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## Weekly Intelligence Report

2026-05-31 | 25 articles | 7 countries  
troy-technical.jp

This Week's Keyword

## Advanced Adhesives

Driving AI, EV, and Sustainable Packaging

25

articles

Total Articles Analyzed

7

countries

Source Countries

95%+

market share

ABF Film Dominance

16

W/mK

Max Thermal Cond.

### All 25 Articles This Week — 5-Axis Evaluation Matrix

How to read columns — Tech Novelty: degree of breakthrough Market Proximity: closeness to commercialization Market Impact: industry-wide effect Data Reliability: quantitative data & peer review US/EU Relevance: direct impact on US/European companies & supply chains

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#01	AI for Sustainable Adhesives	Research	●●●●○ ○	●●●○ ○	●●●○ ○	●●●○ ○	●●●●● ●	US firm uses AI to accelerate development of renewable cellulose-based adhesives for sustainable packaging, funded by NSF.
#02	Dymax Hybrid Medical Adh.	New Product	●●●○ ○	●●●●● ○	●●●○ ○	●●●●● ○	●●●●● ●	Dymax launches HLC-M-1004, a low-viscosity hybrid light-curing adhesive for rapid, reliable medical device assembly.
#03	Graco Acquires Valco Melton	Corporate Strategy	●●●○ ○	●●●●● ●	●●●○ ○	●●●○ ○	●●●●● ●	Graco acquires Valco Melton for \$447M, expanding its adhesive dispensing and quality assurance systems, enhancing industrial automation.
#04	H.B. Fuller Price Hike	Market Overview	●●●○ ○	●●●●● ●	●●●●● ○	●●●○ ○	●●●●● ●	H.B. Fuller raises prices across all product lines due to petrochemical supply constraints, energy costs, and geopolitical instability.
#05	H.B. Fuller VerdaFresh	New Product	●●●●● ○	●●●○ ○	●●●●● ○	●●●○ ○	●●●●● ●	H.B. Fuller introduces VerdaFresh oxygen barrier coating, enabling fully recyclable monomaterial packaging by replacing EVOH.
#06	Adhesive Delamination Risk	Analysis	●●●○ ○	●●●○ ○	●●●○ ○	●●●○ ○	●●●●● ○	Adhesive type impacts delamination and recyclability in high-stress applications; bio-based adhesives offer promising reversible bonding.
#07	Henkel Technomelt PA 6370	New Product	●●●○ ○	●●●●● ○	●●●●● ○	●●●●● ○	●●●●● ●	Henkel launches Technomelt PA 6370, an ultra-low viscosity hot melt for rugged electronics protection, enabling high-speed low-pressure molding.
#08	Plant Oil UV Adhesives	Research	●●●●● ●	●●●○ ○	●●●●● ○	●●●●● ●	●●●●● ○	Research details plant oil-derived UV-responsive polyurethane adhesives enabling strong bonding and easy debonding for enhanced recycling.
#09	Recyclable Packaging Sol.	New Product	●●●○ ○	●●●○ ○	●●●●● ○	●●●○ ○	●●●●● ●	Siegwerk and Henkel introduce new heat-seal lacquers and water-based barrier coatings to enable recyclable flexible and paper-based packaging.
#10	Bio-Adhesive Sealant	Research	●●●●● ●	●●●○ ○	●●●●● ●	●●●●● ●	●●●●● ○	Research unveils a shear-thinning bio-adhesive sealant with multi-network architecture for instant hemostasis and robust wet tissue adhesion.

#	Article Title	Type	Tech Novelty	Market Proximity	Market Impact	Data Reliability	US/EU Relevance	Summary
#11	Sintered Silver Die Attach	New Material	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●● ●	Indium Corp's sintered silver die attach materials show 60-70% lower crack growth rates than lead-free alloys, enhancing reliability for semiconductors.
#12	DELO LiDAR Adhesives	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●● ●	DELO launches new light-activatable adhesives for high-volume LiDAR production, achieving 5x faster bonding and low stress on optical components.
#13	Avery Dennison EV Adhesives	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●● ●	Avery Dennison introduces adhesive tapes for EV batteries, simplifying cell connections, enhancing safety, and improving vibration absorption.
#14	Ajinomoto ABF Film Surge	Market Overview	●●●●○ ○	●●●●○ ●	●●●●○ ●	●●●●○ ○	●●●●○ ○	Ajinomoto's ABF film, with over 95% market share, sees significant profit growth driven by exploding demand for AI chips.
#15	Dexerials CDP Top Rating	Corporate Strategy	●●●●○ ○	●●●●○ ●	●●●●○ ○	●●●●○ ○	●●●●○ ○	Dexerials receives CDP's highest rating for supplier engagement, demonstrating leadership in sustainable supply chains for functional materials.
#16	Low-VOC Adhesives Market	Market Overview	●●●●○ ○	●●●●○ ●	●●●●○ ○	●●●●○ ○	●●●●○ ○	Market report highlights advancements in low-VOC water-based adhesives by Toyochem, Nitto Denko, 3M, and Henkel, driven by environmental regulations.
#17	Shin-Etsu Cosmetic Mat.	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	Shin-Etsu Silicones unveils new water-soluble silicone waxes, emulsifiers, and natural-origin powders for enhanced cosmetic textures.
#18	EU Battery Label Risks	Analysis	●●●●○ ○	●●●●○ ●	●●●●○ ○	●●●●○ ○	●●●●○ ●	New EU Battery Regulation mandates indelible marking, highlighting failure risks of self-adhesive labels for EV and industrial batteries.
#19	Dymax UV/LED for Battery	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ●	Dymax to showcase new UV/LED-curable adhesives and technologies for battery and electronics manufacturing at The Battery Show Europe 2026.
#20	Low-Stress Mold Compounds	Analysis	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	Low-stress mold compounds are evolving with silicone-based and modified epoxy formulations to protect fragile components in advanced semiconductor packages.
#21	Yousan Non-Silicone Pads	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	Yousan New Materials launches non-silicone thermal interface pads (2-10W/m-K) for AI chips, servers, and automotive electronics, preventing siloxane contamination.
#22	Kingfa Low-Stress Crystal.	Research	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	Kingfa advances low-stress crystallization techniques for mold compounds, using nucleation systems and temperature control to mitigate warpage in advanced packaging.
#23	Techinno 16W/mK Gap Pad	New Product	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	Techinno launches "Fill-Pad US 1600," a silicone-free thermal pad with 16W/m-K conductivity for AI data centers, resolving board-level thermal challenges.
#24	Advanced Spray Adhesives	Market Overview	●●●●○ ○	●●●●○ ●	●●●●○ ○	●●●●○ ○	●●●●○ ○	Spray adhesive market grows with focus on high-performance, eco-friendly solutions like Huntsman's, driven by construction, automotive, and packaging demands.
#25	Samsung/Intel Low-Warpage	Analysis	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ○	●●●●○ ●	Samsung (I-Cube) and Intel (EMIB, Foveros) pioneer low-warpage solutions for advanced electronics packaging, boosting reliability.

●●●●○ High ●●●●○ Med-High ●●●●○ Med ●●●●○ Low | Yellow highlight = featured article

## Three Questions That Demand Your Decision This Week

### 1 Is your AI/HPC supply chain exposed to single-source risks?

Ajinomoto's 95%+ market share for ABF film (#14), critical for AI chips, presents a significant vulnerability. Geopolitical instability (H.B. Fuller, #04) further highlights the need for diversification. How resilient are your critical material flows?

### 2 Can your manufacturing processes achieve 5x speed gains?

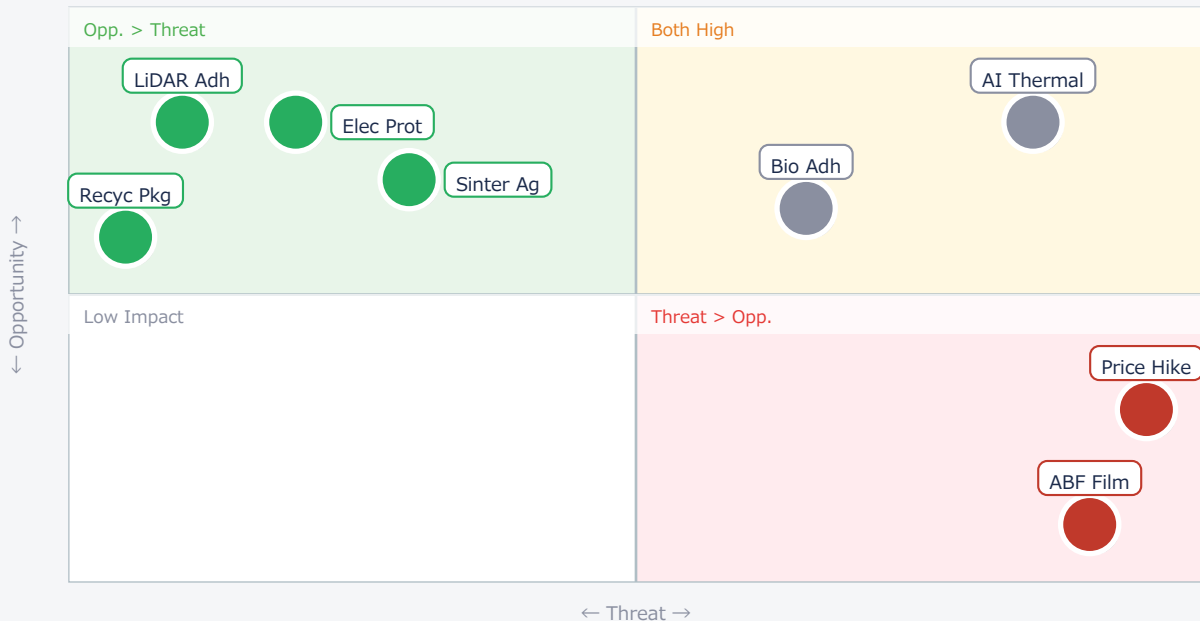
DELO's new adhesives enable 5x faster LiDAR production (#12), while Dymax offers accelerated medical device assembly (#02) and Henkel faster electronics protection (#07). Are your current adhesive and bonding processes bottlenecks for next-gen product scaling?

### 3 How are you integrating sustainability into your core product design?

H.B. Fuller's VerdaFresh (#05) and new bio-based, detachable adhesives (#08) are enabling fully recyclable packaging and enhanced resource recovery. Are your R&D; and product teams actively pursuing these paradigm shifts to meet evolving regulations and consumer demands?

## Opportunities vs. Threats for US/European Companies

Opportunity vs. Threat Matrix for US/European Companies



Item	Quadrant	↑ Opportunity	↓ Threat
● LiDAR Adh	Opp.	5x Prod Speed	—
● Elec Prot	Opp.	Faster Prot	—
● Sinter Ag	Opp.	Higher Reli	—
● Recyc Pkg	Opp.	Meet ESG	—
● AI Thermal	Critical	AI Perf Max	China Lead
● Bio Adh	Critical	New Markets	R&D; Lag
● ABF Film	Threat	—	Supply Risk

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● Price Hike	Threat	—	Cost Pressure
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## Deep Dive ① — 5x Faster LiDAR Assembly with New Adhesives

#12 | 2026/05/22 | SMT Today | Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○ Data Reliability ●●●●○ US/EU Relevance ●●●●●

DELO has launched new light-activatable adhesives engineered for high-volume LiDAR system production, accelerating assembly speeds by up to five times for mirror and cover window bonding. This innovation addresses critical bottlenecks in rapidly expanding automotive and industrial robotics sectors.

The DELO PHOTOBOND LA formulations achieve handling strength in minutes and maintain a low Young's modulus across a broad temperature range, preventing stress on delicate optical components and ensuring long-term precision and reliability in harsh environments.

### ► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The claimed 5x production speed increase is highly realistic given the rapid curing nature of light-activatable adhesives. The key technical barrier is ensuring long-term stability and adhesion under extreme automotive conditions (vibration, temperature cycles) for optical components. [Opportunity] for US/EU automotive OEMs and robotics manufacturers to drastically cut production costs and accelerate time-to-market for LiDAR-equipped products. [Threat] for incumbent adhesive suppliers who lack comparable high-speed, low-stress solutions. Next actions: [R&D;] immediately evaluate DELO's solutions for LiDAR and other optical assemblies; [Procurement] assess current adhesive supplier capabilities and roadmap for similar innovations by end of quarter.

## Deep Dive ② — Ultra-Low Viscosity Hot Melt for Electronics

#07 | 2026/05/26 | Henkel | Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○ Data Reliability ●●●●○ US/EU Relevance ●●●●●

Henkel has unveiled Technomelt PA 6370, an ultra-low melt viscosity hot melt material for robust protection of challenging electronic device designs. This polyamide-based material offers a high-speed, cost-effective alternative to traditional potting processes in low-pressure molding.

It effectively fills gaps as small as 0.5mm, providing excellent adhesion stability across multiple substrates and long-term environmental resistance. This is crucial for low-voltage applications like motors, connectors, sensors, and PCBs, enhancing reliability and accelerating manufacturing.

### ► Strategic Analyst's Perspective

Strategic Analyst's Perspective: Henkel's Technomelt PA 6370 appears to be a solid incremental innovation, with the 0.5mm gap-filling capability being a strong quantitative claim. The challenge lies in ensuring its long-term performance in diverse, harsh electronic environments, especially for automotive applications. [Opportunity] for US/EU electronics manufacturers to improve throughput and reduce costs for component protection, particularly for miniaturized and complex designs. [Threat] to traditional potting material suppliers and processes that are slower and less precise. Next actions: [R&D;] conduct immediate trials for high-density PCB and sensor protection; [Procurement] engage with Henkel to understand supply chain stability and pricing for volume production within one month.

## Deep Dive ③ — Sintered Silver for Semiconductor Reliability

#11 | 2026/05/25 | PatSnap Eureka | Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○ Data Reliability ●●●●○ US/EU Relevance ●●●●●

Indium Corporation's sintered silver die attach materials demonstrate significantly superior crack propagation resistance, showing a 60-70% reduction in crack growth rates compared to conventional lead-free alloys under power cycling conditions.

This technology creates a porous microstructure that deflects crack propagation through energy absorption mechanisms, promising enhanced reliability for high-performance semiconductor packaging in applications like EV power modules, 5G infrastructure, and AI processors.

### ► Strategic Analyst's Perspective

Strategic Analyst's Perspective: The 60-70% crack growth reduction is a compelling quantitative claim, indicating a major leap in reliability for high-power devices. The primary technical barrier is scaling production and reducing cost to compete with established lead-free solders, as well as ensuring compatibility with existing manufacturing lines. [Opportunity] for US/EU semiconductor manufacturers to significantly extend the lifespan and reliability of their high-power devices, gaining a competitive edge. [Threat] to existing lead-free solder suppliers who cannot match this performance, especially as environmental regulations tighten. Next actions: [R&D;] initiate evaluation of sintered silver for next-generation power modules and AI chip packaging; [Procurement] assess Indium Corp's production capacity and cost structure for future integration within the next quarter.

## Other Notable Articles

Dymax Launches Low-Viscosity Hybrid Light-Curing Adhesive for Accelerated Medical Device Assembly (PRNewswire)

Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○

New hybrid adhesive streamlines medical device assembly, offering rapid curing in both light-exposed and shadowed regions.

Dymax to Showcase Latest UV/LED-Curable Adhesives and Technologies for Battery and Electronics Manufacturing at The Battery Show Europe 2026 (PresseBox)

Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○

Dymax highlights UV/LED-curable solutions for EV battery bonding and electronics protection, boosting manufacturing efficiency.

Samsung and Intel Pioneer Low-Warpage Solutions for Advanced Electronics Packaging, Boosting Reliability (PatSnap Eureka)

Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○

Tech giants address warpage in advanced packaging using optimized designs and nanofiller molding compounds for higher reliability.

AI-Driven Platform Accelerates Sustainable Adhesive Development for Packaging (EIN Presswire)

Tech Novelty ●●●●○ Proximity ●●●●○ Market Impact ●●●●○

US firm uses AI to fast-track renewable cellulose-based adhesives, promising quicker market entry for sustainable packaging solutions.

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## Recommended Actions This Week

Action recommendations based on article evaluation matrix and opportunity/threat analysis.

### ■ Immediate (this week)

- [Procurement] Assess current supply chain exposure to Ajinomoto's ABF film (#14) and identify potential alternative sources or mitigation strategies.
- [R&D;] Initiate preliminary evaluation of DELO's new light-activatable adhesives (#12) for LiDAR and other optical assembly projects to benchmark against current processes.
- [Strategy] Review H.B. Fuller's price increases (#04) and analyze potential cost impacts across all product lines, preparing for broader industry adjustments.

### ■ Short-term (1 month)

- [R&D;] Begin lab-scale testing of Indium Corp's sintered silver die attach materials (#11) for high-power semiconductor applications, focusing on thermal cycling performance.
- [Business Dev] Explore potential partnerships or licensing opportunities with H.B. Fuller (#05) or other innovators in recyclable monomaterial packaging solutions.
- [R&D;/Procurement] Benchmark Techinno's 16W/mK silicone-free gap pad (#23) against existing thermal interface materials for AI data center and high-power electronics applications.

### ■ Medium-long term (quarter+)

- [R&D;] Allocate dedicated resources for basic and applied research into bio-based, detachable adhesives (#08, #10) to secure future sustainable material IP.
- [Strategy] Develop a comprehensive supply chain diversification strategy for critical semiconductor packaging materials, including regional sourcing and alternative technologies.
- [Executive] Establish a cross-functional task force (Legal, R&D;, Product) to ensure full compliance with the evolving EU Battery Regulation (#18) regarding indelible marking and material traceability.

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# **Adhesives\_Sealants — Selected Articles**

Date: 2026-05-31

Articles: 25

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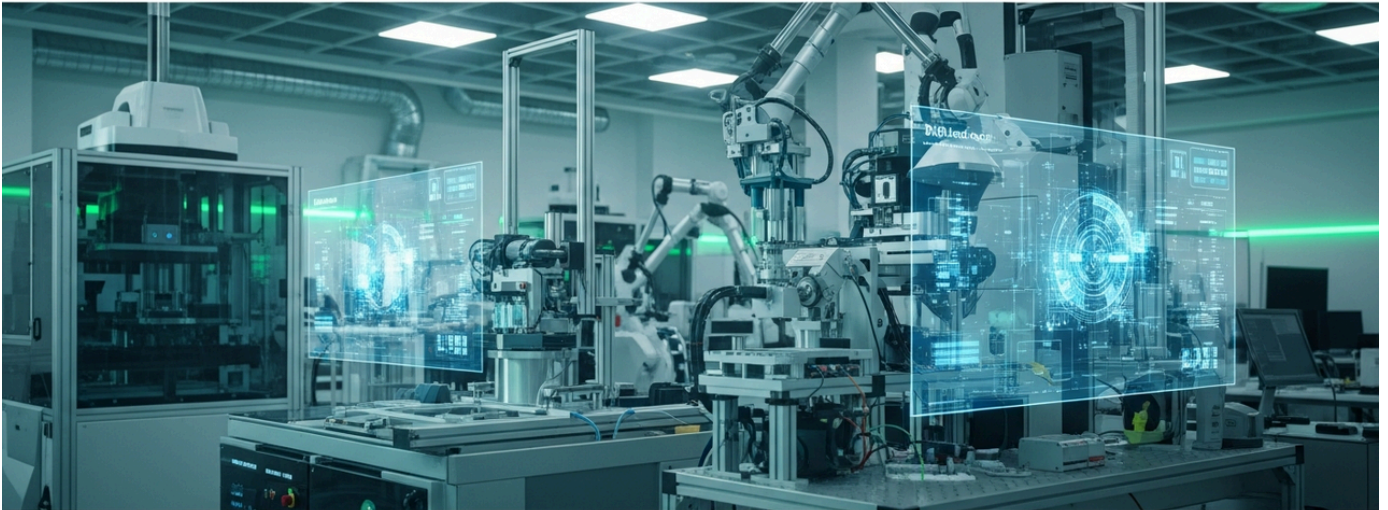
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#25 Samsung and Intel Pioneer Low-Warpage Solutions for Advanced Electronics Packaging, Boosting Reliability

# AI-Driven Platform Accelerates Sustainable Adhesive Development for Packaging

Published May 28, 2026 EIN Presswire USA



## OVERVIEW

Silvis Materials has secured a National Science Foundation (NSF) TECP grant to expedite the development of sustainable adhesives using an AI-powered platform. This initiative focuses on optimizing renewable cellulose-based emulsion adhesives for sustainable packaging applications, leveraging machine learning and predictive data analytics. The funding will significantly shorten time-to-market by rapidly enhancing key performance indicators like adhesive strength, solubility, and biodegradability.

### Background and Objectives

The imperative for sustainable materials development is growing, driven by escalating environmental concerns. In the adhesives sector, this translates to an urgent demand for renewable, eco-friendly alternatives to conventional petroleum-derived formulations. Silvis Materials is at the forefront of this shift, focusing on cellulose-based emulsion adhesives specifically for sustainable packaging applications.

### Key Findings / Results

Silvis Materials plans to integrate an AI-driven platform into its R&D pipeline to revolutionize adhesive development. This platform combines machine learning with predictive data analytics to efficiently optimize critical performance metrics such as adhesive strength, solubility, and biodegradability. The NSF Technology Translation and Commercialization (TECP) grant underscores the potential and validity of this innovative approach.

- **AI Integration:** The AI platform analyzes vast datasets of material properties and experimental results to predict optimal compositions and manufacturing conditions, drastically reducing traditional trial-and-error cycles.
- **Renewable Materials:** Focus on cellulose-based raw materials aims to minimize environmental impact across the adhesive lifecycle, aligning with circular economy principles.
- **Accelerated R&D:** This approach is projected to significantly shorten the development timeline, enabling faster market introduction of high-performance sustainable adhesives.

## Technical Significance & Outlook

This technological advancement is poised to profoundly impact the sustainable packaging market. Consumer goods manufacturers and the packaging industry are increasingly pressured by stricter environmental regulations and rising consumer awareness to transition towards renewable and recyclable materials. Silvis Materials' AI-driven adhesives offer a robust solution to these needs. By enabling rapid development and providing high-performance sustainable adhesives, the company aims to establish itself as a leader in this burgeoning market, potentially catalyzing the broader industrial adoption of eco-conscious materials beyond packaging.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHljNTkPtiDwJdzL59BSqot-o9n4fUvVu7XYTv2DDVyGPCYJhDZJSrJqtQvsokqVTzXvAW2mQFsh-U0dDgmQwilr0\\_HtmtrbTObk4JtGnwx1TeaSh7atfIFfxaFEZzEEWAeX1v44\\_XIUwf8yRbh8hPHZUECY7frG4yknTVcDfdrtVhKZSFn0eKYWBVWljMLBp\\_b64xmXRrkWxo39Ot7EJgMIDo7q4QCjAsKm3DimVzTv10PGIPa1w5bdKT1ExA0bteqIZw=](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQHljNTkPtiDwJdzL59BSqot-o9n4fUvVu7XYTv2DDVyGPCYJhDZJSrJqtQvsokqVTzXvAW2mQFsh-U0dDgmQwilr0_HtmtrbTObk4JtGnwx1TeaSh7atfIFfxaFEZzEEWAeX1v44_XIUwf8yRbh8hPHZUECY7frG4yknTVcDfdrtVhKZSFn0eKYWBVWljMLBp_b64xmXRrkWxo39Ot7EJgMIDo7q4QCjAsKm3DimVzTv10PGIPa1w5bdKT1ExA0bteqIZw=)

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Dymax's Hybrid Light-Curing Adhesive Powers Faster, More Reliable Medical Device Assembly

Published May 28, 2026 PRNewswire (AAP News經由) USA



## OVERVIEW

Dymax has launched HLC-M-1004, a novel low-viscosity hybrid light-curing adhesive engineered to significantly streamline the assembly of complex medical devices. Expanding their HLC™ Adhesives portfolio, this innovative material leverages a dual-cure mechanism, enabling rapid curing in both light-exposed and shadowed areas through a combination of immediate on-contact dark-area curing and fast, low-intensity UV/visible-light curing. This breakthrough promises faster, more reliable manufacturing processes for critical medical applications.

### Background

The stringent demands of medical device manufacturing require unparalleled precision and reliability. For intricate components such as catheters and diagnostic probes, achieving accurate adhesive application to minute bonding areas and ensuring rapid, robust curing are paramount. Conventional adhesives frequently encounter limitations, including inadequate curing in shadowed areas or the necessity for time-consuming thermal post-curing steps, which collectively extend production cycles and introduce process complexities.

### Key Findings

Dymax's recently launched low-viscosity adhesive, HLC-M-1004, directly confronts these critical challenges within the medical sector. As the newest addition to the company's patented Hybrid Light-Curing (HLC™) adhesives portfolio, this product integrates both light-curing and contact-curing mechanisms. Its distinguishing features include:

- **Hybrid Curing Capability:** HLC-M-1004 enables rapid light curing in regions exposed to UV or visible light, while concurrently initiating immediate, on-contact curing in shadowed or opaque areas. This innovative dual-cure mechanism guarantees uniform and swift curing across even the most complex assemblies, encompassing multi-layered structures and components with restricted light access.
- **Ultra-Low Viscosity and Penetration:** Characterized by its ultra-low viscosity, HLC-M-1004 readily penetrates narrow gaps and microscopic crevices, ensuring robust adhesion without the prerequisite for primers. This property is crucial for achieving reliable bonding in precision medical components.
- **Biocompatibility:** The adhesive rigorously adheres to ISO 10993-5 cytotoxicity standards, affirming its suitability for a broad spectrum of medical device applications, including catheters, needles, infusion sets, diagnostic probes, and respiratory devices.

## Market Impact and Outlook

The introduction of HLC-M-1004 is anticipated to significantly elevate manufacturing efficiency and product quality for medical device manufacturers. Its rapid curing capabilities and inherently high reliability offer substantial advantages in high-speed, high-volume production environments, directly contributing to reduced production costs and accelerated time-to-market. This groundbreaking technology possesses the potential to redefine adhesive application standards for the increasingly complex and miniaturized medical devices of the future. Dymax aims to solidify its leadership in delivering advanced bonding solutions to the medical industry with this innovative product.

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Source: <https://aapnews.aap.com.au/aapreleases/cision20260527AE69990>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Graco Acquires Valco Melton for \$447 Million, Enhancing Adhesive Dispensing and Quality Assurance Capabilities

Published May 26, 2026   Label and Narrow Web   USA



## OVERVIEW

Graco Inc. has finalized a \$447 million acquisition of Valco Melton, a provider of adhesive application and quality assurance systems. This strategic move expands Graco's industrial portfolio, bolstering its adhesive business in packaging and broader manufacturing applications. Valco Melton's offerings, including hot melt systems and vision inspection technology, will significantly enhance Graco's precision sealant and adhesive dispensing capabilities, driving improved efficiency and quality control.

### Background and Advancements in Industrial Automation

In modern industrial manufacturing, precise adhesive application and robust quality assurance are critical for product reliability, production efficiency, and cost management. High-speed production lines, particularly in packaging and electronics manufacturing, see adhesive application accuracy and inspection capabilities directly impacting product yield. Graco Inc., a global supplier of fluid and powder handling technologies, has sought to strengthen its position in this vital sector.

### Strategic Significance of Valco Melton Acquisition

Graco Inc. has signed a definitive agreement to acquire Valco Melton, a leading provider of adhesive application and quality assurance systems, for \$447 million. This acquisition represents a strategic move to significantly expand Graco's industrial equipment division's precision sealant and adhesive dispensing capabilities. Valco Melton brings a comprehensive suite of technologies, including:

- **Adhesive Application Machinery:** Systems designed for various adhesive applications in packaging and other industrial manufacturing sectors.
- **Hot Melt and Cold Glue Systems:** Technologies compatible with a wide range of adhesive types.
- **Coating Equipment:** Specialized equipment for surface treatment and protection.
- **Vision Inspection Technology:** Advanced systems for real-time quality assurance of adhesive application accuracy.

These technologies are highly complementary to Graco's existing portfolio, strengthening its ability to offer comprehensive solutions for manufacturing environments demanding high levels of automation and precision.

## Market Impact and Future Outlook

This acquisition positions Graco as a more integrated and competitive solution provider in the adhesive application and quality assurance market. The integration of Valco Melton's vision inspection technology is particularly significant, as it addresses a key bottleneck in automated adhesive application: quality control. This will enable customers to identify product defects earlier, reduce waste, and maximize production throughput. With increasing demands for quality and efficiency in adhesive processes across industries like packaging, automotive, and electronics, the combined entity of Graco and Valco Melton is poised to accelerate the evolution of these markets. The enhanced capabilities will enable more sophisticated, reliable, and sustainable manufacturing operations globally.

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Source: <https://www.labelandnarrowweb.com/breaking-news/graco-acquires-valco-melton/>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# H.B. Fuller Increases Adhesive and Sealant Prices Citing Geopolitical Instability and Logistics Challenges

Published May 26, 2026 Adhesives & Sealants Industry USA



## OVERVIEW

H.B. Fuller has implemented price increases across all product lines in response to persistent supply constraints in petrochemicals, elevated energy costs, and continuous pressure on specialty chemical raw materials, largely influenced by Middle East geopolitical events and logistics disruptions. The company states these adjustments are necessary to ensure continuity of supply and service to its customers. Adhesive and raw material suppliers attribute rising product costs to these pervasive global economic and geopolitical factors.

### Background and Global Economic Headwinds

The adhesives and sealants industry has recently confronted a confluence of global challenges impacting raw material sourcing and logistics. Geopolitical instability in the Middle East, in particular, has directly influenced crude oil price volatility and petrochemical supply chains, driving up the costs of essential monomers and polymers. Concurrently, disruptions in international logistics networks and soaring energy prices have inflated manufacturing and transportation expenses. These multifaceted factors have exerted sustained upward pressure on the industry's overall production costs.

### H.B. Fuller's Response and Price Adjustment

H.B. Fuller, a prominent player in adhesives and sealants, announced price increases across its entire product portfolio to mitigate the impact of these external environmental shifts. The company clarified that these price adjustments are essential to absorb the ongoing cost pressures from petrochemical supply limitations, persistently high energy costs, and the elevated prices of specialty chemical raw materials. The primary objective behind these increases is to ensure stable product supply and maintain high-quality services for customers amidst an unstable market.

- **Raw Material Cost Escalation:** Surging prices for crude oil and chemical intermediates directly affect the procurement costs of adhesive raw materials.
- **Increased Energy Expenditure:** Rising energy costs impact manufacturing processes and logistical operations.
- **Supply Chain Vulnerability:** Geopolitical risks lead to transportation disruptions and delivery delays, driving up operational costs.

## Industry Impact and Future Outlook

Price adjustments by leading companies like H.B. Fuller are expected to have a broad impact across the adhesives and sealants industry. It is likely that other suppliers, facing similar cost pressures, will follow suit. This will necessitate that manufacturers of end products, particularly in the automotive, construction, packaging, and electronics sectors, re-evaluate their cost structures. In the long term, companies may strengthen strategies to build supply chain resilience, consider regional production shifts, or invest in alternative materials to mitigate external risks. Furthermore, the adoption of more efficient adhesive processes and resource-saving technologies is expected to accelerate. The stable supply of adhesives is a lifeline for diverse industries, and addressing these challenges will remain a critical management priority moving forward.

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Source: [https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQEnc-g6AADZGvbRdQ7rc6mEa7AhzVhOAtw1lupWiR9PK9oV\\_zodlGXnddCWcltzuO7eWSyX4sTVlqzAxl2fLptxzQLzOFpl-eWqBY13\\_-CN\\_o4zF0op8UEW7Y-XINzybWk9m0NivuViZdMaExkAhgAthyl7aOZz5QG9kXOfjGRCAhEjTOZqBBx3gYopY=](https://vertexaisearch.cloud.google.com/grounding-api-redirect/AUZIYQEnc-g6AADZGvbRdQ7rc6mEa7AhzVhOAtw1lupWiR9PK9oV_zodlGXnddCWcltzuO7eWSyX4sTVlqzAxl2fLptxzQLzOFpl-eWqBY13_-CN_o4zF0op8UEW7Y-XINzybWk9m0NivuViZdMaExkAhgAthyl7aOZz5QG9kXOfjGRCAhEjTOZqBBx3gYopY=)

Collected: May 30, 2026 | Automated Research System (Gemini API)

# H.B. Fuller Unveils VerdaFresh Oxygen Barrier Coating to Enable Fully Recyclable Monomaterial Packaging

Published May 28, 2026 StreetInsider USA



## OVERVIEW

H.B. Fuller Company has announced a strategic investment in VerdaFresh, an oxygen barrier technology designed to enhance its barrier coating portfolio and accelerate the shift to fully recyclable monomaterial packaging. This innovation eliminates the need for difficult-to-recycle barrier layers like EVOH, simplifying recycling processes. VerdaFresh maintains the essential shelf-life and protection requirements for food and consumer goods while significantly improving package recyclability.

### Background and Packaging Challenges

Modern packaging for food and consumer goods faces a dual challenge: providing excellent barrier performance to maintain product freshness and safety, while simultaneously being highly recyclable to minimize environmental impact. Traditional multi-layer composite materials offer superior oxygen and moisture barrier properties but often include disparate materials like EVOH (ethylene vinyl alcohol copolymer), which complicate and increase the cost of recycling. Consequently, the packaging industry has been actively seeking "monomaterial" solutions that maintain performance while significantly improving recyclability.

### Technical Innovation of H.B. Fuller's VerdaFresh

To address this critical challenge, H.B. Fuller Company has announced a strategic investment in VerdaFresh, a novel oxygen barrier technology. VerdaFresh represents a breakthrough addition to the company's barrier coating portfolio, offering several key features:

- **Enabling Monomaterial Structures:** VerdaFresh eliminates the need for difficult-to-recycle barrier layers such as EVOH, allowing for single-material packaging constructions. This simplification facilitates easier sorting and recycling of packaging, thereby contributing to a more circular economy.
- **Superior Oxygen Barrier Performance:** The technology maintains high oxygen barrier properties, which are crucial for preventing oxidative degradation of food and consumer goods, thus extending shelf life. This is paramount for ensuring product quality and safety.
- **Enhanced Recyclability:** By simplifying the packaging structure, VerdaFresh streamlines the recycling process, improving efficiency and potentially increasing the quality and value of recovered plastic materials.

## Market Impact and Outlook

The introduction of VerdaFresh technology is expected to have a significant impact on the packaging industry. Food and consumer goods manufacturers, in particular, will gain a powerful tool to achieve their environmental targets and respond to consumer demands for sustainability. This technology has the potential to transform conventional packaging design paradigms by balancing high functionality with superior recyclability. Through VerdaFresh, H.B. Fuller aims to accelerate the adoption of recyclable flexible packaging and establish leadership in providing adhesive and coating solutions for a more sustainable future. It is anticipated that this technology will be widely adopted across various plastic packaging applications.

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Source:

<https://www.streetinsider.com/Corporate+News/H.B.+Fuller+introduces+VerdaFresh+oxygen+barrier+coating->

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Adhesive Type Critically Influences Delamination Risk and Recyclability in High-Stress Applications

Published May 29, 2026 PatSnap Eureka Global



## OVERVIEW

Adhesive bonding technologies are evolving to join diverse materials with high reliability, though delamination remains a challenge, particularly in high-stress applications. While structural adhesives like epoxies and polyurethanes offer superior adhesion by incorporating advanced polymer chemistry to resist delamination, their thermoset nature complicates recycling processes and often necessitates specialized disposal. Emerging bio-based adhesive technologies, however, present a promising pathway to reduce environmental impact and address delamination concerns through potentially reversible bonding mechanisms.

### Background and Delamination Challenges

In modern manufacturing, joining dissimilar materials is a critical technique for achieving lightweighting, enhanced functionality, and cost reduction. However, adhesive bonds inherently carry the risk of delamination due to thermal cycling, mechanical stress, and environmental factors. In high-stress applications such as aerospace, automotive, and electronics, the reliability of adhesive layers directly impacts overall product performance and safety, making the development of delamination-resistant adhesives imperative. Concurrently, increasing environmental regulations demand greater consideration for recyclability and reduced environmental impact.

### Adhesive Types and Responses to Delamination Mechanisms

The type of adhesive significantly influences its ability to resist delamination and its implications for end-of-life processing:

- **Structural Adhesives (for High-Stress Applications):** Epoxy and polyurethane-based structural adhesives provide excellent bond strength and durability. These adhesives leverage advanced polymer chemistry to form strong chemical bonds or mechanical interlocks with substrates, effectively distributing stress concentrations that could initiate delamination. This enhances their resistance to layer separation. However, these thermoset adhesives, once cured, are difficult to re-dissolve or separate, complicating the recycling process of bonded materials. They often require specialized separation techniques, which can contribute to disposal costs and environmental burden.
- **Emerging Bio-Based Adhesives:** Driven by environmental concerns, R&D in bio-based adhesives is accelerating. These adhesives, derived from plant-based polymers or natural proteins, offer superior biodegradability and renewability. They are attracting significant attention as sustainable material solutions, as they maintain adhesive performance while reducing environmental impact at the end of their lifecycle. Furthermore, certain bio-based adhesives can be designed to be reversibly detachable under specific stimuli (e.g., heat, light, pH changes), offering significant potential to improve recyclability.

## Technical Significance and Outlook

The choice of adhesive critically affects not only product performance but also its environmental footprint. Mitigating delamination risk in high-stress applications while simultaneously enhancing recyclability represents a major R&D theme for future adhesive technologies. Bio-based adhesives, with their environmental compatibility and potential for controlled debonding mechanisms, offer a promising direction for achieving this dual objective. Adhesive manufacturers must continue to innovate, balancing bond strength, durability, processability, and environmental characteristics. This will pave the way for a safer and more sustainable future in manufacturing. Specifically, achieving both delamination resistance and recyclability in EV battery packs and composite structures remains a key challenge.

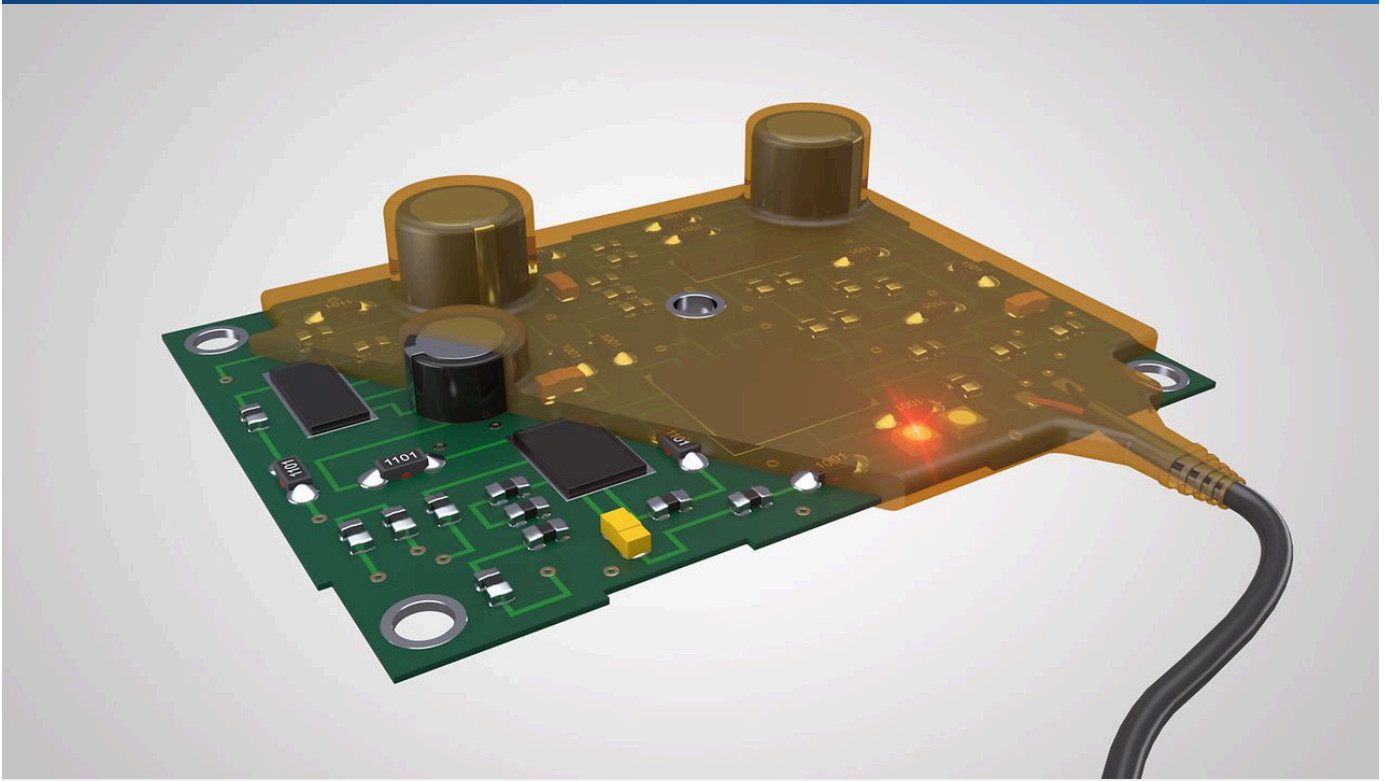
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Source: <https://eureka.patsnap.com/report-how-adhesive-type-mitigates-substrate-delamination-risk>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Henkel Unveils Ultra-Low Viscosity Technomelt PA 6370 for Rugged Electronics Protection and Accelerated Manufacturing

Published May 26, 2026 Henkel Germany



## OVERVIEW

Henkel has launched Technomelt PA 6370, an ultra-low melt viscosity hot melt material designed for robust protection of challenging electronic device designs. This new polyamide-based material offers a high-speed, cost-effective alternative to traditional potting processes in low-pressure molding. Technomelt PA 6370 effectively fills gaps as small as 0.5mm, providing excellent adhesion stability across multiple substrates and long-term environmental resistance, suitable for low-voltage applications like motors, connectors, sensors, and PCBs.

### Background and Challenges in Electronics Protection

Modern electronic devices are becoming increasingly miniaturized and densified, while simultaneously being deployed in ever-harsher environments across automotive, industrial, and consumer electronics sectors. Protecting vulnerable electronic components and PCBs from water, moisture, dust, vibration, shock, and temperature fluctuations is paramount for ensuring product reliability and longevity. While traditional potting and encapsulation technologies are effective, they often entail lengthy processing times, high production costs, and difficulties in filling complex geometries or micro-gaps.

### Technical Innovation of Technomelt PA 6370

Henkel's new Technomelt PA 6370 is an ultra-low viscosity hot melt material developed to address these challenges. Expanding the Technomelt low-pressure molding material portfolio, this polyamide-based hot melt offers key features and benefits:

- **Ultra-Low Melt Viscosity:** Its exceptionally low viscosity in the molten state allows for rapid and uniform filling of extremely small gaps, as tight as 0.5mm, and complex component geometries. This enables the protection of high-density electronic assemblies where potting proved challenging.
- **High-Speed, Cost-Effective Process:** When combined with low-pressure molding processes, it significantly reduces cycle times and manufacturing costs compared to conventional potting. Rapid solidification upon cooling boosts production throughput.
- **Robust Protective Performance:** Provides excellent resistance to moisture, heat, corrosion, and environmental factors. It also boasts superior electrical insulation properties and meets UL 94 V-0 flame retardancy standards, enhancing product safety and reliability.
- **High Adhesion Stability:** Demonstrates excellent adhesion stability to diverse substrates (e.g., metals, plastics), ensuring reliable, long-term protection.

## Market Impact and Future Outlook

The introduction of Technomelt PA 6370 has the potential to significantly transform the electronics manufacturing industry. It offers a faster and more reliable protection solution particularly for low-voltage applications such as motors, connectors, sensors, and printed circuit boards. This material is expected to be widely adopted in fields requiring high robustness, including automotive electronics, industrial control systems, and IoT devices. Through this innovative material, Henkel aims to help customers efficiently manufacture smaller, higher-performing, and more reliable electronic devices, further solidifying its leadership in electronics protection technology. Combined with low-pressure molding, it unlocks new possibilities in the design and manufacturing of complex electronic components.

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Source: <https://www.henkel.com/press-and-media/press-releases-and-kits/2026-05-26-henkel-ultra-low-viscosity-technomelt-material-delivers-rugged-protection-for-challenging-electronic-device-designs-2162366>

# Plant Oil-Derived UV-Responsive Adhesives Offer Sustainable, Detachable Bonding for Enhanced Recycling

Published May 27, 2026 RSC Publishing Global



## OVERVIEW

New research published in RSC Publishing details the synthesis and application of UV-responsive detachable polyurethane adhesives entirely derived from epoxidized plant oils, without synthetic photoinitiators. These novel adhesives demonstrate strong bonding under normal conditions but can be easily debonded upon UV light exposure, significantly enhancing recyclability and resource recovery. This innovation paves a promising path towards more sustainable adhesive technologies that support circular economy objectives.

### Background and the Need for Sustainable Debonding

Adhesives are indispensable in many industrial sectors, yet most are derived from petrochemicals, posing environmental challenges and complicating recycling efforts. Particularly, the process of removing adhesives to separate and recycle components at the end of a product's lifecycle often proves difficult with conventional adhesives, leading to valuable resource loss. To address this, there is a strong demand for eco-friendly adhesives that can be easily debonded when required. The utilization of bio-based raw materials and "smart adhesive" technologies that control adhesion in response to external stimuli are gaining significant attention.

### Technical Innovation: UV-Responsive Adhesives from Epoxidized Plant Oils

The research published in RSC Publishing details the synthesis and application of a new type of UV-responsive detachable polyurethane adhesive derived from epoxidized plant oils. This adhesive is groundbreaking in several aspects:

- **Entirely Plant Oil-Derived:** It is wholly manufactured from renewable plant oils, completely eschewing synthetic photoinitiators. This significantly reduces the adhesive's environmental footprint and contributes to sustainability goals. Plant oils are abundant and represent a promising carbon-neutral material source.
- **UV-Responsive Debonding Mechanism:** Under normal conditions, the adhesive exhibits excellent bond strength to substrates. However, upon brief exposure to specific wavelengths of UV light, the internal structure of the adhesive changes, leading to a significant reduction in adhesive strength and allowing for easy debonding. This controllable debonding simplifies dismantling and recycling processes.
- **Multi-Network Architecture:** The adhesive is anticipated to possess a multi-network architecture via strategic cross-linking involving hydrogen, ionic, and covalent bonds, exhibiting high burst strength and reversible shear responsiveness.

## Technical Significance and Future Outlook

This UV-responsive detachable adhesive holds immense potential for dramatically improving product recyclability. For instance, in sectors such as electronics, automotive components, composite materials, and packaging, it would enable easy separation of bonded parts and efficient recovery and reuse of individual materials. This promotes resource utilization and contributes to waste reduction. Especially as environmental regulations tighten and demand for comprehensive environmental consideration throughout the product lifecycle increases, such smart, sustainable adhesives are poised to become critical foundational technologies for future manufacturing. Further research is expected to focus on optimizing adhesive performance, applicability to different substrates, and scaling up for mass production.

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Source: <https://pubs.rsc.org/en/content/articlehtml/2026/ra/d6ra01625a?page=search>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Siegwerk and Henkel Unveil Next-Gen Coatings to Drive Recyclable Packaging Forward

Published May 29, 2026 Packaging Europe ヨーロッパ



## OVERVIEW

Siegwerk has introduced advanced heat-seal lacquers designed to enable fully recyclable flexible packaging by facilitating monomaterialization. Concurrently, Henkel Adhesive Technologies has significantly expanded its paper coating portfolio with novel water-based barrier and heat-seal solutions. These combined innovations critically enhance the functionality and recyclability of both flexible and paper-based packaging, crucial for achieving circular economy goals and mitigating environmental impact in the packaging sector.

### Background

Flexible packaging is ubiquitous across food, pharmaceuticals, and consumer goods industries, valued for its lightweight nature, cost-effectiveness, and superior product protection. Yet, a substantial environmental hurdle arises from its prevalent multi-layered composite construction, typically combining diverse plastic films and aluminum foil with complex adhesives. This complexity severely impedes effective recycling. Advancing a circular economy thus necessitates novel material technologies that preserve functionality while enabling monomaterialization or straightforward recyclability for flexible packaging solutions.

### Key Innovations and Impact

In direct response to these intricate challenges, industry leaders in ink and adhesive manufacturing are pioneering innovative solutions:

- **Siegwerk's Heat-Seal Lacquers:** Siegwerk has introduced a new line of heat-seal lacquers specifically engineered for recyclable flexible packaging. These lacquers offer exceptional heat-sealing performance on targeted substrates while crucially enabling the monomaterialization of the entire package, thereby significantly streamlining recycling processes. The company is leveraging its deep expertise in heat-seal technology to empower customers in achieving both stringent performance demands and critical circular economy objectives.
- **Henkel's Expanded Paper Coating Portfolio:** Henkel Adhesive Technologies has significantly broadened its portfolio with novel water-based barrier and heat-seal coatings tailored for paper-based packaging. These advanced coatings imbue paper substrates with essential moisture, oil, and oxygen barrier properties, alongside robust heat-sealability. This strategic approach not only curtails plastic consumption but also substantially elevates the functionality and recyclability of paper packaging, consequently broadening its application scope and expanding sustainable choices.

These technological advancements are paramount for significantly enhancing the sustainability profile of both flexible and paper-based packaging. Specifically, heat-seal lacquers and water-based coatings deliver compelling technical advantages:

- **Promoting Monomaterialization:** They are instrumental in facilitating the paradigm shift from complex multi-layer composites to simpler, single-material structures, thereby rendering them far easier to process within existing recycling infrastructures.
- **Balancing Barrier Function and Recyclability:** These solutions deftly maintain the requisite barrier performance vital for product protection, concurrently improving the overall recyclability of the package without compromise.
- **Reducing Environmental Footprint:** Their adoption directly contributes to a substantial reduction in plastic consumption, a measurable increase in recycling rates, and a lower environmental impact throughout the packaging manufacturing lifecycle.

These innovations equip consumer brands with indispensable tools to meet their sustainability commitments and introduce more environmentally responsible products to the global market. Looking ahead, intensified collaboration across adhesive, ink, and coating technologies is poised to accelerate the widespread adoption of sustainable materials throughout the packaging industry. Crucially, future development will prioritize ensuring both safety as food contact materials and uncompromising performance standards.

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Source: <https://packagingeurope.com/news/siegwerks-heat-seal-lacquers-help-customers-unlock-recyclable-flexibles/14331.article>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Shear-Thinning Bio-Adhesive Sealant Achieves Instant Hemostasis and Wet Tissue Adhesion via Multi-Network Architecture

Published May 28, 2026 Nature Communications Global



## OVERVIEW

Research published in Nature Communications unveils a shear-thinning bio-adhesive sealant capable of wet tissue adhesion and instantaneous hemostasis. This sealant leverages a multi-network architecture with strategic polymer cross-linking through hydrogen, ionic, and covalent bonds, exhibiting high burst strength and reversible shear responsiveness. This provides a mechanistic framework for rapid hemostasis, robust wet tissue adhesion, and resistance to arterial burst pressures in non-compressive wounds.

### Background and Challenges in Clinical Medicine

In surgical procedures and trauma care, rapid control of bleeding and effective adhesion to wet biological tissues are critical factors significantly impacting patient outcomes. Conventional hemostatic agents and adhesives have been limited by insufficient bond strength, diminished performance in moist environments, prolonged curing times, or issues with biocompatibility. Particularly for deep-seated tissues or vascular injuries where sustained compression is difficult, there has been a strong demand for instantly acting and highly reliable adhesive hemostatic materials.

### Technical Innovation: Multi-Network Bio-Adhesive Sealant

The research published in Nature Communications describes the development of an innovative shear-thinning bio-adhesive sealant that simultaneously achieves wet tissue adhesion and instantaneous hemostatic capabilities. This sealant possesses the following key technical features:

- **Multi-Network Architecture:** It adopts a complex multi-network structure where polymer chains are strategically cross-linked via different types of interactions: hydrogen bonds, ionic bonds, and covalent bonds. This design imparts high mechanical strength and responsiveness to external stimuli.
- **Shear-Thinning Property:** The sealant exhibits reduced viscosity under shear stress, such as during stirring or application, allowing for smooth, precise delivery. Upon removal of shear stress, its viscosity rapidly recovers, enabling it to maintain its form in situ. This property allows surgeons to accurately and easily apply the sealant to the target area, where it immediately establishes stable adhesion.
- **High Burst Strength and Reversible Shear Responsiveness:** Once adhered, it demonstrates high strength capable of withstanding arterial burst pressures. Furthermore, it is suggested to possess the ability to respond reversibly to specific mechanical shear stresses, indicating potential for future removal or adjustment.
- **Wet Tissue Adhesion and Instant Hemostasis:** The sealant exhibits excellent adhesion even on wet biological tissue surfaces and achieves instantaneous hemostatic effects, stopping bleeding shortly after application. This significantly improves therapeutic efficacy for non-compressive wounds and deep hemorrhages.

## Technical Significance and Future Outlook

This bio-adhesive sealant holds the potential to revolutionize medical fields, particularly surgery and emergency medicine. By combining rapid hemostasis, adhesion in moist environments, and high mechanical strength, it is expected to overcome the limitations of existing therapeutic methods and contribute to improving patient prognoses. This research expands the possibilities of multi-network polymers in biomaterial design and presents new design principles for medical adhesives and sealants. In the future, based on this technology, the development of more advanced multifunctional sealants with drug delivery or tissue regeneration capabilities is anticipated, with applications in regenerative medicine and advanced surgical fields.

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Source: [https://figshare.com/articles/journal\\_contribution/A\\_shear-thinning\\_bio-adhesive\\_sealant\\_with\\_wet\\_tissue\\_adhesion\\_and\\_instant\\_haemostasis/32444388](https://figshare.com/articles/journal_contribution/A_shear-thinning_bio-adhesive_sealant_with_wet_tissue_adhesion_and_instant_haemostasis/32444388)

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Sintered Silver Die Attach Materials Demonstrate 60-70% Lower Crack Growth Rate Than Lead-Free Alloys

Published May 25, 2026 PatSnap Eureka Global



## OVERVIEW

Indium Corporation's sintered silver die attach materials exhibit significantly superior crack propagation resistance compared to conventional lead-free alloys. The technology creates a porous microstructure that deflects crack propagation through energy absorption mechanisms. Laboratory tests show a 60-70% reduction in crack growth rates under power cycling conditions compared to SAC alloys, promising enhanced reliability for high-performance semiconductor packaging.

### Background and Challenges in Semiconductor Packaging

High-power semiconductor devices, particularly for power electronics and high-density ICs in data centers, must withstand high operating temperatures and frequent thermal cycling. In these harsh environments, significant thermal stress is generated in the die attach material bonding the die to the substrate, with crack initiation and propagation being a primary cause of device failure. While conventional lead-free solder alloys have been widely adopted due to environmental regulations, their resistance to thermal cycling fatigue has been a persistent challenge. Consequently, there has been a demand for next-generation die attach materials that offer higher reliability and extended lifespan.

### Technical Innovation of Sintered Silver and Crack Propagation Resistance

Indium Corporation has reported that its sintered silver die attach materials exhibit remarkably superior crack propagation resistance compared to traditional lead-free alloys. The core of this technology lies in its unique microstructure and the resulting energy absorption mechanisms:

- **Porous Microstructure:** Sintered silver materials consist of fine silver particles bonded by heat and pressure, forming a controlled porous structure internally. This porous structure alleviates stress concentration at crack tips and irregularly deflects crack paths as they propagate through the material, significantly reducing propagation velocity.
- **Energy Absorption Mechanism:** As a crack navigates through the porous structure, energy dissipation occurs at micro-voids and interfaces, enhancing the material's overall resistance to crack propagation. This effectively slows down actual crack growth, akin to impeding its path through a maze.
- **Experimental Results:** Laboratory power cycling tests demonstrated that sintered silver reduced crack growth rates by 60-70% compared to standard SAC (Sn-Ag-Cu) lead-free solder alloys. This implies a dramatic extension of device thermal cycling life.

## Technical Significance and Future Outlook

The superior crack propagation resistance of sintered silver die attach materials holds immense technical significance for high-reliability semiconductor packaging. It will substantially contribute to extending the lifespan and improving the reliability of devices in applications demanding high power density and harsh operating environments, such as EV power modules, 5G communication infrastructure, AI processors, and aerospace electronics. By being lead-free while exceeding the performance limitations of conventional lead-free solders, it satisfies both environmental regulations and high-performance requirements. Moving forward, sintered silver technology is expected to see accelerated adoption in a broader range of semiconductor packaging applications through further material design optimization, manufacturing process efficiencies, and cost reductions. Furthermore, given its excellent thermal dissipation properties, sintered silver is also gaining attention as a next-generation thermal management solution.

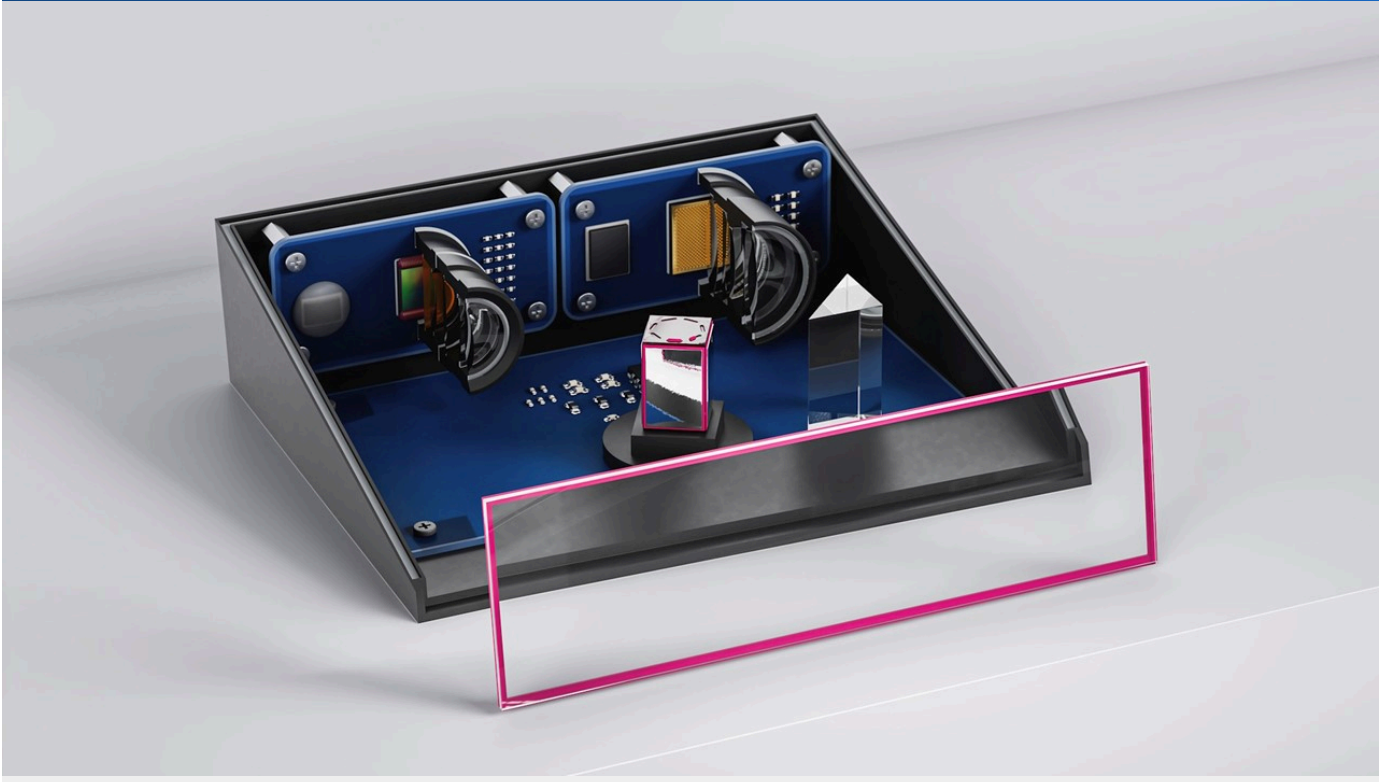
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Source: <https://eureka.patsnap.com/report-sintered-silver-vs-lead-free-alloys-crack-propagation-rates>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# DELO Unveils New Light-Activatable Adhesives Achieving 5x Production Speed for High-Volume LiDAR Manufacturing

Published May 22, 2026 SMT Today Germany



## OVERVIEW

DELO has launched a new generation of light-activatable adhesives specifically engineered for high-volume LiDAR system production. This breakthrough technology accelerates production speeds by up to five times in mirror and cover window bonding applications, addressing critical bottlenecks in the rapidly expanding automotive and industrial robotics sectors. The new DELO PHOTOBOND LA formulations achieve handling strength in minutes and maintain a low Young's modulus across a broad temperature range, preventing stress on delicate optical components.

### Background and Challenges in LiDAR Production

LiDAR (Light Detection and Ranging) systems are rapidly gaining traction in fields where precise 3D environmental perception is essential, such as autonomous vehicles, industrial robots, and smart city applications. The assembly of optical components like laser modules, mirrors, and cover windows, which are core to LiDAR systems, demands extremely high precision and reliable bonding technology capable of withstanding harsh environments including vibration, temperature fluctuations, and humidity. However, existing adhesive processes have faced challenges such as inability to support high-speed, high-volume production, or degradation of optical performance due to stress induced on components.

### Technical Innovation of DELO's New-Generation Light-Activatable Adhesives

To address these challenges, DELO has introduced its new generation of light-activatable adhesives, the "DELO PHOTOBOND LA" series, specifically tailored for high-volume LiDAR production. This adhesive offers the following key features and advantages:

- **Up to 5x Increase in Production Speed:** It can increase production speed by up to five times compared to conventional adhesive processes for mirror and cover window bonding applications. This is due to its extremely rapid curing properties, where the adhesive achieves initial cure within seconds and handling strength within minutes upon exposure to light (typically UV light). This acceleration dramatically resolves bottlenecks in the mass production of LiDAR modules.
- **Low Stress on Optical Components:** The adhesive is designed to maintain a low Young's modulus (elasticity) across a broad temperature range. This prevents unnecessary stress from being exerted on optical components due to curing shrinkage or thermal expansion/contraction, ensuring high-precision optical performance over the long term, which is crucial for LiDAR sensor accuracy and reliability.
- **Robust Environmental Resistance:** It ensures reliability under the stringent temperature, humidity, vibration, and shock conditions required for automotive applications. It maintains stable adhesion and mechanical properties even after light activation, contributing to long-term device performance.

- **Precise Application and High Reproducibility:** When combined with advanced dispensing systems, it can be applied with high precision to fine adhesive lines and complex geometries, ensuring high reproducibility in mass production.

## Market Impact and Future Outlook

DELO's new generation of light-activatable adhesives will significantly contribute to reducing production costs and shortening time-to-market for LiDAR-equipped devices such as autonomous vehicles, industrial robots, and drones. Particularly, as the demand for LiDAR sensors is projected to explode with the proliferation of autonomous driving technology, this adhesive technology will be an indispensable factor in expanding production capacity and enhancing market competitiveness. Through this innovation, DELO is expected to establish leadership in adhesive technology for high-precision optical assemblies and accelerate the development of next-generation smart mobility and industrial automation.

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Source: <https://smttoday.com/2026/05/22/delo-introduces-next-generation-light-activatable-adhesives-for-high-volume-lidar-production/>

# Avery Dennison Advances Adhesive Technology for EV Batteries, Boosting Safety and Assembly Efficiency

Published May 25, 2026 AI Online USA



## OVERVIEW

Avery Dennison has unveiled adhesive technologies poised to enable next-generation EV battery systems with higher voltages, increased energy density, and more compact architectures. Their new pressure-sensitive adhesive tapes simplify cell connection designs, enhance safety through flame retardancy and high-temperature resistance, and improve performance via vibration absorption. These innovations address critical challenges in EV battery construction, making batteries safer, more efficient, and easier to assemble for a rapidly evolving automotive market.

### Background and Challenges in EV Battery Development

The rapid expansion of the electric vehicle (EV) market demands continuous innovation in EV battery technology across performance, safety, cost, and manufacturing efficiency. Next-generation EV battery systems aim for higher voltages, greater energy density, and more compact designs, which introduce new engineering challenges. Specifically, adhesive solutions for interconnecting numerous battery cells, managing heat, absorbing vibrations, and ensuring fire safety are crucial for determining the overall reliability and performance of the battery pack.

### Avery Dennison's Adhesive Technology Innovations

Avery Dennison has introduced advanced adhesive technologies designed to address these key challenges in EV battery development. Their new pressure-sensitive adhesive (PSA) tapes offer innovative solutions in the following areas:

- **Simplified Cell Connection Systems:** These tapes simplify the interconnection of battery cells, eliminating the need for complex wiring or welding processes. This leads to faster assembly, reduced manufacturing costs, and enables flexible designs that contribute to more compact battery packs.
- **Enhanced Safety:** Adhesives with flame retardancy and high-temperature resistance protect battery packs from risks such as thermal runaway. In the event of an anomaly, they help suppress the spread of flames, significantly enhancing safety—an indispensable feature as EV safety regulations become more stringent.
- **Optimized Performance:** Superior vibration absorption characteristics protect battery cells from road vibrations and impacts, reducing mechanical stress. This contributes to extended battery lifespan and stable performance. The stable interface provided by the adhesive also enhances the reliability of electrical connections.

## Market Impact and Future Outlook

Avery Dennison's adhesive technologies for EV batteries are expected to have a significant impact on the electric vehicle industry. The realization of safer, more efficient, and easier-to-assemble battery packs will further accelerate EV adoption. This technology empowers battery manufacturers to achieve greater design freedom, streamline production processes, and ultimately deliver high-quality, affordable EVs to consumers. In the future, these adhesive technologies are expected to play an indispensable role in the development of modular battery designs, cell-to-pack architectures, and next-generation battery technologies such as solid-state batteries. Adhesives will increasingly become strategic components for improving battery system performance and safety, rather than mere bonding materials.

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Source: <https://ai-online.com/2026/05/avery-dennison-powers-the-next-generation-of-ev-battery-innovation/>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Ajinomoto's ABF Film Business Surges with 95%+ Market Share, Driven by Exploding AI Chip Demand

Published May 27, 2026   Let's Data Science   Japan



## OVERVIEW

Ajinomoto, a dominant player with over 95% global market share for its ABF (Ajinomoto Build-up Film) insulating film crucial for high-performance semiconductors, is experiencing significant profit growth in its semiconductor film business. This surge is directly attributable to the escalating demand for AI chips. The trend underscores how the benefits of AI infrastructure spending extend beyond major tech and chipmakers, profoundly impacting specialized material suppliers globally.

### Background and Evolution of Semiconductor Packaging Technology

Modern high-performance semiconductors, especially AI processors and GPUs, require extremely high-density integration and complex packaging technologies to process vast amounts of data at high speeds. In such advanced packaging, insulating materials are indispensable for forming multi-layer interconnections, and their performance dictates the overall reliability and speed of the semiconductor device. Traditional insulating materials struggled to meet the demands for miniaturization and high-speed signaling. Against this backdrop, Ajinomoto's "ABF (Ajinomoto Build-up Film)" has established itself as a standard material for advanced semiconductor packaging due to its superior properties.

### AI Demand Fuels Growth of Ajinomoto's ABF Film

Ajinomoto's ABF film holds an overwhelming global market share of over 95% as an insulating layer for high-performance semiconductor packages. This thin film combines excellent electrical insulation, thermal properties, dimensional stability, and fine processability, making it ideal for the build-up process of multi-layer substrate interconnections. In recent years, with the evolution of generative AI and other advancements, the demand for AI chips has exploded, leading to a corresponding rapid expansion in ABF film demand.

- **AI Chip Performance Requirements:** AI chips, to maximize computational power, incorporate more transistors and operate at high frequencies, exacerbating issues of heat generation and signal delay within the package. ABF film provides excellent heat dissipation and low dielectric properties to address these challenges.
- **Indispensability for High-Density Packaging:** High-density packaging using technologies like chiplets and HBM (High Bandwidth Memory) requires multiple chips to be placed in close proximity and interconnected over short distances. ABF film is essential as a reliable insulating layer supporting these fine wiring structures.
- **Contribution to Profit Growth:** The increase in AI chip demand has led to a rise in both sales volume and average selling price for ABF film, resulting in substantial profit growth for Ajinomoto's semiconductor film business. This demonstrates how technical superiority aligned with a major market trend.

## Technical Significance and Future Outlook

Ajinomoto's ABF film plays a critically important role as a hidden foundational technology supporting the evolution of semiconductor technology in the AI era. This trend clearly illustrates that investments in AI infrastructure are bringing widespread economic benefits not only to end products and major chipmakers but also to the specialized material suppliers behind them. Further advancements in AI technology and the associated increase in semiconductor packaging complexity and density are inevitable, suggesting a sustained increase in demand for high-performance insulating materials like ABF film. Ajinomoto is expected to focus on further improving material properties, developing new manufacturing processes, and strengthening its supply chain to maintain this advantageous position. This case exemplifies how Japanese technological prowess continues to hold a crucial position in the intensifying global semiconductor materials market.

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Source: <https://letsdatascience.com/news/ajinomoto-benefits-from-ai-driven-semiconductor-demand-414de364>

# Dexerials Achieves CDP Top Rating for Supplier Engagement, Signaling Leadership in Sustainable Supply Chains

Published May 25, 2026   Dexerials Corporation   Japan

The logo for Dexerials, featuring the word "Dexerials" in white, bold, sans-serif font, centered within a dark blue rectangular background with a slight wave effect at the bottom.

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## OVERVIEW

Dexerials Corporation, a functional materials manufacturer, announced it received the highest rating in the CDP 2025 Supplier Engagement Assessment for the first time. This recognition highlights the company's strong commitment to addressing environmental issues through proactive engagement with its suppliers. The achievement reflects a broader industry trend towards sustainable practices across the supply chain and reinforces Dexerials' leadership in environmental governance.

### Background and Importance of Sustainability Assessment

In modern corporate management, Environmental, Social, and Governance (ESG) aspects have become indispensable elements for evaluating corporate value. Particularly for manufacturing industries with global supply chains, there is a strong demand for efforts to reduce environmental impact not only within the company but also throughout the entire supplier network. CDP (formerly the Carbon Disclosure Project) is an international non-profit organization that assesses corporate environmental disclosures regarding climate change, water security, and deforestation. The Supplier Engagement Rating evaluates a company's ability to collaborate with its suppliers to reduce emissions and manage environmental risks.

### Dexerials Achieves Top Rating and Its Significance

Dexerials Corporation, a manufacturer of functional materials, announced that it received its highest-ever rating, an "A," in the CDP 2025 Supplier Engagement Rating. This indicates that the company is at an industry-leading level in addressing environmental challenges across its entire supply chain.

- **Enhanced Supplier Collaboration:** Through close collaboration with suppliers from raw material procurement to manufacturing and distribution, Dexerials is working towards environmental goals such as reducing greenhouse gas emissions, efficient water resource utilization, and waste reduction. This includes setting environmental standards for suppliers, performance evaluation, and improvement support.
- **Strengthened Environmental Governance:** Achieving the highest rating affirms that the company's environmental management system, transparency of data disclosure, and environmental strategy meet high international standards. This demonstrates the company's commitment to sustainability.
- **Responsibility as a Functional Materials Manufacturer:** Dexerials provides high-performance functional materials, including electronic components, bonding materials, and optical materials. The environmental performance of these products significantly impacts the environmental footprint of final products. Environmental consideration throughout the supply chain is essential for enhancing the value offered by the company's products.

## Industry Impact and Future Outlook

Dexerials receiving the highest rating in the CDP Supplier Engagement Assessment serves as a positive example that will accelerate sustainability efforts across the entire electronics materials industry. It clearly conveys the message that environmental performance in the supply chain is directly linked to a company's competitiveness and brand image. Moving forward, more companies are expected to strengthen supplier engagement and promote transparent environmental information disclosure. Through this assessment, Dexerials will further enhance trust from investors and customers and strengthen its leadership as a company contributing to the realization of a sustainable society. In the development of adhesive materials and electronic materials, the adoption of lower environmental impact materials and manufacturing processes is also expected to accelerate.

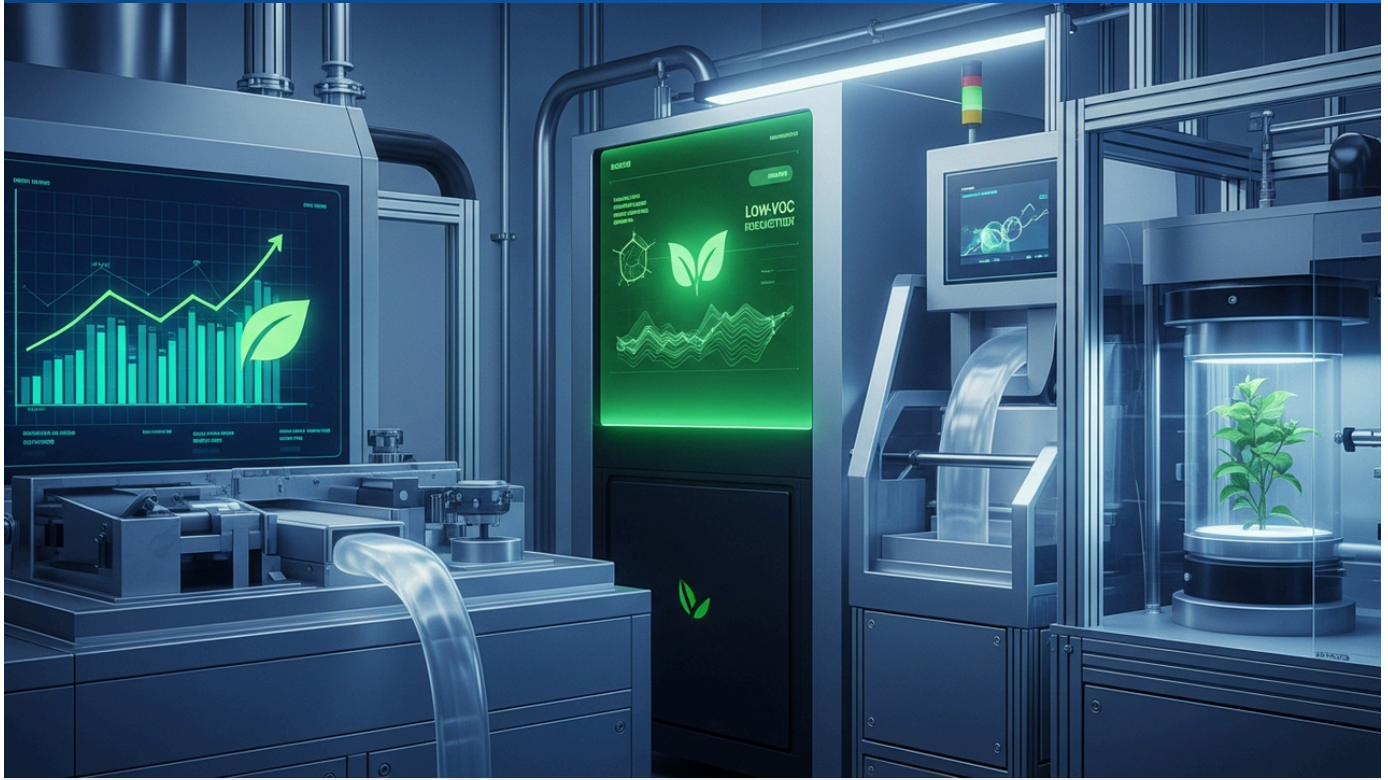
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Source: <https://www.dexerials.jp/en/>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Beyond Solvents: The 2026 Evolution of Low-VOC Water-Based Adhesives for a Sustainable Future

Published May 29, 2026 DataM Intelligence 4 Market Research LLP (openPR.com 經由) Global



## OVERVIEW

A new report from DataM Intelligence 4 Market Research LLP highlights the rapid evolution of the low-VOC water-based adhesive market, driven by stringent environmental regulations and corporate sustainability goals. Leading innovators like Toyochem, Nitto Denko, 3M, and Henkel are making significant strides in eco-friendly adhesive technologies for critical sectors including packaging, electronics, and automotive, emphasizing enhanced safety, recyclability, and performance.

### Background

A recent market research report by DataM Intelligence 4 Market Research LLP provides an insightful overview of the rapidly evolving low-VOC (Volatile Organic Compound) water-based adhesive market. The report identifies escalating environmental regulations and ambitious corporate sustainability objectives as the primary catalysts for this growth. Water-based adhesives offer a compelling alternative to traditional solvent-based counterparts, significantly reducing environmental impact and enhancing workplace safety, thereby accelerating their adoption across diverse sectors, including packaging, automotive, and electronics. The report specifically details key technological trends and leading company activities observed in 2026.

DataM Intelligence 4 Market Research LLP is renowned for its detailed market analyses across various industrial sectors, with specialized expertise in chemicals, materials, and technology. They empower clients to make data-driven strategic decisions through comprehensive market size forecasting, trend analysis, and competitive landscape assessments.

### Key Findings

In May 2026, several industry leaders demonstrated significant advancements in technological innovation and product development within the low-VOC water-based adhesive market:

- **Toyochem Co., Ltd.:** Pioneered advancements in eco-friendly water-based adhesive technologies for flexible packaging and industrial coating applications. A particular emphasis was placed on developing solutions that optimize both safety and recyclability, especially for food packaging.
- **Nitto Denko Corporation:** Introduced high-durability water-based adhesive materials designed for demanding electronics and automotive component bonding. These innovations aim to bolster reliability in high-temperature/high-humidity environments and enhance vibration absorption capabilities.
- **3M:** Significantly expanded its development and portfolio of sustainable water-based adhesive technologies. Their focus encompassed a broad range of applications, including automotive interiors, construction, and critical medical uses.

- **Henkel AG & Co. KGaA:** Paralleling 3M's efforts, Henkel broadened its development and product portfolio for sustainable water-based adhesive technologies, concentrating on eco-friendly solutions tailored for the packaging, construction, and consumer goods sectors.

Across these innovators, a clear strategic alignment is evident: a concentrated focus on reducing VOCs, enhancing recyclability, and incorporating bio-based raw materials. These efforts are driving both compliance with evolving environmental regulations and the achievement of ambitious corporate sustainability strategies.

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Source: <https://www.openpr.com/news/4531349/low-voc-water-based-adhesive-market-evolution-2026-why>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Shin-Etsu Silicones Unveils Next-Gen Raw Materials for Enhanced Cosmetic Textures and Soft-Focus Effects at In-Cosmetics Global

Published May 23, 2026 Global Cosmetic Industry Japan



## OVERVIEW

Shin-Etsu Silicones Europe B.V. showcased a new generation of high-performance silicone raw materials at in-cosmetics Global 2026. Key launches included KF-6070W, a water-soluble silicone wax for smooth O/W textures, and KF-6080W, a high-performance O/W emulsifier compatible with organic oils and UV filters. The company also introduced WHP-100MS, a natural-origin hybrid powder for intense soft-focus effects, alongside various silicone elastomer gels and coated cellulose powders designed to enhance sensory experience and formulation flexibility in cosmetic applications.

### Background and Trends in the Cosmetics Industry

The cosmetics industry is increasingly demanding not only functional efficacy but also enhanced sensory experience and environmental compatibility to meet diverse consumer needs. Particularly in skincare and makeup products, smooth, non-tacky textures, natural soft-focus effects that conceal skin imperfections, and stable emulsification performance are crucial factors that determine product differentiation and market competitiveness. To address these challenges, high-performance raw materials, especially silicone technologies, are drawing significant attention.

### Shin-Etsu Silicones' Innovative Raw Materials

Shin-Etsu Silicones Europe B.V. unveiled its next-generation high-performance silicone raw materials for cosmetic applications at in-cosmetics Global 2026, showcasing new products that deliver innovative textures and soft-focus effects. Key announcements included:

- **Water-Soluble Silicone Wax "KF-6070W"**: This wax creates astonishingly smooth, non-tacky textures in O/W (oil-in-water) emulsions, enabling the development of skincare products that offer a comfortable feel. Its water-solubility also increases formulation flexibility.
- **High-Performance O/W Emulsifier "KF-6080W"**: A high-performance O/W emulsifier with excellent compatibility with organic oils and UV filters. This allows for the formation of stable emulsions and complex formulation designs, thereby improving product stability and performance.
- **Natural-Origin Hybrid Powder "WHP-100MS"**: This hybrid powder provides an intense soft-focus effect, effectively minimizing the appearance of fine lines and pores, and creating an even, matte finish. This brings new value to makeup and base makeup products.
- **Various Silicone Elastomer Gels and Coated Cellulose Powders**: Designed to enhance the sensory experience, these materials further improve the feel of products and expand formulation flexibility.

## Technical Significance and Future Outlook

These innovative raw materials announced by Shin-Etsu Silicones open new possibilities for product development in the cosmetics industry. They will serve as crucial foundational technologies for offering high-performance, sensory-rich products, particularly to environmentally conscious consumers. The water-soluble silicone wax and high-performance emulsifiers enhance formulation freedom, leading to more stable emulsions and comfortable textures. Furthermore, the natural-origin soft-focus powder aligns with the clean beauty trend while delivering excellent skin-enhancing effects. Shin-Etsu Silicones aims to help cosmetic manufacturers develop products that exceed consumer expectations through these offerings, creating new value in silicone technology. The application scope of silicone technology in the adhesives and sealants sector is also expected to expand into diverse areas such as medical and electronics.

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Source: <https://www.gcimagazine.com/ingredients/launches-claims/news/22967499/shin-etsu-silicones-of-america-shinetsu-unveils-nextgen-silicone-textures-and-softfocus-innovation-at-incosmetics-global>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# EU Battery Regulation Highlights Failure Risks of Self-Adhesive Labels for EV and Industrial Batteries

Published May 27, 2026 Pryor Marking Technology UK



## OVERVIEW

This article discusses the limitations of self-adhesive labels for EV and industrial batteries under the new EU Battery Regulation, which mandates indelible marking. It explains that adhesive bonds weaken due to thermal cycling and aging, leading to label failure. Traditional adhesive labels are thus unlikely to be compliant for larger battery packs requiring long-term durability, emphasizing the need for alternative, more robust marking technologies.

### Background and Intensification of EU Battery Regulation

With the increasing demand for electric vehicle (EV) and industrial batteries, regulations concerning the safety, traceability, and sustainability of these products are strengthening globally. In the EU, specifically, new battery regulations have been introduced, mandating that battery identification information must remain "indelibly legible" throughout the product's entire lifespan. This is critically important for recycling, safety management, and counterfeit prevention. However, this stringent requirement poses significant technical challenges for conventional self-adhesive labels.

### Challenges Faced by Self-Adhesive Labels

While self-adhesive labels have been widely used due to their cost-effectiveness and ease of application, they possess inherent limitations in meeting the requirements of the new EU Battery Regulation:

- **Adhesive Degradation from Thermal Cycling:** EV batteries experience significant temperature fluctuations due to charging/discharging cycles and external environmental conditions. This thermal cycling generates repetitive stress in the adhesive layer due to differences in the coefficient of thermal expansion between the adhesive and the label, or between the adhesive and the battery surface. This gradually degrades the adhesive's bonding strength, increasing the risk of label detachment over time.
- **Aging and Environmental Factors:** Adhesives degrade at a molecular level and lose performance when exposed to environmental factors such as heat, humidity, chemicals, and UV light. Since battery packs are often used in harsh environments, the durability of labels is easily compromised.
- **Incompatibility with Indelible Marking Requirements:** The "indelible marking" required by EU regulations means that information should not be lost due to physical removal, abrasion, or aging. Adhesive detachment directly contradicts this requirement, making traditional self-adhesive labels unsuitable for applications requiring long-term durability, such as large battery packs.

## Alternative Marking Technologies and Future Outlook

To address these challenges, battery manufacturers must consider alternative marking technologies. The article suggests the following technologies as promising solutions for ensuring long-term durability:

- **Laser Marking:** Information is directly engraved onto battery housings or components using a laser. This method is highly resistant to physical abrasion and chemical effects, providing permanent marking.
- **Dot Peen Marking:** This method involves indenting dot-shaped marks onto hard surfaces, offering high durability and tamper resistance.
- **Permanent Direct Part Marking (DPM):** An umbrella term for various direct marking technologies that ensure data permanence.

As the EV and industrial battery markets continue to grow, ensuring safety and traceability will become increasingly critical. While advancements in adhesive technology are anticipated, for the time being, more robust direct marking solutions replacing self-adhesive labels will be essential to meet specific regulatory requirements. This may also serve as an impetus for adhesive manufacturers to accelerate the development of specialized, more durable adhesives or new bonding technologies less susceptible to environmental degradation.

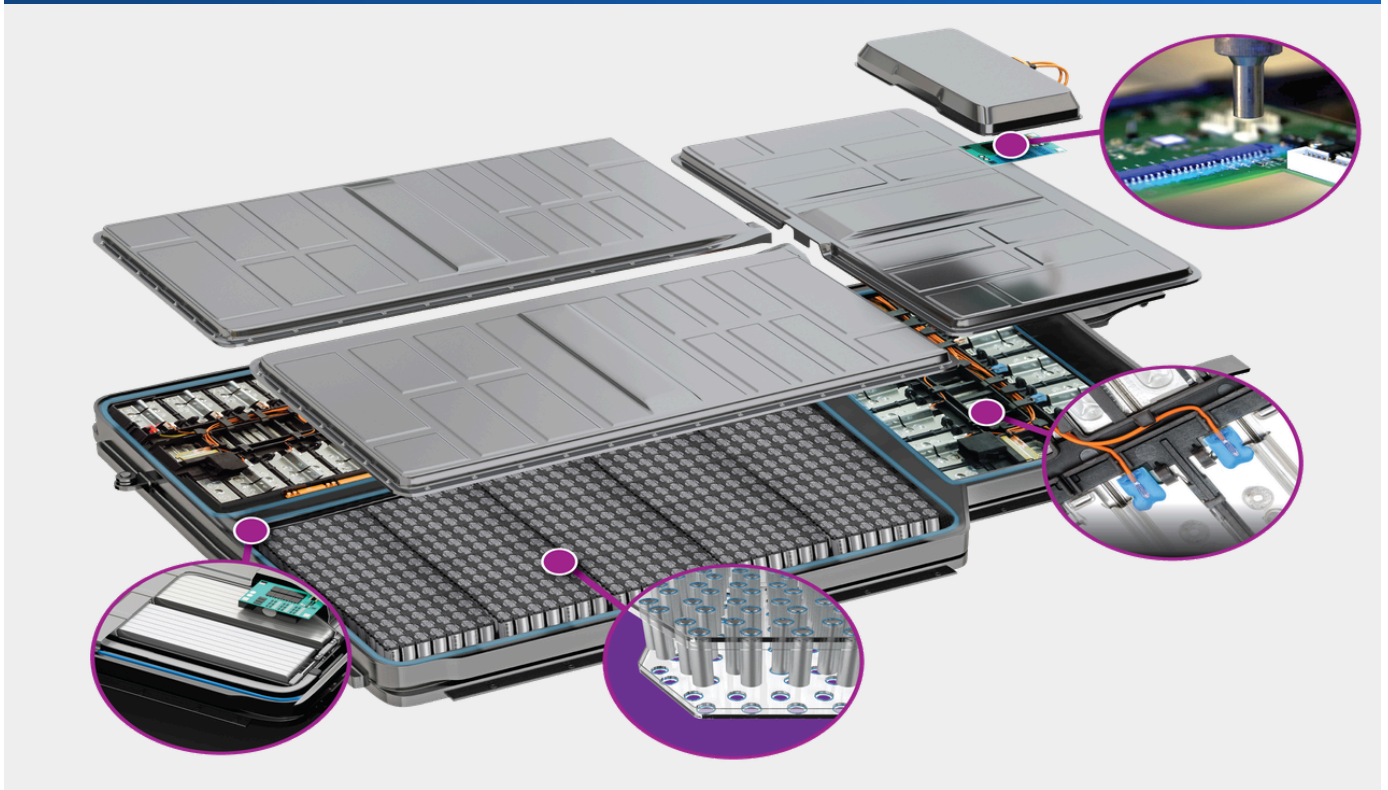
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Source: <https://www.pryormarking.com/why-self-adhesive-labels-fail-the-eu-battery-regulation/>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Dymax to Showcase Latest UV/LED-Curable Adhesives and Technologies for Battery and Electronics Manufacturing at The Battery Show Europe 2026

Published May 26, 2026   PresseBox   Germany



## OVERVIEW

Dymax is set to showcase its newest UV/LED-curable materials and technological innovations for battery and electronics manufacturing at The Battery Show Europe 2026. Highlights include new solutions for camera module assemblies and advanced air mobility battery bonding, along with dual-cure conformal coatings for PCB protection. The company will also introduce fast-curing adhesives, coatings, and gasket sealants tailored for fuel cell and battery module applications, addressing critical challenges in key industrial sectors.

### Background and the Need for High-Performance Bonding Solutions

Sectors such as electric vehicle (EV) batteries, fuel cells, and high-density electronics are experiencing rapidly escalating demands for power density and thermal management. In these advanced systems, high-performance adhesives, coatings, and sealants are indispensable for ensuring long-term reliability, safety, and manufacturing efficiency of components. Particularly, material technologies that cure rapidly with UV (ultraviolet) or LED (light-emitting diode) light are gaining attention for their ability to accommodate high-speed, precision manufacturing processes. Dymax, as a leader in light-curable materials, is providing innovative solutions to meet these evolving needs.

### Dymax's Exhibition Highlights and Technical Innovations

Dymax has announced it will showcase its latest UV/LED-curable materials and technological innovations for battery and electronics manufacturing at The Battery Show Europe 2026. Key exhibits and technical features include:

- **Battery Bonding and Fuel Cell Applications:** New solutions for advanced air mobility battery bonding will be featured, alongside fast-curing adhesives, coatings, and gasket sealants for fuel cell and battery module applications. These products offer a combination of high bond strength, thermal stability, vibration resistance, and chemical resistance, contributing to enhanced battery pack safety and performance.
- **Protective Solutions for Electronics:** Dymax will present high-precision adhesives for camera module assemblies and dual-cure conformal coatings for Printed Circuit Board (PCB) protection. Dual-cure coatings ensure curing even in shadowed areas where light cannot reach, achieving complete protection for complex electronic components.
- **Advantages of UV/LED Curing Technology:** These materials cure within seconds to minutes upon exposure to UV or LED light, leading to accelerated production lines, reduced energy consumption, and lower solvent usage. This offers significant benefits in terms of both environmental impact reduction and increased production efficiency.

## Market Impact and Future Outlook

Dymax's UV/LED-curable adhesive and coating technologies are poised to play a crucial role in accelerating the evolution of growth industries such as EV batteries, fuel cells, and high-density electronics. These products address manufacturing challenges in next-generation devices that demand high performance, miniaturization, and superior reliability. Specifically, faster bonding and improved durability in battery manufacturing directly contribute to the widespread adoption and enhanced performance of EVs. Through this exhibition, Dymax aims to deepen collaborations with customers and provide customized solutions tailored to specific application needs, thereby reinforcing its leadership at the forefront of adhesive technology. The pursuit of sustainability and improved manufacturing efficiency will continue to be major driving forces in future material development.

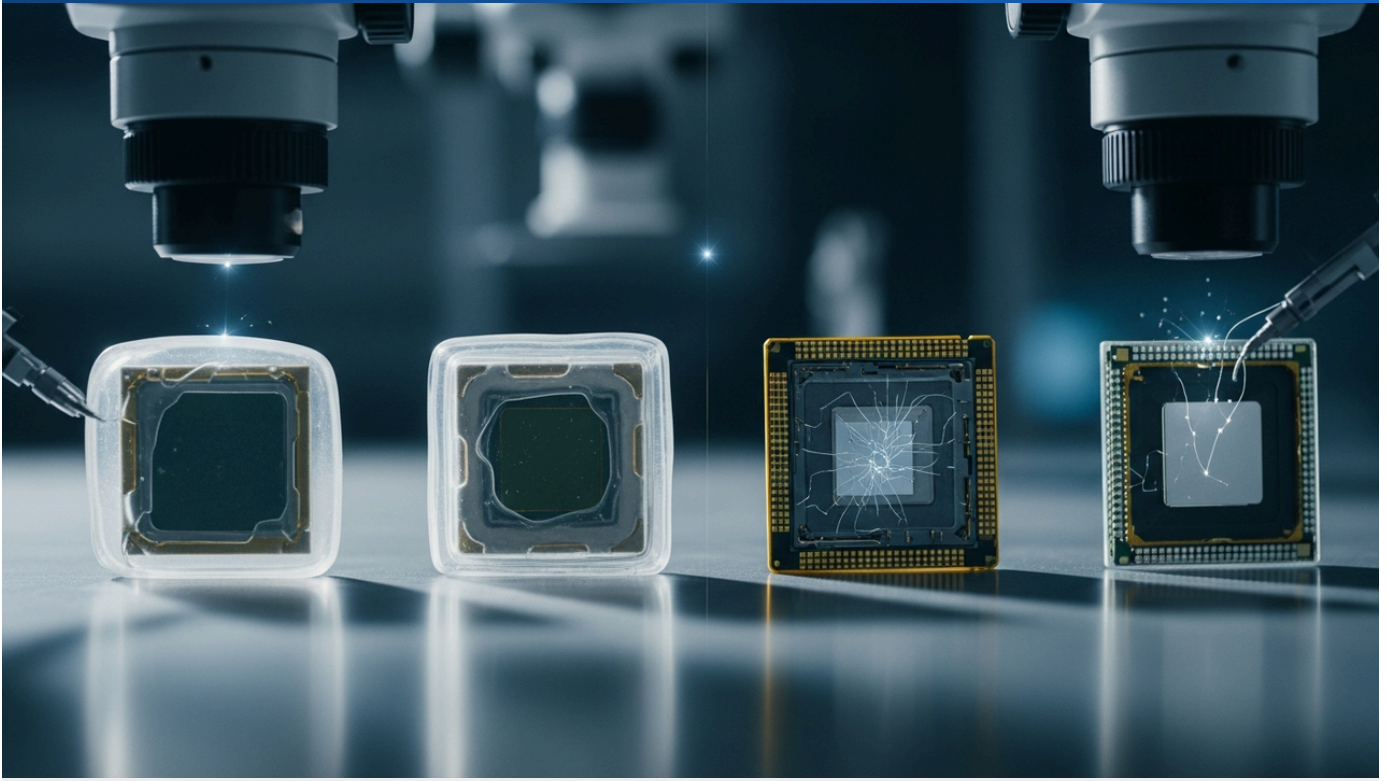
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Source: <https://www.pressebox.com/pressrelease/dymax-europe-gmbh/dymax-to-showcase-its-latest-uv-and-led-curable-adhesives-and-technology-innovations-at-the-battery-show-europe-2026/boxid/1298523>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Low-Stress Mold Compounds Evolve to Protect Fragile Components in Advanced Semiconductor Packages

Published May 25, 2026 Global Semiconductor Global



## OVERVIEW

Modern low-stress molding technologies encompass diverse material compositions, including silicone-based compounds and modified epoxies with flexible segments. These compounds have evolved to address multiple stress sources such as thermal cycling, moisture-induced swelling, and CTE mismatch. However, challenges persist in protecting ultra-thin dies, high aspect ratio components, and advanced packaging architectures like SiP and WLCSP, demanding continuous innovation in material science and package design.

### Background and Vulnerabilities in Semiconductor Packaging

As modern semiconductor devices become smaller, more integrated, and higher performing, their internal dies and interconnects become increasingly vulnerable to physical and thermal stress. Particularly for ultra-thin dies, high-aspect-ratio wire bonds, and advanced packaging structures like System-in-Package (SiP) and Wafer-Level Chip-Scale Packages (WLCSP), even minimal stress generated during manufacturing processes or operating conditions can lead to reduced device reliability and failure. Therefore, the development of low-stress mold compounds to protect these fragile components is indispensable.

### Technology and Evolution of Low-Stress Mold Compounds

The latest low-stress Encapsulation Molding Compounds (EMCs) have evolved in material composition and structure to address multiple sources of stress:

- **Diversification of Material Composition:** While traditional EMCs were primarily epoxy resin-based, new silicone-based compounds and modified epoxy resins incorporating flexible polymer segments have been developed for lower stress. Silicones, with their low elastic modulus and coefficient of thermal expansion (CTE), excel at stress relief during thermal cycling.
- **Addressing Stress Sources:**
  - **Thermal Cycling Stress:** Stress generated by CTE mismatch between different materials within the package (silicon die, leadframe, mold compound) is effectively managed by the EMC's internal stress relaxation mechanisms. Optimizing the EMC's CTE or glass transition temperature ( $T_g$ ) minimizes thermal stress.
  - **Moisture-Induced Swelling:** To prevent internal stress from EMC swelling due to moisture absorption, materials with low hygroscopicity and additives with excellent moisture barrier properties are introduced.
  - **Mechanical Stress:** EMCs resist mechanical stress from molding pressure during manufacturing processes or external shocks and vibrations with an appropriate balance of hardness and flexibility, protecting internal components.

## Technical Significance, Remaining Challenges, and Future Outlook

Low-stress mold compounds are essential technologies for improving the reliability and durability of advanced semiconductor packages. However, further miniaturization of ultra-thin dies, increasing complexity of high-aspect-ratio components, and advancements in heterogeneous integration in SiP and WLCSP continue to pose new challenges. Specifically, there is a demand for material designs that achieve both higher thermal conductivity and lower CTE, polymer synthesis that maintains extremely low elastic modulus while possessing sufficient mechanical strength, and the development of precise stress simulation and management techniques for complex package structures.

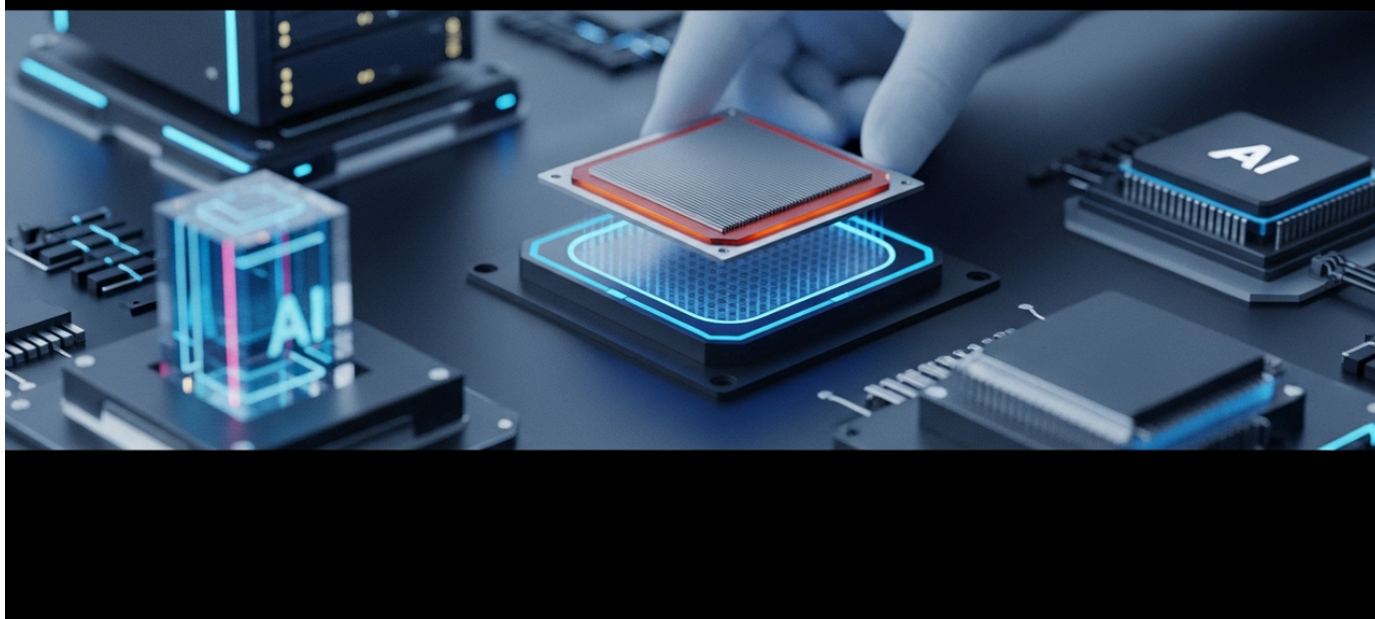
In the future, the development of more intelligent packaging materials, such as EMCs with self-healing capabilities or those that can be debonded by specific triggers, could improve the repairability and recyclability of semiconductor devices. These technologies will form the foundation for next-generation high-performance electronics, including AI processors, 5G communications, and IoT devices.

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Source: <https://eureka.patsnap.com/report-compare-low-stress-mold-compounds-for-protecting-fragile-components>

# Yousan New Materials Unveils Non-Silicone Thermal Interface Pads (2-10W/m·K) for AI Chips and High-Power Electronics

Published May 22, 2026   Yousan New Materials   China



## OVERVIEW

Yousan New Materials has introduced a new range of non-silicone thermal interface pads with thermal conductivities from 2.0 to 10.0 W/m·K, targeting AI chips, servers, and automotive electronics. These pads are specifically engineered for high-power semiconductor applications where silicone contamination is unacceptable. They are also well-suited for optical and precision instruments like photosensors, camera modules, and medical electronics, offering both high thermal conductivity and precise thermal management solutions.

### Background and Thermal Management Challenges in High-Performance Electronics

Modern advanced electronic devices, such as AI chips, high-performance servers, and automotive electronics for electric vehicles (EVs), operate at unprecedented power densities. This results in significant heat generation within the devices, and without proper thermal management, it leads to performance degradation, reduced reliability, and even device failure. Particularly in precision instruments like photosensors, camera modules, and medical electronics, there is a strong demand for non-silicone thermal management solutions due to the risk of siloxane outgassing from silicone-based materials, which can contaminate optical components and degrade their performance.

### Technical Innovation of Yousan New Materials' Non-Silicone Thermal Interface Pads

In response to these stringent requirements, Yousan New Materials has launched non-silicone thermal interface pads with a wide range of thermal conductivities from 2.0 to 10.0 W/m·K. These innovative pads offer the following key features and advantages:

- **Non-Silicone Composition:** The pads completely eliminate the risk of siloxane contamination associated with silicone-based materials. This is critically important for precision electronics, including optical sensors, camera modules, and laser devices, where siloxane can adversely affect performance.
- **High Thermal Conductivity:** Offering a thermal conductivity range from 2.0 W/m·K to 10.0 W/m·K, these pads ensure efficient heat transfer from high-heat-generating components like AI chips, high-performance CPUs/GPUs, and power electronics to heat sinks. This maintains optimal operating temperatures for devices, maximizing performance and lifespan.
- **Excellent Conformability:** The pads effectively conform to irregular surfaces and micro-gaps, minimizing thermal resistance. This eliminates air gaps and optimizes the heat conduction path.
- **Broad Applications:** Applicable across a wide range of high-power and precision electronic devices, including AI data center servers, high-performance graphic cards, power modules in automotive electronics, and medical diagnostic equipment.

## Technical Significance and Future Outlook

Yousan New Materials' non-silicone thermal interface pads hold the potential to significantly transform the paradigm of thermal management in high-power and precision electronics. Particularly in optical-related devices where silicone contamination is a concern, and in automotive applications demanding strict reliability, this non-silicone solution is poised to set a new standard. This technology addresses the increasing thermal density of semiconductors driven by AI advancements, forming a foundational technology for the development of next-generation computing and mobility. In the future, the development of non-silicone materials with even higher thermal conductivity, superior mechanical reliability, and stability over an even wider temperature range is anticipated. Yousan New Materials is expected to strengthen its leadership in the thermal management solutions market through this innovative product.

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Source: <https://www.ysdiecut.com/2-10w-mk-non-silicone-thermal-interface-pad-for-ai-chips-servers-high-power-electronics/>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Kingfa Advances Low-Stress Crystallization Techniques for Mold Compounds, Mitigating Warpage in Advanced Packaging

Published May 25, 2026   Global Semiconductor   Global



## OVERVIEW

Advanced mold compounds face challenges like package warpage, delamination, and mechanical property degradation due to inherent stresses during crystallization. Kingfa adopts advanced nucleation systems that promote uniform crystal distribution while maintaining processing efficiency. Their approach combines temperature-controlled crystallization chambers with modified injection parameters to minimize thermal gradients, thereby enhancing package reliability and yield for complex semiconductor devices.

### Background and Challenges in Semiconductor Packaging

Modern semiconductor devices are increasingly integrated and adopting complex 3D packaging structures. In such advanced packaging, mold compounds play a crucial role in protecting devices from external environments and providing mechanical strength. However, inherent stresses generated during the curing and crystallization process of mold compounds can lead to severe problems such as package warpage, delamination between the die and mold, and degradation of the device's mechanical properties. These challenges are particularly pronounced in large packages and heterogeneous stacked structures, directly affecting product yield and reliability.

### Improvements in Low-Stress Crystallization Techniques

Advanced material manufacturers like Kingfa are focusing on optimizing the crystallization process of mold compounds to resolve these issues. Their approach aims to promote uniform crystal distribution while simultaneously maintaining processing efficiency.

- **Advanced Nucleation Systems:** Advanced nucleating agents and systems are introduced to control the crystallization process within the mold compound. This ensures uniform crystal formation and growth, reducing imbalances in internal stress. A homogeneous fine-grained crystalline structure improves the material's mechanical strength and thermal resistance.
- **Temperature-Controlled Crystallization Chambers:** By using crystallization chambers capable of precise temperature control, a uniform temperature profile is maintained throughout the mold compound. This prevents stress generation due to rapid temperature changes and non-uniform crystallization.
- **Modified Injection Parameters:** In the injection molding process, parameters such as injection speed, pressure, and mold temperature are optimized to minimize thermal gradients. This ensures uniform filling of the mold compound within the mold and prevents the introduction of non-uniform stresses before crystallization begins.

## Technical Significance and Future Outlook

Improvements in low-stress crystallization techniques hold immense technical significance for substantially enhancing the reliability of advanced semiconductor packages. Reduced package warpage and delamination lead to fewer assembly defects in subsequent processes, improving the yield of final products. This is critical for high-value AI processors, High-Performance Computing (HPC) chips, and high-reliability applications like automotive electronics.

In the future, these techniques are expected to evolve further to accommodate more complex package structures (e.g., 3D stacking, chiplet integration) and new materials (e.g., ultra-low CTE substrates). The introduction of real-time crystallization process monitoring and AI-driven optimization techniques is also anticipated. Companies like Kingfa will continue to provide the foundation for sustained growth in the semiconductor industry through these advanced material technologies. The evolution of adhesives and encapsulants is an indispensable factor for realizing next-generation electronics.

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Source: <https://eureka.patsnap.com/report-improve-low-stress-crystallization-techniques-for-advanced-mold-compounds>

Collected: May 30, 2026 | Automated Research System (Gemini API)

# Techinno Redefines AI Thermal Management with 16W/m·K Silicone-Free Gap Pad

Published Published May 25, 2026   Techinno (泰吉诺)   China



## OVERVIEW

Techinno has launched 'Fill-Pad US 1600,' an advanced silicone-free thermal gap pad specifically designed to combat the severe thermal challenges in high-density AI data centers. Featuring an industry-leading thermal conductivity of 16W/m·K and low-stress conformability, this innovative material efficiently dissipates heat while its silicone-free formulation prevents critical siloxane contamination, ensuring enhanced performance and long-term reliability for sensitive AI hardware.

### Background and Thermal Management Challenges in AI Data Centers

The rapid advancement and proliferation of generative AI have dramatically escalated the computational demands on hardware within data centers. AI processors, including GPUs and NPUs (Neural Processing Units), now operate at unprecedented power densities to execute massive computational tasks, generating enormous amounts of heat. Without robust thermal management, this intense heat invariably leads to performance degradation (thermal throttling), system instability, and a heightened risk of premature device failure. Particularly within high-density AI server environments, there has been an urgent demand for non-silicone, high-thermal-conductivity materials capable of efficiently dissipating heat within constrained footprints while preventing siloxane contamination of adjacent precision electronic components.

### Technical Innovation of Techinno's "Fill-Pad US 1600"

To address these stringent thermal management imperatives, Techinno, a prominent Chinese material manufacturer, has introduced its high-performance silicone-free thermal pad, "Fill-Pad US 1600." This innovative product delivers the following critical features and advantages:

- **Ultra-High Thermal Conductivity (16W/m·K):** Achieving an industry-leading thermal conductivity of 16W/m·K, Fill-Pad US 1600 maximizes heat transfer efficiency from high-power AI processors to their respective heat sinks and cooling systems. This capability is crucial for optimizing chip operating temperatures and sustaining peak computational performance.
- **Silicone-Free Formulation:** This composition entirely eliminates the emission of siloxane gases (low molecular weight siloxanes) typically associated with silicone-based thermal interface materials. Siloxanes are known contaminants for precision optical components and electrical contacts, potentially causing performance degradation and long-term reliability issues. Consequently, a silicone-free design is becoming an indispensable requirement for many precision electronics, particularly AI hardware integrated with camera modules or optical sensors.

- **Low-Stress Conformability:** Engineered with excellent compressibility, the pad effectively conforms to microscopic gaps and surface irregularities between the heat source and cooling components. This characteristic minimizes thermal resistance and ensures robust thermal contact without imposing undue mechanical stress on delicate chips or PCBs.
- **Electrical Insulation:** Beyond thermal performance, the pad offers robust electrical insulation properties, mitigating the risk of short circuits within complex electronic circuits and thereby contributing to a safe and stable operating environment.

### Technical Significance and Future Outlook

Techinno's "Fill-Pad US 1600" establishes a new benchmark for thermal management solutions within the burgeoning AI data center landscape. Its combination of ultra-high thermal conductivity and silicone-free attributes is pivotal for maximizing the performance of AI chips and High-Performance Computing (HPC) hardware, concurrently ensuring their long-term operational reliability. This innovative technology provides an indispensable foundation for the future expansion and continuous performance enhancement of AI infrastructure globally. Looking ahead, the evolving demands of advanced computing will necessitate material designs that offer even higher thermal conductivity, possess thinner and more flexible form factors, and are adaptable to complex 3D packaging architectures. Through this groundbreaking thermal pad, Techinno is poised to strengthen its leadership in thermal management technology for the AI era. The paradigm shift towards silicone-free thermal interface materials is anticipated to permeate the entire precision electronics industry.

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Source: <https://www.techinnotech.com/en/333.html>

# Advanced Spray Adhesives Reshape Industrial Manufacturing with Focus on Sustainability and High Performance

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## SPRAY ADHESIVE MARKET



### OVERVIEW

The spray adhesive market is projected to grow, driven by demands from construction, automotive, and packaging industries for high-performance bonding solutions. Huntsman, a key supplier of specialty chemicals, has recently introduced a new generation of eco-friendly adhesives to meet future manufacturing needs, aligning with market demands for both sustainability and efficiency. This trend signifies a significant evolution in industrial manufacturing processes towards greener and more effective adhesive applications.

### Background and Evolution of Industrial Manufacturing

Modern industrial manufacturing processes face multifaceted demands: improving production efficiency, reducing costs, and minimizing environmental impact. Adhesives are increasingly critical as lightweight and efficient bonding solutions, replacing traditional mechanical fasteners. Spray adhesives, in particular, are widely adopted in key industries like construction, automotive, furniture, and packaging due to their ability to quickly and uniformly apply adhesives over large surface areas. However, with tightening environmental regulations and heightened sustainability awareness, there has been a demand to shift from conventional solvent-based spray adhesives to more eco-friendly alternatives.

### Technical Innovation in Advanced Spray Adhesives

The spray adhesive market is being reshaped by the following major trends:

- **High Performance and Diverse Applications:** High-performance spray adhesives are required across a wide range of industrial applications, including insulation material fastening in construction, bonding automotive interior components, furniture manufacturing, and efficient packaging processes. This encompasses high bond strength, heat resistance, moisture resistance, and rapid initial tack.
- **Response to Sustainability:** Leading specialty chemical manufacturers like Huntsman are introducing a new generation of eco-friendly spray adhesives. This includes water-based or 100% solid content formulations that significantly reduce VOC (Volatile Organic Compound) emissions. This improves workplace safety and ensures compliance with environmental regulations.
- **Efficient Application Technology:** Beyond improvements in the adhesives themselves, advancements in application equipment are also progressing. More precise and uniform spray patterns, optimized material consumption, and automated application systems further enhance production efficiency and reduce waste.

## Market Impact and Future Outlook

The efforts of advanced spray adhesive companies are significantly impacting global industrial manufacturing. Eco-friendly, high-performance spray adhesives are driving the greening of manufacturing processes and contributing to corporate sustainability goals. New adhesives from companies like Huntsman are promoting innovation in a wide range of sectors, including energy efficiency in construction (fastening high-efficiency insulation), lightweighting in the automotive industry (bonding composite materials), and efficiency in the packaging industry (high-speed assembly).

In the future, spray adhesives are expected to become even more multifunctional, opening new markets through integration with smart sensors, designs that allow for on-demand debonding (to facilitate repair or recycling), or applications in medical fields with biocompatibility. Technological innovations that achieve both sustainability and high performance are key to solving the challenges faced by industrial manufacturing and building a more efficient and environmentally friendly future.

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Source: <https://www.snsinsider.com/blogs/spray-adhesive-market>

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# Samsung and Intel Pioneer Low-Warpage Solutions for Advanced Electronics Packaging, Boosting Reliability

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## OVERVIEW

Samsung and Intel are spearheading efforts to reduce warpage in electronics packaging components. Samsung leverages its I-Cube technology and optimized package stack designs to match thermal expansion characteristics, while Intel utilizes EMIB and Foveros 3D packaging, incorporating advanced thermal interface materials and optimized substrate designs. Both companies employ advanced molding compounds with nanofillers to minimize CTE mismatch, ensuring reduced warpage during assembly and operation for next-generation devices.

### Background and Warpage Challenges in High-Performance Electronics

Modern electronic devices such as AI processors, High-Performance Computing (HPC) chips, smartphones, and tablets are becoming smaller, more integrated, and multifunctional. Correspondingly, semiconductor packaging technology has evolved towards 2.5D/3D stacking, chiplet integration, and heterogeneous material integration. However, different materials within a package (silicon die, interposer, substrate, mold compound, etc.) possess varying coefficients of thermal expansion (CTE). This difference leads to dimensional changes known as "warpage" during thermal cycles in manufacturing processes and temperature fluctuations during operation. Warpage is a primary cause of assembly defects, interconnect breakage, reduced device reliability, and performance degradation, making its suppression an urgent challenge.

### Leading Companies' Low-Warpage Solutions

Samsung and Intel are employing advanced technologies and approaches to address the warpage challenge in electronics packaging:

- **Samsung's I-Cube Technology:** Samsung utilizes its proprietary "I-Cube" technology and advanced substrate engineering capabilities to provide low-warpage packaging solutions. I-Cube integrates multiple dies and HBM (High Bandwidth Memory) onto a single interposer, employing package stack designs optimized to match thermal expansion characteristics. This minimizes overall package CTE mismatch and effectively suppresses warpage during thermal cycling.
- **Intel's EMIB and Foveros 3D Technologies:** Intel focuses on "EMIB (Embedded Multi-die Interconnect Bridge)" and "Foveros 3D Packaging" technologies to achieve low warpage. EMIB connects dies fabricated with different process nodes using high-performance bridges, mitigating warpage associated with larger interposers. Foveros is a technology for stacking chips in 3D, which necessitates advanced thermal interface materials (TIMs) and optimized package substrate designs. This minimizes warpage caused by thermal stress during assembly and operation.

- **Common Approach: Nanofiller-Reinforced Molding Compounds:** Both companies commonly use advanced molding compounds with nanofillers to further reduce CTE mismatch. Nanofillers precisely tune the thermomechanical properties of mold compounds, managing overall package stress and warpage effectively through lower CTEs and optimized elastic moduli.

### Technical Significance and Future Outlook

These low-warpage solutions driven by Samsung and Intel are indispensable for realizing next-generation high-performance semiconductor devices. Warpage suppression technology enables high-density integration and heterogeneous integration, contributing to improved product yield, enhanced reliability, and maximized performance. In the future, as packaging in finer process nodes, accommodation of ultra-high thermal density devices, and integration of even more diverse materials progress, warpage management technology will become increasingly complex and sophisticated. Innovative approaches such as AI-driven simulations, in-line monitoring, and the introduction of self-healing materials are anticipated. These technologies will form the foundation for the sustained growth of the electronics industry.

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Source: <https://eureka.patsnap.com/report-low-warpage-solutions-for-electronics-packaging-components>