Tputty™ SF560
Application Guideline

Application Note

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This application guideline provides general instructions for use for Tputty™ SF560.

global solutions : local support.

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Overview

Tputty™ SF560 is a high-performance Thermal Interface Material (TIM) designed to enhance heat dissipation in electronic components as well as eliminate silicone contamination. It is a single-component, silicone-free material distinguished by its high thermal conductivity and low thermal resistance, ensuring efficient thermal transfer. The ultra-soft composition of Tputty™ SF560 allows it to conform easily to surfaces, minimizing gaps and enhancing contact. Additionally, it boasts low fogging and low bleeding properties, providing high reliability and long-term stability in various applications.

At elevated temperatures, above 85°C, the material may present a natural discoloration or yellowing at the periphery of the pad aera, which can play the role of a dam, preventing bleeding or fogging.

Use

Recommended Use:

Tputty™ SF560 is ideal for applications that can benefit from automation, and providing application flexibility and variable gap adaptation, Tputty™ SF560 will exert minimum stress on your component while maintaining interface contact to maximize thermal transfer.

Data provided on the datasheet are for design engineer guidance only; it is possible to observe performance variation in application. As general recommendation for liquid gap fillers, a proper fixation design is important to minimize relative displacement between housing and PCB, which can be caused by thermal expansion or inertial solicitation from vibrations and shocks.

Shipping and Storage

Shelf Life:

Shelf life for Tputty™ SF560 stored in unopened original package is currently set at 6 months from date of production.

Note: A limited flow rate variation can be seen after shelf life. It' does not impact functional performance.

Storage Conditions:

Tputty™SF560 should be stored in original product packaging until ready for use. Recommended storage conditions are up to 35°C with no special requirement on relative humidity when stored in original packaging. For cartridges, the direction to store the material is referred to the arrow from carton or sticker as in vertical tip-down dispense orientation). It's very important to keep the correct storage direction following the note of the packaging.

Storage under High Pressure:
Tputty™SF560 should not be stored under high pressure dispensing conditions. If stored for long periods under pressure some separation may be noticed. It is recommended to release the pressure from the dispensing equipment when not use for long periods.

Open package after start of using
The general guideline is that you can finish one packaging product within one shift continued production line running or at least you can finish one packaging product within 3 days with discontinuous production line running. It's not recommended that a big packaging to be used for small using volume, there is some risk of material flow rate evolution and of resin bleeding if the material remains under high pressure too long time.

Preparation and Clean-up

Preparation for Use: Tputty™SF560 is ready to use out of the container and no post-cure is needed. Make sure surfaces to be covered are clean and dry. Mixing before use is not recommended; however, the flow rate may be lower than specified on the datasheet if dispensed at temperatures below 23°C.
Ensure the dispensing equipment is clean and calibrated. Load thermal interface material, set the desired parameters, and verify consistent dispensing for optimal application. It is recommended to purge the material prior to use as well as making sure the entire system including pipes are free of air. In case of air is entered to the system, purge the material and remove it.
Clean-up: Excess material can be cleaned up using a dry rag.
Use 100% IPA and microfiber cloth to clean dispensed thermal interface material, avoid hard or metallic tools.

First Aid

First Aid:
Safe handling, disposal, and first aid measures are included in the SDS. Please read the SDS before using or handling this product. For further questions, please contact Laird. Always use protective gloves when operating with TIM for safety.

Packaging:

Tputty™SF560 can be provided in various packages according list below.
For special packaging, please contact Laird.

Table

PACKAGING SIZE	FILL VOLUME
30cc plastic syringe	30cc (101g)
75cc plastic cartridge with sealed piston	56cc (190g)
180cc plastic cartridge with sealed piston	159cc (537g)
300cc Aluminum cartridge	300cc (1029g)
360cc plastic cartridge	326cc (1100g)
600cc plastic cartridge	601cc (2028g)
1 gallon steel pail	3820cc (13kg)
5 gallon HDPE pail	5880cc (20kg)

Cartridges

1gallon pails

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Dispensing Recommendations & Equipment

Tputty™ SF560 can be dispensed with a variety of dispensing systems. The following is a partial list of example equipment for low and high volume dispensing and typical results that can be expected.

- **Material first time use (testing & prototype) Dispensing Method**

  The manual dispensing gun or EFD Performus II Dispenser can be used.

30cc Manual Dispenser

Nordson EFD Performus II Dispenser

- **Prototype & Low volume Dispensing Method**

  Portable XYZ robots with small dispenser ensure precise, accurate patterns. Avoid air bubbles in prototypes for best results.

  Laird offers prototyping capabilities in the lab — contact Laird Application Engineering for production.

- **Medium & High Volume Dispensing Methods**
  Laird partners with top equipment suppliers and manufacturers. All products are tested, with feasibility studies in place. Feeding systems suit various packaging like cartridges or pails. Dispensers are chosen for precision, repeatability, cost efficiency, and cycle time optimization.

- **Highest dispensing accuracy**
  Volumetric based dispensing systems are recommended for achieving most stable, accurate and repeatable processes. Volumetric systems will also eliminate the variation of flow rates when the material is close to expiry date.
  For more information and advice of suitable dispensing solutions, contact Laird Application Engineering.

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Troubleshooting Guideline

Problems	Recommendations
Material not coming out fast enough	1. A kind of higher-pressure material supply pump will be very helpful to improve it. 2. Try to reduce the resistance force of the material supply pipe, for example, reduce the length of the material pipe or increase the diameter of the material supply pipe or avoiding a rectangle of the material supply pipe. 3. Heating the material to 60℃~80℃ when dispensing by a kind of heating control dispensing valve.
A small dot cannot stick on the surface, but it is taken off with the dispensing nozzle	1. Try to reduce the inner diameter of the dispensing nozzle. 2. Optimize the distance from the surface to the dispensing nozzle, not too far and not too close. 3. Try to add about 0.3s~0.5s waiting time before the dispensing nozzle moving to another position. 4. Not moving the dispensing nozzle up directly but moving it to left and right before up. 5. Using a kind of heating control dispensing valve to heat the material 60℃~80℃ when dispensing
The dispensing weight Cpk is not very good	1. A kind of metering dispensing valve will be needed. 2. Selected a proper metering valve model, not too big but can meet the capacity, for example a cylinder piston metering valve with bigger diameter will decrease the dispensing precision. 3. Increase the dispensing pressure for screw metering dispensing valve or reduce the rotational speed of the screw. 4. Using a kind of heating control dispensing valve to heat the material 60°C~80°C when dispensing, it will be positive for Cpk.
Cartridge broken during dispensing	1. The dispensing pressure may be too high, try to reduce the dispensing pressure or reduce the diameter of the air cylinder. 2. Try to use a metal protection fixture outside the cartridge, contact Laird for technical supporting of these fixture if needed.