doxsteelfasteners

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FAQS

HOW LONG HAVE YOU BEEN AROUND?

Doxsteel Fasteners has been dedicated to building better bolts for more than fifteen years. We are headquartered in Houston, TX.

HOW DO YOU GIVE ME 20 TIMES RETURN ON INVESTMENT?

Doxsteel Fasteners are designed to offer our customers an unparallelled return on investment, so we constantly document our bolts' field performance wherever they are in service to determine just how much cost savings they provide. Every process we perform and every test we conduct is done to prolong our fasteners' lifespan, provide quick and easy installation, and resist seizing to prevent costly operational shutdown and dangerous hot bolting conditions. With these processes protecting our bolts from the usual heavy maintenance costs, you can count on our fasteners to return cost savings in time and labor at least 20 times over. Our upfront costs are consistently competitive; our long-term savings for our customers are completely unparalleled.

HOW DO YOU KNOW YOUR BOLT WILL LAST SO LONG?

There are many tests we conduct on both our fasteners and our manufacturing processes to make sure that nothing compromises our bolts. Guided by specifications recommended by API 20E and ASTM, we test every Doxsteel Fastener in conditions that mimic both the stresses and the environmental conditions of offshore service to make sure that they are up to the task.

One of these tests, ASTM G59, measures a fastener's resistance to polarization to tell us how long it will take to react to its environment and corrode. By measuring targeted sections, we can determine a fastener's rate of corrosion per year of standard service. The slower a fastener polarizes, the longer it will last. This is how we guarantee that our fasteners will not seize for five years, and why we estimate that they have a life expectancy of 21 years.

WHAT IS HOT BOLTING, AND HOW DO YOU ELIMINATE IT?

Hot bolting is the practice of either removing and replacing or freeing and re-tightening bolts on live piping and equipment. It is an expensive and dangerous procedure that has cost workers' lives in the past, and every facility needs to exercise the utmost caution when planning and carrying it out.

For years, and despite the dangers, hot bolting has been seen as a necessary evil to prevent lengthy operational shutdown that threatens a company's long-term bottom line and economic health. At Doxsteel Fasteners, our team has found a way to make it possible for fasteners to last much longer and to know when they will seize so you can schedule maintenance with certainty. Our fasteners have a life expectancy of 21 years even in the most corrosive environments, and are backed by a five-year no-seize warranty. All these features help us make hot bolting a thing of the past, saving companies time, money, and lives.

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WHY DO YOU USE NICKEL-COBALT AS THE ALLOY FOR YOUR PLATING?

In all of the tests we've run and continue to run, Nickel-Cobalt simply outperforms other alloys. It has the highest resistance to corrosion we have seen, it can operate in both higher and lower temperatures, and it won't flake or break out during torquing. Our process doesn't induce hydrogen and the coating maintains a consistently low coefficient of friction. Basically, it's the best alloy we have found for coating critical use fasteners.

HOW DID YOU DISCOVER THE NICKEL-COBALT ALLOY?

We tested as many alloys as we could find before settling on Nickel-Cobalt. It was originally developed by NASA for its Saturn V rocket and has a distinguished military career in corrosive aircraft carrier environments that are similar to offshore platform conditions. After extensively testing how we could put it to use on our fasteners, we thought it was the perfect technology to bring to the private sector.

DO YOU COAT YOUR FASTENERS BY HAND?

We use an electroplating process that helps us provide a consistent coating thickness on all parts of the nut and bolt. Other leading coatings are applied by hand, either through spraying or painting. This leads to an unpredictable and inconsistent coating thickness that may require overtapping the nut or undersizing the stud to get a proper fit. With electroplating, the coating can be applied more evenly and doesn't require any overtapping or undersizing.

WHAT DO YOU DO TO AVOID HYDROGEN EMBRITTLEMENT?

Hydrogen embrittlement has been a leading cause of bolt failure in the past, so we take extreme caution to make sure that every Doxsteel Fastener is as free of hydrogen as possible. Nickel-Cobalt is an alloy that doesn't generate hydrogen in its reduction process. That means that no matter how long the coating is in service or how much it oxidizes, it will not induce hydrogen and cause embrittlement. Due to its high melting point, the coating can also be used in more extreme temperatures that other coatings can't handle, such as manholes in heat exchanges, without the risk of liquid and solid metal embrittlement. Finally, we have designed additives for our electroplating bath which reveal hydrogen bubbles and draw them to the surface to be released, and bake out any remaining hydrogen in our fasteners for a minimum of eight hours. To make sure that our process stays as free of hydrogen as possible, we evaluate it every 30 days using the ASTM F519 Standard Test Method for Mechanical Hydrogen Embrittlement Evaluation of Plating/Coating Processes and Service Environments.

DON'T MOST FASTENER COATINGS JUST FLAKE OFF DURING INSTALLATION?

When a bolt is subjected to torquing forces, weaker and more unevenly applied coatings can easily flake away, completely negating their usefulness as a barrier to corrosion. That's why we developed our Nickel-Cobalt alloy and why we coat our fasteners using an electroplating process. To put our coating's adhesion properties to the test, we place our fasteners in tension using the ASTM B994 Galling Test and administer the ASTM B571 Adhesion Test. With these two tests, we know that our Nickel-Cobalt alloy can stand up to the forces applied during torquing, so it will continue to protect our bolts while they are in service.

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DOES THE COATING AFFECT THE FASTENER'S ELASTICITY?

All mechanical properties inherent in our bolts are totally unaffected by elasticity. In addition to being more resilient than other leading alloys, Nickel-Cobalt elongates and contracts in similar ways to steel, so it won't chip or break out as the fastener is put under stress.

I LIKE TO USE B7M FASTENERS. DOES YOUR NICKEL-COBALT COATING AFFECT THEIR PROPERTIES?

Our Nickel-Cobalt alloy does not change the mechanical or chemical properties of any steel it coats. It can be applied to any carbon steel nut or bolt, including B7, B7M, L7, L7M, 2H, and 2HM. You name it, we can coat it.

DO YOU UNDERSIZE OR OVERTAP?

Not at all. One of the benefits of our controlled electroplating process is that we apply only enough coating needed to protect the nuts and bolts from corrosion. By maintaining a consistent coating thickness with a minimum of 18 microns in each thread, our Nickel-Cobalt alloy doesn't require any change to the original thread dimensions to accommodate its protection.

WAIT, I DON'T BELIEVE YOU. HOW IS IT POSSIBLE TO COAT AND NOT UNDERSIZE/OVERTAP?

Undersizing and overtapping, like many other standards in bolting, has been a necessary evil to compensate for uncontrolled variables in the coating process. As bolt failure continues to be an issue in the industry, newer specifications like API 20E have moved away from this inadequate solution and recommend that a fastener's original thread dimensions be maintained. Electroplating is a process that has been used for hundreds of years, and when it is controlled it can plate the threads with only as much alloy as is needed to provide protection from corrosion. With such tight control over our processes, Doxsteel Fasteners maintain their original ASME B1.1 thread dimensions in compliance with API 20E specifications.

WHAT IS THIS FELT TEST THAT I KEEP HEARING ABOUT?

The Fastener End of Life Test, or FELT, is a new spin on the standard salt fog test that answers the most important question in bolting: when will a fastener seize?

In the FELT Test, samples are placed under tension and put into a chamber that simulates the world's harshest environments to assess their real world applications. At certain intervals, we open a sample to check its condition. If the fasteners still turn, we know that the bolts in the field are still performing. We keep enough samples from each production batch to perform the test for eight years. As an old batch is opened, a new batch is closed. If at any time a sample should fail to turn, we recommend our customers schedule a turnaround before the fasteners seize in the field.

We perform the FELT Test both in a standard ASTM B117 salt fog environment and in a highly corrosive ASTM B368 salt

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and acid fog environment. Each test tells us more about how we can manufacture a better fastener for our customers, and lets our customers know that their bolts in service are holding fast against corrosion.

WHY IS YOUR PACKAGING DIFFERENT FROM OTHER COMPANIES I USE?

The Doxsteel Packaging System is designed to maintain the integrity of our bolts during shipping and storage as well as help teams execute turnaround operations quickly and easily.

A dent in a bolt's thread can have a 30% effect on its torque value, so our boxes are specially designed to withstand the rigors of shipping, field conditions, and storage in facility warehouses. Each box's interior is reinforced by cardboard rolls that prevent the fasteners from knocking against each other and allow the boxes to be stacked. The exterior is color coded to the bolt's steel type to eliminate bolt confusion, and the label on the side also provides the K factor and traceability number to link back to the Doxsteel Material Test Report which comes in the box. These structural improvements give our customers the ability to store and organize the fasteners in their warehouse with ease, and the extra protection the packaging provides helps the boxes stand up to field conditions.

CAN I SEND YOU MY OWN MATERIALS TO COAT?

No. Part of the way we make sure that our coating performs so well is that we take ownership of every step of the manufacturing process, from heat load to shipment. Every fastener we produce complies with multiple ASTM specifications, and our entire process is backed up by API 20E standards. We have no problem with other companies that only hold themselves accountable for their coating, but Doxsteel Fasteners were created to meet higher standards. That's why we are a fastener company and not just a coating company.