

# Fastener End of Life Test (Felt)

ASTM B994 Standard Specification for Nickel-Cobalt Alloy Coating

ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus

ASTM B368 Standard Test Method for Copper-Accelerated Acetic Acid-Salt Spray (Fog) Testing (CASSTest)

When we set out to manufacture a fastener that saved time, money, and lives, we needed a test that would answer the most important question in bolting: when will the fasteners seize? Enter the Fastener End of Life Test.

In the FELT Test, samples are placed under tension and put in the harshest environments to simulate 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 use the FELT Test to evaluate each heat load and coating batch. We place the samples in an ASTM B117 salt fog environment, open a sample every 120 days, and provide our customers with a progress report. We keep enough samples from each production batch to perform the test for eight years, and 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.

But though the salt fog environment is a great measurement for the standard longevity of a Doxsteel Fastener, we wanted to test our coating in the harshest environments our bolts would face, both to know for sure how long we last and to help us build a better bolt. To get those answers, we perform the FELT Test in an ASTM B368 environment, exposing it to highly corrosive salt and acid fog. After performing this test more than 200 times against other leading coatings, we know for sure how we stand up to our competitors.

The FELT test is the best way to evaluate any coating in any environment. Our customers can use the information it provides to avoid the costs that come from lengthy shutdowns as well as avoid the necessity of a hot bolting scenario. With every part specifically numbered and traceable to its heat load and coating batch, our customers can target the bolts that are failing and won't have to shut down the entire facility or pull up wellheads from the bottom of the ocean.

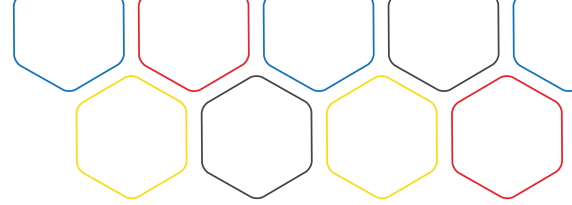
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# doxsteelfasteners

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COATING	MAXIMUM HOURS TO SEIZE	MAXIMUM HOURS TO SEIZE
	BEST RESULTS REPORTED	AVERAGE IN 200 TESTING
Cadmium Plating	2,500	2,300
Hot Dip Zinc	2,000	1,800
Zinc Plating	2,600	2,500
Zinc Plating + PTFE Topcoat	3,750	3,500
Ceramic + PTFE Topcoat	5,300	4,500
Zn-Ni Plating	2,300	2,000
doxsteelfasteners	13,500	12,000

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