperate need of repair and modernization. A MAPEI single-source system solution was needed to repair the pier and produce a contemporary finished look with decorative concrete pavers.

## **Solution:**

Step 1 – Shotblast the concrete to a concrete surface profile (CSP) of #7. (The International Concrete Repair Institute [ICRI] Concrete Surface Profile [CSP] Scale describes CSP #7 as a heavy shotblast, usually used for topping applications from 1/4" to 1/2" [or 6 to 12 mm.] )

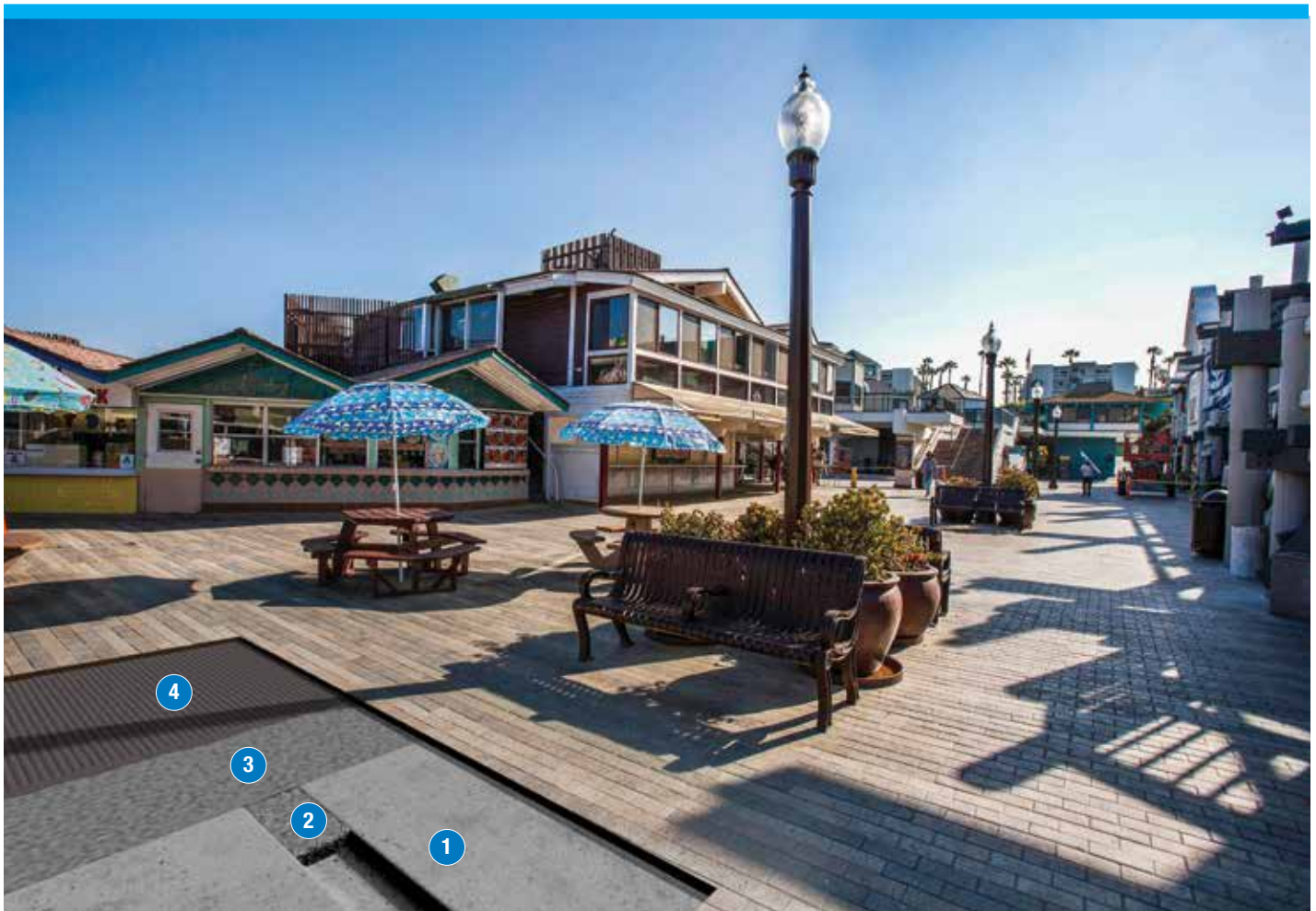
Step 2 – Resurface the entire damaged section of the pier walkway with **Planitop® FD** full-depth repair mortar mixed with **Planicrete® AC** admixture. *Planitop FD* is a shrinkage-compensated, cementitious, self-compacting flowable mortar that can be used for a variety of structural repairs. It contains a corrosion inhibitor and is suited for form-and-pour applications as well as flatwork repairs at depths from 1/2" to 4" (12 mm to 10 cm) neat. *Planitop FD* is pumpable and ideal for deep repairs that require ease of placement

and a rapid return to service. When using *Planitop FD* in exterior environments, the addition of *Planicrete AC* will provide further durability.

Step 3 – Trowel on **Mapelastic®** waterproofing and protective membrane. *Mapelastic's* specially formulated synthetic resins generate a hardened waterproofing layer that remains flexible under all environmental conditions and resists chemical attacks. It offers excellent protection to concrete structures in coastal areas exposed to humidity and chlorides.

Step 4 – Once the repairs are completed and the surface is prepared, install exterior concrete pavers using MAPEI's **Granirapid®** mortar system. *Granirapid* has excellent strength and deformability characteristics. Developed as a fast-curing system geared for fast-track projects, *Granirapid* develops high, early mechanical strength, making it the ideal solution for setting the concrete pavers.

MAPEI offers complete architectural solutions that address a variety of construction needs and requirements – all from a single source.





# MAPELASTIC® WATERPROOFS THE WORLD

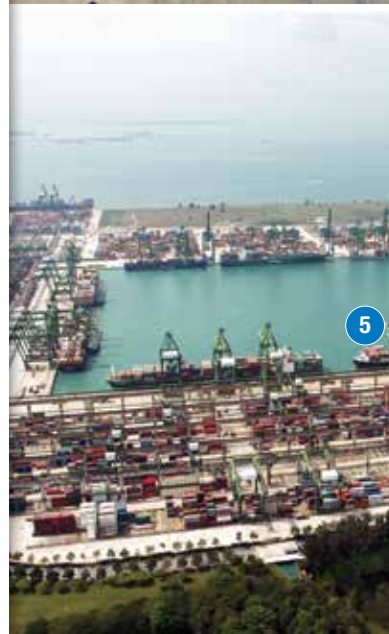
*Mapelastic*, first produced by MAPEI more than 30 years ago to waterproof concrete and masonry, has been used on projects around the globe. Its specially formulated synthetic resins generate a hardened layer that remains flexible under all environmental conditions.

The cured *Mapelastic* remains waterproof in conditions where there is up to 50 feet (positive side) of hydrostatic head pressure. This strong cementitious membrane also resists chemical attack from de-icing salts, sulfates, chlorides and carbon dioxide.

*Mapelastic* offers excellent protection to structures in coastal areas exposed to high humidity and salt, as well as those located in heavy industrial areas exposed to aggressive airborne chemicals and pollutants. While it can be used to waterproof balconies, suspended walkways, patios and pools in residential and commercial applications, *Mapelastic* is also suitable for irrigation canals, spillways, dams, storage tanks and other industrial applications.

This pictorial shows *Mapelastic* being used in various projects around the world.

**1** Apartments on Vig Street – Budapest, Hungary **2** Champlain Bridge – Montreal, Canada **3** Chhatrapati Shivaji International Airport – Mumbai, India **4** Etileno XXI Petrochemical Complex – Coatzacoalcos, Mexico **5** Singapore harbor – Singapore, Republic of Singapore **6** Redondo Beach Pier – Redondo Beach, California **7** Grove Isle Bridge – Miami, Florida **8** Autoroute Dufferin-Montmorency – Canada





# MAPEI PROVES SEAWORTHY

MAPEI's marine division takes installation materials to the open waters



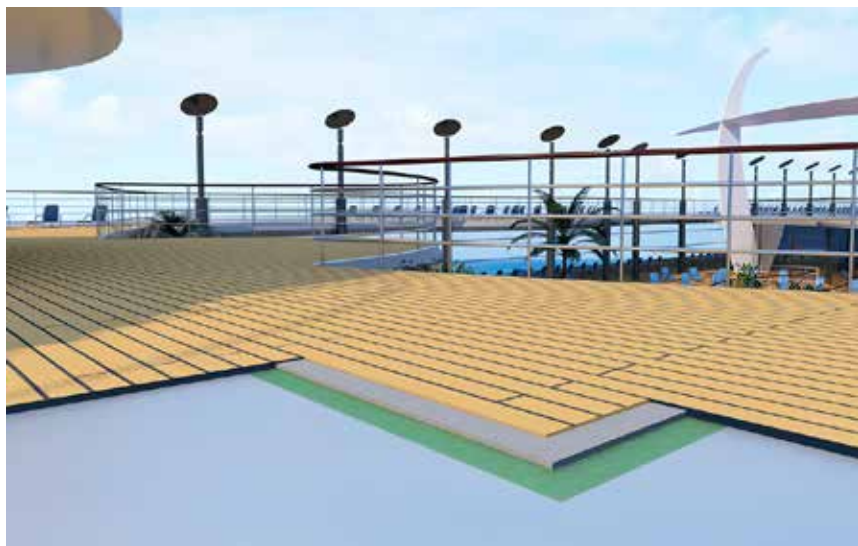
The shipbuilding industry has evolved significantly over the past few decades, due to the constant development and progress in construction technology and the continuous research work into better building materials. The result has been an innovative process that encompasses cargo ships, military-use vessels and cruise liners, as well as pleasure boats and ocean-going yachts.

In addition to traditional requirements regarding durability and resistance to aggressive atmospheric and environmental agents, or wear caused by the movement of high volumes of passengers and cargo, new requirements must now be taken into consideration, too. The need to offer rooms and spaces with increasingly high levels of comfort and livability acts as a stimulus for research to develop new solutions, materials and finishes that combine aesthetics and functionality. Also, requirements are becoming increasingly stringent in terms of health, safety and hygiene that must be guaranteed for ships' passengers.

To answer these needs and requirements, MAPEI Group has established the marine division, a dedicated line of products and systems for the shipbuilding industry. These products were developed through MAPEI's exclusive wealth of experience in this specific application field. Solutions and products were developed to meet the market's particular needs. MAPEI's hallmark attention to sustainability is evidenced in these marine solutions, which were developed with attention to humans and the environment.

MAPEI has integrated its synergistic products into complete system solutions that guarantee certified quality, excellent performance characteristics, functionality, reliability, long-lasting durability, ease of use and simple application. Typical MAPEI marine applications include:

- Leveling compounds and underlays
- Decorative floors for external decks and internal areas
- Resin deck coatings suitable for technical areas such as warehouses, workshops, alleyways, galleys, wet areas,



- laundry, air-conditioning units and refrigerating rooms
- Bonding system for carpet and resilient flooring (such as luxury vinyl tile, sheet vinyl, etc.)
- Bonding system for stone, ceramic, marble and mosaic tiles
- Grouting products for stone, ceramic, marble and mosaic tiles
- Bonding system for turf on open decks
- Sound damping and viscoelastic underlayments
- Waterproofing coatings
- Sealants

The marine industry is a typical example of how MAPEI continually searches for new markets for its products and system solutions. Entering new market sectors is key to enhancing the company's organic growth with existing and new products.





The **MAPEI Technical Institute** (MTI) provides the highest-quality, basic product knowledge with demonstrations and hands-on training to architects, contractors, installers and distributors in 9 locations: Deerfield Beach (FL), San Bernardino (CA), Garland (TX), Dalton (GA), West Chicago (IL) and Swedesboro (NJ), all in the USA; and Laval (Quebec), Brampton (Ontario) and Delta (British Columbia), all in Canada.



## Training by request

In addition to regular MAPEI Technical Institute workshops that are scheduled throughout the year, the Technical Services Department accommodates a number of special-request workshops. On occasion, members of an organization may meet at MAPEI's Deerfield Beach, Florida, headquarters facility to get hands-on experience with new technologies such as large, thin (gauged) tile panels.

However, at other times, a distributor may send representatives from a specific region or selected people from each of their regions to get specialized training on new MAPEI products. Or contractors may want all their employees to learn approved techniques for specific installations.

When the need for such localized training arises, the customer's MAPEI sales representative can contact MAPEI's MTI coordinators. The coordinators can then arrange for a local one- or two-day workshop led by MAPEI's National Presenter Sam Biondo or by regional Technical Services representatives. The workshops are held in one of MAPEI's MTI facilities, which are located at each of the production plants in the United States and Canada.

For registration information on U.S. seminars, please contact Sophia D'Amico-Campbell at (954) 246-8555.  
For registration information on Canadian seminars, please contact Marie-Christine Mercier at (450) 662-1212.

## New general manager named for MAPEI/GRT division



MAPEI has named Jesse Osborne as the new general manager for its MAPEI/GRT concrete admixtures and cement additives division, which is headquartered in Eagan, Minnesota. Osborne will report directly to Luigi Di Geso, President and CEO of MAPEI North America. He will also interact closely with MAPEI's Global Liquid Admixture Group – headed by Walter Nussbaumer – and the Research & Development Center in Milan, Italy, as

MAPEI/GRT adds new product offerings to its portfolio. Plans are also in the works for a new concrete admixtures R&D department at the MAPEI plant that is being built in Logan Township, New Jersey.

"We feel Jesse can deliver the leadership we need to take MAPEI/GRT to the next level in this market," Di Geso said. "His background

and experience will help us strengthen the organizational structure of the division as we grow the brand both organically and geographically."

Osborne comes to MAPEI/GRT with 37 years of experience in the industry, having previously worked for BASF and Euclid Chemical. "I see my position as a unique opportunity to work with a company that is just starting to grow its concrete admixtures and cement additives business in the Americas, and I believe that MAPEI/GRT will gain a respectable share of the market," Osborne said.

In addition to managing sales and R&D, Osborne will oversee manufacturing operations for MAPEI/GRT. Daily operations will be managed by Marco Federico, who has worked with MAPEI in Italy since 1995 and has held positions of increasing responsibility in production and management.

## MAPEI participates in Gary Sinise Foundation's Walls of Honor dedication

MAPEI Business Development Manager Keith Haney recently attended a Walls of Honor dedication on the site of the new smart home that the Gary Sinise Foundation is building for United States Army Sergeant First Class Wade Mitcheltree (Ret.) of Tigard, Oregon.

The Gary Sinise Foundation invites donors and friends to visit its houses when the foundation, timbers and outer shell are completed. Everyone writes words of encouragement and signs their names on the timbers and shell before the interior walls are added. In this way, messages of good luck are locked into the core of each house. Haney commented, "It was a very moving time, and I left with a feeling of pride in what Americans can do to help each other."

Mitcheltree served three tours in Iraq and Afghanistan, and his platoon worked with local police in Afghanistan to ensure the security of their surrounding areas. On August 13, 2012, near Kandahar, Mitcheltree was severely injured by an improvised explosive device (IED). His progress in rehabilitation has continued

to improve and his outlook on life has been positive, although he lost his right leg above the knee and his left leg below the knee as well as sustaining other traumatic injuries.

MAPEI is proud to have offered a helping hand by supplying all the installation materials for the tile, stone and wood in Mitcheltree's new smart home, which is specially adapted for his injuries.



MAPEI representative Keith Haney signing Walls of Honor at Mitcheltree home





## MAPEI volunteers work at AEC Cares Project Orlando

Every year, on the day before the American Institute of Architects (AIA) National Conference, AEC Cares brings together ConstructConnect, the AIA, Hanley Wood, leading manufacturers, generous sponsors and volunteers from across the United States for a project that helps the host city of the national conference. MAPEI has participated all seven years since the inception of this unique idea, one of the few companies that have made it every year.

AEC Cares picks a project and, over the year, plans what needs to be accomplished. An architectural firm volunteers its time to do the needed design work. A general contractor is brought on board to help with the planning and ordering of needed materials. A week or two before the work day, a lot of preliminary work gets handled.

On the day of the project, architects, contractors, engineers and suppliers show up, break into teams and go to work. As many as 300 people have showed up for the project.

Over the years, MAPEI has generously donated tile mortars and grouts, floor-covering adhesives, wood adhesives and stains, wood refinishing systems, caulking and sealants. But more importantly, MAPEI volunteers have given multiple hours of physical labor that has put their expertise and skills to work. Over the years they have set tile, installed brick veneer, sand-set pavers, re-finished wood flooring, hung ceilings, and performed landscaping, carpentry and painting. Every year, local MAPEI salespeople join in with MAPEI's architectural and marketing personnel to support this worthy cause.

This year, the work centered on a shelter for the Coalition for the Homeless in Orlando, Florida. The building is an old broadcasting studio that, years ago, was divided into bedrooms primarily for single mothers and their children. The building was in need of much repair. The work this year was refurbishing the main lobby, meeting rooms and all corridors leading to the living units.

New flooring, ceilings and wall coverings were installed; and new paint was applied to the interior. Joining the MAPEI work team this year were Bill Dunkerley, Jon Shoemaker, Jim Moffitt, Dan Costa, Luis Roman, Steven Day and Mike Granatowski. All agreed that it was a very rewarding day. Everyone worked hard, had a lot of laughs and got dirty; but, at the end, a lot was accomplished.



## THE WORLD OF



### TILE & STONE INSTALLATION SYSTEMS



### FLOOR COVERING INSTALLATION SYSTEMS



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### PRODUCTS FOR UNDERGROUND CONSTRUCTION



### ADMIXTURES FOR CONCRETE



### BELOW-GRADE WATERPROOFING SYSTEMS



### CEMENT ADDITIVES

#### Headquarters of North America

1144 East Newport Center Drive  
Deerfield Beach, FL 33442

#### Customer Service

1-800-42-MAPEI (1-800-426-2734)

#### Technical Services

1-800-992-6273 (U.S. and Puerto Rico)  
1-800-361-9309 (Canada)

#### Services in Mexico

0-1-800-MX-MAPEI  
(0-1-800-696-2734)

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India  
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Singapore  
South Korea  
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#### **AFRICA**

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Egypt  
South Africa



# Let your **grout colors** take flight



Create an **IRIDESCENT** effect  
with **MAPEI Flexcolor™ 3D**  
ready-to-use, translucent grout

Stunning tile demands a stunning grout. *MAPEI Flexcolor 3D* grout makes tiles “pop” with varying degrees of translucence and iridescence, creating a brilliant rainbow effect in various tints. Plus, this grout’s stain- and chemical-resistant formulation offers easy cleanability, color consistency and improved workability. Best of all, you won’t need a sealer to lock in the luminous beauty of *MAPEI Flexcolor 3D*.

