



# **SOLDERING STANDARDS**

**adapted from MIL STD-2000**

## SOLDERING STANDARDS

	<p><b>PREFERRED SOLDER COVERAGE</b></p> <p>Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action.</p>
	<p><b>INSUFFICIENT COVERAGE - REJECTABLE</b></p> <p>Connection exhibits incomplete filling of hole and/or incomplete wetting of land area.</p>
	<p><b>PREFERRED SOLDER CONNECTION</b></p> <p>Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action.</p>
	<p><b>COLD CONNECTION - REJECTABLE</b></p> <p>Solder is normally smooth and bright but has not flowed smoothly. Solder is lumpy and piled up and does not display complete wetting throughout the connection.</p>

## SOLDERING STANDARDS



### **PREFERRED SOLDER CONNECTION**

Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action.



### **ROSIN CONNECTION - REJECTABLE**

Flux is entrapped between lead and land, reducing or preventing metallic continuity.



### **GRAINY CONNECTION - REJECTABLE**

Evidence of graininess indicates overheating of connection.

## SOLDERING STANDARDS



### PREFERRED SOLDER CONNECTION

Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action.

Land area has total adhesion to board base laminate with no evidence of heat related damage.



### DISTURBED CONNECTION- REJECTABLE

Solder connection is characterized by stress lines and a localized granular zone which may include minute fractures.



### LIFTED LAND AREA - REJECTABLE

Land area or trace separating from base laminate.

## SOLDERING STANDARDS



### **PREFERRED**

Solder is totally confined within the land area or trace. Solder is smooth, bright, and thin with no projecting points, peaks, or icicles



### **BRIDGING - REJECTABLE**





Solder is projecting beyond the land area or trace forming a conductive path or short between conductors.



### **ICICLES - REJECTABLE**

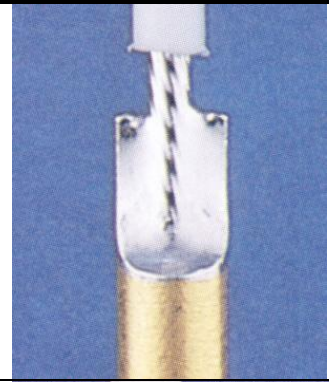
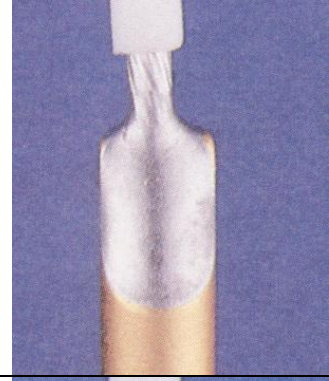
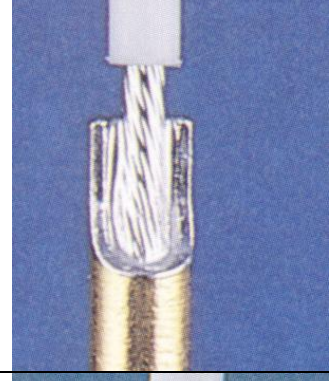
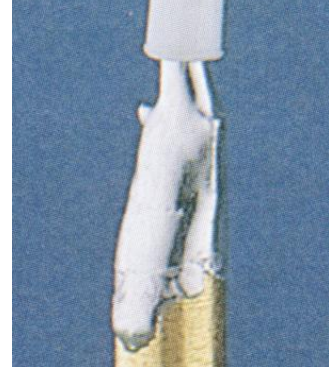
Solder connection has projecting peaks, points, or icicles.

## SOLDERING STANDARDS

	<p><b>PREFERRED</b></p> <p>The solder connection should be smooth, bright, shiny, and continuous with no evidence of voids or pinholes.</p>
	<p><b>PIN HOLES - REJECTABLE</b></p> <p>The solder connection exhibits voids or pinholes in which the entire inner surface is not visible and/or covers more than 5% of the land surface area.</p>
	<p><b>PREFERRED COMPONENT SIDE COVERAGE</b></p> <p>There is a visible solder fillet extending above the land surface. Connection exhibits good wetting to both the lead and the land surface.</p>
	<p><b>MINIMUM COMPONENT SIDE COVERAGE</b></p> <p>Solder is recessed a maximum of 10% of the board's thickness. Connection exhibits good wetting to both the lead and the land surface.</p>

## SOLDERING STANDARDS

### CUP TERMINALS

	<p><b>PREFERRED SOLDER COVERAGE</b></p> <p>Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action. Outline of wire is clearly discernible in the solder. Solder follows contour of cup entry slot.</p>
	<p><b>MAXIMUM SOLDER COVERAGE</b></p> <p>Stranded wire within cup is completely obscured by solder but contour of the wire is not obscured. At termination end of insulation there is no solder build-up beyond the boundaries of the cup area. Any spillage beyond the boundaries of the cup area is in the form of a thin film only</p>
	<p><b>MINIMUM SOLDER COVERAGE</b></p> <p>Strands of wire are visible with a thin solder fillet extending to the inside edges of the cup. The cup is filled with solder to the bottom edge.</p>
	<p><b>EXCESS SOLDER OVERFLOW</b></p> <p>Buildup of solder and spillage on the outside of the terminal.</p>

## SOLDERING STANDARDS

### PIERCED TERMINALS



#### PREFERRED SOLDER COVERAGE

Solder is smooth, bright, and feathered, indicating proper flow and wetting action. Outline of wire is clearly discernible in the solder.



#### MINIMUM SOLDER COVERAGE

Stranded wire is just covered by solder. Solder wets the terminal and wire with a visible fillet.






#### MAXIMUM SOLDER COVERAGE

Stranded wire is nearly obscured by solder. Solder has a visible fillet between the terminal and the wire.






# SOLDERING STANDARDS

## TURRET TERMINALS

	<p><b>PREFERRED SOLDER COVERAGE</b></p> <p>Solder is smooth, bright, and feathered to thin edge indicating proper flow and wetting action. Outline of wire is clearly discernible in the solder.</p>
	<p><b>MAXIMUM SOLDER COVERAGE</b></p> <p>Stranded wire is nearly obscured by solder. Solder has a visible fillet between terminal and wire.</p>
	<p><b>MINIMUM SOLDER COVERAGE</b></p> <p>Stranded wire is just covered by solder. Solder wets the terminal and wire with a visible fillet.</p>

## SOLDERING STANDARDS

### DIP's

	<p><b>PREFERRED CONNECTION</b></p> <p>Solder is smooth, bright, continuous, and feathered to thin edge indicating proper flow and wetting action. Outline of lead is clearly discernible in the solder.</p>
	<p><b>MAXIMUM SOLDER COVERAGE</b></p> <p>Good solder flow and wetting, but outline of lead is nearly obscured by solder</p>
	<p><b>MINIMUM SOLDER COVERAGE</b></p> <p>Solder is recessed a maximum of 10% of the board's thickness. Connection exhibits good wetting of both the lead and the land surface.</p>