

AQUENCE®

Best Practices Guide



WATER-BASED LABELING ADHESIVES CLEANUP BEST PRACTICES

Cleaning Aids:

- Window cleaner with ammonia
- Heavy-duty scouring pads
- Scrub brush
- Warm water and soap



In-Process Cleaning:

- Preventive maintenance cleaning should be done when equipment is slow or down
- A spray bottle can be used to wet pallets and remoisten adhesive buildup while equipment is running or slow
- Cleaning should be done a minimum of once per shift

Changeover Cleaning:

- Disassemble pallets and rollers and soak in warm water for up to 30 minutes
- Water should not exceed 125°F
- Water with a pH close to 10 will decrease cleaning time

TIPS:

For easy cleaning of side shields and rotary tables, the following can be used to cover surfaces for easy adhesive removal:

- Plastic wrap
- Food grade grease
- Penetrating and lubricating oil spray
- Frekote®

ADHESIVE APPLICATION AMOUNT BEST PRACTICES

Recommended adhesive application:

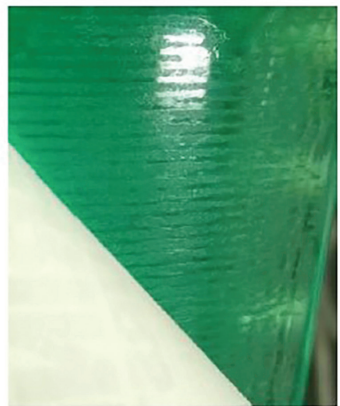
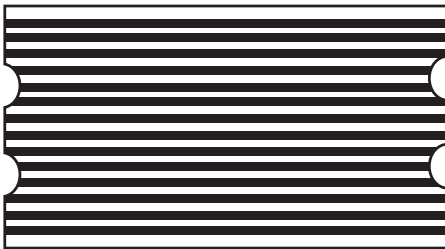
- 2 mils of wet adhesive
- Defined stripped adhesive pattern
- Approximately 32 mg/in² wet adhesive, or 16 mg/in² dry (based on a 50%-solids adhesive)

Problematic labels or challenging adhesion:

- Labels that curl in reaction to the adhesive should be adjusted up in coating weight to allow for maximum adhesive surface area; however, it must be balanced with reduction in tack
- For substrates needing additional adhesion, optimize the surface area by applying more adhesive to the label

Adhesive Amount

Cross Section View



ON LINE RECIRCULATION STABILITY BEST PRACTICES

On Line Recirculation Stability

- Be sure to maintain a proper stroke speed of no more than 30 strokes/minute

Excessive Adhesive Pumping Causes...

Adhesive to lose water:

- Increase in viscosity
- Poor flowability
- Increase in tack
- Decrease in set speed

Air entrapment in adhesive:

- Poor flowability
- Decrease in tack
- Less adhesive transfer

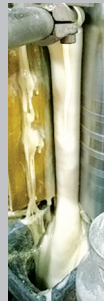
TIPS:

- Decrease the pump stroke speed to achieve a pencil-size thickness bead at a maximum of 30 strokes/minute
- Cover the recirculation bucket with a lid
- Do not set pail warmer above 90°F to heat the adhesive
- Maintain a half-full adhesive pot level by refilling it often

Good recirculation



Poor recirculation

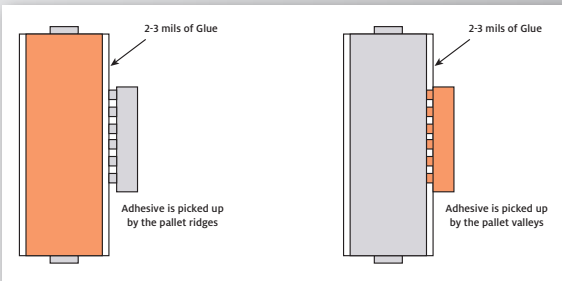


EQUIPMENT SETUP BEST PRACTICES

Equipment Setup:

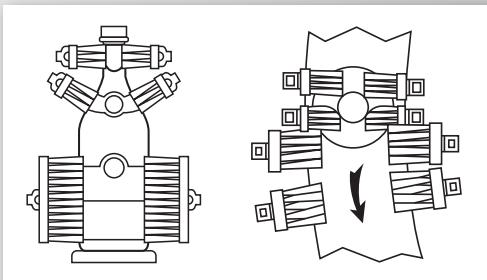
The major components of the equipment that affect the adhesive application are the rollers, pallets and compression brushes.

Roller & Pallet Configuration:	Setup:
Rubber roller & aluminum pallet	0.002-0.003" gap
Steel roller & rubber pallet	0.001-0.002" gap



Compression Brushes:

- Compression brushes should always be full coverage and tight to the bottle
- Container should penetrate 3 to 4 mm (1/8" to 3/16") into brush bristles
- Keep container penetration equal on opposite-facing brushes to reduce label pull
- Align brush bristles to label/container shape and height



ADHESIVE TEMPERATURE BEST PRACTICES

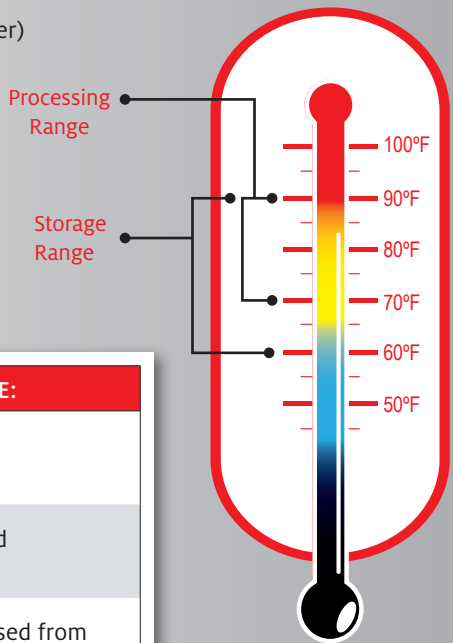
It is important to keep adhesives at the proper storage and processing temperatures to avoid issues.

Adhesive that is too cold:

- Poor flowability (tote to pail or pail to labeler)
- Increased viscosity causing increased tack
- Decreased set speed
- Less adhesive transfer

Adhesive that is too hot:

- Poor recirculation stability
- Poor shelf stability



TIPS TO CONTROL ADHESIVE TEMPERATURE:

- Do not store material on a cold floor
- Store adhesive in a temperature-controlled environment at least 7 days prior to use
- Tote, drum or pail warmers can be purchased from The Cary Company or other industrial supply stores

TIPS TO FILL PAILS FROM BULK TOTE CONTAINERS:

- Warm adhesive to at least 70°F
- Place air line in the top of the tote to create a pressure difference
- Use adhesive before its "Best If Used By" date. Implement FIFO inventory practices.

ADHESIVE MILEAGE BEST PRACTICES

Adhesive Mileage Methods:

Two methods can be used to measure a customer's mileage. We recommend using a combination of both methods.

Adhesive used over time:

Supplies needed:	Advantage:
5-gallon pail and portable scale	Measures how much product is used throughout the process, including material lost on the equipment

Steps:

1. Place adhesive in a 5-gallon pail or use pail provided.
2. Place pail with adhesive pump on scale. Run normally.
3. When you are ready to begin taking a mileage reading, zero the scale. The scale should start to decrease in the negative direction.
4. Record the time and note the bottle count.
5. Run for the remainder of the shift or at least 5,000 bottles. Do not replenish the adhesive in the pail.
6. Record the amount of adhesive lost from the pail and the number of bottles labeled during the evaluation.

$$\text{Adhesive Mileage} = \frac{\text{Adhesive Used}}{\text{Bottles Labeled}}$$

Adhesive coating weight on label:

Supplies needed:	Advantage:
Double-stick tape or carpet tape, release liner (back of stickers)	Precise measure of coatings to determine whether variability exists among pallets, adhesive and equipment settings.

Steps:

1. Use double-stick tape to apply a release liner to filled, unlabeled bottles. Be certain to cover the entire area to be labeled. Prepare the same number of bottles as pallets on the labeler.
2. Place bottles in sequence upstream of the labeler and allow them to run through the labeler. Since there is the same number of bottles as pallets, each bottle is labeled using a unique pallet.
3. Remove these bottles from the line and allow to dry for 30 minutes.
4. After they have fully dried, the labels are easy to pull off the release liner.
5. It is recommended to repeat this process at least three times to get an accurate data population.
6. Once labels with the adhesive isolated from the bottle are removed, the amount of adhesive on the label can be measured.
7. Collect at least three blank, unglued labels.
8. Place the labels in an oven at 200°F for 15 minutes to dry.
9. Once the labels are completely dry, weigh the labels immediately and use the following formula to calculate the weight of the dry adhesive.

$$\text{Adhesive Mileage} = \text{Weight of Glued Labels} - \text{Weight of Blank Labels}$$



WET FILM GAUGE USE BEST PRACTICE

Using a Wet Film Gauge:

1. The measurement must be taken with the line running at full speed.
2. Hold the gauge firmly in your hand.
3. Place the gauge perpendicular to the roller, slightly above where the pallet makes contact with the roller.
4. Exert slight pressure on the roller, keeping hand firm.
5. The thickness is measured by the last teeth on the gauge with adhesive on it.
6. Flip the gauge to go up or down in thickness.
7. Repeat the measurement 3 times for a constant reading.



Factors Affecting Measurement:

- Line speed
- Adhesive viscosity
- Adhesive temperature
- Scraper blade gap thickness
- Pump Rate

Important Reminders:

- The thickness measured on the roller is not the same as the amount on the labeled bottle. The adhesive is transferred several times before coming in contact with the bottle.
- The gauge is a tracking tool for operators on the amount of adhesive on the roller to achieve optimum performance. It is not an exact measurement on the amount of adhesive. An example is comparing adhesive quantity at the beginning of each shift.

Safety Precautions:

- This procedure involves contact with the labeler while it is running. It is extremely important to be vigilant about risks involved.
- No jewelry should be worn during the test.
- Hand should be kept firm and steady to prevent slipping.

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