

Production plants:

- M.R. Štefánika 2256, 026 01 Dolný Kubín
- Hlavná 146, 056 01 Gelnica

E cablex-sk@cablex-group.com | www.cablex-group.com

Zadanie

na použitie tavidla (fluxu) v procese výroby

Predmet zadania

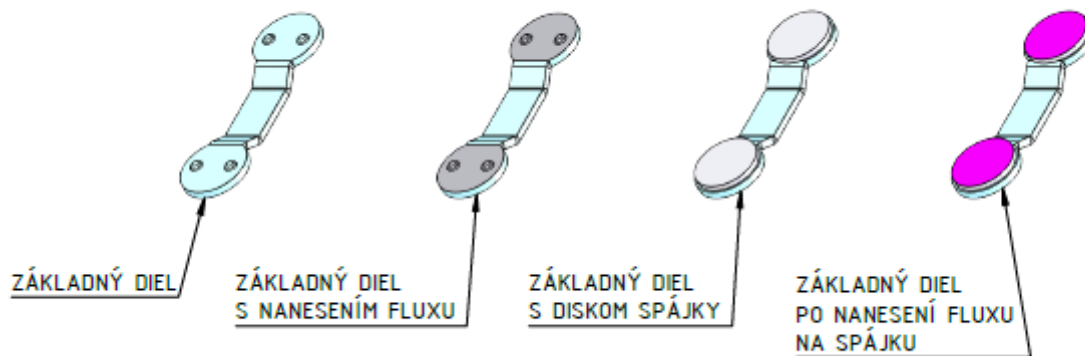
Aplikácia fluxu na výrobkoch tak aby bola skrátená doba jeho schnutia na minimum pri zachovaní jeho vlastností.

Opis procesu

V procese výroby niektorých vyrábaných dielov sa nanáša spájka na dosadacie plochy výrobkov, ktoré budú v ďalšom procese – u zákazníkov mimo našej prevádzky osadené na miesta ich trvalého použitia. Spájka, ktorá je v prevažnej miere v tvare plátok, resp. diskov sa čiastočne nataví aby sa spojila na požadovanej ploche.

Aby bolo zabezpečené spoľahlivé uchytenie samotnej spájky na výrobku a následne aby bol tento výrobok pripravený na jeho aplikovanie u zákazníka používa sa pri výrobe flux. Tento zabezpečuje aby sa pri aplikácii znížilo ovplyvnenie povrchu oxidmi, zlepši sa roztekание spájky a jej prichytenie k dielu a následne sa zabezpečí aj ochrana pred ďalšou oxidáciou a spájkovaním u zákazníka.

Čiže samotný flux sa aplikuje pred spájkovaním ako aj po spájkovaní na vonkajšej ploche spájky. Flux nanášaný na vonkajšiu plochu je farbený a musí ostať bez poškodenia pri následnej manipulácii a prevoze.



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**Cieľ zadania**

Proces nanášania fluxu pred samotným uchytením spájky je prakticky bezproblémový, ale nanášanie fluxu už na diel po spájkovaní je veľmi náročný na čas schnutia naneseného fluxu, ktorý sa pohybuje až v desiatkach hodín a potrebovali by sme tento čas zredukovať na minimum. Riešenie by malo vychádzať z materiálov používaných u nás vo výrobe, návrhom vhodnej technológie a postupov ich aplikovania.

Ako alternatívne riešenie môže byť návrh nových fluxov.

Používané materiály

Základný diel:

- Cu-ETP plain
- Cu-ETP + Coating Sn 3µm min.
- Cu-ETP + Ag plating Ag 4µm min.
- Stainless steel 1.4016 + Ag plating Ag 5µm min.

Spájka:

- Sn25Pb62Ag3Bi10 (interné označenie: SL001)
- Pb62 Sn25 (SL004, SL009)
- Sn27 Pb70 (SL013, SL016, SL026)
- Pb70 Sn27 (SL014)
- Sn99Cu1 (SL008)
- Sn96,5Ag3Cu0.5, SAC305 (SL015, SL020, SL022, SL023, SL025, SL027)
- Sn98Ag2 (SL028, SL029, SL030, SL032, SL033)

Flux:

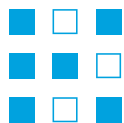
- Kester - 186 Soldering Flux

Zadávateľ

CABLEX SK, s.r.o.

M.R. Štefánika 2256

026 01 Dolný Kubín



kester®

Technical Data Sheet

186 Soldering Flux

Mildly Activated Rosin Liquid Flux

	Item: MA45877
Identification: Kester 186	
Drawing date / Revision KAT	Checked: Goričan
APPROVED 24.09.2024	



Product Description

Kester 186, under MIL-F-14256, was QPL approved as Type RMA. The flux residue after soldering is non-corrosive and non-conductive. 186 rosin flux has been developed for use in critical applications where difficult assemblies are to be soldered, but process requirements stipulate use of Type RMA flux. This flux possess high thermal stability for soldering multi-layer assemblies which may require a high preheat temperature or longer temperature dwell time. There is no surface insulation resistance degradation caused by the flux residue. The use of a minimum of ionic activating agents and the inactive nature of the residue permits leaving the residue on circuit board assemblies for many applications. The flux residue is also moisture and fungus resistant.

Performance Characteristics:

- High thermal stability
- Improves soldering performance
- Eliminates the need and expense of cleaning
- Classified as ROL0 per J-STD-004



RoHS Compliance

This product meets the requirements of the Restriction of Hazardous Substances (RoHS) Directive, 2011/65/EU for the stated banned substances.



Physical Properties

Specific Gravity: 0.874-0.884
Anton Paar DMA @ 25°C

Percent Solids (typical): 36%
Tested to J-STD-004, IPC-TM-650, Method 2.3.34

Acid Number (typical): 55.5 ± 7.8 mg KOH/g of flux
Tested to J-STD-004, IPC-TM-650, Method 2.3.13

Flash Point: 18°C (64°F)



Reliability Properties

Copper Mirror Corrosion: Low
Tested to J-STD-004, IPC-TM-650, Method 2.3.32

Corrosion Test: Low
Tested to J-STD-004, IPC-TM-650, Method 2.6.15

Silver Chromate: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.33

Chloride and Bromides: 0.02%
Tested to J-STD-004, IPC-TM-650, Method 2.3.35

Fluorides by Spot Test: Pass
Tested to J-STD-004, IPC-TM-650, Method 2.3.35.1

Surface Insulation Resistivity (SIR): Pass
Tested to J-STD-004, IPC-TM-650, Method 2.6.3.3

	Blank	186 PD	186 PU
Day 1	5.0*10 ⁹ Ω	3.1*10 ⁹ Ω	5.2*10 ⁹ Ω
Day 4	5.8*10 ⁹ Ω	4.9*10 ⁹ Ω	6.8*10 ⁹ Ω
Day 7	6.3*10 ⁹ Ω	5.5*10 ⁹ Ω	7.2*10 ⁹ Ω

Flux Application

186 can be applied to circuit boards by a foam or dip process. An air knife after the flux tank is recommended to remove excess flux from the circuit board and prevent dripping on the preheated surface. A spray application can be used if the spray system can handle a high solids flux (36%).

Process Considerations

The wave conveyor speed should be adjusted to achieve the contact time. Dwell time for Sn63Pb37 is typically 2-4 seconds. Contact time for lead-free alloys are typically 4-8 seconds. Adjust the preheat settings to achieve the proper preheat temperature. The optimum preheat temperature for most circuit assemblies is 90-105°C (194-221°F) as measured on the top or component side of the printed circuit board. This will be the same for all alloys.

Flux Control

Specific gravity (0.879 ± 0.005 Anton Paar DMA @ 25°C) is normally the most reliable method to control the flux concentration of rosin-based fluxes. To check concentration, a hydrometer should be used. Control of the flux in the foam flux tank during use is necessary for assurance of consistent flux distribution on the circuit boards. The complex nature of the solvent system for the flux makes it imperative that Kester 120 Thinner be used to replace evaporative losses. When excessive debris from circuit boards, such as board fibers and from the air line build up in the flux tank, these particulates will redeposit on the circuit boards which may create a build up of residues on probe test pins. It is, therefore, necessary to clean the tank and then replenish it with fresh flux when excessive debris accumulates in the flux tank.

Cleaning

186 residues are non-conductive, non-corrosive and do not require removal in most applications. If residue removal is required, call Kester Technical Support.

Storage, Handling and Shelf Life

186 is flammable. Store away from sources of ignition. Shelf life is 2 years from the date of manufacture when handled properly and held at 10-25°C (50-77°F).

Health and Safety

This product, during handling or use, may be hazardous to your health or the environment. Read the Safety Data Sheet and warning label before using this product.