STANNOL

SHELF LIFE OF SOLDERING WIRES

Results from the Stannol in-house laboratory

Examinations for minimum durability, based on a Rockwell Collins study, have been performed in the Stannol in-house laboratory due to requests from customers and auditors. Many different wires have been tested. Some test results are shown as examples in this report.

RESULTS

Some reasons for the quality stability are:

Metal: As a very thin and simultaneously very dense oxide layer forms on the tin surface, no deep oxidation or even rusting inwards of the surface takes place, such as is known for iron.

Wire flux: No oxidation takes place here as the wire flux is not exposed to the oxygen in the air. For some tests with approx. 50 years old soldering wire, a clear deterioration of the quality of the soldering joints was evident.
However, this was only evident for the first 10 – 20 cm. Therefore, simply 20 – 30 cm of wire should be discarded for old wires.

- **Some photooxidation can occur as the wire fluxes are located away from light in the interior of the wire. Wire flux is solid and cannot leak out of the wire.**
- **Wire flux has a very low vapour pressure and is not sublimated through the wire ends or even the surface of the metal.**
- **Wire flux and wire are solids. Therefore, no reaction is expected as solid state reactions are extremely slow.**

CONCLUSION

Taking account of these examination results and agreement with the results of Collins Rockwell, Stannol will also not specify any minimum durability date in the future as it is our opinion that there are no technical reasons for this.

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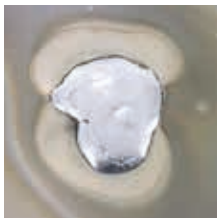
EXAMINATIONS

- **Solder spread according to EN ISO 9455-10**
- **Manual soldering tests on copper test plates, Weller soldering station, 320 °C**
- **Manual soldering tests on E-copper, highly oxidised, Weller soldering station, 360 °C**

SOLDER SPREAD ACCORDING TO EN ISO 9455-10

			
Type	HF32	HF32	HF32
Alloy	S-Sn60Pb39Cu1	S-Sn60Pb40	S-Sn60Pb40
Part number	640104	647123	643084
Year of manufacture	2012	2001	older than 25 Jahre
Solder spread	122 mm²	120 mm²	125 mm²

Result = wetting angle and dispersion area are almost identical.

MANUAL SOLDERING TESTS ON COPPER TEST PLATES

		
Type	2632	2632
Alloy	S-Sn60Pb39Cu1	S-Sn60Pb40
Part number	395210	390282
Year of manufacture	2013	2001

Result = no difference.

MANUAL SOLDERING TESTS ON E-COPPER

		
Type	Kristall 511	Kristall 511
Alloy	S-Sn95Ag4Cu1	S-Sn95Ag4Cu1
Part number	593133	593133
Year of manufacture	2013	2002

Result = wetting without complaint.

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