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# Purpose

This specification outlines the requirements for Fastener coatings and materials for vehicle build applications. Proterra does not currently require the use of a specific coating trade name (I.e. Delta seal™, Dacromet™, Geomet™, Doerken™, Nanomate™ etc.). Instead, Proterra will classify fasteners by zone/areas of the vehicle and specify the ASTM B-117 corrosion specs. for that area of the vehicle. The goal of this specification and fastener initiative is to ensure that cost effective, readily available coatings and materials that are widely used in the automotive industry are used in our vehicle application and meet or exceed all APTA and ancillary specifications. To ensure consistency, Proterra will specify the color of the coatings utilized to be silver metallic.

# Specification

**External Fasteners**: All external fasteners must be steel or stainless steel, and meet a 1,000 hour salt spray requirement to ASTM B-117 with no red rust formation or weight loss. Black oxide *is not authorized* for external fasteners.

**External Structural Fasteners**: These fasteners are used for all suspension and torque plate mounting applications. These fasteners must be coated steel and meet a 1,000 hour salt spray requirement to ASTM B-117 with no red rust formation or weight loss. Dry film organic coatings must be used in lieu of platings (electrolytic coatings/platings) for external structural fasteners to mitigate the risk of hydrogen embrittlement and other possible failure modes. Black oxide *is not authorized* for structural external fasteners.

**Interior Fasteners – below 5ft of height from main floor**: These fasteners must meet a minimum 350 hour salt spray requirement to ASTM B-117 with no red rust formation or weight loss.

**Interior Fasteners – above 5ft of height from main floor:** These fasteners must meet a minimum 96 hour salt spray requirement to ASTM B-117 with no red rust formation or weight loss.

# Requirements

Engineering will require complete specification sheets from all coating suppliers utilized, including the coefficient of friction data so that proper torque specifications can be established and documented.

# Revision History

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| Date | Rev. | DCR # | Approver | Description of Change |
| 11/14/2014 | A |  | Gordon Dollar | Initial release |
| 6/17/2015 | B |  | Gordon Dollar | Included color requirement |
| 06/21/2019 | C |  | Adriano Mauri | Relaxed requirement for above 5ft interior fastener, paragraph 2 |
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