Asymtek Applications Hotsheet Jetting Low-Viscosity, Two-Part Epoxy EPO-TEK 301

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The goal of this application was to jet this low-viscosity, optically clear material without voids or air bubbles. This two-part epoxy is often used in applications where optical clarity is important. The settings defined here can be used for jetting similar materials.

Settings Summary

Platform	Axiom™ X-1020
Jet/Pump/Valve	DispenseJet [®] DJ-9000
Fluid Type	Two-part epoxy
Fluid Manufacturer & Product number	Company Name: Epoxy Technology, INC Part number: Epo-Tek 301 Two component materials in the bottle
Fluid Details	Viscosity: 100 to 200 cPs at 100 rpm/ 23 C Pot life : 50 minutes for 25 grams Mix ratio by weight of A:B = 4:1
Hardware Configuration	Nozzle: 0.25 mm (PN: 210753-10) Seat: 0.75 mm carbide (PN: 210734-6) Needle: 2.4 mm (PN: 7200580-16) Seal: Peek (PN: 7200581)
Fluid Pressure	48 kPa (70 psi)
Nozzle Temperature	Not used
Dispense Height	1 mm
Valve on / off	3/ 5 ms
Micrometer Setting	15 increments
Substrate Temp	Not used
Applications Development	Developed by Jaynie Park

Results Summary

Different hardware combinations made it possible to get rid of air voids trapped in the jetted dots. Figure 1 shows the air bubbles trapped inside the jetted material using a unitized nozzle. Figure 2 shows no air bubbles inside the jetted material, using a standard nozzle and seat. Therefore this is the recommended configuration.

Air can be introduced into the jet when the needle retracts. Since the unitized nozzle has a shorter fluid path from the seat to the nozzle tip compared to the standard nozzle (3.5 mm from the seat to the nozzle tip), the standard nozzle can resolve the air bubble issue when dealing with clear, relatively low viscosity material.

See photos next page.

Figure 1 Unitized 0.2 mm nozzle with 0.75 mm seat, 3.2 mm needle – Air bubbles/ voids after jetted



Figure 2

Standard 0.2 mm nozzle, 0.75 mm seat, 2.4 mm needle - No air bubbles after jetted



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