Copackers, Closures and Quality

An emerging brand's guide to choosing a copacker

IN THE EVER-CHANGING, NEVER-BORING WORLD of new and growing businesses, one thing remains constant: there are always decisions to be made. Having a little knowledge to make good decisions early can lead to positive long-term relationships and a successful product.

A key decision emerging brands face is choosing a copacker. When consulting with a copacker, there are a number of questions and considerations that can be discussed to help a brand understand how a copacker runs their operation and can help get you closer to finding the right partner. When it comes to closure application, there are several safety and quality checks required to ensure a proper seal. Failure to conduct or implement strict controls may lead to inadequate seals or seal failures, which could create time consuming and expensive outcomes like leaking product, hard to open product, etc.

When you understand the process and know what to look for, you'll be better equipped to enlist the right partner, one with a painstaking attention to detail and a system of quality checks integrated into their operating procedures. This is why educating yourself on what to look for is essential. Silgan, an industry leader in food and beverage closures, offers these guidelines to consider when connecting with a copacker.

If you're a new, emerging or growing business, here's your guide to the plastic closure application process, what to look for in a copacker and the most important questions you should always ask. >>

CLOSURE SHIPPING AND WAREHOUSING: THE FIRST STEPS MATTER

"The plastic closure application process is incredibly complex—more so than brands tend to think, involving multiple details, from handling and storage all the way through to the finished product," says Jeremy Yocca, who is responsible for Package Commercialization at Silgan. "Mistakes at any of these stages can negatively impact your product—and your business. The first steps are deceptively simple, but vital."

Key details to address with a copacker start prior to the moment the copacker receives a shipment of closures. These considerations include:

- Closures shipments should be immediately unloaded and stored in a clean warehouse, stacked no more than two pallets high and protected from potential damage by water, high humidity and odor-producing materials.
- Cartons must be handled carefully, since rough handling may impair closures and affect performance.
- Ideal warehouse temperature is between 40°F and 90°F. Because temperature requirements vary across different materials, Silgan recommends a minimum of 65°F across all closures before use.

Lined closures should be transported in refrigerated trucks in the summer. Extreme heat can harm liner surfaces and impact application. Once product has been properly received and stored, closures should be at least five days old from the date of manufacture, and at a temperature of at least 65°F before capping begins. During conveying, bulk hoppers shouldn't be overfilled and chute work must be dimensioned properly for a smooth and uninterrupted flow of closures during capping. In air conveyance systems, the velocity of the closure needs to be matched to the speed of the line, to avoid excessive deceleration that can damage closures. And, if changes are being made to an existing system, says Yocca, this is an important time to check in with your Silgan representative. "We're here to help you," says Yocca. "Involve us if you're making changes. We have a team of technical service representatives who can review your system and make recommendations."

CLOSURE APPLICATION: QUALITY INSPECTIONS, OPERATING GUIDELINES AND TROUBLESHOOTING

At the filling facility, critical quality inspections must be completed to ensure a proper seal. Since production facilities vary, every Silgan closure comes with a set of guidelines outlining ideal ranges for pull-up, removal torque and security. Key inspections include:

Pull-up, to determine how far the closure has been applied to the bottle finish

Removal torque, to gauge the force required to move the closure on the bottle finish (tamper-evident bands should also be checked)

Security, to assess the liner compression and seal integrity

Quality checks during capper application are also vital. Rotary sealing machines have multiple headsets and Silgan stresses the importance of treating each station as an individual application point. "If you're using a 10-head rotary machine, application checks need to be done on all 10 heads," says Yocca. "You could have one head that's out of maintenance and it's overperforming or underperforming, so each one of them has to be >>

examined to maintain consistency, guarantee proper application and ensure the integrity of the seal."

Application inputs that should be checked include:

STATIC TORQUE—a rotary capper head setting that finishes closure application by tightening the closure to an application torque setpoint

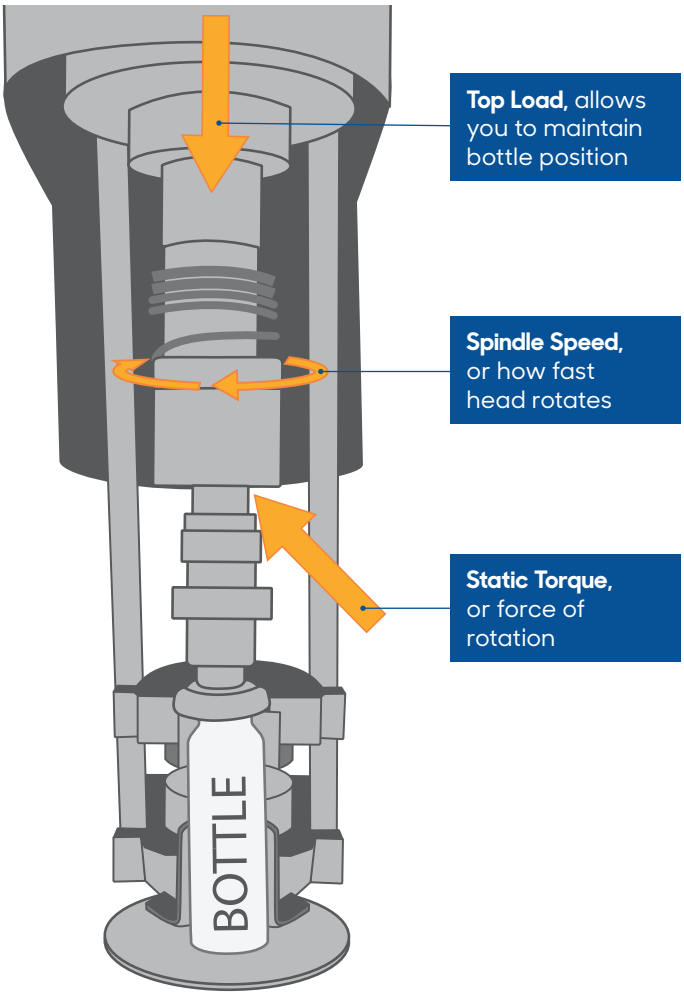
SPINDLE SPEED—how fast the capper heads are rotating during closure application

TOP LOAD—used to maintain the bottle position and avoid spinning while keeping a consistent force between the closure and bottle threads

HEAD RISE—a measurement of the amount the top load spring is compressed during application

Every Silgan closure comes with a set of guidelines outlining ideal ranges for the above inputs. Each input depends on, and influences, other inputs. For example, higher head rise values will increase top load and spindle speed. As these values change, you need to make sure the closure descent rate matches the closure/bottle thread angle for proper application. Your copacker should understand these inputs and their impact on the application process, and know what adjustments need to be made to resolve capping issues.

Because the same issue may be produced by two or more factors, Silgan offers a troubleshooting chart to help pinpoint causes and correct deviations. >>



	STATIC TORQUE	SPINDLE SPEED	TOP LOAD
TOO HIGH	• Spinning Bottles; PET shredding • Over application of closure • Possible hiking or stripping of closure on finish	• Spinning Bottles; PET shredding • Over application of closure • Possible hiking or stripping of closure on finish • Misapplication	• Under application • High/Loose closures on finish • Misapplication
TOO LOW	• Under application • High/Loose closures on finish • Misapplication	• Under application • High/Loose closures on finish • Misapplication	• Spinning Bottles; PET shredding • Over application of closure • Misapplication

Several factors can result in the same misapplication and significant variation exists between packing facilities. "That's why quality inspections are so critical," says Yocca. "Not only does Silgan design closures, we also know how these closures are applied. So, we can support brands in the field with the extensive technical service group we have out there, doing this every single day."

To learn more about the closure application process, enroll in **Silgan U Online**. As you partner with a copacker, be sure to ask them specific questions to better understand their operations. The better you understand their processes, the more you can guarantee a high level of packaging performance, a great relationship with your copacker and a successful brand.

INTERVIEWING COPACKERS: WHAT TO ASK (AND WHAT THEY SHOULD SAY)

Before a brand works with a new copacker, it's important to ask the appropriate questions. The answers will assist you in the consultation with your potential partner's knowledge base and how effectively they can address plastic closure application issues. Some essential questions to ask are as follows:

What quality checks do you use and how frequently are they performed?
Quality checks ideally include pull-up inspections, removal torque and security inspection to ensure proper seal. These checks need to be completed post capping in all situations and post cooling in hot-fill applications. Frequency recommendations also depend on line speed; the faster the line runs, the more frequently checks are required.

How often do you perform full headset checks for application on rotary sealing machines?
A full headset check should be done and recorded at the start of each shift, after any lengthy shutdown or when packages outside application parameters are found during the regular established quality checks. Additionally, each headset must be treated as an individual capper to maintain consistency during application.

What is your static torque, spindle speed, top load and head rise, and what's your frequency for checking them?
These are all critical settings and should be checked regularly for deviations that can impact the final product's seal. The settings should be recorded and available for reference so they can be replicated on future runs. Packing facilities vary, so every Silgan closure includes Technical Data Sheets (TDS) with recommended ranges for static torque, spindle speed and top load.

Do you have a temperature-controlled warehouse?
Warehouse temperatures need to be maintained between 40°F and 90°F to ensure optimum performance. Silgan recommends a minimum of 65°F.

Do you use a first-in, first-out (FIFO) rotation process?
Closures should be used on a FIFO basis and Silgan recommends closures be less than one year old for the best results. If by chance you have closures more than a year old, Silgan can analyze samples to determine if they're still fit for use.

Do you have a repository for all supportive documents?
Data collection is vital for process evaluation, to monitor quality, increase efficiency and improve overall productivity. Ask your copacker: Is there a data base system that utilizes statistical process control (SPC)? Is this used in all facets of the operations?