

Suitability of Lubricant Coatings

- A. Effect of the coating on the ability of cadmium plating to prevent galvanic corrosion. Lubricant coated and unlubricant coated "scratch panels," made of the same material as the finished fastener product, and cadmium plated in accordance with AMS-QQ-P-416, shall be scratched through to the base metal. The unlubricated panel shall be cadmium plated in accordance with type II, class 2 of AMS-QQ-P-416. These panels shall be subjected to a 96 hour salt spray test in accordance with ASTM B117. After exposure, no significant difference in corrosion shall be found when a comparison is made between the panels with lubricant and the panels without lubricant.
- B. Effect of the coating on structural materials in contact with the fastener. Corrosion test specimens will be panels with four test fasteners per panel. Two fasteners of each specimen panel shall be cadmium plated in accordance with type II, class 2 of AMS-QQ-P-416 without lubricant coating, and the other two fasteners shall be plated in accordance with type II, class 2 of AMS-QQ-P-416 and shall be lubricant coated. Duplicate specimen sets of the following alloys and finishes shall be subjected to a 96 hour salt spray test in accordance with ASTM B117.

- (a) Bare 7075-T6 (UNS A97075) and 2024-T6 (UNS A92024) aluminum-alloy surfaces treated in accordance with MIL-DTL-5541 and anodized in accordance with MIL-A-8625.
- (b) Clad 7075-T6 (UNS A97075) and 2024-T6 (UNS A92024) aluminum alloy.
- (c) Titanium alloy.
- (d) CRES.
- (e) Magnesium alloy wherein the fasteners are insulated from the magnesium in accordance with MIL-STD-7179.

After exposure, the specimens shall be disassembled and no significant difference in corrosion shall be found on either the fasteners or panel facing surfaces when a comparison is made between the fasteners with lubricant and the fasteners without lubricant.

- C. Behavior of coating with paint. Corrosion test specimens shall be of aluminum alloy similar to those of B and painted, including the fasteners, with wash primer zinc-chromate primer system in accordance with MIL-STD-7179. These specimens shall be subjected to a 96 hour salt spray test in accordance with ASTM B117. After exposure, no significant difference in corrosion, blistering, or loss of adhesion of the paint shall be found when a comparison is made between the fasteners with lubricant and the fasteners without lubricant.
- D. Effect of coating on sealing materials. Corrosion test specimens shall be of aluminum alloy similar to those of B except MIL-S-8802 AMS-S-8802 sealant material shall be applied to the fasteners. Before the application of the sealant material, the fasteners and panel shall be cleaned by scrubbing and rinsing with solvent formulated in accordance with Table I. After rinsing, and while still wet, the specimen shall be wiped dry with clean, non-oily wiping cloths or tissue. The specimen shall be subjected to a 96 hour salt spray test in accordance with ASTM B117. After exposure, no significant difference in loss of adhesion or degradation of sealant material shall be found when a comparison is made between the fasteners with lubricant and the fasteners without lubricant.

TABLE I – FORMULATION OF CLEANER

Ingredient	Specification	Percent by Volume
Aromatic petroleum naphtha	TT-N-97, Type I, Grade B	50
Ethyl acetate	TT-E-751	20
Methyl-ethyl-ketone	ASTM D740	20
Isopropyl alcohol	TT-I-735	10

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PROCUREMENT SPECIFICATION	NONE	TITLE	CLASSIFICATION SPECIFICATION
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- E. Effect of coating on stress corrosion resistance of fasteners. The lubricated threaded fastener shall be scratched through to the base metal. Torque shall be applied against the aluminum-alloy panels to induce 90 KSI in mating bolt. The assembly shall be salt-spray tested for 96 hours in accordance with ASTM B117. After exposure, the lubricated fastener shall not have any cracks which can be determined by visual inspection under 10 diameters magnification.
- F. Non dry film lubricant removability. Non-dry film lubricant coated panels, made of the same material and containing the same finish as the fastener product, shall be submerged for 10 ± 1 minutes in the cleaner specified in Table I. The panel shall then be wiped dry with clean, non-oily wiping cloths or tissue. Failure of all lubricant to be removed from the panel by the above process shall be cause for rejection of the fastener product.

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