



Dispensing Guide for 3M™ Scotch-Weld™ One-Part Epoxy Adhesive 6101 Off-White

Technical Bulletin

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Product Description

3M™ Scotch-Weld™ One-Part Epoxy Adhesive 6101 Off-White is a one-part epoxy exhibiting a low temperature cure or fast high temperature cure with long room temperature pot life. It is flexible and toughened, resulting in high impact performance.

Application Techniques

This guide will focus on the dispensing, or extruding, application technique. Three different metering techniques will be discussed:

- Time/pressure dispensing direct from a 30 mL syringe
 - Pros: Least expensive option
 - Cons: Highly variable dispense profiles
- Time/pressure dispensing with a needle valve for added on/off control
 - Pros: Moderate control of dispense profiles
 - Cons: Dependent on fluid viscosity
- Volumetric metering with a progressive cavity pump for highly precise applications
 - Pros: Highly controllable dispense profiles and volumes
 - Cons: Most expensive option

Troubleshooting Dispense Parameters

- If the dispense speed for a desired bead width is too fast for the application, reduce adhesive flow rate by:
 - Reducing air pressure
 - Reducing micrometer adjustment, if applicable (e.g., when using needle valve)
 - Reducing flow rate (e.g., when using volumetric metering)
 - Reducing tip inner diameter
- If “stringing”, “angel hair”, or “snakeheads” are major issues, try:
 - Backtracking over previously dispensed bead
 - Cutting off flow of adhesive before it reaches end of dispense pattern
 - Replacing time/pressure with volumetric metering system

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- If desired bead width is not in table, extrapolate dispense parameters to provide an estimate for initial evaluations

Additional Help and Advice

- The provided tables and list of common troubleshooting tactics is not comprehensive. Please contact your local 3M Technical Service representative or call 1-888-3M-HELPS.

Dispense Parameter Tables

Syringe Direct (Time / Pressure Dispensing)	Average Extruded Bead Width (mm)											
	0.30				0.50				1.00			
Bead Height (mm)	0.10	0.10	0.08	0.18	0.10	0.16	0.15	0.23	0.25	0.26	0.34	0.37
Tip Speed (mm/s)	125	135	250	230	60	90	175	190	15	40	60	115
Air Pressure (kPa)	207	414	207	414	207	414	207	414	207	414	207	414
Tip Inner Diameter (mm)	0.25	0.25	0.41	0.41	0.25	0.25	0.41	0.41	0.25	0.25	0.41	0.41
Stand-off z-Height (mm)	0.4				0.4				0.4			

Note: Dispense parameters were generated on a PVA Delta 8 robotic cell directly from the adhesive syringe with plastic tapered tips. Adhesive beads were extruded onto aluminum at room temperature. These parameters should be considered directional and recommended for initial evaluation, as parameters can vary.

Needle Valve (Time / Pressure Dispensing)	Average Extruded Bead Width (mm)											
	0.30				0.50				1.00			
Bead Height (mm)	0.15	0.15	0.08	0.07	0.16	0.20	0.12	0.13	0.25	0.32	0.30	0.27
Tip Speed (mm/s)	105	157	210	230	60	105	128	180	15	30	30	105
Air Pressure (kPa)	207	414	207	414	207	414	207	414	207	414	207	414
Tip Inner Diameter (mm)	0.25	0.25	0.41	0.41	0.25	0.25	0.41	0.41	0.25	0.25	0.41	0.41
Micrometer Adjust. (mm)	0.51				0.51				0.51			
Stand-off z-Height (mm)	0.4				0.4				0.4			

Note: Dispense parameters were generated on a PVA Delta 8 robotic cell with a PVA FC-100 needle valve and plastic tapered tips. Adhesive beads were extruded onto aluminum at room temperature. These parameters should be considered directional and recommended for initial evaluation, as parameters can vary.

Progressive Cavity Pump (Volumetric Metering)	Average Extruded Bead Width (mm)											
	0.30				0.50				1.00			
Bead Height (mm)	0.15	0.13	0.10	0.11	0.18	0.17	0.18	0.15	0.26	0.28	0.30	0.31
Tip Speed (mm/s)	45	90	135	124	90	150	75	140	15	60	30	60
Flow Rate (mL/min)	0.1	0.2	0.25	0.25	0.25	0.75	0.25	0.75	0.25	0.75	0.25	0.75
Tip Inner Diameter (mm)	0.152	0.152	0.234	0.437	0.25	0.25	0.41	0.41	0.25	0.25	0.41	0.41

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Stand-off z-Height (mm)	0.4	0.4	0.4
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Note: Dispense parameters were generated on a PVA Delta 8 robotic cell with a PVA VPX-450 progressive cavity pump and plastic tapered tips. Adhesive beads were extruded onto aluminum at room temperature. These parameters should be considered directional and recommended for initial evaluation, as parameters can vary.

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