Standard Product Specification

Product Name	ECO SOLDER PASTE SHF M40-LS720HF Type4	Specification No.	Ed.	Page
		F2-5-PXES-184	1	1／7

1．Scope

This specification covers the solder paste,

ECO SOLDER PASTE SHF M40-LS720HF Type4, using lead-free solder alloy, used for wiring connection and so on, of electrical and electronic parts.

2．Standard

2．1 Chemical composition of solder alloy（Test method : STM-9）

Composition and impurities are prescribed as following tables.

Composition (mass%)				
Ａｇ	Ｂｉ	Ｃｕ	Ｉｎ	Ｓｎ
1.0 ± 0.1	1.6 ± 0.2	0.7 ± 0.05	0.2 ± 0.05	Balance

Impurities								
less than mass%		mass% or less						
Ｐｂ	Ｃｄ	Ｓｂ	Ｚｎ	Ｆｅ	Ａｌ	Ａｓ	Ｎｉ	Ａｕ
0.05	0.002	0.10	0.001	0.02	0.001	0.03	0.01	0.005

Date of Establish or Revision	Approval	
	Q. A. Dept.	Manufacturing Dept.
Established on March, 03, 2011	T. Sakuma T. Sakuma.	Y. Kawamata Kawamata.

2．2　Performance and standard

Table 1

Items	Performance ・ Standard	Test Method
Appearance	It shall not have separated flux, and shall be in a smooth paste state.	STM-1
Flux content (mass%)	11.0 ～ 13.0	STM-5
Viscosity of solder paste (Pa･s)	190 ± 20	STM-7-7
Grain size of powder (μm)	36 ～ 25	STM-12-4
Copper plate corrosion test	Shall be passed	STM-28-1
Insulation resistance (Ω)	Ordinary state 1×10^{12} or more After humidifying 1×10^{11} or more	STM-30-8
Solution resistance (Ωm)	100 or more	STM-32
Reflow property	No unmelted solder nor black product shall be permissible.	STM-34-1

Table 2

Items	Performance ・ Standard	Test Method
Halide content Note 1） (mass %)	0.02 (200 ppm.) or less Mass convert as flux content to be 100 %	STM-27-7
Halogen content (mass %)	Br : 0.09 (900 ppm.) or less (Brom) Cl : 0.09 (900 ppm.) or less (Chlorine) Total content of Br and Cl ; 0.15 (1500 ppm.) or less Mass convert as flux solid content to be 100 %	Note 2）

Note 1） : Ion, among halogen compounds.

Note 2） : As correspond to「ET-7304」,「EN 14582」,「IPC-TM-650 2.3.41」, and so on, measurement by ion chromatography which made combustion decomposition of the specimen as a pretreatment.

2．3 Melting temperature range and specific gravity of solder alloy

(Reference value)

Melting temperature range ℃	Specific gravity
Approx. 211 ～ 222	Approx. 7.4

3． Inspection Report

Inspection and test shall be carried out on each production lot about following items ① through ④, and the Inspection Report which result is mentioned shall be attached at the time of delivery.

① Chemical composition of solder alloy

② Viscosity of solder paste

③ Flux content

④ Halide content in flux

4． Packaging ・ Indication

4． 1 Packaging

Container ： Jar or designated container

Net mass ： 500 g or designated mass

4． 2 Indication

The following items shall be indicated on the container with label.

① Product name

② System of solder alloy

③ Manufacturing date

④ Lot No.

⑤ Net mass

⑥ Validity

⑦ Precaution

⑧ Manufacturer's name

⑨ Product code

5. Guarantee period

The guarantee period of this product shall be six months from the manufacturing date, in a refrigerator (0～10℃) when unopened as it is.

6. Precautions for safety

Stated in the separate documents, 「Instruction Manual」 and 「Material Safety Data Sheet」.

7. Regulations

Stated in the separate documents, 「Instruction Manual」 and 「Material Safety Data Sheet」.

8. Precautions in handling, storing, and disposing

Stated in the separate documents, 「Instruction Manual」 and 「Material Safety Data Sheet」.

9. Regarding to environmental substance

This product conforms to RoHS Directive.
However, Pb and Cd are contained as an impurity of solder alloy, but the content is controlled to be less than 0.05% (500ppm) for Pb and 0.002% (20ppm) for Cd.

10. Others

① We cannot guarantee the result of use nonconforming to or unspecified in this specification.

② You are requested not to divulge to any other company or publicize any matter related to this specification.

１１．Test Method

STM-1　Appearance

To be confirmed by visual observation concerning items in specification.

STM-2　Mass

Weighing shall be conducted using a weighing apparatus having a minimum graduation less than 5/10000th of the maximum weighing capacity.

STM-5　Flux Content

According to「JIS Z 3197　Testing methods for Soldering Fluxes」.

STM-7-7　Viscosity of Solder Paste

According to spiral method of attached book 6, of「JIS Z 3284　Solder paste」.
Set the sample to rotational viscometer made by Malcom Co., Ltd. and adjust the temperature of solder paste to 25 ℃ at 10 rpm. for about 3 min., and measure the viscosity at speed of revolution shown in the table below,
and let the value A be the viscosity value.

rpm.	10	3	4	5	10	20	30	10
min.	3	6	3	3	3	2	2	1
viscosity					A			

STM-9　Chemical Composition

According to「JIS K 0116　General rules for atomic emission spectrometry」or to「JIS Z 3910　methods for Chemical Analysis of Solder」.

STM-12-4　Grain size of Powder

Measurement shall be taken with the Microtrac Particle Size Analyzer.

STM-27-7　Halide Content

According to「JIS Z 3197　Testing Methods for Soldering Fluxes」.

STM-28-1　Copper Plate Corrosion Test

According to「JIS Z 3197　Testing Methods for Soldering Fluxes」.

However, test pieces shall be made as follows;

Print solder paste on copper plates ϕ 10 mm and 0.3 mm thick, reflow them by preheating for 20 sec. at solidus line temp. -30 ℃ and heating regularly for 40 sec. at liquidus line temp. +50 ℃, and cool.

STM-30-8　Insulation Resistance

According to attached book 3 of JIS Z 3284, Solder paste.

However, test condition shall be as follows ;

Temperature 40 ± 2 ℃、Relative humidity 90～95 %、168 hrs., and measurement of resistance shall be done with take the specimen out of chamber.

STM-32　Solution Resistance

According to「JIS Z 3197　Testing methods for Soldering Fluxes」.

STM-34-1　Reflow Property

Print solder paste on copper plates ϕ 10 mm and 0.3 thick and reflow them by preheating for 20 sec. at solidus line temp. -30 ℃ and heating regularly for 40 sec. at liquidus line temp. +50 ℃.

After cooling examine visually whether there is any black product or unmelted solder powder on the solder surface or not.