

GC 50

GC 50 is a halogen free, zero halogens added no-clean, Pb-free solder paste specially designed to provide enhanced stability when used it jetting and other dispensing applications.

FEATURES AND BENEFITS

- Halogen-free flux: passes IC with pre-treatment IPC-TM-650 2.3.34/EN14582
- Halogen-free flux classification: ROL0 to IPC/J-STD-004 Rev B
- Provides added long-term stability over a wide range of temperature conditions. Cpk >2.0 achievable with less than 50% tolerance
- High process capability for paste diameter targets <300 µm using jetting technology
- IPC Class III voiding performance
- Post reflow residues readily removed with electronics industry solvent cleaners
- Eliminates the need for step-stencil or preforms

- Optimized rheology suitable for solder paste jetting technology with process stability up to 28°C
- Stable in ejector head for at least 1 week (up to 28°C)
 Suitable for use in time/pressure and auger pump
- dispensing systemsVoid-free packaging for improved process consistency and
- sustainability
- Stable at room temperature for enhanced sustainability
 Excellent soldering performance in air or nitrogen
- Excellent soldering performance in all of hid ogen
 Good resistance to graping in demanding reflow profiles
- Compatible with Pb-free printing pastes in a solder additive process

TYPICAL PROPERTIES

Solder Alloy/Powder:

The solder alloys used in GC 50 are RoHS and EICC compliant and are manufactured meeting IPC J-STD-006 and EN29453 for impurity levels. The solder powder is manufactured in a carefully controlled production process to a quality level that exceeds IPC J-STD-005 requirements for sphericity, size distribution and oxide levels.

Code	Alloy Composition	Melting Point (°C)
SAC305	Sn96.5Ag3Cu0.5	217
Powder Description	Particle Size Distribution (µm)	IPC Equivalent (J-STD 005A)
T4	38-20	Type 4
Т5	25-15	Type 5

Minimum order requirements may apply to certain alloys and powder sizes. For availability contact your local Customer Service Department.

Solder Paste:

The properties of a solder paste depend in part on the metal content, the solder alloy and the solder powder particle size range. In general terms, increasing metal content reduces the tendency to slump and reduces the tackiness of the solder paste while the solder balling performance improves. The metal content (by weight) of lead-free solder pastes are often somewhat lower than tin/lead solder pastes for similar applications due to the lower density of lead-free alloys.

Property	SAC305		
Particle Size	T4	T5	
Metal Content (%)	84	84	
Brookfield Viscosity (cP)	850.000	850,000	
Malcom Viscosity (Pa.s)	105	110	
Thixotropic Index (Ti)	0.72	0.73	

DIRECTIONS FOR USE

Jet printing:

GC 50 has been formulated with rheology optimized for jet printing. It can also be used in traditional dispensing technology. Process setup is specific to the technology chosen (time/pressure and auger pump dispensing systems).



Reflow:

Excellent soldering performance is typically achieved using a convection reflow oven in air. Nitrogen atmosphere reflow can be used if desired. Example reflow profiles are shown below:



Further reflow profiles can be reviewed in the Engineering Manual

Cleaning:

GC 50 is a no-clean solder paste designed to be left on the PCB, post assembly, without compromising long-term reliability.

Should there be a specific requirement for residue removal, this may be achieved using conventional electronic cleaning processes based on commercially available cleaning materials designed for the de-fluxing of electronic assemblies including MCF 800 solvent cleaner. For cleaning needles and board/misprints MSC 01 solvent cleaner is recommended.

RELIABILITY PROPERTIES

Solder Paste Medium:

The flux used in GC 50 solder paste contains a stable resin system, slow evaporating solvents and has minimal odour. The flux has been tested to the requirements of the IPC/J-STD-004 B standard, attaining ROL0 classification.

Test	Specification	Test Method	Results
Copper Plate Corrosion	IPC/J-STD-004B	2.6.15C	Pass
Copper Mirror Corrosion	IPC/J-STD-004B	2.3.32D	Pass
Chlorides & Bromides	IPC/J-STD-004B	2.3.33	Pass
Surface Insulation Resistance (SIR) (without cleaning)	IPC/J-STD-004B	2.6.3.7	Pass
Electromigration (ECM) (without cleaning)	IPC/J-STD-004B	2.6.14.1	Pass
Halogen Content (Pre-treatment EN14582, 2.3.28.1)	IPC/J-STD-004B	2.3.34	Pass
Flux Activity Classification (without cleaning)	IPC/J-STD-004B		ROL0

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COMPATIBILITY:

GC 50 jetting and dispensing solder paste is compatible with Pb-free printing solder pastes and the flux residues have been shown to be compatible with encapsulation technologies.

STORAGE AND SHELF LIFE

Storage:

GC 50 solder pastes can be stored refrigerated however they are designed to be stored at 5 to 25°C tightly sealed in the original container (NB cartridges should be stored tip down to prevent the formation of air pockets). If cold storage is used the paste should be removed from cold storage a minimum of 8 hours before use. Do not use forced heating methods to bring solder paste up to temperature. Please refer to the GC 50 Handling Guideline for further information on storage conditions.

Shelf Life:

A minimum shelf life of 6 months can be expected when stored in the original unopened container at room temperature. GC 50 can be stored refrigerated for 12 months.

GENERAL INFORMATION

For safe handling information on this product consult the relevant Safety Data Sheet (SDS)

Disclaimer

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. HARIMA is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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