DEVELOPMENTAL PRODUCT All data is preliminary and subject to change.

QuickSinter™ Kit

Pressureless Silver Sintering Dispense Pastes

Introduction

Indium Corporation's **QuickSinter™** silver sintering pastes are high metal-loading materials designed to fit easily into a dispense process with no change of deposition equipment. The pastes can also use fast "reflow-like" (RFL) sintering processes to form strong joints on many standard leadframe, DBC, and IPM pad finishes, and will bond strongly to die with Ag, Au, or Cu surfaces.

Solder and many standard epoxy-silver materials are proving increasingly unsuitable for many discrete and small module device applications. They may, for example, be incapable of surviving the ambient conditions seen from longer mission profiles for automotive applications. These mission profiles typically may drive longer high-temperature operating life (HTOL) and larger temperature swings in usage (thermally cycling).

Dispense: The pastes are capable of being dispensed at very high speed (>>3dots/second) using readily-available specialty needles. These are supplied with the **QuickSinter™ Silver Sintering Paste Kits.**

Sinter: Smaller die are typically better suited to faster-ramping RFL sintering, and guidelines are given below.

Features

- Pressureless sintering
- Fast processing: dispense/sinter
- Near drop-in process solution for replacement of current high-Pb solder
- Compatible with a variety of surfaces
- Kit allows fast time to market

Why Kits?

Customers have been asking, "Why does Indium Corporation offer kits of materials, rather than recommending a single material?" The answer is simple: *speeding up your time to market.*

Silver sintering is not new in power semiconductor assembly. Pressurized sintering has been used for well over a decade and is now an established process. Pressureless sintering, on the other hand, is relatively new and specifics of best application are not well characterized. Trade-offs in the material functionality (for example voiding versus speed of processing) are therefore not well known.

Indium Corporation sintering materials are targeted towards discrete die-attach and leadframe applications, but may also show usage in less temperature-tolerant applications, such as SMT attach. As we enter the era where smaller die for wide band gap applications (especially SiC) are being used, and integrated power modules (IPM) are under development, the engineer's task of rapid deployment of new materials is only likely to become more complex.

Even within subsets of the power assembly market, there is a complexity of disparate applications (for example: metallizations on die and substrate (leadframe/DBC pad); reflow/RFL-sintering equipment and process details; RFL-sinter atmosphere; die size; target bondline thickness and so on).

All this means that recommending any single material is not easy, and we are leaving it up to the engineer to choose the (perhaps) two to four pastes that may be best suited for evaluation.

Packaging

These dispense pastes are supplied in standard 10cc syringes. **QuickSinter™** pastes can be supplied in 10 or 30cc syringes.

Cleaning

Ionic contents for the **QuickSinter™** pastes have been measured to be significantly lower than the allowable limit for specific ions mentioned in the **QuickSinter™** Sintering Paste Basics table. No cleaning process should, therefore, be required after sintering.

Technical Support

Indium Corporation's internationally experienced engineers provide in-depth technical assistance to our customers. Thoroughly knowledgeable in all facets of Material Science as it applies to the electronics and semiconductor sectors, Technical Support Engineers provide expert advice on Ag sintering applications. Indium Corporation's Technical Support Engineers provide rapid response to all technical inquiries.

Safety Data Sheets

The SDS for this product is available by contacting askus@indium.com

From One Engineer To Another®

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Key Features by Paste Designation

	QS789-NS	QS815-SD	QS815-AR	QS815-LT
Key Parameters	Pressureless sinter			
	Zero residue			
	Highest bond (shear) strength	“Fast Sinter” for smaller die	“All-Round” suited for fast and slower ramp and a wider variety of die sizes	Low-temperature sinter suited to PCB applications for small die
	Minimal (vertical only) cracking	No cracking		
	Room temperature or refrigerator or cooler (≤5°C) storage	Refrigerator or cooler (≤5°C)		
	Shelf Life ≥6 months			
	Thaw Time: 10cc ~30 minutes 30cc ~1–2 hours			
	Long dispense life for lower metal loadings	Long dispense life (>48 hours)		
	Fastest (RFL) sinter in nitrogen at higher temperatures	Sinters in air	Sinters in air and compatible with organic coated copper (BTA/OSP), specific nitrogen applications	Sinters in air

QuickSinter™ Sintering Paste Basics

	QuickSinter™ Material						
	QS789-NS			QS815-SD	QS815-AR	QS815-LT	Test Details
Appearance	Homogeneous bubble-free silver fluid						Visual inspection
Silver Content by wt%	91.0%	92.0%	93.0%	**92.0%**	**92.0%**	**92.0%**	As manufactured
Ionics	Meets specification	Meets specification	Meets specification	Meets specification	Meets specification	Meets specification	Anions: F-, Cl-, Br- and Cations: Na, K, NH4, S (<20ppm each)
EH&S Conformance	Conforms to REACH, RoHS, ELV, and all applicable requirements						
Viscosity, kcps, 5rpm at 25°C	12.6	33.4	54.5	12.6	24.7	36	C&P 51 5rpm after 5 minutes
Thixotropic Index	4.4	4.3	6.1	7.8	8.2	7.2	Ratio of viscosity at 0.5rpm/5rpm

All information is for reference only.
Not to be used as incoming product specifications.

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