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## NEI Announces Allowance of Two New Patents to Its Portfolio of Functional Coatings

Somerset, NJ (USA) – [NEI Corporation](#) announced today that the US Patent and Trademark Office ([USPTO](#)) has recently issued a notice of allowance to the company on two patent applications; one for a durable highly hydrophobic coating and the other for an adhesion promoting surface treatment. These patents complement NEI's portfolio of patents pertaining to superhydrophobic, self-healing, and abrasion resistant coatings. With the allowance of seven patents, and the introduction of an array of coating products, NEI's concerted efforts to develop and implement practical, multi-functional coatings have now come to fruition.

There is great interest in functional coatings, for both industrial and consumer applications, where the coating or surface treatment provides functionalities beyond the usual protective and aesthetic properties. For example, **self-healing coatings** autonomously repair damage, **hydrophobic coatings** are able to vigorously repel water droplets, **oleophobic coatings** prevent "oil" molecules from sticking to the surface, **self-cleaning** or **easy-to-clean coatings** minimize or eliminate the need for chemicals during washing, and **adhesion promoter surface treatments** enable an ultra-strong bond between the primer and the surface. Commercial products to date have met with limited success because they are not engineered to meet all of the functional performance requirements that an application requires. NEI's patented and patent-pending technologies address this market need.

The recently allowed patent application describes durable hydrophobic coating compositions that are highly desirable for numerous applications, as they impart easy-to-clean and stain-resisting properties to surfaces. For aesthetic reasons, there is also a need for a thin, transparent, easy-to-clean coating that does not add excess weight and does not change the appearance of the substrate to be coated. The patented compositions are comprised of functionalized perfluoropolyethers (PFPEs), which are known for their non-stick and lubricating properties. It has been a major technical challenge to incorporate PFPEs into a stable formulation that can lead to a coating with sufficient adhesion to various substrates. The patent claims transparent and homogeneous compositions that overcome the stability and adhesion issues. The compositions result in a micron-thick, durable hydrophobic coating that cannot easily be removed by abrasion, harsh cleaners, or chemicals. The patent is the basis for NEI's hydrophobic coating products, [NANOMYTE® SuperCN](#) and [SR-100EC](#).

The adhesion promoter patent application describes a chromate-free, surface pretreatment composition. The environmentally-friendly, waterborne pretreatment promotes the adhesion between a metal substrate and an overlying paint layer by acting as a "double-sided bonding agent," while at the same time improving corrosion resistance. The novel composition comprises organo-functional silanes but functions differently from traditional silane treatments. The composition results in a thin film coating having a graded structure, i.e., an inorganic oxide layer that bonds strongly with steel and a loosely crosslinked top layer containing functional groups that can further crosslink with paint overlay. The new technology is valuable to applicators who paint metal structures, such as bridges, ships, and other steel structures. It is also applicable to industrial painting operations, such as coil and spray coatings. The patented chromate-free pretreatment for steel, offered commercially as [NANOMYTE® PT-20](#), represents a significant advancement in the state-of-the-art for corrosion resistant technologies.

For a more detailed discussion on the company's patented coating technologies and applications, please see our [Patented Coatings Technology Brief](#).

**About NEI Corporation:** NEI Corporation is an application-driven company that utilizes nanotechnology to develop and produce advanced materials. The company's core competencies are in synthesizing nanoscale materials and prototyping products that incorporate the advanced materials. NEI offers an array of Advanced Protective Coatings for metal and polymer surfaces, which are sold under the registered trademark NANOMYTE® and are backed by a suite of issued and pending patents. The coatings have tailored functionalities such as anti-corrosion, self-healing, scratch resistance, ice-phobic, and self-cleaning.

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