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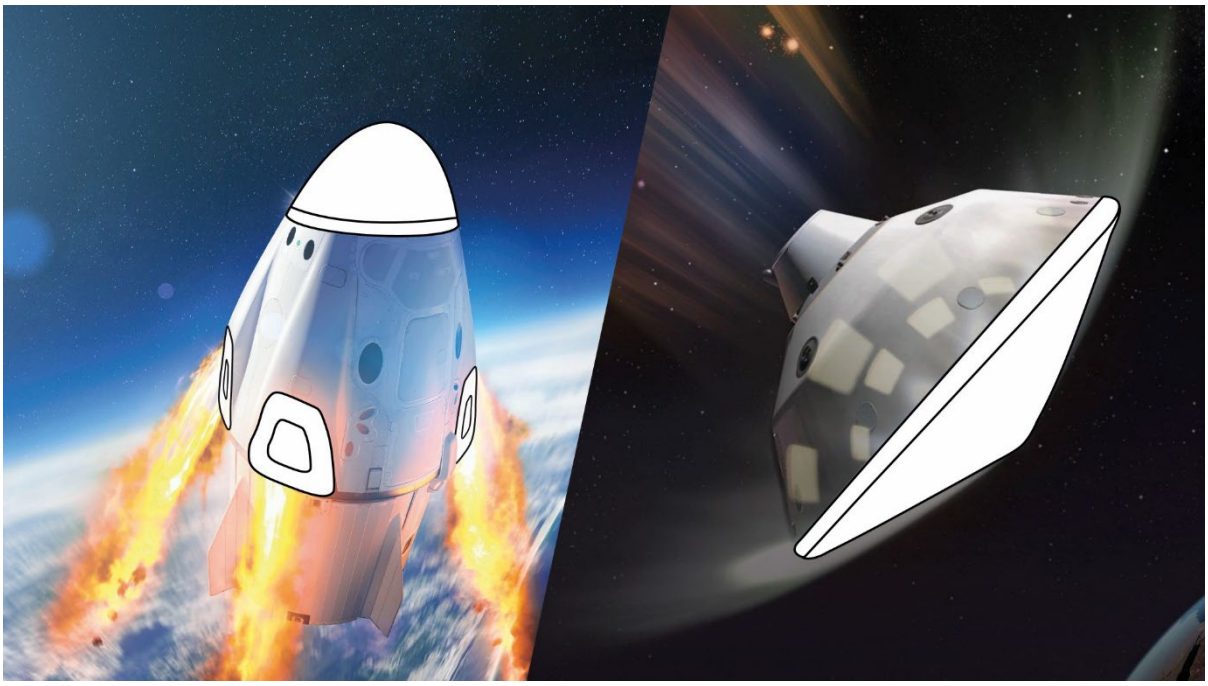
MICHELIN RESICARE

PRESS RELEASE

Paris, March 9, 2026

MICHELIN ResiCare launches two new high thermal performance resins as alternatives to phenolic resins

Resi4 CARBON/CARBON and Resi4 ABLATION: two bio-based araminolic resins designed without formaldehyde, offering a safer industrial alternative for composite applications subjected to extreme thermal environments.



Resi4 CARBON/CARBON and Resi4 ABLATION are dedicated to high thermal composites in defense or spatial applications.

A solution to the emerging challenges of advanced composites

MICHELIN ResiCare, a brand of the Michelin Group, announces the commercial launch of Resi4 CARBON/CARBON and Resi4 ABLATION, two innovative araminolic resins that are formaldehyde-free and bio-based—100% and 90% respectively [1]. Primarily formulated from **5-HMF** (5-hydroxymethylfurfural), a bio-sourced and non-toxic molecule [2]. These new solutions provide a safer alternative to traditional phenolic resins.

Available and compatible with industrial-scale production starting in September 2026, these thermosetting resins are designed for the most demanding composite applications, including aerospace, defense, aeronautics, and automotive industries.

[1]Upon availability of ResiCare's sugar-based monomers industrial demonstrators in 2027. Two of our first main industrial monomers demonstrators are based in France. The bio-based content is based on ISO 16620 guidelines based on internal data.
[2]Not meeting SVHC criteria (Substance of Very High Concern) as defined by European Chemicals Agency in date of 01/01/2026.

Thermal performance and regulatory compliance

These new resins meet the growing demand from composite manufacturers seeking high thermal performance, strict compliance with European regulations (including REACH and Directive 2004/37/EC), and a reduction in their environmental footprint.

They are also part of a fully European sourcing approach, from raw materials to the finished polymer, helping to secure the supply chains of strategic industrial sectors.

Innovative araminolic chemistry

Developed from innovative araminolic chemistry, these resins replace formaldehyde with aromatic aldehydes and bio-based polyphenols, while maintaining the required levels of thermal performance for advanced composites.

This approach enables manufacturers to anticipate regulatory changes while ensuring the robustness and reliability of materials exposed to harsh environments.

Resi4 CARBON/CARBON: Designed for high-temperature composites

Resi4 CARBON/CARBON is aimed at CMC (Ceramic Matrix Composites), where it delivers high thermal performance without formaldehyde. It stands out as an ideal solution for high-performance applications such as space propulsion, nuclear energy, advanced civil engineering, and motorsports, where thermal stability and material reliability are critical.

Resi4 ABLATION: Optimized for extreme environments

Also formulated without formaldehyde, Resi4 ABLATION is distinguished by its particularly high charring rate, meeting the strictest specifications for ablation and thermal resistance. It targets applications exposed to extreme thermal flux, where the stability of the char layer determines the performance and safety of systems, especially in the space and defense sectors.

An industrial alternative available in 2026

With these two new resins, MICHELIN ResiCare offers composite industry players solutions that are immediately available for testing and industrially operational by September 2026, simultaneously meeting requirements for thermal performance, environmental durability, regulatory compliance, and operator safety, without compromising market demands.

About Michelin

Michelin is building a world-leading manufacturer of life-changing composites and experiences. As a pioneer in material science for over 130 years, Michelin leverages its unique expertise to make a significant contribution to human progress and a more sustainable world. With unrivaled mastery of polymer composites, Michelin continually innovates to produce high-quality tires and critical components for demanding sectors such as mobility, construction, aeronautics, low-carbon energy, and healthcare. The meticulous care devoted to its products and deep understanding of customer needs enable Michelin to deliver exceptional experiences, whether through data-driven and AI-based solutions for professional fleets or the discovery of outstanding restaurants and hotels recommended by the MICHELIN Guide. Based in Clermont-Ferrand, France, Michelin operates in 175 countries and employs 132,200 people. (www.michelin.com)

ResiCare website: https://resicare.michelin.com/

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