

Static Mixers:

Static mixers vary in mixing performance and pressure drop (back pressure) depending on the dimensions, number of elements and the mixer design.

Use a static mixer with an adequate number of mixer elements and the lowest backpressure to minimize off ratio dispensing. Talk to your adhesive supplier as mixer design requirements vary depending on the adhesive flow properties.

Partially blocked static mixers or cartridge outlets can also have a negative effect on the cure.

Check for crystallized or cured adhesive at the outlet before re-attaching a new tip to a previously used cartridge.

Dispensing guns:

Manual dispensing guns vary in mechanical advantage.

Higher mechanical advantage dispensers can produce more internal pressure. The higher the pressure the more chance for off ratio dispensing. To minimize off ratio dispensing, use as little pressure as possible to dispense the adhesive and maintain a constant forward motion of the cartridge pistons.

Some dispensers have a non-drip feature that releases pressure at the end of each stroke. This is a useful feature but it can add to off ratio dispensing if the gun is pumped and then paused between strokes. Apply a technique of constant motion and a rapid re-grip of the trigger.

Damaged or worn dispensing gun:

Damage to the ratchet / brake mechanism and cracks or missing teeth on the plunger of a dispensing gun can cause uneven feeding of the pistons. Check the condition of the dispenser paying particular attention to the ratchet mechanism. Look for broken teeth, build up of adhesive or play in the dispensing mechanism. Also look for loose, bent or missing piston rod ends.

Leaking cartridge pistons:

Check the condition of the dispenser. Look for excessive play in the piston rods or loose piston rod ends. Check cartridge position in the dispenser and ensure that it sits parallel to the piston rods. For pneumatic systems, ensure there is a regulator on the dispenser providing controlled pressure. Adjust pressure to provide adequate flow without overpowering the system. If leaking occurs, your supplier may wish to inspect the molded part for defects or damage as part of their quality control program.

Operator trigger action:

Some shops find that off ratio dispensing appears to be a random event and may occur more often with some individual operators. The triggering action used with manual dispensers is an important technique to ensure an even cure.

Purge adhesive (1 tablespoon) immediately start to dispense adhesive. Apply smooth even strokes; maintain constant feed and pressure using the full stroke of the trigger. Do not stop and let adhesive drool out of the tip between strokes, quickly re-trigger the gun and continue until dispensing is completed. To minimize off ratio dispensing, use as little pressure as possible to dispense the adhesive and maintain a constant forward motion of the cartridge pistons.

Cold Adhesive:

Adhesive stored in the fridge or a cold shop, should be allowed to return to room temperature before use. Some adhesive components become thicker at low temperatures and may not mix as well. Thickened material creates higher pressure in the cartridge and tip. Higher pressure will flex the cartridge wall and can throw off mix ratio. If you re-warm adhesive, make sure the cartridge plug is in place. A previously used mixing tip left on the cartridge can allow expanding adhesive to back flow into the activator chamber and result in a plugged cartridge.

Never warm adhesive above 45 degrees C° The activator may be damaged.

Cold Sheet material:

Bonding sheet goods that have been stored below normal room temperature will cause the adhesive to cure slowly in the joint. Fabricating with cold sheet goods may prevent a full cure from developing in areas with lower than optimum activator levels.

Warm room air will cause the adhesive on the surface to cure much faster than the adhesive in the joint where the cold substrate will absorb much of the energy from the chemical reaction. This can cause joints to have low strength. For best results, allow product being joined to reach a room temperature of 60 f before assembly.

Disturbing adhesive prior to cure:

Disturbing the exposed adhesive at the joint line prior to the surface curing can cause the adhesive to remain sticky and under cured at the surface.

Let the adhesive cure undisturbed until the surface dulls and becomes hard. Do not handle the project until there is sufficient bond strength. A rough estimate for handling time (materials that are at room temperature when bonded) is 2 X working time. i.e. 15 minute to set up; allow 30 minutes before applying stress to the joint.

Storage:

For optimum shelf life and performance, store adhesive upright away from direct sunlight in a cool area or fridge.

It is possible that an air bubble could be trapped in the activator or adhesive, gases can also form in the activator if it is subjected to high temperatures during storage or shipping.

In the event that a gas or air bubble was trapped in the cartridge, upright storage should allow it to reach the top (outlet) of cartridge to be eliminated during the initial purge.

Activator failure:

Activator exposed to high temperatures during transport or storage will start to break down and lose strength, this will generally show up as a slower cure.

High temperature decomposition of the activator can also release gasses into the activator component.

Bubbles may appear in the dispensed product and the compressibility of the gases may act like a spring compressing with each pull of the trigger, producing fluctuations in the dispensing rate, off ratio cure and drooling at the tip.

Our tests revealed that some manufacturers activator may separate after freezing; this can cause the proportions of active ingredients (therefore the cure) to vary. If you suspect damaged activator, contact your supplier.

Double Bead

With all of the variables involved in manual and pneumatic dispensing of dual component adhesives, it is impossible to completely eliminate the possibility of any variation in mix ratio. However if you purchase quality adhesives, store them correctly and follow these few simple procedures you can expect a near perfect seam every time. We also recommended that you run two small beads instead of one larger single bead. The overlapping of adhesive streams will greatly reduce the possibility of under cured areas in any joint.