

DOW

DOWFRIENDS

Newsletter



Top New Year's resolutions that are powered by science

New year—new you! Take a look at the science behind the everyday materials that help you achieve your goals.

[Learn More](#)

Dow recognized with six wins in the BIG Innovation Awards

This is the 9th consecutive year Dow technologies have won BIG Innovation Awards and the highest number of awards Dow has won in a single year, matching the record set in 2024.

[Learn More](#)



Dow reports fourth quarter 2024 results

FINANCIAL HIGHLIGHTS

- Net sales were \$10.4 billion, down 2% year-over-year, reflecting declines in Packaging & Specialty Plastics. Sequentially, net sales were down 4%, led by seasonal declines in Performance Materials & Coatings.
- Volume increased 1% compared to the year-ago period, with gains in most regions. Sequentially, volume decreased 1%, led by seasonally lower demand in Performance Materials & Coatings, partly offset by improved supply availability in Packaging & Specialty Plastics and Industrial Intermediates & Infrastructure.
- Local price was down 3% year-over-year and sequentially, with declines in all operating segments.
- Equity losses were \$51 million, down \$44 million compared to the year-ago period, primarily driven by lower integrated margins at our Thai joint ventures. Sequentially, equity earnings were down \$53 million, driven by lower earnings at our principal joint ventures.
- GAAP net loss was \$35 million, or \$0.08 per share, including significant items totaling \$0.08, primarily from restructuring and efficiency costs. Operating earnings per share¹ was \$0.00. Both earnings per share and operating earnings per share include higher-than-expected non-cash tax adjustments of \$0.27, primarily related to Argentina, amplified by inflation.
- Op. EBIT was \$454 million, down \$105 million year-over-year, primarily driven by lower prices, which were partly offset by higher operating rates and lower spending. Sequentially, Op. EBIT was down \$187 million, reflecting lower integrated margins in Packaging & Specialty Plastics and seasonally lower demand in Performance Materials & Coatings.
- Cash provided by operating activities – continuing operations was \$811 million, down \$817 million year-over-year, primarily driven by a significant prior period working capital release from destocking. Sequentially, cash from operating activities was up \$11 million.
- Returns to shareholders totaled \$492 million of dividends in the quarter.
- The Company delivered 2024 full year net sales of \$43.0 billion compared to \$44.6 billion in 2023. GAAP net income was \$1.2 billion, up from \$660 million in 2023. Operating EBIT was \$2.6 billion, down from \$2.8 billion last year. Cash provided by operating activities – continuing operations was \$2.9 billion compared to \$5.2 billion in 2023. The Company delivered returns to shareholders of \$2.5 billion, comprised of \$2 billion in dividends and \$0.5 billion in share repurchases in 2024.

SUMMARY FINANCIAL RESULTS

<i>In millions, except per share amounts</i>	Three Months Ended Dec 31			Three Months Ended Sep 30	
	<u>4Q24</u>	<u>4Q23</u>	<u>vs. SPLY</u> <u>[B / (W)]</u>	<u>3Q24</u>	<u>vs. PQ</u> <u>[B / (W)]</u>
Net Sales	\$10,405	\$10,621	\$(216)	\$10,879	\$(474)
GAAP Income (Loss) Net of Tax	\$(35)	\$(95)	\$60	\$240	\$(275)
Operating EBIT¹	\$454	\$559	\$(105)	\$641	\$(187)
Operating EBIT Margin¹	4.4%	5.3%	(90) bps	5.9%	(150) bps
Operating EBITDA¹	\$1,205	\$1,216	\$(11)	\$1,382	\$(177)
GAAP Earnings (Loss) Per Share	\$(0.08)	\$(0.15)	\$0.07	\$0.30	\$(0.38)
Operating Earnings Per Share¹	\$0.00	\$0.43	\$(0.43)	\$0.47	\$(0.47)
Cash Provided by Operating Activities – Cont. Ops	\$811	\$1,628	\$(817)	\$800	\$11

CEO QUOTE

Jim Fitterling, chair and chief executive officer, commented on the quarter:

“Despite persistently weak macroeconomic conditions, Team Dow delivered our fifth consecutive quarter of year-over-year volume growth, leveraging our cost-advantaged footprint to capture resilient demand for high-value applications. In December, we signed a definitive agreement for the sale of a minority stake in select U.S. Gulf Coast infrastructure assets for expected cash proceeds of up to approximately \$3 billion. The partnership represents a new business model designed to drive operational efficiencies and growth with new customers, while providing near-term financial flexibility. We also announced a strategic review of select European assets, and today we are announcing additional actions to deliver \$1 billion of targeted cost reductions. These collective actions represent a continuation of Dow’s commitment to maintaining our strong financial foundation and supplementing near-term cash flow.

SEGMENT HIGHLIGHTS

Packaging & Specialty Plastics

<i>In millions, except margin percentages</i>	Three Months Ended Dec 31			Three Months Ended Sep 30	
	<u>4Q24</u>	<u>4Q23</u>	<u>vs. SPLY</u> <u>[B / (W)]</u>	<u>3Q24</u>	<u>vs. PQ</u> <u>[B / (W)]</u>
Net Sales	\$5,315	\$5,641	\$(326)	\$5,516	\$(201)
Operating EBIT	\$447	\$664	\$(217)	\$618	\$(171)
Operating EBIT Margin	8.4%	11.8%	(340) bps	11.2%	(280) bps
Equity Earnings (Losses)	\$(15)	\$40	\$(55)	\$16	\$(31)

Packaging & Specialty Plastics segment net sales in the quarter were \$5.3 billion, down 6% versus the year-ago period. Local price decreased 5% year-over-year, primarily driven by lower functional polymers and polyethylene prices. Segment volume was down 1% year-over-year, as polyethylene demand growth was more than offset by lower merchant hydrocarbons and non-recurring licensing revenue. On a sequential basis, net sales were down 4%, primarily driven by lower polyethylene prices.

Equity losses were \$15 million, a decrease of \$55 million compared to the prior year, led by lower integrated margins at the Thai joint ventures. Sequentially, equity earnings were down \$31 million, driven by lower earnings at our principal joint ventures.

Op. EBIT was \$447 million, a decrease of \$217 million compared to the year-ago period, driven by lower integrated margins, licensing revenue, and reduced equity earnings. Sequentially, Op. EBIT decreased by \$171 million, due to lower integrated margins and equity earnings, partly offset by the restart of a cracker in Texas and lower planned maintenance activity.

Packaging and Specialty Plastics business reported a net sales decrease versus the year-ago period, driven by lower functional polymers and polyethylene prices, primarily in Asia Pacific, partly offset by higher demand for flexible food and specialty packaging in all regions except Latin America. Sequentially, net sales decreased, as higher demand for industrial and consumer packaging was more than offset by lower prices.

Hydrocarbons & Energy business reported a net sales decline compared to the year-ago period, driven by lower merchant olefins demand and aromatics prices. Sequentially, net sales decreased, as higher third-party olefins demand from improved supply availability after the restart of a cracker in Texas was more than offset by lower olefins and aromatics prices.

Industrial Intermediates & Infrastructure

<i>In millions, except margin percentages</i>	Three Months Ended Dec 31			Three Months Ended Sep 30	
	<u>4Q24</u>	<u>4Q23</u>	<u>vs. SQLY</u> <u>[B / (W)]</u>	<u>3Q24</u>	<u>vs. PQ</u> <u>[B / (W)]</u>
Net Sales	\$2,948	\$2,948	\$0	\$2,962	\$(14)
Operating EBIT	\$84	\$15	\$69	\$(53)	\$137
Operating EBIT Margin	2.8%	0.5%	230 bps	(1.8)%	460 bps
Equity Earnings (Losses)	\$(39)	\$(57)	\$18	\$(17)	\$(22)

Industrial Intermediates & Infrastructure segment net sales were \$2.9 billion, flat versus the year-ago period. Local price declined 1% year-over-year. Volume increased 1% year-over-year, driven by improved supply availability in Industrial Solutions, partially offset by lower volumes in Polyurethanes & Construction Chemicals. On a sequential basis, net sales were flat as seasonal increases in deicing fluid demand offset local price declines and seasonally lower volumes in building & construction.

Equity losses for the segment were \$39 million, an improvement of \$18 million versus the year-ago period, driven by improved MEG margins at the Kuwait joint ventures. Equity losses in the prior quarter were \$17 million. Sequentially, the earnings decline was primarily driven by price declines in Asia Pacific at Sadara.

Op. EBIT increased \$69 million versus the year-ago period, primarily driven by higher operating rates and improved supply availability in our Industrial Solutions business. On a sequential basis, Operating EBIT increased by \$137 million, driven by lower planned maintenance activity and higher operating rates that were partially offset by local price declines.

Polyurethanes & Construction Chemicals business reported a decrease in net sales compared to the year-ago period, driven by lower volumes primarily in Asia Pacific and Europe, the Middle East, Africa and India (EMEA). Sequentially, net sales decreased, driven by seasonally lower demand in building & construction applications.

Industrial Solutions business reported an increase in net sales compared to the year-ago period, as local price declines were more than offset by volume gains in all regions on improved supply availability following the restart and continued ramp-up from an outage at Louisiana Operations. Sequentially, net sales increased, driven by higher ethylene oxide project-related catalyst sales and seasonally higher demand for deicing fluids, partly offset by local price declines.

Performance Materials & Coatings

<i>In millions, except margin percentages</i>	Three Months Ended Dec 31			Three Months Ended Sep 30	
	<u>4Q24</u>	<u>4Q23</u>	<u>vs. SQLY</u> <u>[B / (W)]</u>	<u>3Q24</u>	<u>vs. PQ</u> <u>[B / (W)]</u>
Net Sales	\$1,965	\$1,894	\$71	\$2,214	\$(249)
Operating EBIT	\$(9)	\$(61)	\$52	\$140	\$(149)
Operating EBIT Margin	(0.5)%	(3.2)%	270 bps	6.3%	(680) bps
Equity Earnings (Losses)	\$2	\$6	\$(4)	\$1	\$1

Performance Materials & Coatings segment net sales in the quarter were \$2 billion, up 4% versus the year-ago period. Local price decreased 2% year-over-year, primarily driven by lower prices in Consumer Solutions. Volume was up 5% year-over-year, driven by gains in both businesses. On a sequential basis, net sales were down 11%, primarily from seasonally lower demand.

Op. EBIT increased \$52 million versus the year-ago period, driven by volume gains as well as lower fixed costs. Sequentially, Op. EBIT decreased \$149 million, driven by seasonally lower demand and operating rates.

Consumer Solutions business reported an increase in net sales versus the year-ago period, driven by volume gains across all downstream end markets, led by infrastructure, home care, and electronics, as well as in upstream siloxanes. Sequentially, net sales decreased primarily driven by lower seasonal demand.

Coatings & Performance Monomers business reported an increase in net sales compared to the year-ago period, driven by higher merchant monomers volumes in the U.S. & Canada, which were partly offset by lower volumes in EMEA. Sequentially, net sales decreased, primarily from seasonally lower demand for pavement markings and architectural coatings.

OUTLOOK

“We remain confident that Dow will benefit from the completion of our near-term incremental growth projects and an enhanced focus on operational discipline in 2025. In addition, we are optimistic that we will see further demand growth in attractive end markets such as packaging, energy and electronics,” said Fitterling. “Our differentiated portfolio and strong balance sheet enable us to deliver

on all our capital allocation priorities, including an industry-leading dividend. Until we see more definitive indications of a true recovery taking hold – and in order to deliver improved margins – we are taking actions to reduce our costs by \$1 billion as well as our 2025 CapEx plans by \$300 - 500 million. We will complete these actions while staying the course on our long-term strategic priorities. Our proactive interventions are necessary for Dow to continue to successfully navigate this economic downcycle.”

[Link to online article](#)

How Dow is driving sustainability in sports and stadiums

Materials science helps elevate the game, the experience and sustainability in sports stadiums.

Sustainability is a priority in many sectors, and the world of sports is no exception. Sports organizations are increasingly adopting sustainable solutions to reduce their carbon footprint and enhance energy efficiency. This shift is accelerated by the realization that sustainable practices not only benefit the environment but can also enhance the fan and player experience.

In this evolving landscape, materials play a critical role. By leveraging our advancements in materials science, Dow contributes to sustainable sports facilities. Materials science, an interdisciplinary field, explores how to design materials with specific properties. This expertise enables our teams to develop solutions that meet the unique demands of athletes and where they play.

From the ground up, Dow materials are at the forefront of driving sustainability in sports. These innovations help organizations achieve their sustainability goals, providing durable, high-performance solutions that address environmental impact and elevate the overall experience of venues.



Sustainable materials for playing surfaces and footwear

Athletic fields, tracks and courts made with advanced materials can deliver the right combination of performance, strength, and sustainability—ensuring a top-tier playing experience across every sporting pursuit.

Artificial turf

Artificial turf has revolutionized the way sports are played, providing a versatile and durable playing surface for a wide range of activities. From football to field hockey and beyond, artificial turf is the go-to choice for stadiums seeking a reliable

and high-performance surface. The benefits of artificial turf extend beyond its immediate functionality; it also offers significant, sustainable advantages.

One of the environmental benefits of artificial turf is the reduction in water usage. Unlike natural grass, artificial turf requires no regular watering, which conserves vast amounts of water over its lifespan. Additionally, the maintenance of artificial turf is much less resource-intensive than that of natural grass. There is no need for mowing, fertilizing or pesticide application, which reduces both emissions and product runoff.

Dow plays a role in advancing **artificial turf technology** through our innovative materials. Our ELITE™ and DOWLEX™ polyethylene resins are used in the turf yarn, providing a combination of mechanical toughness, softness, and resilience. These properties ensure that players can safely slide, tackle and fall on the surface. Polyurethane can be used to improve strength and durability of turf backing while elastomer materials can be used as an alternative to crumb rubber as infill to cushion players.

We are committed to developing sustainable solutions and this is exemplified by our development of **REVOLOOP™ 30-LL E Recycled Plastics Resin**. This resin, containing 30% post-consumer recycled (PCR) content, is specifically designed for turf applications. It helps sports venues get closer to their sustainability goals by incorporating circular materials to help reduce the overall environmental impact of playing surfaces.

Athletic tracks

Track materials have transformed the way athletic tracks are built and utilized, providing durable and sustainable solutions that cater to the rigorous demands of athletes. One of our innovations in this arena is **DIAMONDLOCK™ Track technology**.

DIAMONDLOCK™ Track is a high-performance, waterproof sandwich system specifically designed for athletic tracks. Utilizing a sophisticated polyurethane binder system, it delivers top-tier performance across diverse climates, ensuring consistent reliability regardless of location.

This advanced technology not only enhances the durability of the track but also supports sustainability. More than 60% of DIAMONDLOCK™ Track's base layer weight is derived from circular materials, effectively giving a second life to materials originally made for other applications. This use of repurposed materials supports sustainable practices in stadiums and reduces the overall environmental footprint of track surfaces.

An example of DIAMONDLOCK™ Track in action can be found at the **Joan Samarra Vila Communal Stadium** in Andorra. Installed by **Sportan**, this track system exemplifies how materials can deliver exceptional performance while adhering to rigorous sustainability standards.

Hard courts

The push for the increased sustainability of playing surfaces has led to advancements in constructing long-lasting hard courts, like those used in **tennis**.

Our family of RHOPLEX™ Acrylic Emulsions, used in both indoor and outdoor hard court coatings, helps achieve a balance between performance and sustainability—creating resilient surfaces that withstand tough shots. These emulsions dry quickly, reducing court downtime and increasing facility efficiency. They also resist weather and UV degradation, extending the life of a court and reducing the resources needed to maintain it.

We have also worked with **B.T. Sports** to develop **GreenPave® PermeaCourt**, a permeable hard court surface to address the issue of rain disruption in tennis matches. Science plays a crucial role in this innovation through materials and design that enable courts to drain water quickly, reducing the time to dry off after rainfall.

The aggregate-mix surface is made of a series of layers. As the water goes into deeper layers, bigger air spaces continue to force water downward. This inverted-funnel design prevents clogging and maintains permeability, speeding up the drying process and ensuring consistent performance. Our **ECOGROUND™ technology** further enhances the court surface as a protective coating with outstanding durability and UV resistance.

A full-scale court using GreenPave® PermeaCourt technology is on display at **SportsSG's Jurong West Centre** in Singapore. The **International Tennis Federation** certified this court as a Level 3 playing surface, and the **Singapore Green Building Council** also granted its highest certification to this surface system for its sustainable attributes.

Footwear

For ultimate performance, athletic footwear is often made with multiple materials, including leather, rubber, foam, polymers, natural textiles and synthetic materials. Each has properties that contribute to the functionality of the shoe and how it interacts with playing surfaces.

We collaborate with leading footwear manufacturers to help them create **high-performance athletic footwear**. For example, midsoles made with **Dow INFUSE™ Olefin Block Copolymers** offer exceptional recovery and compression, contributing to stability and shock absorption for injury reduction. **ENERLYTE™ Polyurethane Elastomers**, used in insoles and midsoles, provides lightweight energy return to enhance rebound. And the flexible properties of **VORALAST™ Polyurethanes** helps shoes perform like day one, every day.

Energy-efficient stadium systems

By maintaining precision control and improving the overall efficiency of facility systems, material science contributes to significant energy savings and the sustainability of sports venues.

Lighting

Energy-efficient stadium lighting systems have become a crucial element in reducing electricity consumption while maintaining optimal performance.

Advancements in lighting systems include the integration of Dow SILASTIC™ Moldable Optical Silicones in **next-generation LED designs**. This innovative material opens new avenues for efficiency,

light output and energy savings, setting the stage for expressive stadium designs with enhanced visual appeal that also provide a superior visibility experience for both players and spectators.

By optimizing the light distribution and reducing energy consumption, these LED systems contribute cost savings and environmental benefits, supporting the sustainability of modern venues.

We have collaborated on the enhancement of stadium lighting at the **Dow Diamond**, home of the Great Lakes Loons, a Minor League Baseball team affiliated with the Los Angeles Dodgers. The upgrade involved installing a state-of-the-art LED lighting system with improved light levels, uniformity, glare control, and energy efficiency, as well as special effects capabilities.

Alongside **Schröder**, we also developed reliable LED floodlights to illuminate the 6,000-seat **Hidegkuti Nándor Stadium** in Hungary under intense conditions and UV exposure—introducing **Eastern Europe's first LED-illuminated sports stadium**.

Rinks

In ice venues, heat transfer fluids are used to enable precision control of temperatures to create rinks tailored to the specific needs of different sports, like hockey or speed skating.

The movement of steel skate blades and other equipment releases energy that can soften ice and slow down athletes. Heat transfer fluids are a material that helps transfer heat from one part of a system to another. In rinks, these fluids are used to maintain the exact temperature needed to ensure athletes have the proper grip on the surface of the ice.

DOWTHERM™ SR-1 Heat Transfer Fluid is chilled by refrigeration equipment beneath the rink and then circulated through a network of pipes. The cold solution extracts any heat collecting on the floor, causing a layer of water to freeze into a smooth sheet of ice. The fluid is then circulated back to the refrigeration system where the heat is dissipated.

With **DOWTHERM™ Heat Transfer Fluids'** unmatched ability to maintain temperatures, the technology helps ease maintenance requirements and protects pipes from corrosion.

HVACs

Heat transfer fluids are used in stadium HVAC (heating, ventilation, and air conditioning) systems to improve energy efficiency in heating and cooling of the facility.

High-quality heat transfer fluids can enable HVAC systems to perform for 20 years or more by protecting system components against corrosion and scaling that can lead to costly system downtime. Efficient HVAC systems help large sports facilities, like stadiums, reduce their operational costs and environmental impact.

DOWFROST™ Heat Transfer Fluids play a significant role in this function by serving as secondary refrigerants in air conditioning systems. These fluids help optimize air flow throughout the stadium, ensuring that indoor areas remain cool and comfortable for spectators.

Sustainable infrastructure and the fan experience

Building state-of-the-art stadiums requires sustainable materials and cutting-edge techniques to ensure the longevity and human-centric design of the structures.

Stadium infrastructure

Sustainable construction materials and techniques are pivotal in building modern stadiums. Dow has pioneered innovations that meet the highest standards of performance, enhance the durability of these structures and reduce their environmental impact.

The **Japan National Stadium** served as the Olympic Stadium during the Olympic Games Tokyo 2020. This main venue for Tokyo 1964 was **retrofitted with several Dow technologies** in insulation, coatings, paints and wiring for Tokyo 2020. This includes foam sealants to fill gaps between materials and provide structural stability during heat expansion, cable insulation for reliable power throughout the venue, water-based coatings to meet low-VOC requirements, and telecommunications compounds for the seamless transmission of event footage across the world.

Another example of materials used in stadium construction is **DOWLEX™ PE Resins**, which help pipes resist stress cracks. **DOWSIL™ Silicone Structural Glazing Sealants** deliver seamless glass façades that contribute to both the aesthetic appeal and structural integrity of stadiums.

The **Dow Center** stadium in Bahía Blanca, Argentina, a flexible-use facility supported by Dow and other partners, became the first **LEED-certified** sports complex in Latin America in 2022. Its construction includes polyisocyanurate panels and **SILASTIC™ silicone elastomers** to create effective insulation that reduces energy consumption and improves the acoustics of the venue.

In 2019, the Golden State Warriors moved into the **Chase Center**, a premier facility in San Francisco featuring an 18,000-seat arena and mixed-use office and retail space. The project faced challenges including a tight build schedule and achieving LEED Gold certification. To meet these goals, **they teamed up with Dow technical experts** to install a **DOWSIL™ Silicone Air Barrier System** for the damp climate conditions and DOWSIL™ silicone structural sealants for the challenging façade design.

Stadium seating

Stadium seating that is sustainable and comfortable is a growing trend. Innovative solutions like the use of recycled materials and modular design are being installed in venues around the world.

Dow contributes to this aspect of the fan experience through water-based coatings formulated with acrylic resins, which protect seating from the relentless sun and corrosive elements. Our **SPECFLEX™ circular polyurethane foam technologies** are also bringing a new level of comfort and support to spectators, ensuring that every game can be enjoyed with ease.

Performance from the ground up

Materials science is transforming the world of sports. By focusing on sustainability, durability, and performance, it is enhancing the experiences of fans and athletes and contributing to the long-term sustainability of stadiums and other venues.

Dow aims to continue pushing the boundaries of what is possible, so that every aspect of the sporting world can benefit from our innovative technologies and solutions.

[Link to online article](#)

Dow and Innventure to collaborate on Waste-to-Value Platform

Innventure founds fourth company, Refinity, to commercialize cost-effective conversion of mixed wastes to petrochemical feedstocks

Dow and Innventure, a technology commercialization platform, today announced plans to collaborate to develop and commercialize new waste-to-value technologies. The collaboration aims to enable globally scalable, cost-effective conversion of mixed wastes to petrochemical feedstocks.

Innventure has created a new subsidiary, Refinity, to commercialize cost-effective waste-to-value technologies. Refinity will work directly with Dow to scale and commercialize technologies aimed at converting mixed waste, including hard-to-recycle plastic waste, to petrochemical feedstocks. The sustainable chemicals produced by Refinity will serve as direct replacements for existing fossil fuel-based feedstocks. Dow will provide technical resources to support the engineering development and deployment of new waste-to-value processes and work with Refinity to identify preferred sites for future commercial plant operations. This collaboration with Innventure aligns with Dow's strategy to work with partners to accelerate the development and deployment of advantaged technologies and deliver the volumes and incremental profit goals of its **Transform the Waste** goal.



Via Refinity, Innventure licenses novel, high yield thermochemical processes; for example, gasification to convert mixed plastic waste to light olefins. Dow anticipates contributing other technologies as part of the collaboration in the future. Refinity and Dow may also collaborate to develop selected parts of the waste supply chain, including waste plastic feedstock aggregation and upgrading.

“Dow is committed to transforming plastic waste into circular solutions that result in high-quality resins demanded by our customers while helping to accelerate a circular economy,” said **Dave Parrillo**, vice president for Research & Development, Dow Packaging & Specialty Plastics and Hydrocarbons. “We are excited to work with Refinity on waste-to-value which can be combined with Dow’s efforts to Decarbonize & Grow and its Path2Zero journey. We are also excited to work more broadly with

Innventure, whose differentiated model for technology commercialization and new company creation can help Dow accelerate our Transform the Waste initiative.”

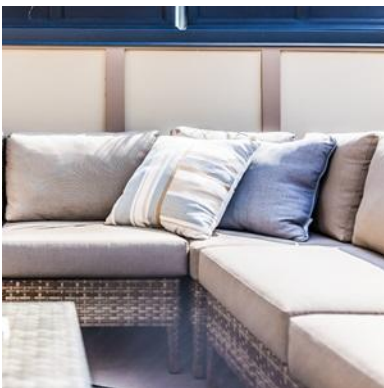
Bill Haskell, CEO of Innventure, added, "Partnering with industry-leading multinational corporations like Dow to accelerate the commercialization of game-changing technologies is core to Innventure’s business model. Through the collaboration with Dow, our new subsidiary, Refinity, intends to accelerate the development and deployment of differentiated waste conversion processes globally."

Dow and Innventure are committed to accelerating circularity on a global scale. Dow has a sustainability target to Transform the Waste and commercialize three million metric tons of circular and renewable solutions by 2030.

[Link to online article](#)

Dow transforms the comfort experience with production of VORANOL™ WK5750 at Freeport polyol plant

Dow announced that VORANOL™ WK5750, a cutting-edge polyether polyol, is set to be produced at its Freeport polyol plant, marking its continued commitment to high application performance.



With its unique design and ability to produce soft and hypersoft foams, VORANOL™ WK5750 aims to transform the comfort experience in products such as mattresses and furniture. Its ability to serve as a powerful cell opener further extends its utility to viscoelastic and high resiliency foam applications, offering unprecedented softness and resilience.

As a critical enabler of specialty slabstock flexible foam applications, VORANOL™ WK5750 also offers:

- ◆ **Enhanced reactivity**, ensuring superior cross-linking for a broad spectrum of applications.
- ◆ **Optimal viscosity**, providing a good range of 1000-1500 cSt at 25 °C to balance ease of processing and quality performance.
- ◆ **High standard of purity and quality**, delivering a maximum water content of 0.06 Wt %.
- ◆ **Aesthetic appeal** with a maximum color specification of 50 APHA, ensuring products maintain visual quality.

“At Dow, we are committed to improving flexible foam capabilities as our customers continue to look for high performance in viscoelastic and hyper soft foam applications,” said Kevin Meyer, associate technical service & development director at Dow. “By producing VORANOL™ WK5750 at our Freeport polyol plant, we can offer innovative polyol options that help meet our customers’ performance needs.”

For more details or to request samples, please visit [VORANOL™ WK 5750 Polyol](#).

[Link to online article](#)

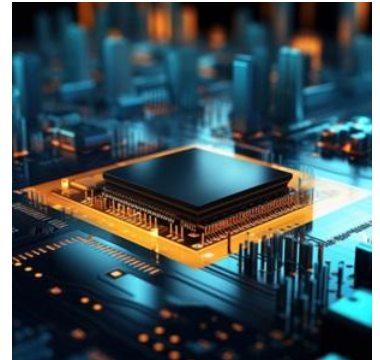
Carbice and Dow partner to enhance thermal management of electronics

Collaboration powers the future of innovation.

Dow and Carbice have a groundbreaking partnership to offer advanced thermal interface materials for various industries, including mobility, industrial, consumer electronics, and semiconductors. Unveiled at The Battery Show North America in 2024, [this partnership](#) combines decades of Dow's silicone expertise with aligned carbon nanotube (CNT) technology from Carbice. The collaboration supports innovation for diverse applications through thermal management solutions that are reliable, affordable, and customizable.

Understanding thermal interface material

A thermal interface material (TIM) is a material placed between two parts—like a heat-generating device and a heat sink—to help with heat transfer. In electronic devices, gaps can form because of rough surfaces, manufacturing flaws, or misalignment during assembly. These gaps have lower thermal conductivity than solid materials, leading to higher thermal resistance and poor heat dissipation. This can cause hotspots, overheating, or even device failure.



Have you ever noticed your PC or cell phone getting hot when you use it for a while? This happens because of electrical resistance, where the flow of electricity creates friction and generates heat. This heat can slow down your device and affect its performance. That is where thermal interface materials (TIMs) come in. They help transfer heat away from the hot parts, keeping your device cool and running smoothly.

Types of thermal interface materials

Dow builds on silicone's inherent potential by combining it with industry-leading materials knowledge, application expertise, customer collaboration, and a global footprint. This continues to be true in our partnership with Carbice.

The following sections elaborate on our industry-leading product portfolio of heat transfer solutions and highlight the new materials from the partnership.

Thermally conductive adhesive

DOWSIL™ thermally conductive silicone adhesives are suitable for bonding and sealing hybrid circuit layers, semiconductor components, heat spreaders, and other applications that demand broad design, flexible processing options and excellent thermal management.

The high-performance materials in our portfolio encompass moisture-cure grades for simple, room-temperature processing as well as heat-cure solutions for speeding productivity and time to market.

Carbice® SA-90 with Silicone Adhesive provides exceptional thermal performance with the functionality of an adhesive. It offers unique assembly benefits by reducing the need for mechanical fastening and can be easily adopted in pick and place processes. The thermal pad ensures reliable high thermal temperature stability, thanks to Dow Silicone technology, and remains re-workable for component adjustments.

Thermally conductive compounds

DOWSIL™ thermally conductive silicone compounds deliver high conductivity and low resistance to efficiently draw heat away from sensitive printed circuit board (PCB) components and dissipate it into the ambient environment. Silicone-based compounds allow for reworkability and ease of application.

Carbice® SW-90 with Silicone Wax offers performance like a liquid with the user experience of a pad. The robust base pad by Carbice eliminates concerns of pump-out behavior, while Dow Silicones provide enhanced temperature range and stability. It ensures better contact for heat transfer on non-regular surfaces, thanks to its exceptional wettability. The wax is tuned to the temperature requirements for TIM, and its tacky but non-adhesive nature allows for easy removal on demand.

Thermally gap fillers

DOWSIL™ thermally conductive silicone gap fillers are soft, compressible solutions specifically formulated to process easily from the original packaging with minimal to no additional process preparation.

They avoid slumping on vertical surfaces during assembly and maintain their vertical stability after cure, even after long use. These highly advanced silicone formulations dissipate heat away from PCB components by efficiently conducting it to a heat sink.

Advantages of TIMs

By creating a TIM through the integration of silicone with CNTs, we can develop robust thermal management solutions with excellent interface contact, thereby reducing stress transfer for reliable performance across applications and environments.

Carbice CNTs are durable, reworkable thermal pads and can be effective on uneven surfaces when combined with Dow liquid silicones. Dow liquid silicones can be dispensed exactly where needed and can be enhanced in strength when combined with Carbice pads. Together, these materials complement each other and enable superior performance, customization, and thinner bond lines.

The versatility of silicone chemistry can help expand design freedom, increase processing options, and ultimately enhance the performance and reliability of the devices and machines we use every day.

Innovations and future trends in TIMs

Transportation

From race to road, vehicles are increasingly reliant on PCB system assemblies for everything from power electronics systems to propulsion and braking. As this trend accelerates, it will drive demand for higher performance and more cost-effective thermal management solutions.

Solid-state lighting

Unlike conventional light sources, the ability to manage the temperature of an LED module has a direct impact on the reliability, output quality, lifetime and system cost of the device. Moreover, thermal management is becoming an increasingly important performance metric for the entire LED value chain, as solid-state lighting competes with conventional illumination for high-intensity and high temperature applications.

Consumer devices and telecommunications

Form factor optimization is one of the challenges facing this industry. Slim, high-powered consumer devices require compact, multifunctional thermal management solutions.

The trend toward smaller devices with more densely packed PCB system components is converging with expanded use of flip chip and stacked die architectures. As a result, new thermal management solutions are needed to effectively dissipate heat and deliver greater device reliability.

Power devices

Power supplies and controls for industries like computer servers and alternative energy are all managing higher electrical loads, which cause increased temperatures. The trend is creating a need for improved thermal management to dissipate heat in these devices, as this translates into improved performance, reliability, and lifetime. Improved thermal management also offers needed design flexibility.

Heat is the enemy of the devices and systems we use in our everyday lives. Improved thermal management is increasingly critical to maintaining the long-term performance and reliability of PCB system assemblies in virtually every industry.

Our ongoing joint research and development between Dow Silicones and Carbice Lab supports the continuous delivery of cutting-edge, next-generation thermal management solutions to meet market demands for innovation—now and into the future.

[Link to online article](#)

Dow achieves 24th year on the Dow Jones Sustainability World Index

Dow announced that it has been **named** to the Dow Jones Sustainability World Index (DJSI World) by S&P Dow Jones Indices. This is the 24th year Dow has achieved this prestigious ranking as one of the top companies in the global chemical industry in terms of sustainability performance. Dow is also listed on the Dow Jones Sustainability North America Index (DJSI North America) for the 19th consecutive year.



"Being listed among the leading companies in sustainability recognizes our efforts and motivates us to continue pursuing performance excellence," said Andre Argenton, chief sustainability officer and vice president of Environment, Health, Safety and Sustainability for Dow. "By embedding sustainability practices into our operations and business performance, we aim to achieve consistent growth and create long-term value for all our stakeholders – from our employees and customers to our investors and the communities we serve. Together, we are driving positive change and contributing to a more sustainable future."

In S&P Global's 2024 Corporate Sustainability Assessment (CSA), Dow performed particularly well in Climate Strategy, Water, Occupational Health & Safety, and Employee Support & Development Programs. These scores highlight Dow's continued strong performance in climate protection and the long-standing commitment to investing in the health, safety and development of our employees.

The Dow Jones Sustainability Indices, including the DJSI World, were launched in 1999 as the pioneering series of global sustainability benchmarks available in the market. The index family is comprised of global, regional and country benchmarks.

For information about Dow's sustainability and ambition progress, see our **INtersections Progress Report**.

[Link to online article](#)

Redefining comfort through collaboration and advanced mattress technology insights

Dow and GoodBed team up to establish an innovative program for mattress testing

This joint research sets a new industry standard, offering measurable insights that drive actionable results for bedding manufacturers, retailers, suppliers and consumers.

Mattress technology advancements for ultimate comfort

Over the last 30 years, mattresses have undergone significant advancements in materials and technology. Evolving from traditional innerspring systems and cotton padding, polyurethane memory foam mattresses were introduced in the early 1990s and have since revolutionized the bedding industry with enhanced comfort and support.

Continuous innovation of polyurethane foams has led to the creation of advanced materials such as viscoelastic, latex-like and high-resiliency foams, which have improved mattress quality, durability, breathability and thermal regulation. However, despite this progress, systematic, independent studies linking mattress composition to temperature control in a variety of mattresses of different constructions remain limited across the industry, underscoring the need to better understand how different materials influence comfort.

The concept of comfort has remained largely subjective – easy to experience, but difficult to describe, which leaves bedding manufacturers and retailers with limited tools to communicate the benefits of their products or properly gauge consumer satisfaction. In partnership with GoodBed, the premier mattress information resource for consumers, Dow is playing an important role in developing the industry's most comprehensive product testing program, which will better inform mattress design and production, as well as improve the overall comfort experience.

THE CHALLENGE

Tackling the complexity of mattress testing to enhance comfort

Choosing the right mattress has often felt like a shot in the dark for consumers. Without objective information from independent experts to guide their decisions, shoppers have relied only on subjective experiences and marketing claims to purchase a mattress, which increases the risk of investing in a product that fails to meet their unique needs, preferences and priorities.

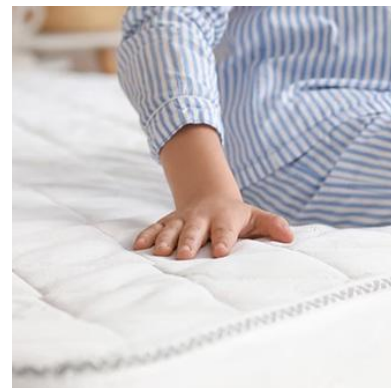
Bedding manufacturers have the same feeling when it comes to creating their mattress offerings. Because there is a lack of objective, standardized testing to validate their product claims, they have struggled to differentiate their products effectively from competitors, making it difficult for their innovative offerings to truly stand out as they should.

And raw material suppliers face a similar dilemma in developing unique and effective materials that make a tangible difference in mattress comfort. Without objective, standardized testing, innovation is stifled or not properly rewarded in an industry that directly impacts the quality of life for millions of sleepers worldwide.

THE SOLUTION

Combining unique testing capabilities with an innovative mattress evaluation framework to deliver impactful results

The **collaboration between Dow and GoodBed** combines Dow's robust lab testing capabilities through our ComfortScience™ Studio with GoodBed's proprietary Mattress DNA™ evaluation framework. The result is a comprehensive testing program that promises to bring much-needed objectivity to an industry that relies primarily on experiences.



One of the key focus areas of this research is microclimate performance where we're uncovering crucial insights into comfort by examining how different mattress characteristics impact temperature, humidity and airflow. This research goes beyond surface-level assessments, delving into the behavior of mattresses in both wet and dry conditions to provide a holistic understanding of mattress performance in these areas.

The implications of this research are far-reaching. For consumers, it means more informed decision-making and better sleep. Manufacturers can use these insights to develop truly differentiated products backed by independent testing. And for suppliers, these insights open new avenues for innovation, allowing them to create materials that address specific, measurable attributes related to comfort.

As our research unfolds, we expect to see a transformation in the mattress industry. From more targeted product development to better-substantiated marketing messages, the ripple effects of these scientific tests will be felt across the entire mattress industry value chain. This collaborative approach underscores a commitment to elevating industry standards through testing and evaluation.

The mattress industry is on a path to a comfort revolution driven by science and innovation. As we move forward, the insights from this groundbreaking collaboration will undoubtedly help shape the future of sleep technology, promising better nights and brighter days for sleepers everywhere. Visit comfortscience.com and goodbed.com to learn more.

Kevin Meyer, Associate TS&D Director

[Link to online article](#)

Form # 736-02171-01-0225 Dow