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ND Industries – ND Hi-Temp Patch®:

Raising the Bar for High Temperature Applications

How well can your fastener assemblies take the heat? Do you worry about high temperatures that can cause failure? Do you wonder if there is a fastener application that works beyond 475°F?

The answer is YES - if you're using ND Hi-Temp Patch®, the latest breakthrough in high temperature patch technology.



Developed by ND Industries® for assemblies that operate in extreme heat conditions, such as those used in the aerospace, automotive, appliance industries, and others, ND Hi-Temp Patch performs in temperature extremes ranging from -70°F to +500°F.

What is a patch?

A patch is a coating applied to a fastener that creates a positive lock, preventing loosening and leakage at the fastening point. One of the more practical benefits of a patch application is that it replaces the need for costly lock washers, cotter pins or castellated nuts. These types of hardware components were the most commonly used methods to prevent fastener slippage before patch technology was available. To improve the cost efficiency on large runs, patch technology has also supplanted the use of bottled thread-locking compounds that require application at the point of assembly.

How is ND Hi-Temp Patch different from traditional patch-materials and what are its benefits?

A high temperature patch creates this same kind of lock, with the same resiliency and benefits of a standard nylon patch, but also with the capacity to retain locking reliability at high temperatures. Standard patch may fail to retain functional integrity when exposed to temperatures above 250°F. Most high temperature polyester based patch coatings' will not endure in temperatures exceeding 400°F. However, as a result of innovative research, ND Industries now offers ND Hi-Temp Patch, a high temperature patch that can withstand temperatures as high as 500°F without compromise to its locking power.

During the patch coating process the fastener to which the patch is being applied is heated to a precise temperature. This heating allows a powdered polymer material to flow into the shape of the fastener thread. During the ND Hi-Temp Patch process the custom formulated polymer material is stabilized to work at extreme high temperatures. It is typically applied 2 to 3 threads back from the fastener end for easier starting of the nut/bolt assembly. ND Hi-Temp

Patch is clearly distinguishable from ND Patch®, by virtue its color. ND Hi-Temp Patch is orange or gray, while ND Patch is normally yellow.

The applied coating material fuses to the heated fastener instantly; no curing time is required. Since ND Hi-Temp Patch is not chemically reactive, once the fastener is cooled, it's ready to use right out of the box. This means that ND Hi-Temp Patch treated fasteners can be immediately fed through automatic feeding equipment, saving precious time in the assembly process. Because the ND Hi-Temp Patch coating process entails no drilling or milling, the fastener to which a patch is applied does not lose any structural strength. ND Hi-Temp Patch coating can be applied to almost any internally or externally threaded metallic fastener, whether large construction bolts or minuscule screws used in portable electronic devices. Moreover, the nylon-like material used in the ND Hi-Temp Patch coating process is highly chemical resistant, and will not dry, shrink, or lose its integrity even when exposed to commercial solvents, alcohol, gasoline, motor oil, caustic soda, jet fuel, anti-freeze, brake fluid, and more.

Overall, the ND Hi-Temp Patch concept is nothing short of genius in its simplicity. The ND Hi-Temp Patch coating, like typical patch, works effectively like a spring or a dam. When a ND Hi-Temp Patch coated fastener is threaded onto a mating part, the patch material is compressed. This is when the sealing action begins. The compression of the patch material exerts a constant spring-like locking pressure between the fastener and its mate, creating a strong metal-to-metal contact. Even if the fastener is not fully seated, the pressure of the patch material forms a positive lock. When the fastener is fully seated, the positive seal created prevents fluid leakage and is resistant to loosening, even when subjected to extreme shock impact and prolonged vibration. This resistance greatly reduces the need to retighten fasteners.

Amazingly, even though a superior seal is made by the ND Hi-Temp Patch coating on a fastener, the presence of the ND Hi-Temp Patch material does not affect its adjustability. A fastener treated with ND Hi-Temp Patch retains service removability. Furthermore, the patch material does not lose its locking power if the fastener is removed, and remains extremely impervious to deformation. This ensures that fasteners may be repeatedly reused without compromising their locking ability or damaging their threads.

Coating a fastener with ND Hi-Temp Patch is not only easier and more cost effective than outdated sealing methods, but also ensures fastener reusability and sealing reliability under the strains of extreme environments. So, it would seem the ND Hi-Temp Patch is the best solution for high temperature fastening needs.

ND Hi-Temp Patch is used in the automotive, construction, medical, electronics, and aerospace industries as well as in military applications.