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NEI Corp. introduces Nanomyte® PT-60, a self-healing coating to reduce corrosion in magnesium alloys

Somerset, NJ – [NEI Corporation](#) announced today that it has completed initial development of a chromate-free, self-healing conversion coating that significantly improves the corrosion resistance of magnesium alloys. A conversion coating, only a few micrometers thick, forms on the surface of a magnesium part when immersed in Nanomyte® PT-60, which is a waterborne solution. The coating has the ability to “self-heal,” i.e., repair itself if scratched or damaged, thereby providing active corrosion protection. In salt-fog exposure experiments (ASTM B117), magnesium AZ91D panels coated only with Nanomyte® PT-60 show minimal corrosion pitting after 10 days (240 hours). In contrast, AZ91D panels with conventional pretreatments begin to pit after only 24 hours.

Magnesium alloys are of increasing interest to several industries, such as automotive, construction, medical, computers, communication and consumer electronics, as well as the military. The light weight of magnesium allows increased fuel efficiency and energy savings. However, magnesium alloys have a high tendency to corrode. Coatings made with hexavalent chromium (chromate) provide adequate corrosion resistance, but they are no longer acceptable for use in a majority of industrial, commercial and some military applications due to the adverse environmental and health effects of chromium. Nanomyte® PT-60 chromate-free, self-healing conversion coating is a drop-in replacement for chromate, and it can be applied as a standalone barrier layer that protects the metal from exposure to corrosive liquids or gases, or as a pretreatment that improves adhesion with overlying paint layers.

The new technology is part of NEI’s efforts to develop self-healing coating systems, including pretreatments, primers and topcoats, to protect steel, aluminum and magnesium from corrosion. The coatings are based on formulations that are *environmentally friendly*. The coatings are economical, easy to use and provide excellent corrosion resistance compared to state-of-the-art offerings. The aim is for the self-healing coatings to improve the durability and maintain the appearance of the metals over time after exposure to corrosive environments.

“Our chromate-free, self-healing conversion coating for magnesium alloys represents a significant advancement in the state-of-the-art,” said Dr. Fred Allen, President of the Anticorrosion Coatings Division at NEI Corporation. “The market focused activities of NEI are key to serving the needs of customers who require high-performance anticorrosion coatings. Our goal is to engage customers as partners in developing new self-healing coating products.”

Development of Nanomyte® PT-60 has been aided by a grant from the US Department of Energy and a contract from the US Army. NEI is working closely with the Army’s Armaments Research, Development and Engineering Center (ARDEC) Corrosion Protection and Control Group located at Picatinny Arsenal, New Jersey to enable the Army to implement advanced anticorrosion coatings on lightweight metals. This effort addresses the need for the development of chromate-free coating systems for lightweight alloys to be used in weapon systems for the warfighter.

About NEI Corporation

Founded in 1997, NEI Corporation develops, manufactures, and distributes nanoscale materials for a broad range of industrial customers around the world. The Company's products incorporate proprietary nanotechnology and advanced materials science to create significant performance improvements in manufactured goods. NEI's products include advanced protective coatings, high performance battery electrode materials and specialty nanoscale materials for diverse applications. NEI has created a strong foundation in the emerging field of nanotechnology that has enabled the Company to become a leader in selected markets. The Company is based in Somerset, NJ.

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