

MIL-T-83399 (USAF)

22 November 1972

## MILITARY SPECIFICATION

### TEST FOR REMOVAL OF FLUX RESIDUES

#### 1. SCOPE

1.1 This specification covers requirements for the removal and neutralization of flux residues from the surfaces of soldered joints in Air Force equipment.

#### 2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein.

#### SPECIFICATIONS

##### Federal

QQ-S-571

Solder; Soft (Tin-Lead, and Lead Silver)

##### Military

MIL-F-14256

Flux, Soldering, Liquid (Rosin Base)

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

#### U. S. TREASURY DEPARTMENT, BUREAU OF INTERNAL REVENUE

Appendix to Regulations No. 3  
(Formula No. 28A)

Specially Denatured Alcohol, 1942  
(10 parts by volume of 188 proof  
ethyl alcohol to which has been  
added 1 part by volume of U.S.P.  
acetone)

FSC MISC

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(Application for copies should be addressed to the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.)

### 3. REQUIREMENTS

#### 3.1 Materials

3.1.1 Solder. The composition of the solder alloy shall conform to QQ-S-571. Other alloys may be used with approval of the Procuring Activity, providing the detail requirements of this specification are complied with.

3.1.2 Flux. The flux or fluxes employed shall be no more active chemically than necessary to obtain satisfactory soldered joints. Fluxes conforming to MIL-F-14256 are preferred but selection is not so limited provided flux residues remaining on or near the joint are satisfactorily removed and neutralized. (See 3.2.2.) However, the flux selected should not be more active, chemically, than is necessary to obtain satisfactory joints.

3.1.2.1 Only neutral fluxes, Type W of MIL-F-14256 or Type W of QQ-S-571 are acceptable when soldering stranded conductors, insulated wire, or joints which by their configuration are likely to entrap flux residues and made removal difficult.

3.1.3 Materials to be assembled. The materials to be joined shall be amenable to soldering. All members of the assembly in the vicinity of the joint, whether or not they are joined by soldering, shall be stable on heating to soldering temperatures and unaffected chemically by limited exposure to the flux employed, vapors which may be generated during the soldering operation, and to flux residue removal baths or solutions.

3.1.3.1 Cleaning. Surfaces of components to be joined shall be cleaned by mechanical or chemical means except that chemical cleaning of insulated wire or stranded wire is not permissible. Acid cleaning shall be followed by a neutralizing treatment prior to soldering.

3.2 Soldering process schedule. The Contractor shall establish a processing schedule for each type of soldered joint; including pre-cleaning of the surfaces to be joined, solder composition, specific flux by brand name and designation, detailed operational procedures and flux residue removal agents with instructions concerning their use.

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3.2.1 A type of joint shall encompass joints of similar configuration, the same combination of alloys to be joined, same materials adjacent to the joint or exposed to the flux, flux fumes, or residue-removal solutions, same fluxing and flux residue removal agents; but may vary in size and geometric configuration.

3.2.2 Suitability of schedule. The suitability of each process schedule shall be confirmed by tests of a sample unit or an assembly simulating the respective production joint. Each sample shall be subjected to the preproduction test as specified in 3.3.

3.3 Confirmation of process. Prior to use in production the Contractor shall expose a representative specimen conforming to 3.2.2 in a cabinet capable of maintaining desired wet and dry bulb temperatures within tolerances of  $\pm 2^{\circ}\text{F}$ . The exposure conditions shall be  $100^{\circ}\text{F}$  and 95 percent relative humidity, for 72 hours. After exposure, the specimen shall be examined visually or at low magnification for evidence of selective corrosion at the joint areas.

3.3.1 The occurrence of corrosive attack more severe at the joint areas than on adjacent areas not exposed to flux or removal agents is considered evidence of failure of the process under which the joint was soldered. In the event of failure, the Contractor shall devise a more satisfactory process, which shall then be confirmed by humidity test as specified in 3.3.

#### 4. QUALITY ASSURANCE PROVISIONS

(Not applicable)

#### 5. PREPARATION FOR DELIVERY

(Not applicable)

#### 6. NOTES

6.1 Intended use. To alleviate corrosion problems at or in the vicinity of soldered joints in units of Air Force electrical equipment by assuring that the residues of chemically-active soldering fluxes are completely removed or neutralized before the units are installed or accepted.





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