

High reliability of Low-VOC fluxes

As a consequence of increasing demands for disinfectants to prevent the spread of COVID-19, solvents such as isopropanol (IPA) or ethanol are becoming rare and supply chains are becoming disturbed.

Therefore VOC-free and Low-VOC fluxes are becoming more and more important in the production of electronic assemblies.

Water-based fluxes have been used in the electronics industry since the early 1990s. The higher energy evaporating requirement of water gives special demands on the machine configuration and entire process.

For high reliability electronics, residues left on the PCB must be chemically neutral and shall not lead to function failures.

Rosin and or Resins are responsible for the polymerization after the soldering process resulting in encapsulating any acids or activators left. The polymerization process will ensure safe residue and therefore longtime reliability.

For water based fluxes organics are used as they are water-soluble. Unfortunately Resin and or Rosin are not water soluble which will leave the residue of hydroscopic organics and activators exposed after the soldering process (no polymerization). This can increase the risk of corrosion on the electronic assemblies and in danger the longtime reliability.

For these reasons **COBAR[®]**, part of the **BALVER ZINN[®]** Group, introduced Low-VOC fluxes in the electronics market since 1996.

Low-VOC combines the biggest advantages of both worlds and gives the possibility to replace most alcohol-based fluxes by Low-VOC technology's with similar reliability and process settings.

As inventor of the Low-VOC fluxes **COBAR[®]** provides a wide range of emission-reducing and safe low-VOC fluxes for the electronic industry.

The Low-VOC resin-based flux technology offers similar high reliability as alcohol-based systems and has been used in the automotive industry for decades.

The higher surface tension caused by the mixture of alcohol and water reduces the flux spread. As a result, the flux remains where it is needed. Therefore, Low-VOC technology is perfectly suitable for selective soldering processes where a minimum of flux spreading is required.

As one of world's largest suppliers of low-VOC fluxes, Balver Zinn Josef Jost GmbH & Co KG offers a wide product portfolio for the electronics industry. The introduction of low-VOC flux technology provides excellent soldering properties and offers the optimal solution for the increasing demands of today's soldering processes.

Flux selection for wave soldering

High end industrial electronics and automotive with 33 - 40% water content

The **95-RXZ-M** and later the **95-RXN-M** were specially developed on achieving good soldering properties under nitrogen, especially with regards to eliminating solder bridges. The anti-solder ball formulation shows low residues and excellent wetting on most common board finishes.

High end industrial electronics with 58% water content

396-BSG has extremely low residues due to low solid and 58% water content. Although this flux is classified as REL1 (IPC J-STD-004), it has very safe and reliable flux residues.

Industrial electronics with 40% water content

The **95-DRX-M+** is a low-VOC flux for industrial applications. Excellent soldering properties with and without nitrogen. The product is very powerful, minimizes bridging and works very well on all solderable surfaces with very low residue levels.

Industrial electronics with 96% water content

396-DRX-M+ is a water-based, organic flux for wave soldering with and without nitrogen. 396-DRX-M+ is the all-rounder of the 396-series and other types are available in different solid contents. Excellent through-hole filling, hardly visible flux residues under nitrogen.

396-DRX+ has less solid content than 396-DRX-M+ which makes it's also suitable for the solar industry.

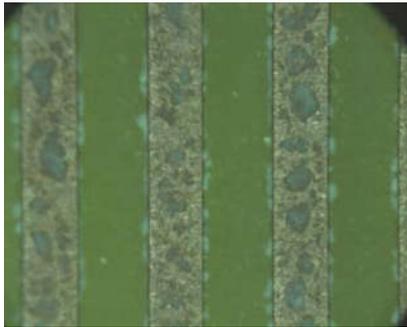
Low-VOC	95-RXN-M	95-RXZ-M	396-BSG	95-DRX-M+	396-DRX-M+
Water content [%]	33	40	58	40	96
Classification: J-STD-004	REL0	REL0	REL1	ORL0	ORLO
Density [kg/dm ³]	0,848	0,900	0,945	0,896	1,008
Solid content [%]	2,57	1,80	1,70	3,30	3,40
Acid number [mg/KOH]	13,85	15,90	15,90	27,80	27,70
Nitrogen	recommended	recommended	recommended		

Flux selection for selective soldering

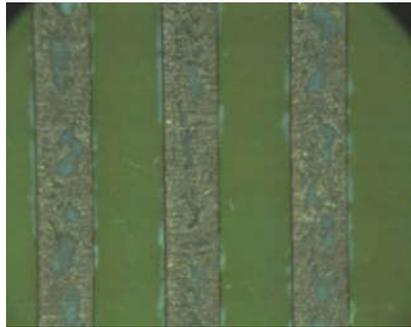
High end industrial electronics and automotive with 20 - 40% water content

94-SEL is a selective soldering flux with low spread and has excellent soldering properties with safe residues that meets automotive requirements. In addition, the flux has excellent anti-solderball properties and low visible residues which are dry and shiny.

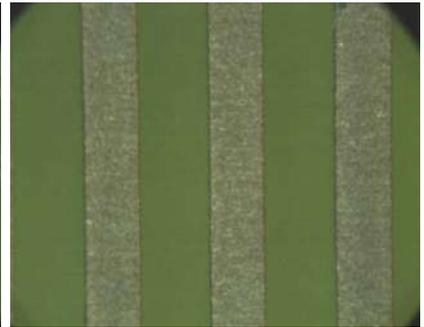
94-SEL on a IPC-A-24 bare copper test board, only preheated



Preheated at 50°C:
No evidence of dendrites



Preheated at 100°C:
No evidence of dendrites



Preheated at 150°C:
No evidence of dendrites

95-SEL is a selective soldering flux with low spread and has excellent soldering properties with safe residues for industrial applications. The **95-SEL** is based on the **95-RXZ-M** which has an anti-solder ball formulation shows low residues and excellent wetting on most common board finishes.

Low-VOC	94-SEL	95-SEL
Water content [%]	21	40
Classification: J-STD-004	RELO	RELO
Density [kg/dm ³]	0,848	0,900
Solid content [%]	2,57	1,80
Acid number [mg/KOH]	13,85	15,90