
New temperature stable solder paste
LOCTITE GC 10 –
The Game Changer
No refrigeration
Improved stability
Improved printing
Improved paste management
Improved reflow
Improved logistics
Cost savings

First-ever temperature stable solder paste

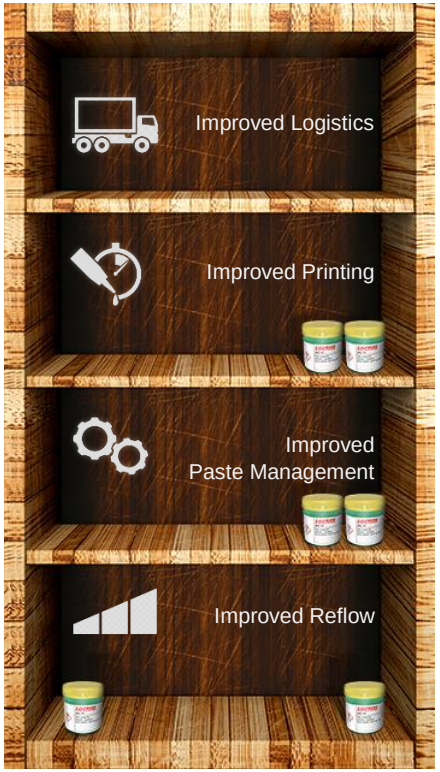
LOCTITE GC 10 – The Game Changer

LOCTITE GC 10

- Improved Logistics
- Improved Printing
- Improved Paste Management
- Improved Reflow

Benefits at a Glance

- Temperature Stable:
  - 26.5°C for one year
  - 40°C for one month
  - 50°C for one week
- Performance Attributes:
  - Zero halogens added
  - 24-hour abandon times
  - Stabilized, consistent print transfer efficiency
  - Expansion of the reflow process window
  - >95% on-line paste utilization
  - Reduced solder-related defects
- All of these advantages combined result in more than **30% potential cost savings**



LOCTITE GC 10 – The Game Changer

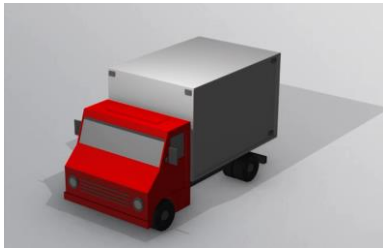
Improved Logistics

LOCTITE GC 10

Improved Logistics

Improved Logistics

- Eliminates cold packs, dry ice and overnight shipping
- Ship ground vs. air transportation
  - Material is not affected by climate
  - Eliminates spoilage caused by transportation or customs clearance
- Provides flexible supply chain options



LOCTITE GC 10 – The Game Changer

Improved Paste Management

LOCTITE GC 10

Improved Paste Management

Improved Paste Management

- On-line paste utilization of >95%
  - Compared to 75%
- Reduces end-of-day paste scrap to <5%
  - Compared to 25%
- Eliminates cold storage
- Eliminates thaw period, allowing for immediate start-up

Benefits of Temperature Stability

Game-changing Flux Technology

LOCTITE GC 10 Flux

Improved Stability

- Current flux technology reacts with metal-powder oxides, causing instability
  - Increases viscosity
  - Reduces coalescence
  - Flux and powder separates
- GC 10 flux technology is stable until activated. It does not react with oxides until reflow
  - Increases activity in formula
  - Stabilizes viscosity, improving print life
  - Improves reflow by eliminating defects caused by flux exhaustion
  - Extends shelf life

Benefits of Temperature Stability

Consistent Performance Over Time, Humidity and Temperature

LOCTITE GC 10

No impact

Storage Conditions	
Time	12 months
Humidity	80% RH
Temperature	26.5°C

Competitor Paste

Severe impact

Storage Conditions	
Time	12 months
Humidity	80% RH
Temperature	26.5°C

LOCTITE GC 10 – The Game Changer

Improved Printing

LOCTITE GC 10

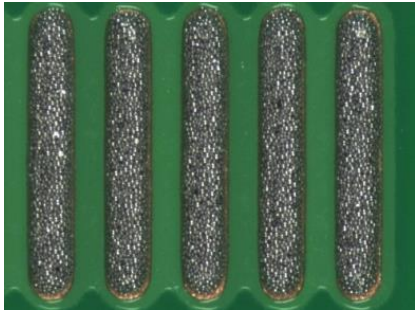
Improved Printing

Improved Printing

- Up to 24 hour abandon times
- Up to 72 hour stencil life

- High yield past volumes with lowest aspect ratio
- Industry leader in paste-transfer efficiency

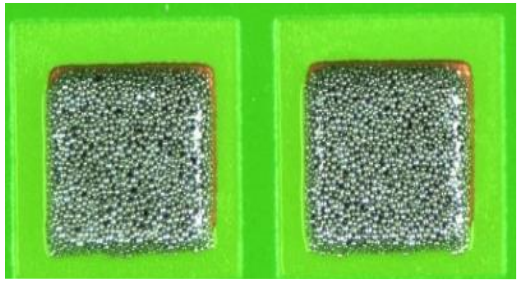
- Reduces scrap from shift changes, breaks and production delays
- Decreases defects from stagnant paste on the stencil
- Reduces rework costs



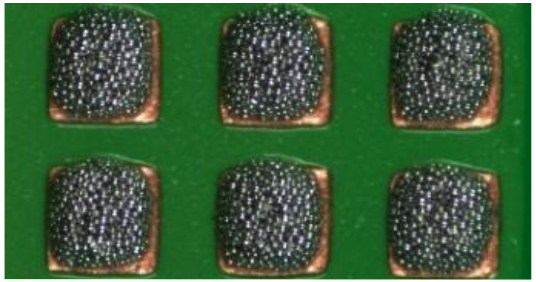
LOCTITE GC 10 – The Game Changer

Improved Printing: Consistent printing down to 0.3mm with Type 4 paste

0402



0201



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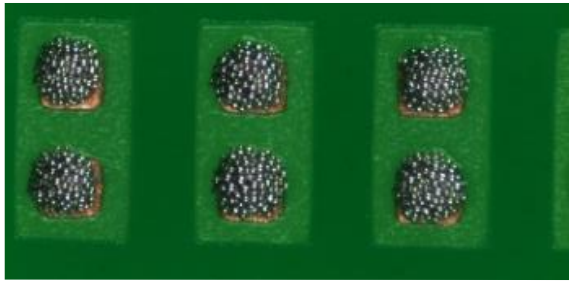
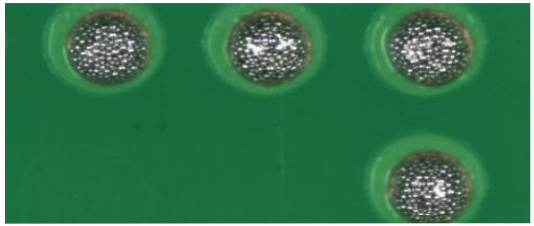
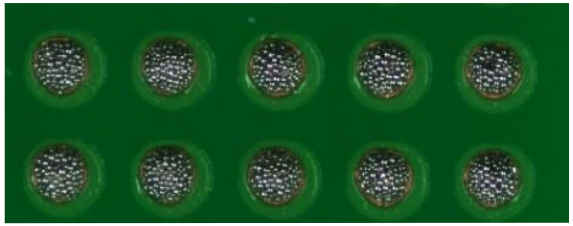


0.4mm TQFP120

0.5mm CSP56



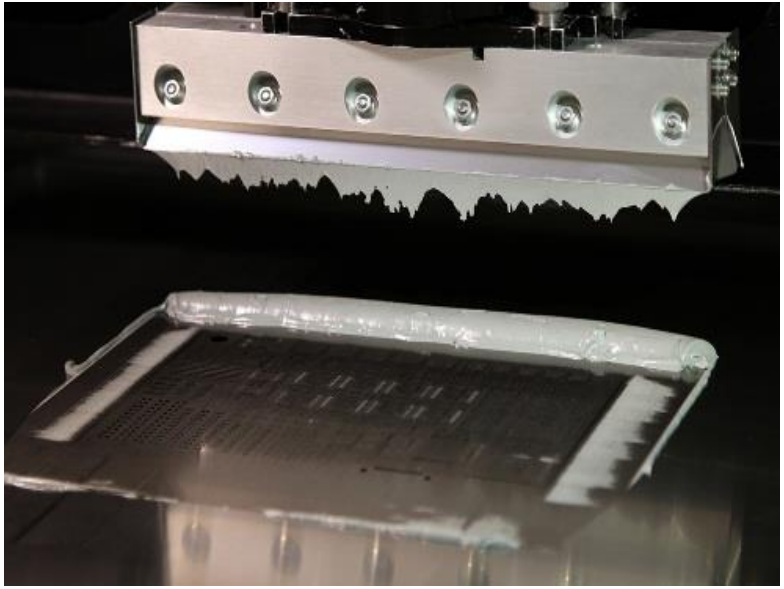
0.4mm BGA432



LOCTITE GC 10 – The Game Changer

Improved Printing: Industry-Leading Abandon Times and Stencil Life

LOCTITE GC 10



Improved Stability

- Extends abandon times and stencil life
- No change in printing performance in hot humid or dry environments
- Eliminates scrap between shifts and end of day
- Promotes continuous use
- Improves printing consistency
- Dramatically reduces printing defects

LOCTITE GC 10 – The Game Changer

Improved Reflow

LOCTITE GC 10

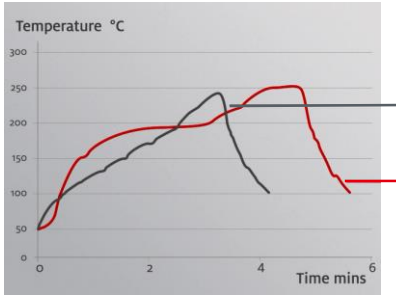
Improved Reflow

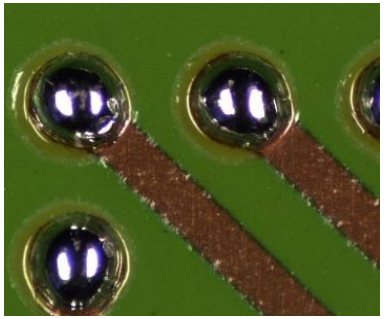
Improved Reflow

- Extremely wide reflow process window
  - Drop-in replacement for current reflow process, regardless of current profile
- Shiniest Pb-free solder joints in the industry
- Superior coalescence and wetting on long, hot soak profiles

- Eliminates graping due to flux exhaustion on long profiles
- Eliminates mid-chip balling with improved wetting

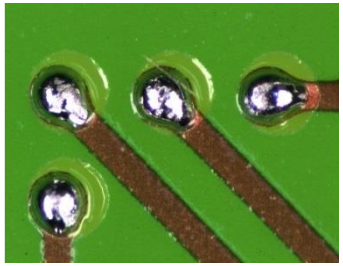
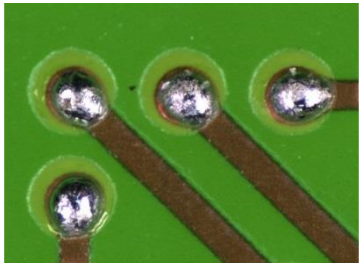
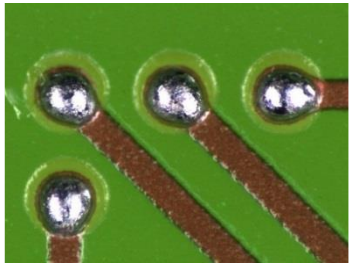
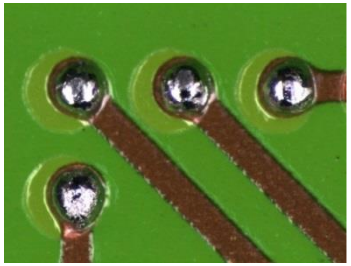
- Accommodates innovative board designs that require long, hot profiles





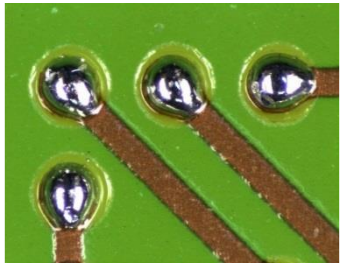
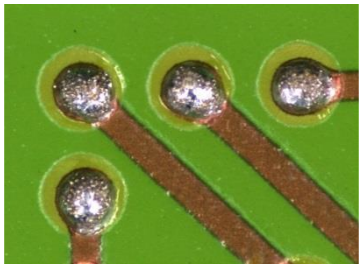
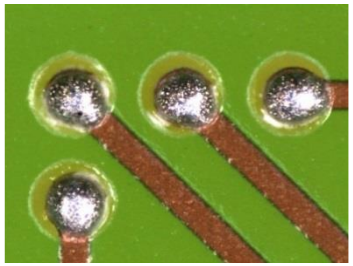
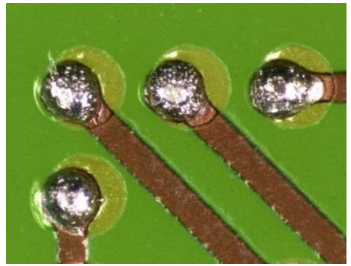
LOCTITE GC 10 – The Game Changer

Improved Reflow: Consistent Performance and Coalescence on Linear and Long-Hot Soak Profiles

Game Changer	Comparison A	Comparison B	Comparison C
			

Profile A (Consumer)

- 0.5 mm CSP pads

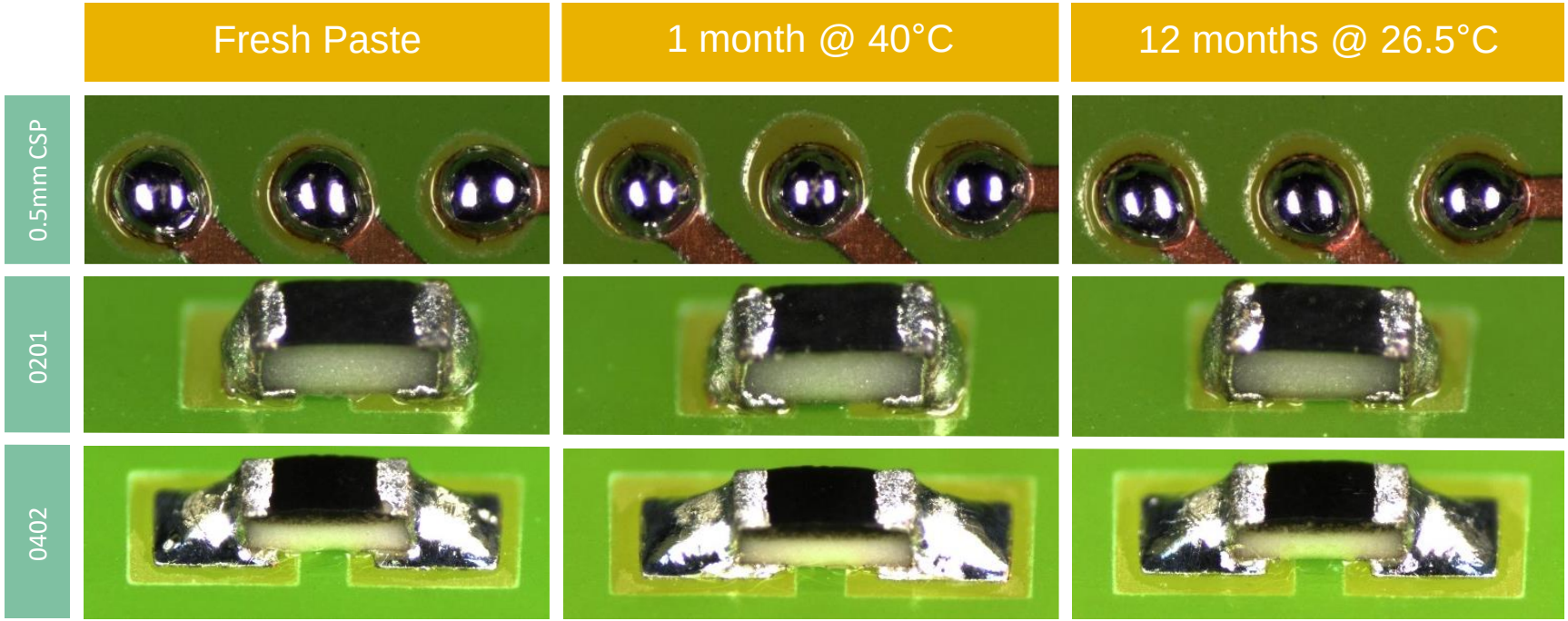
Game Changer	Comparison A	Comparison B	Comparison C
			

Profile D (Industrial)

- 0.5 mm CSP pads

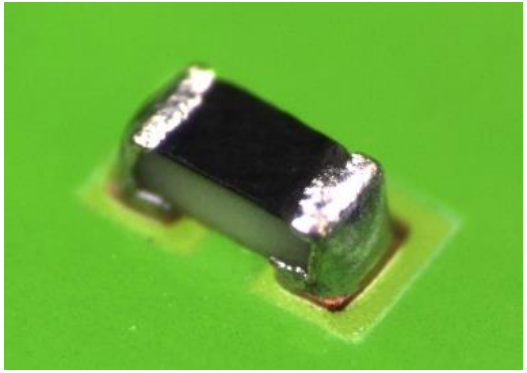
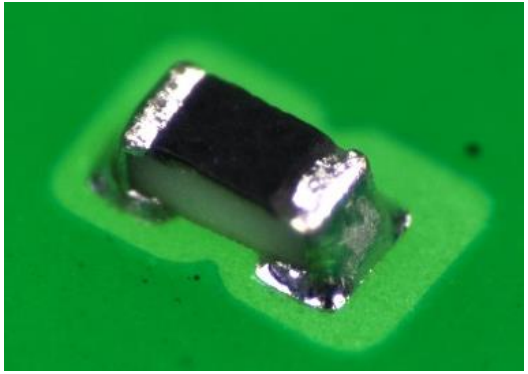
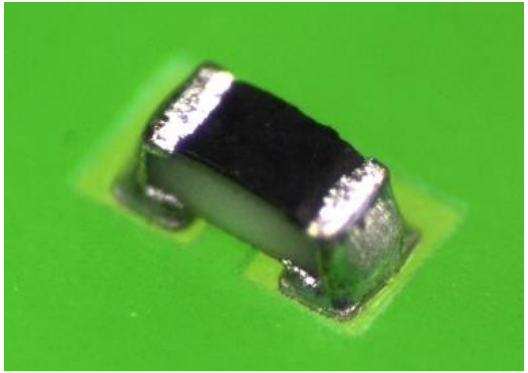
LOCTITE GC 10 – The Game Changer

Improved Reflow: Consistent Performance Over Time and Temperature



LOCTITE GC 10 – The Game Changer

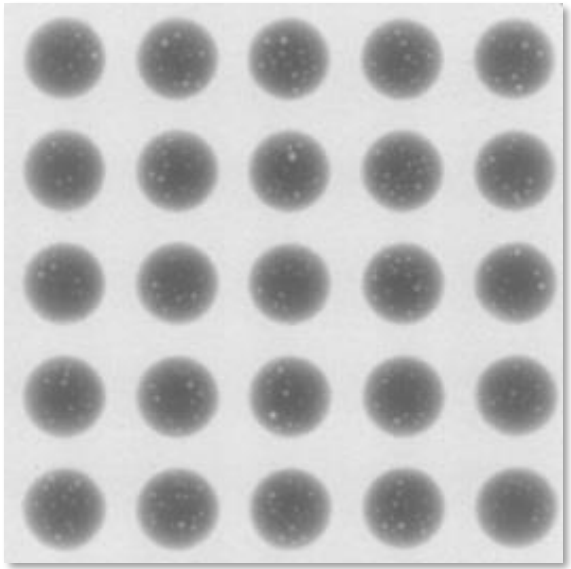
Improved Reflow: Consistent Performance on Multiple Board Finishes

OSP Finish	Silver Finish	Tin Finish
		

Benefits of Temperature Stability

Meets IPC Voiding Specifications

0.3mm pitch CSP25



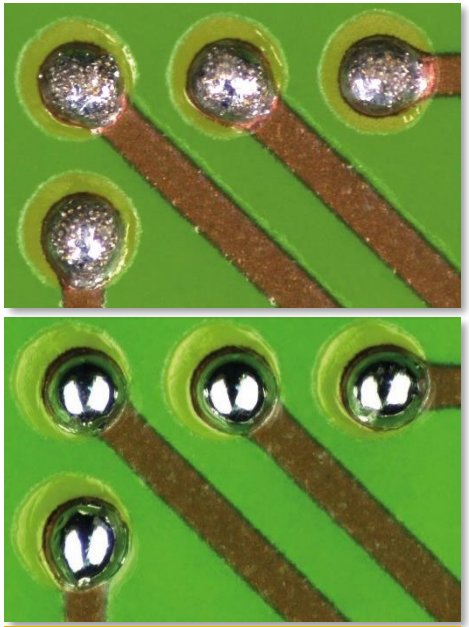
Improved Stability

- Flux formulation is not affected by high humidity, reducing the voids caused by moisture captured in the flux
- Environmentally stable
- Meets and exceeds all IPC Class III requirements

Benefits of Temperature Stability

Reduced Solder Balling and Graping

Competitor Paste



LOCTITE GC 10

Improved Stability

- Designed to minimize reflow defects
- Creates oxide barrier, prohibiting reaction until reflow

Game Changer Paste Technology

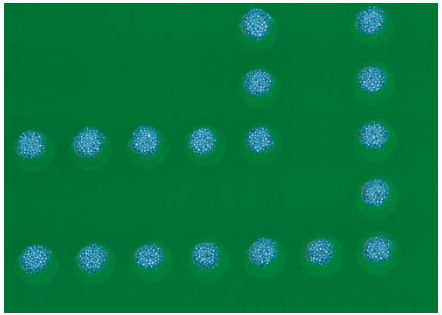
Summary: The new benchmark for the industry

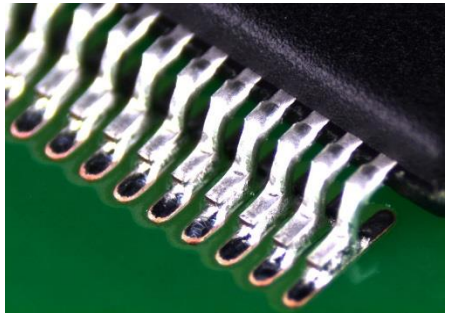
Attributes	Standard Technology	LOCTITE GC 10
Particle Size Distribution	Type 3, 4	Type 3, 4, 4.5 (4A), 5
Alloy	SAC305 (97SC)	SAC305 (97SC)
Flux	ROL0	ROL0
Storage:		
Performance Stable at 26.5°C	1 month	1 year
Performance Stable at 40°C	1 day	1 month
Performance Stable at 50°C	0	1 week
Process:		
Abandon Time	Up to 4 hours	Up to 24 hours
Stencil Life	Up to 8 hours	Up to 72 hours
Soak Temperature (Reflow)	150-180°C	150-200°C
On-line Paste Utilization	75%	>95%
Start-up Time	4-24 hours	0 hours

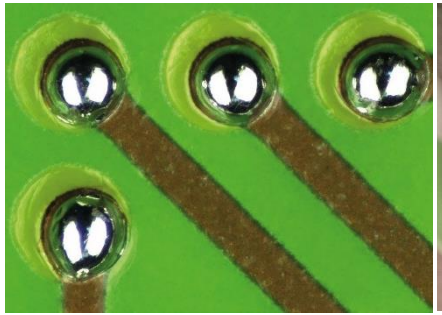
Benefits of Temperature Stability

Summary: Improved Printing, Stability, Reflow and Paste Management

Improved Printing:	Improved Stability:	Improved Reflow:	Improved Paste Management:
Six Sigma quality paste deposition with extended abandon times	On-line stencil stability: 3 days @ 80% RH	Excellent coalescence in air for 0201, 01005 and 0.3mm pitch components	Exceptional on-line paste utilization
Groundbreaking standards for stencil life	Paste stability: 12x over conventional	After 3 days @80% RH, zero dewetting on long soak, high-temperature reflow profiles	Eliminates end-of-day paste scrapping
High yield paste volumes with lowest aspect ratio: 20% lower than industry standard	Elevated temperature stability: 100x over conventional	Minimal hot slump @ 182°C, improving solder joint reliability	Eliminates refrigerated preproduction and warehouse storage
Industry leader in paste-transfer efficiency	Improved shipping logistics management	Best-in-class cosmetic appearance for Pb-free solder joints	Eliminates cold pack, dry ice and overnight shipping
Exceptional cost savings from reducing the required amount of paste		New flux technology improves total pad solderability in air with reduced solder paste volumes	







LOCTITE GC 10 – Be a Game Changer

Customer Acceptance

> “Outside of its excellent process performance, which is always our top priority, the sheer simplicity and cost savings realized by LOCTITE GC 10’s hassle-free material management are incredible. There is no taking it out of the refrigerator hours before a shift, no complex labeling and, best of all, start-up time is zero. We just take it off the shelf, put it on the stencil and start printing boards. We’ve left LOCTITE GC 10 on the stencil for more than eight hours and it was as creamy as when we first opened the jar – no kneading required. Plus, we can do away with expensive overnight shipping of solder paste and the worry about temperature exposure. With LOCTITE GC 10, we have a lot more latitude and that translates to a more efficient operation.”

Chris Murphy, Technical Steward, The Morey Corporation

MOREY

Henkel

LOCTITE GC 10 – Be a Game Changer

Customer Acceptance

> “LOCTITE GC 10 has completely changed our traditional working models. The paste has given us nothing but perfect, consistent results with no refrigeration. In our evaluation, LOCTITE GC 10 came out of the jar perfect and the printing results at 60 hours were just as good as they were an hour after opening the jar. It printed and reflowed perfectly and we achieved very close to 100% yield. In addition, we didn’t experience any aperture clogging, the stencil cleaned up easily and the paste didn’t dry out. The cost savings for our business are substantial and far outweigh any incremental cost differential versus competitive pastes. LOCTITE GC 10 is absolutely the “game changer” it claims to be!”

Matthew Polak, Owner, Raven Systems Design, Inc.

LOCTITE GC 10 – Be a Game Changer

Customer Acceptance

> “LOCTITE GC 10 temperature stable solder paste yielded great results. We were able to hold jobs on the line for as long as two days and had absolutely excellent reflow performance even though the paste had been exposed for an extended period of time.”

Brian Steelglove, President, Accelerated Assemblies, Inc.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