Tflex™ CR350
Dispensing Guideline

Application Note

Date: June/11/2019

This application guideline provides general instructions for use for Tflex™ CR350.

global solutions :
local support.

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Overview

Tflex™ CR350 is a two-part, silicone-based thermal gap filler that has low viscosity prior to curing. The low viscosity makes it ideal for applications in which the components cannot withstand high pressure during assembly. Tflex™ CR350 is ideal for applications where large gap tolerances are present. The mixed material will cure at room temperature or can be accelerated with the addition of heat. The Tflex™ CR350 composition provides excellent thermal performance and compliance.

Shipping and Storage

Shelf Life: Shelf life for Tflex™ CR350 stored in unopened original package is currently set at 6 months from date of shipment.

Storage Conditions: Recommended storage conditions are up to 35°C, up to 50% relative humidity. Tflex™ CR350 should be stored in original product packaging until ready for use. It's very important to keep the correct storage direction followed the note of the packaging.

Packaging: Tflex™ CR350 is two component products can be provided as below standard packages to support different application scenario.

Table1

PACKAGING SIZE	FILL VOLUME
50cc (Dual plastic cartridge 1:1) (2*25cc)	47cc(150g)
400cc (Dual plastic cartridge 1:1)(2*200cc)	387cc(1240g)

Table2

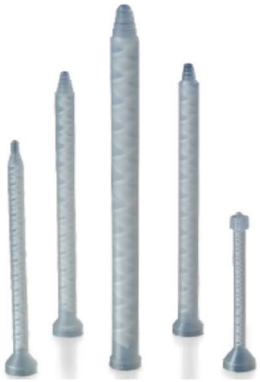
PACKAGING SIZE	FILL VOLUME
5 gallons plastic pail *2	6250 cc*2 (40 kg)
1 gallon plastic pail*2	4062 cc *2(26 kg)

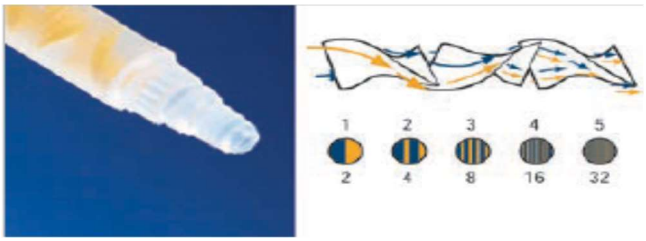
In order of left to right using Table1 for definition

In order of left to right using Table2 for definition

Application and Clean-up

Mixing: Tflex™ CR350 is a two-part, silicone-based system and therefore requires mixing before use. Mixing should be done at a 1:1 ratio of part A (pink) to part B (white). Material should be used with matching part A and B batch numbers. Disposable plastic mixing nozzles can be used to mix parts A and B together. Mixing nozzles can be attached to the ends of cartridges or automated dispensing systems. Mixing nozzles with a minimum of 16 mixing elements are recommended to achieve proper mixing.
Before attaching mixing nozzle, a small amount of material should be purged out of each cartridge to align pistons evenly and fill any air space in the tip of the cartridge.





How the static mixer work:
The spiral mixer provides thorough material mixing by simple yet mixing process with the material go through these mixing elements.

Troubleshooting of using static mixers	
Problem	**Recommendation**
Striation (i.e. Two colors in the material indicating that is not mixed very well)	Increase the number of the elements to the upper limits for that type of material. **Or** Reduce diameter if increased back pressure is acceptable.
Set time is slow	Increase the number of the elements to the upper limits for that type of material. **Or** Reduce diameter if increased back pressure is acceptable.
Surface is tacky	Increase the number of the elements to the upper limits for that type of material. **Or** Reduce diameter if increased back pressure is acceptable.
Material not coming out fast enough	Increase the diameter of elements towards the upper limits for the viscosity of materials
Difficult to dispense material through mixer **(When using a manual hand dispenser)**	Increase the diameter of elements towards the upper limits for the viscosity of materials

Dispensing: Material can be dispensed with manual dispensing gun or automated dispensing systems for high volume in-line manufacturing.

- **Prototype & Low Volume Dispensing Method**

  The manual dispensing gun or pneumatic dispensing gun is recommended for the prototype and low volume dispensing.

50ml Manual Dispenser

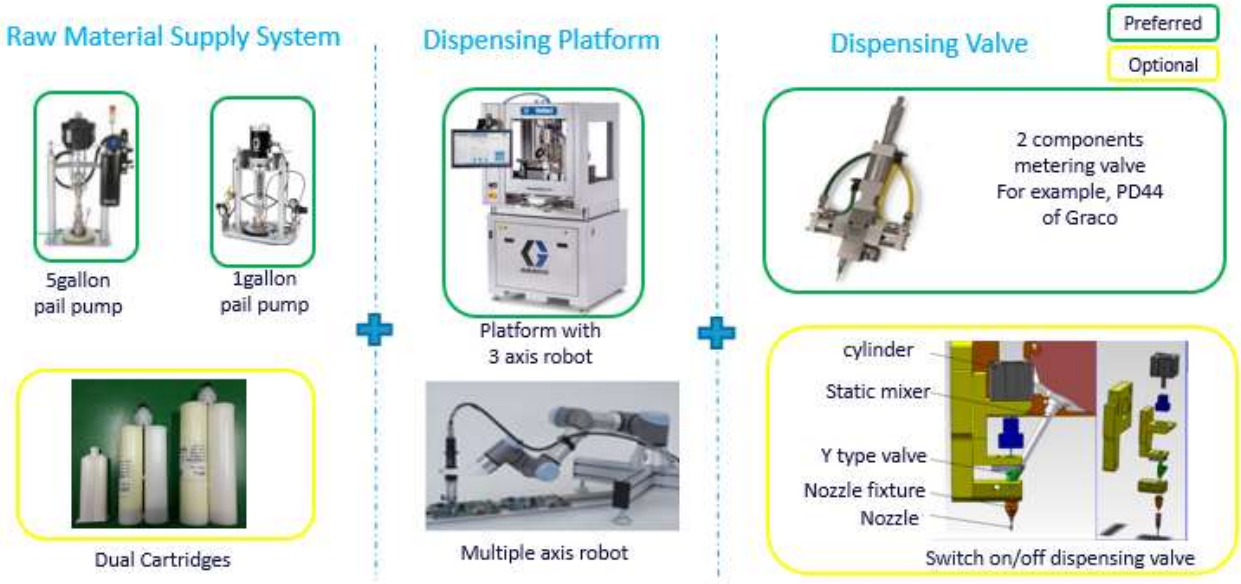
Manual Dispense Gun

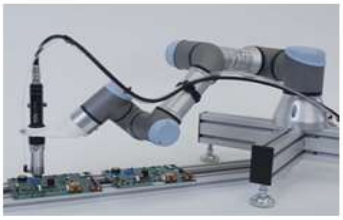
Pneumatic Dispense Gun

Select the proper dispensing gun based on the size of the cartridge.

- **High Volume Dispensing Methods**

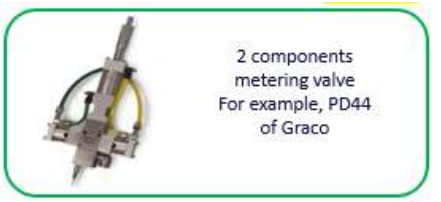
Normally the dispensing system include the raw material supply system, dispensing platform and the dispensing valves:

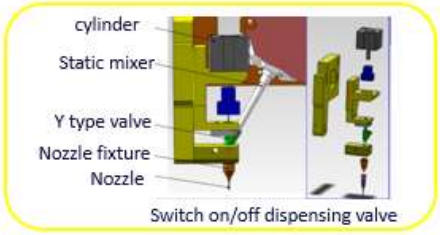


Raw Material Supply System: ✧ Generally, the 2 components products supply from pail to the dispensing valve by pump is better for efficiency and process stable. So normally the 5gallon pail packaging, the pump pressure ratio more than 55:1 is recommended and the diameter of the air cylinder > 80mm is better for the material pump into high pressure and reduce the leftover on the bottom of the pail. The dispensing pipe need the lining with TPFE，all the connectors please use stainless steel.. ✧ The plastic dual cartridge product is pushed piston by air cylinder or motor to dispense the material out.	 5gallon pail pump  1gallon pail pump  Dual Cartridges
Dispensing Platform: ✧ Selected the dispensing platform based on the dimension of the part and the dispensing pattern requirements. ✧ Need to estimate the dispensing platform combined with the dispensing valve, for example, the dispensing valve weight do not exceed the maximum capacity of the robot	 Platform with 3 axis robot  Multiple axis robot

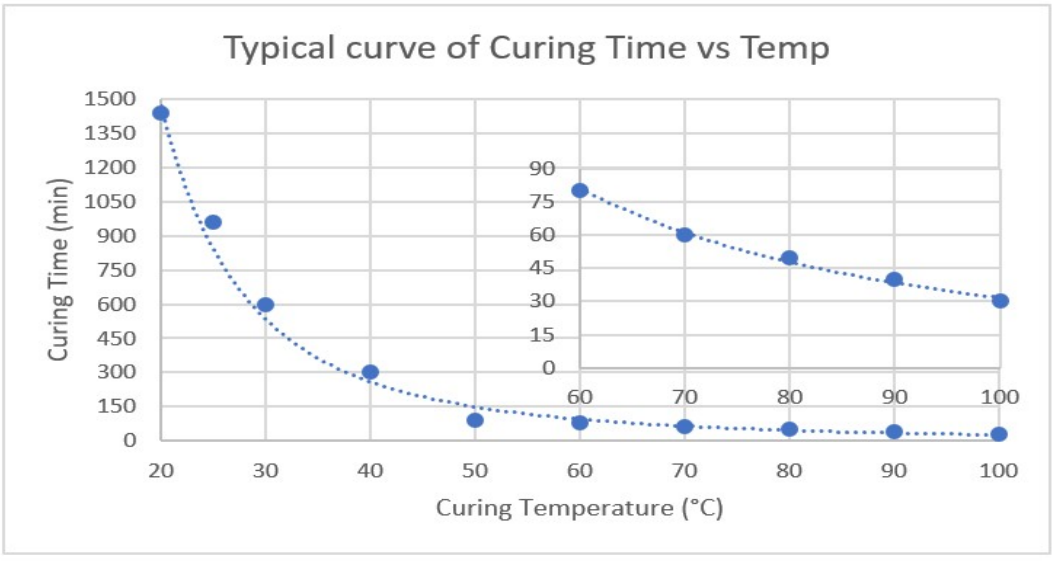
Dispensing Valves:

- ✧ The PD44 metering valve is better for two component products dispensing precision and good cycle time, the dosing pressure is more than 100PSI.
- ✧ The metering valve can provide good dispensing precision, but normally the dispensing process is not continuing, prefer using the 2-metering valve system for continuing process.
- ✧ Switch on/off valve dispensing precision is not very good.
- ✧ The static mixer selection and the diameter of dispensing nozzle is based on the dispensing precision and material, smaller diameter need higher dispensing pressure





Pot life and Cure time: At 25°C pot life (double viscosity) is greater than 60 minutes, and full cure is 24 h at room temperature. At 70°C cure time is 1 hour. Make sure surfaces to be covered are clean and dry.



The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

Cure Inhibition: Tflex™ CR350 is a silicone based material that requires proper curing to fully function. Various elements and their compounds have been proven to cause problems by inhibiting the curing of silicone systems which mainly include three types.
(1) Elements and their compounds of the VA and VIA families in the periodic table including sulfur, phosphorous, and nitrogen containing compounds, urethanes. compounds containing antimony, arsenic, tellurium, and selenium.
(2) Compounds with unsaturated bonds, such as alkynals.
(3) Some metal or metal ions, such as tin, lead, mercury.
So during using the uncured materials, we should pay attention to the elements and their compounds mentioned earlier, and some residual solvents or monomers, and some primers. Do not use latex gloves when handling uncured material.

Exposure to solvents: Tflex™ CR350 is a silicone material filled with thermally conductive fillers. Exposure to organic solvents and strong bases can result in swelling or removal of the silicone carrier material resulting in degradation or loss of performance. For specific chemical resistance consult Chemical Resistance Tables for silicone materials such as the one listed at the following web address:
http://www.omega.com/pdf/tubing/technical_section/chemical_chart_5.asp

Clean-up: Excess material can be cleaned up using a dry rag. Residual silicone oil can be removed using a clean rag and acetone solvent.

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.