

# Coating Thickness: **Nickel-Cobalt Alloy**

## ASTM B568 Standard Test Method for Measurement of Coating Thickness by X-Ray Spectrometry

One of the biggest issues in critical bolting operations is inconsistent coating thickness in hand-sprayed and painted threads. If consistency isn't maintained, the coating will interfere with the fit and function of the threads and require undersizing or overtapping, another time-consuming and money-wasting solution that can be prevented with a more controlled coating process.

This test evaluates the consistency of our electroplating process. Using fluorescent X-rays, we identify the thickness and composition of our Nickel-Cobalt alloy in every crest and valley of the thread. Our goal is to make sure the entire bolt is as evenly coated as possible for maximum protection and optimal consistency. This test is another way Doxsteel Fasteners are designed to save time, money, and lives.



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**TEST CERTIFICATE — EAR-CONTROLLED DATA**

Date: 6/30/2014  
P.O. No.:  
W/O No.: PRO002-06-20-37365-4

**MEASUREMENT OF DOX-STEEL® COATING THICKNESS BY X-RAY SPECTROMETRY**

**Operator:** Frank Garcia, Oscar Garcia

**Test Method:** ASTM B568

**Size of Collimator Aperture:** 0.3 mm

**Measuring Time:** 3 Seconds

**INTRODUCTION**

On June 26<sup>th</sup> 2014, DOX-Steel LLC asked Element Materials Technology testing laboratory to conduct the measurement of DOX-Steel® Coating Thickness by X-Ray Spectrometry, under ASTM B568, for the wrenching-flats of nuts, and crests and roots of fasteners with DOX-Steel® coating.

**PROCEDURE**

DOX-Steel® Coating Thickness was measured by X-Ray Spectrometry under ASTM B568 on the wrenching flats of DOX-Steel® coated nuts and the crests and roots of DOX-Steel® coated fasteners. The test was applied to 50% of the total threads of the fasteners. There were two readings; the first read 50% of the crests of the threads of the total fastener starting at one end and continuing towards the center of the fastener. The second reading corresponded to 50% of the roots of the threads and of the total fastener starting at one end and continuing towards the center of the fastener. The test was also applied to wrenching flats of the nut, 20 consecutive readings were distributed along the flat.

**SPECIMENS**

DOX-Steel LLC provided all test specimens:

1. 3 DOX-Steel® coated 5/8-11 x 4 ¼ steel studs with DOX printing and 3 DOX-Steel® coated 5/8 nuts with 2H printing.

**EQUIPMENT**

1. X-ray fluorescence spectrometer, FISCHERSCOPE® X-RAY XDL® 240

**STANDARDS**

1. CE Approvals
  - EN 61010
2. X-ray standards
  - DIN ISO 3497
  - ASTM B 568
3. Approval
  - Fully protected instrument with type approval according to the German regulations "Deutsche Röntgenverordnung-RöV"

Respectfully Submitted

Terry Wilt  
Manager, Product Qualification and Non-Metallics

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**RESULTS**

Order No.:	Mean (µm)	Standard Deviation (µm)	No. of Readings
Fastener roots	18.25	2.44	20
Fastener crests	22.54	3.07	21
Fastener (roots and crests)	20.39	2.76	20
Wrenching flats	19.63	1.68	28

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