INTERFLUX® ELECTRONICS N.V.

IF 14

Lead-free, **no-clean** and **halide free** solder wire

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IF 14

Lead-free, **no-clean** and **halide free** solder wire

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2. Important parameters when soldering with **IF 14**
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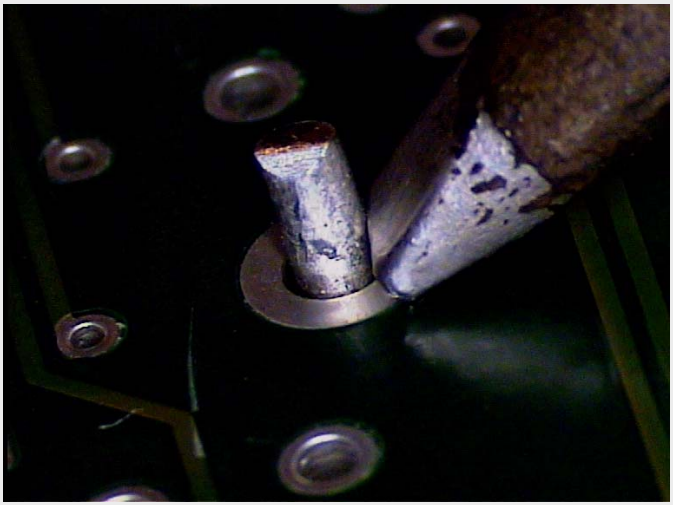
The correct way to solder with **IF14**

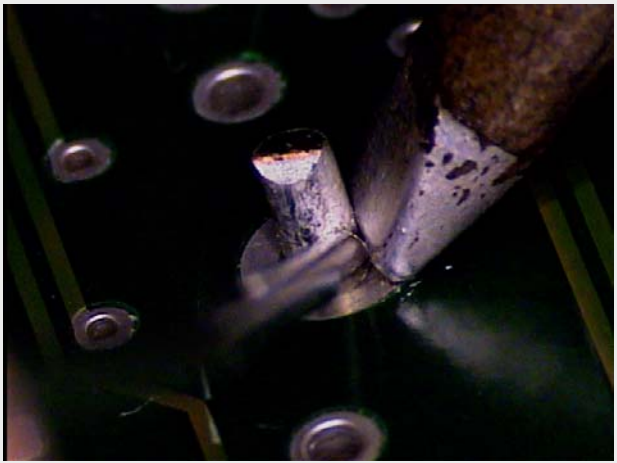
IF 14



Heat up the surfaces of component and island simultaneously

The correct way to solder with **IF14**

IF 14

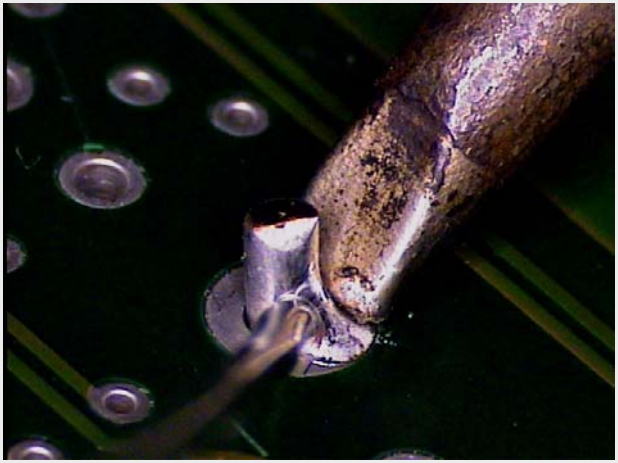


Apply the solder wire, slightly to the point where component, pad and soldering tip meet

The small quantity of solder leads to a drastic lowering of the thermal resistance

The correct way to solder with **IF14**

IF 14



Add subsequently, without interrupting the heat supply, the correct amount of solder.

At this stage:

it is important that the wire makes no contact with the soldering tip.

-premature flux consumption

-flux spitting.

The correct way to solder with **IF14**

IF 14

The result has a very low amount of residue, compared to competitors wire

Important parameters

IF 14

Correct temperature of the soldering station

Since the Lead-Free types of the IF14 contain the same quantity of the same flux as the IF14 SnPb, we recommend to use the same temperature setting of 360°C.

Only when soldering of more dense materials is required (Ni,Zn,...), a temperature up to 420°C is allowed.

Important parameters

IF 14

Correct temperature of the soldering station

When the temperature setting is too high:

- the tip life is reduced (more aggressive alloy)
- more spitting is observed
- due to premature flux consumption, the spreading will be reduced
- risk of PCB and/or component damage

Important parameters

IF 14

Correct temperature of the soldering station

When the temperature setting is too low:

-the soldering time will be too long.

-too long heating time results in the same thermal damage to a component as too high temperature

Important parameters

IF 14

Correct temperature measurement of the soldering station

-Calibration of soldering stations can be considered

-Soldering stations with the possibility to “lock” the settings become more important

Important parameters

IF 14

Quick response time of the soldering iron

is obtained by the correct Power and advanced technologies of the soldering station in combination with a low thermal mass of the soldering tool.

-too much power can can give an overshoot in temperature

-when the thermal mass is too high, it will be more difficult to “follow” the desired temperature.

Important parameters

IF 14

Correct choice of soldering tip, related to component and pad

The bigger the soldering tip, the better the heat conduction towards pad and component.

In order to maximize the thermal contact, people tend to push the soldering bit with a high force on the pad. With a too fine soldering bit, this will damage the pad.

Soldering a big variety of components will become very difficult

Important parameters

IF 14

Correct choice of soldering tip, related to component and pad

Important parameters

IF 14

Correct choice of the wire diameter

Too fine diameter:

-will increase the total soldering time.

-contains more oxides relative to solder volume.

Too big diameter:

-gives inaccurate solder quantity on joint

-cannot make complete contact with melting area

Important parameters

IF 14

The soldering time

-Solderability of any Lead-Free solder wire is lower than with SnPb

-The Melting temperature is higher

This leads to a significant increasing of the soldering-time per solder joint

Important parameters

IF 14

The best soldering joint is made in one handling!

Multiple soldering on the same joint will reduce its reliability

INTERFLUX® IF 14 versus competition_

IF 14

-Solderability wetting (-speed)

-Reliability Halogen-Free

-Tip life

-Fumes Aldehides

-Type / Quantity of residue (how to clean?)

INTERFLUX® IF 14 versus competition_

IF 14

Solderability

Solderwire	Alloy Sn/ag/Cu	Diameter (mm)	Flux Nominal	Flux Actual	Spread Factor
Supplier A	Sn/3.8/0.7	0.8	??	2.25	+
Supplier B	Sn/0.03/0.7	0.8	3.0	3.07	++
Supplier C	Sn/0.03/0.7	0.5	3.0	3.09	++
Supplier D	Sn/3/0.5	0.75	1.1	1.07	++
Supplier D	Sn/3.8/0.7	0.75	3.3	2.8	-
Supplier D	Sn/3.5/0	0.7	2.2	2.18	-
Supplier D	Sn/3/0.5	0.75	3.3	3.10	-
Supplier E	Sn/3.8/0.7	0.5	1.0	1.33	+
Supplier E	Sn/3.8/0.7	0.5	3.5	3.43	0
Interflux IF 14	Sn/3.0/0.5	0.7	1.4	1.42	++
Supplier G	Sn/3.8/0.7	0.8	2.7	2.81	--

INTERFLUX® IF 14 versus competition_

IF 14

Reliability Halogen-Free

Electronic Product Class	No-Clean Soldering Process		
	Rosin (**RO**)	Resin (**RE**)	Organic (**OR**)
I	L0, L1, M0, M1	L0, L1, M0, M1	L0, M0
II	L0, L1, M0	L0, L1, M0	L0, M0
III	L0, L1	L0, L1	L0

INTERFLUX® IF 14 versus competition_

IF 14

Reliability
Halogen-Free

Solderwire	Classification per J-STD-004	Class		
		I	II	III
Supplier A	-	-	-	-
Supplier B	RO M1	+	-	-
Supplier C	RO M1	+	-	-
Supplier D	RO M0	+	+	-
Supplier D	RO M1	+	-	-
Supplier D	RO M1	+	-	-
Supplier D	OR L0	+	+	+
Supplier E	OR L0	+	+	+
Supplier E	RO L1	+	+	+
IF 14	RE L0	+	+	+
Supplier G	RO L1	+	+	+

INTERFLUX® IF 14 versus competition_

IF 14

Tip life

the combination of a more aggressive alloy with halogen containing solder wire will attack the soldering tip very fast.

because the IF14 does not contain any halogens the tip life is much longer.

INTERFLUX® IF 14 versus competition_

IF 14

Fumes

When rosin-cored solder wire is heated, fumes are produced. These fumes may cause occupational asthma and can also irritate the upper respiratory tract and eyes. The greatest risk of exposure to fume occurs when hand soldering because the operator's head is likely to be near or actually in the plume of fume rising from the soldering iron tip or workpiece.

are you aware of the

DANGER

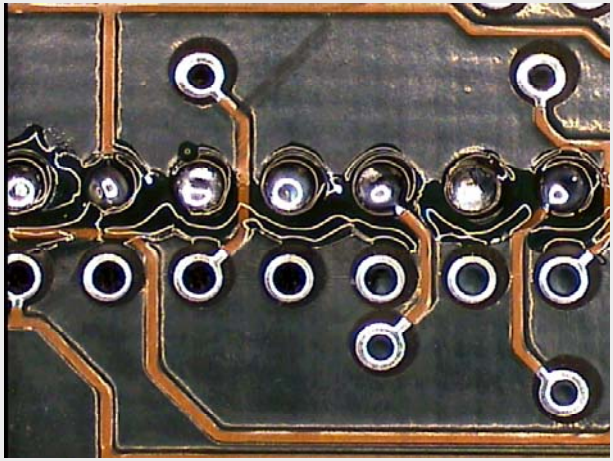
of rosin fumes?

THIS FUME IS ONE OF THE MOST SIGNIFICANT CAUSES OF OCCUPATIONAL ASTHMA IN THE UK

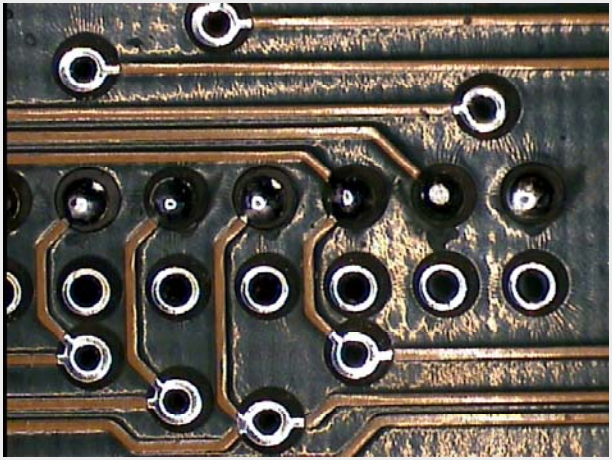
INTERFLUX® IF 14 versus competition_

IF 14

Type / Quantity of residue



Rosin based solder wire



IF 14

INTERFLUX® IF 14 versus competition_

IF 14

Type / Quantity of residue

The residue of the IF14 can:

-easily be brushed away without additional solvents

-evaporated by heat

Very often we see that people try to remove the residues of a Rosin based wire by means of IPA and a brush.

The consequence of this operation is that one leaves the halogens unprotected on the surface of the PCB and that the total quantity of residue is just spreaded over a larger area.

The ionic contamination is still the same or even larger!!!

The flux content issue_

IF 14

-The IF14 SAC305 contains 1,6% flux wt/wt

-1.6% of the total solder wire weight is flux, the quantity in volume is the same

-The only difference between the original **IF14** and the Lead-Free version is the alloy.

The flux content issue_

IF 14

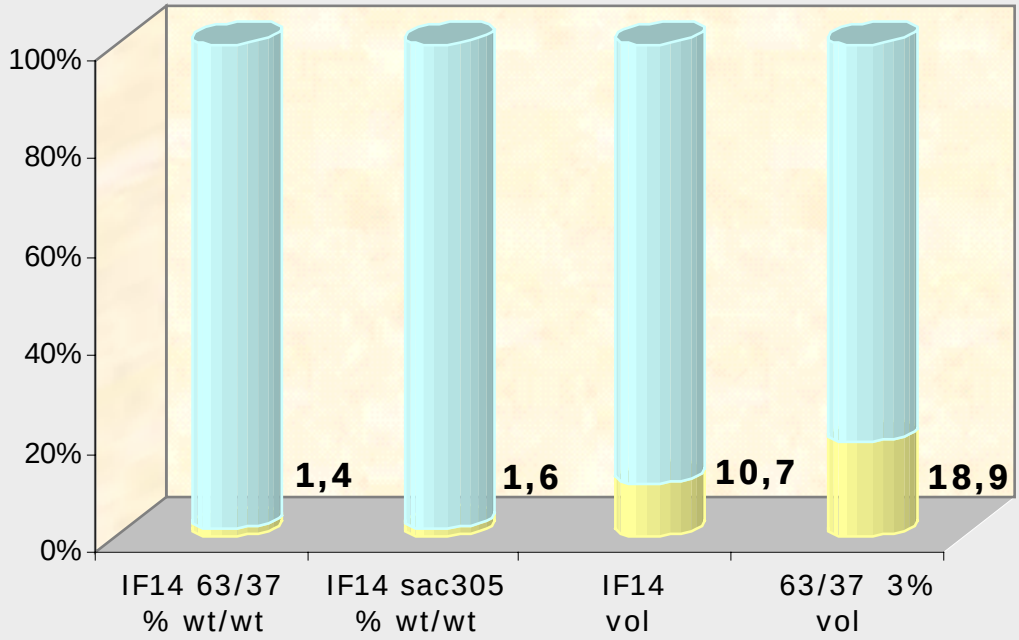
		Metal		Flux		
IF14 Sn63Pb37	=	98,6 %	+	1,4 %	=	100 %
% ? weight	=	98,6 g	+	1,4 g	=	100 g
÷ D1	=	11,7 ml	+	1,4 ml	=	13,1 ml
x D2	=	86,9 g	+	1,4 g	=	88,3 g
÷ 88,3	=	98,4 %	+	1,6 %	=	100 %

D1 = density of Sn63Pb37 = 8,4 g/ml

D2 = density of SAC305 = 7,4 g/ml

The flux content issue_

IF 14



The flux content issue_

IF 14

IF14 Sn63Pb37 1.4% = IF14 SAC 1.6%

the volume of a SAC wire is about 14% higher than a 63/37 wire of the same weight.

Package: in general white 500g spools