Ablebond 967-1 Dispensing Test

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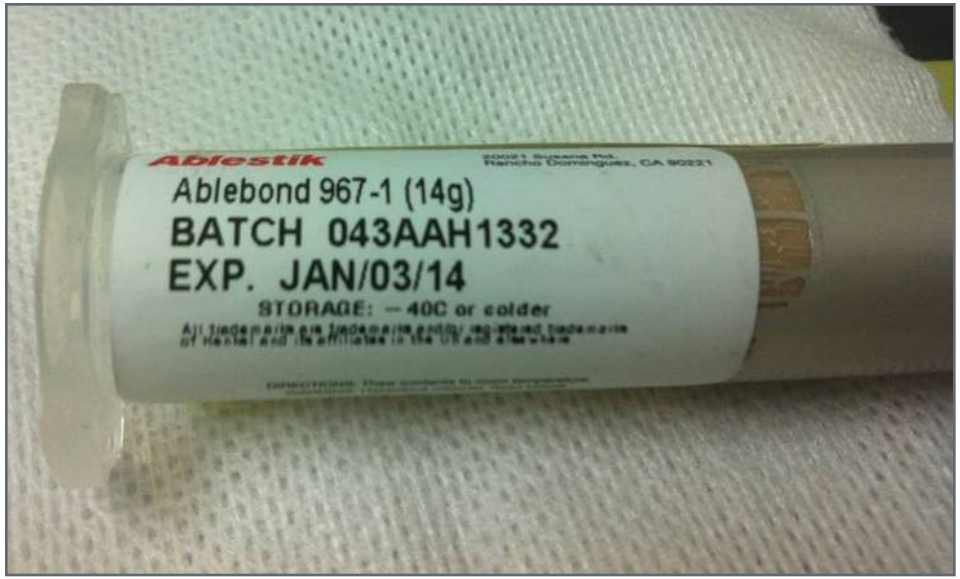
March 12, 2013

Background

- X use Ablebond 967-1 on their new SMOP package, and found the dispensing was not stable, especially some hours after thawing.
- Henkel WGQ support to do dispensing test to find out how long it has good dispensing after thawing.
- Only 5cc paste was from Henkel US to do this test. Batch # 043AAH1332.

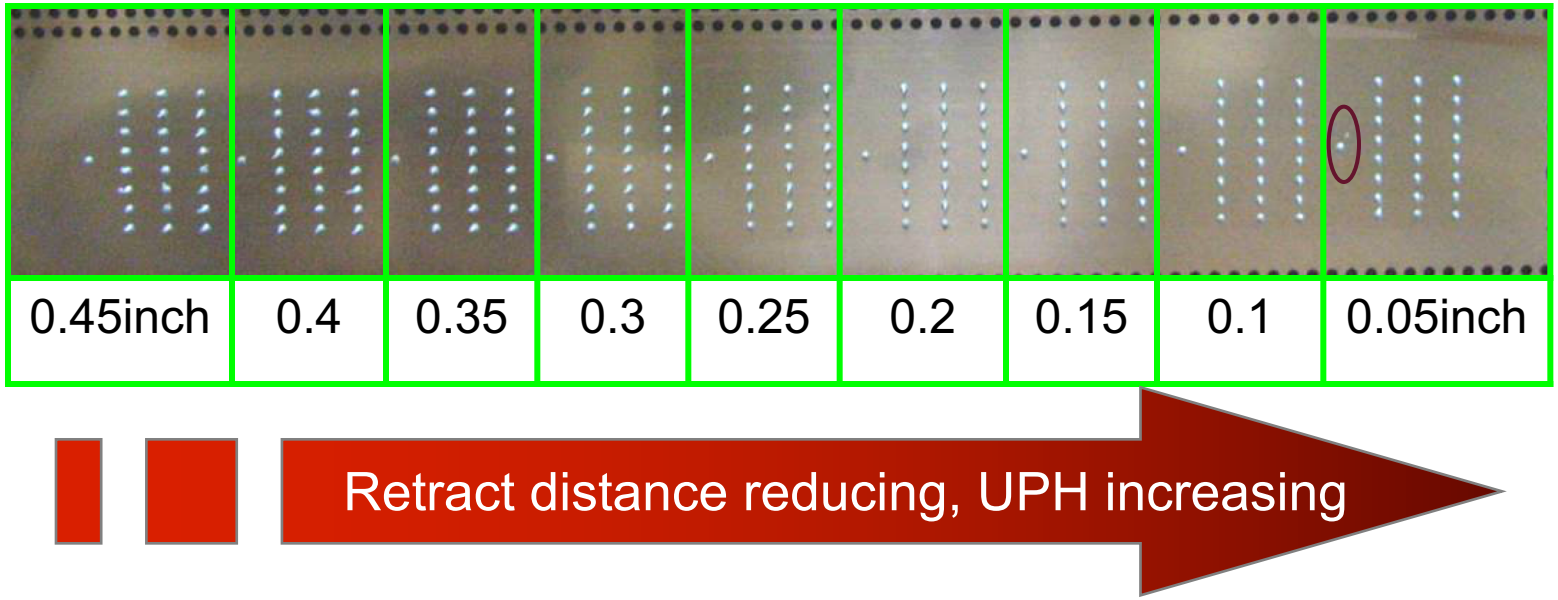


Experiment

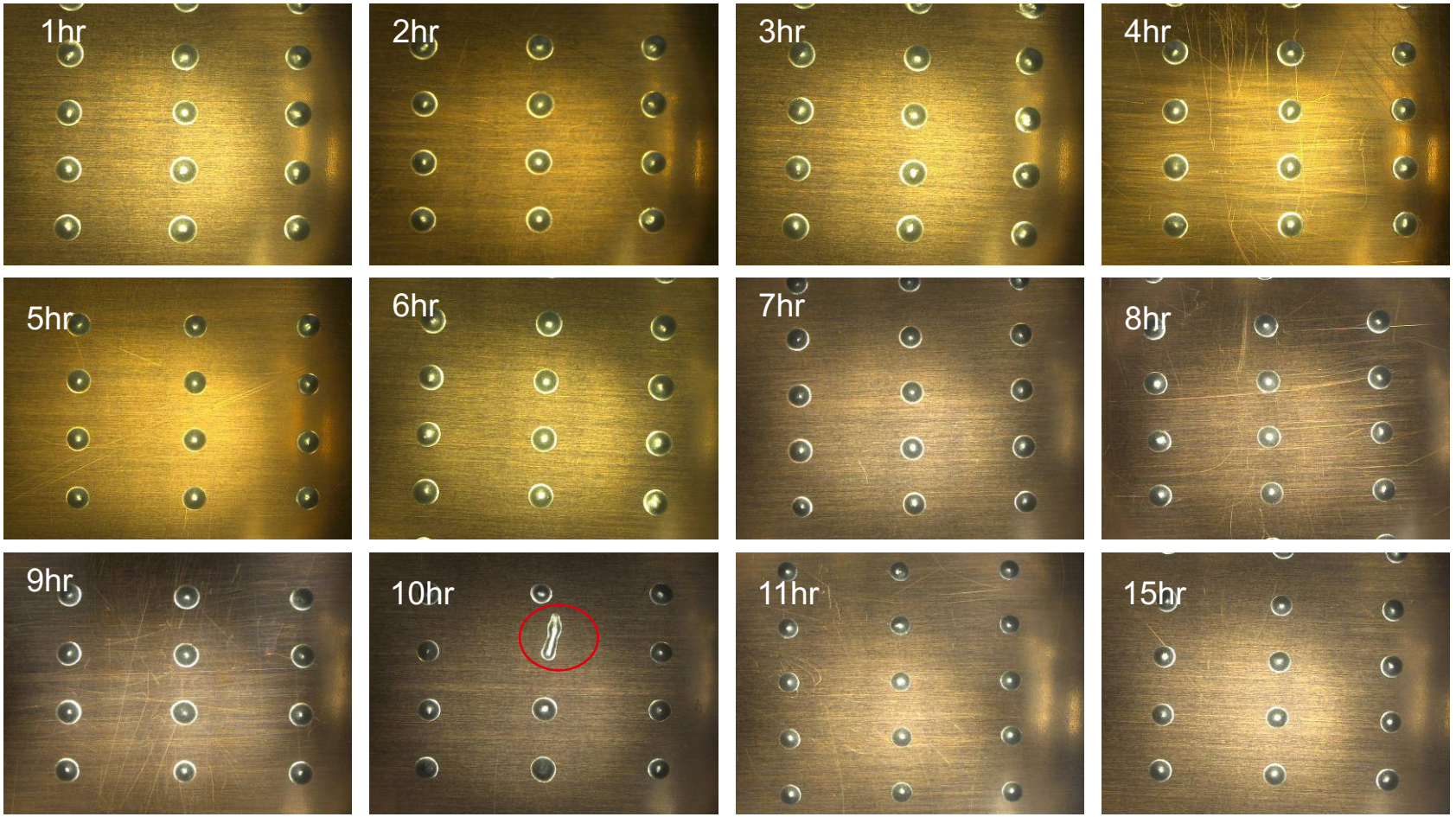
- Dispensing machine: Asymtek S820
- Dispensing Needle: EFD 27Gage (Clear)
- Dispensing pressure: 55psi
- Dispensing time: 0.4sec
- Sample size: 450 dots(2strips)
- Dispensing gap: 0.2mm

Dot dispensing methodology

- Henkel has standard dot dispensing method: totally dispense 9 group with the same parameters except different retract distance. This testing simulates different UPH from low to high, output is total defective dot quantity.

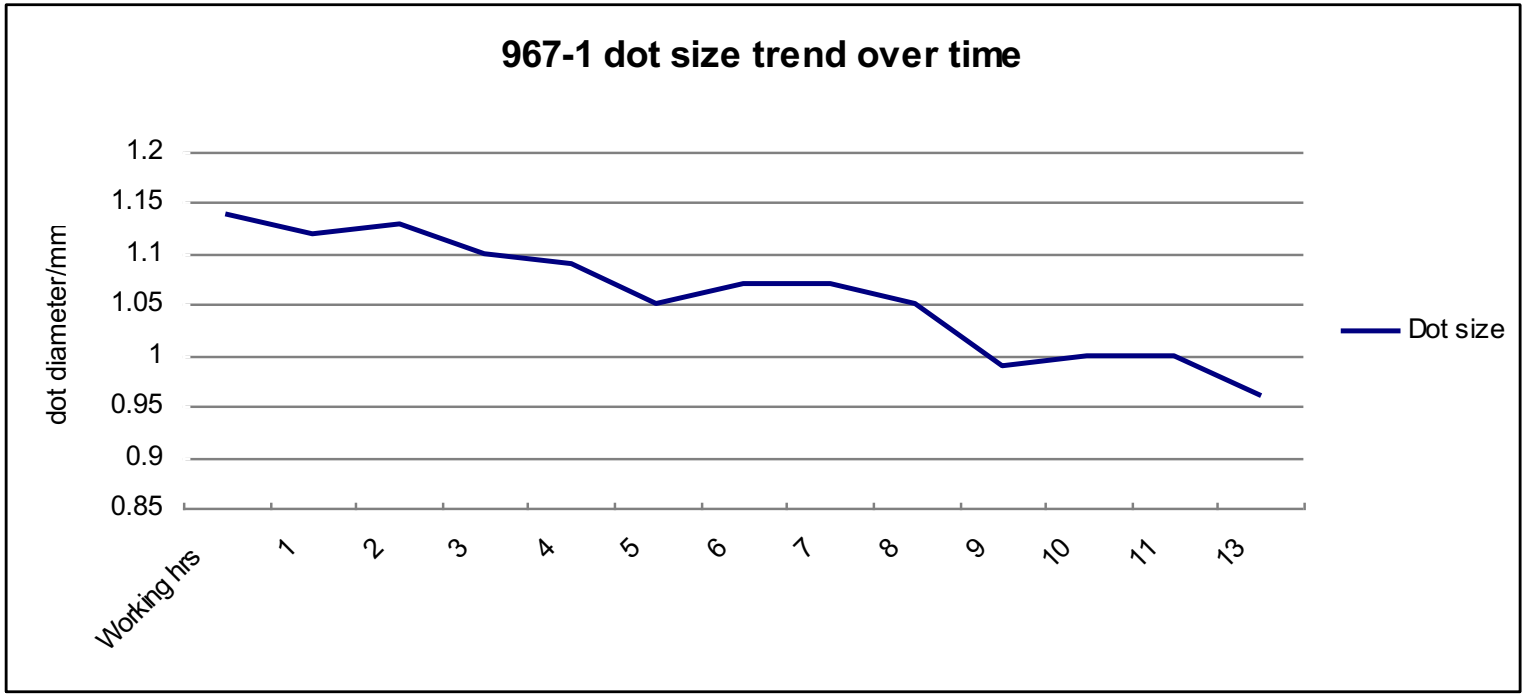


Dot dispensing result



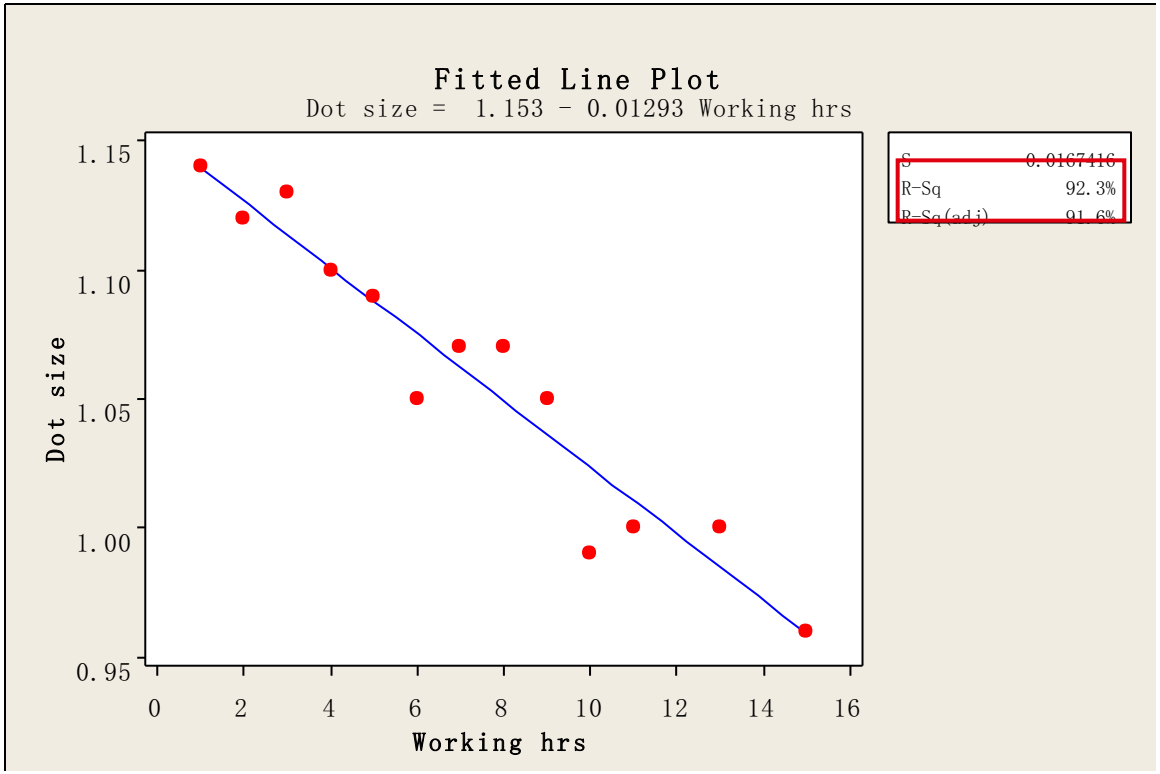
- Only 1 defective dot from 450 dots was found after 10hrs, and no defective after 11 and 15hrs.

Dot size



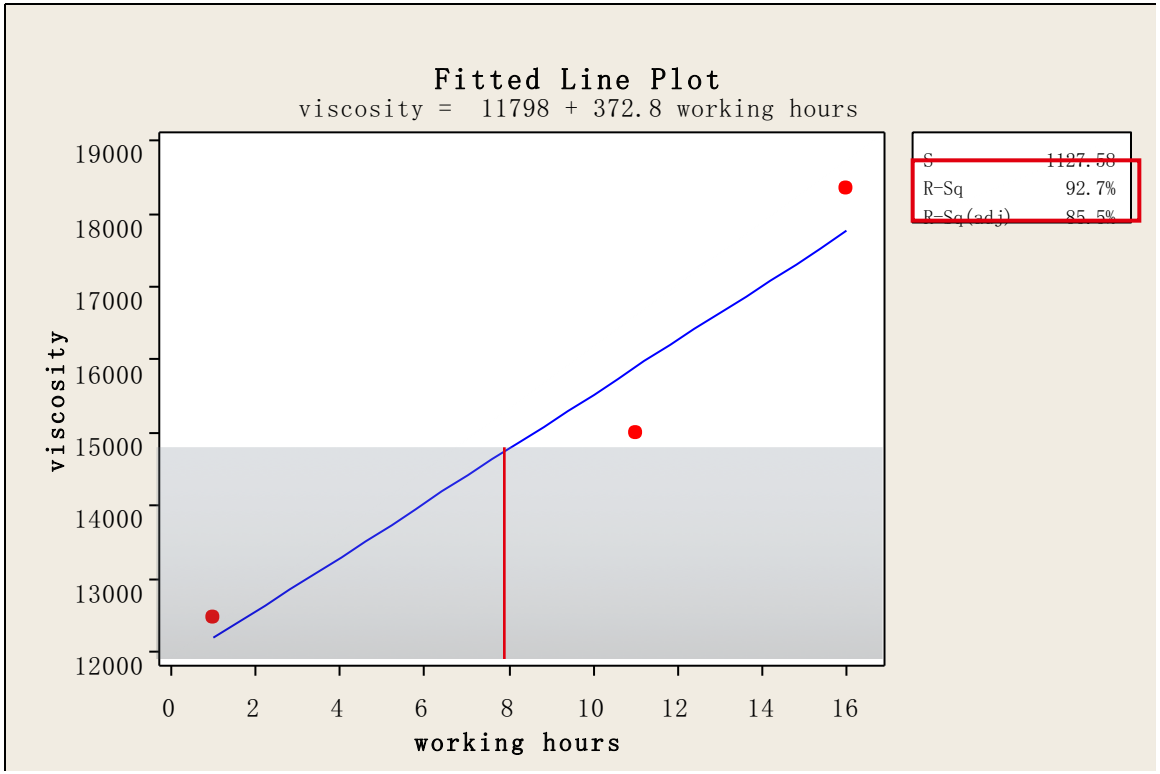
- Without changing parameters, the dot diameter dropped about 15% after 15 hours working time.

Fit plot



- The dot diameter decreased as working hours increased. Very good fitting.

Viscosity



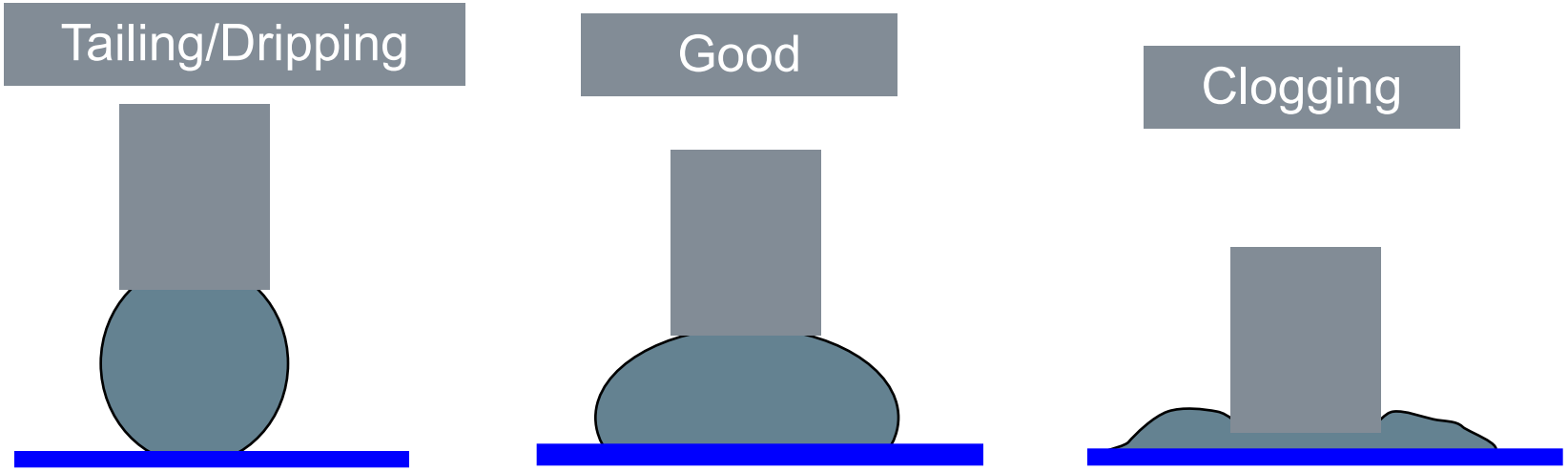
- The viscosity will increase as working hour increase, and it fits well by minitab. The worklife should be around 8 hours if calculated 25% viscosity increase.

Conclusion

- As the working hours increase, 967-1 viscosity increased accordingly, and the dispensing dot will decrease.
- The working life was around 8 hrs if calculated 25% viscosity increase.
- The dispensing tailing was stable by testing 15 hours, although 1 defective dot occurred after 10 hours, but it may be caused by void or other factors, because we didn’t see any defective after 11, 13 or 15 hours.

Path forward

- As customer use a very small dispensing needle, EFD G27, inner diameter is 0.21mm, and dispensing dot diameter is around 0.8mm on their substrate. The dispensing tailing is highly impacted by dispensing gap, especially when customer's substrate has some warpage.
- It is important to check the substrate warpage during dispensing.



Dispensing height is recommended ½ Needle ID, but if the substrate has some warpage, it is easy to cause tailing/dripping or clogging.

Appendix