

ENGINEERING PRACTICE STUDY

TITLE: ADDITION OF A TERMINATION FINISH SUBSTITUTION TABLE IN MIL-PRF-55681

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FINAL REPORT

Study conducted by John A. Bonitatibus  
Electronics Engineer  
Electronics Component Team  
DLA Land and Maritime-VAT

Prepared by:

//Signed//

John A. Bonitatibus  
Electronics Engineer  
Electronics Components Branch

Approved by:

//Signed//

Michael A. Radecki  
Chief  
Electronics Components Branch

I. **OBJECTIVE:** This engineering practice study was conducted to determine if users and manufacturers would benefit from the inclusion of a termination finish substitution table in [MIL-PRF-55681](#).

II. **BACKGROUND:** [MIL-PRF-55681F](#) is being reviewed as it has been more than 5 years since the last specification action (3 September 2004). The termination finishes listed on page 3, table IV, continue to be the topic of questions and discussions due to the vague and confusing nature of their definitions. Studying the offerings, it becomes apparent that several of the finishes are similar and may be satisfied by the same process. Some of the finishes meet or exceed the requirements of other finishes.

By introducing a termination finish substitution table, DLA Land and Maritime hopes to: reduce lead times by allowing users to accept termination finishes that may be immediately available, limit the possibilities of pure tin finishes getting into Government inventories, create the opportunity for manufacturers to streamline their processes, and ultimately, reduce the number of termination finishes and PIN combinations offered in [MIL-PRF-55681](#).

Proposed changes to the spec would include:

**3.24.4 Substitutability of termination finishes.** *The manufacturer may substitute qualified termination finishes in accordance with table VIII with the user's approval. The substitutable parts shall not be remarked (if applicable) unless specified in the order or contract (see 6.2). In the event that the part is remarked, the date code and lot symbol shall not be changed and the workmanship criteria shall be met (see 3.26).*

**TABLE VIII. Termination finish substitution.**

<i>Parts qualified to termination finish</i>	<i>Are substitutable for parts qualified to termination finish</i>
<i>U</i>	<i>S, W, Z</i>
<i>Y</i>	<i>W</i>
<i>Z</i>	<i>U <sup>1/</sup>, S, W</i>

**<sup>1/</sup> Termination finish Z is substitutable for finish U provided the finish has a melting point of +200°C or less and is 60 micro-inches thick, minimum.**

III. **RESULTS:** Comments were received from both users and manufacturers. Users do not want pure tin termination finishes “Y” and “W” involved in any substitutions and, if possible, would like to see them eliminated from the specification. Furthermore, they would like to see more specific descriptions of the various termination finishes.

QPL manufacturers were in favor of a substitution table.

IV. **CONCLUSIONS:** The addition of a substitution table would be a benefit to both users and manufacturers; however, the table proposed in this EP Study is not acceptable and would need to be amended.

V. **RECOMMENDATIONS:** Revise [MIL-PRF-55681](#) with the following proposals:

- Inactivate pure tin finishes “Y” and “W”.
- Clarify the existing termination finish descriptions. This may require a follow-up EP study to poll the QPL manufacturers.
- Allow limited substitutions for similar termination finishes with the approval of the acquiring activity.