



Packaging
testing solutions
for the wine and
spirits industry



Strength testing of packaging

Over centuries, winemakers have consistently taken advantage of new technology to improve their product, from oak barrels to bottles to modern pressing equipment and micro-oxygenation.

From a classic vintage red in a glass bottle with a cork stopper, to bag-in-box containers or aseptic cartons and cans, it's not just the drink that gets us talking but also how it's packaged.



Wine incites passion and has stirred the emotions for centuries. In more recent years the packaging of our favorite grape-based drink has also evolved enormously.



KORBEL

DIAGEO

AMORIM





Evolving requirements of quality control testing

Innovation in wines and spirits packaging is growing as a new generation of consumers push for more creative design and reduced environmental impact.

Protecting the sealed contents and controlling the rate of oxygen transmission is essential to product quality. Selecting the right packaging to achieve this goal, and making sure that the consumer finds it easy-to-open, is a key quality control task.



Cork extraction force (still)

Cork producers must tailor their choice of stoppers according to the wines they seal. The correct elasticity and coating are vital to its frictional properties when a cork is inserted into a bottle and later extracted by the consumer.



Cork extraction torque (sparkling)

Torque testing of sparkling wine stoppers helps producers verify that the corks are not so tightly inserted they cannot be removed and, worse still, that they don't pop out too easily and cause injury.



Screw cap removal torque

Test the torque characteristics to ensure an ROPP screw closure can be unscrewed by the consumer and evenly screwed back again for product consumption in separate servings.



Pop and tear force of cans

Test the openability strength of these increasingly popular, lightweight convenience cans.



Box compression force

With the upsurge in home delivery, testing the compressive strength of the boxes and packaging needed to safely transport heavy contents is critical.



Bag-in-box strength

Test the dispensing force of the air-tight valve and its seal connection to the metallised film bladder.

Cork extraction force for still wines

Motorized and manual solutions: Cork Extraction Pull Testers

Ideal for testing the extraction force of cylindrical cork stoppers to ensure they can be comfortably removed by the consumer without them sliding too easily into the bottle when opening.

- Suitable for natural, technical and synthetic corks
- Monitor cork coatings and seal integrity
- Quickly identify problems in cork/bottle configuration
 - Cork difficult to remove
 - Cork slides too easily into bottle
 - Cork breaks during extraction
- Allows testing of cork in bottle and also cork in glass tube (to simulate bottle neck)

Mecmesin's motorized pull tester is an affordable and accurate system to meet the cork extraction testing requirements of ISO 9727-5.

- Tests to standard ISO 9727-5 at 30 cm/min with exceptional accuracy and repeatability
- Easy operation – Carry out a test with a single button push



Cork extraction torque for sparkling wines

Motorized solution: CombiCork Torque Tester

An all-in-one test system that determines the torque required to initiate the release and extraction of the cork from a sparkling wine bottle.

Designed in collaboration with Diam, one of the world's leading cork manufacturers, the CombiCork Extraction Tester provides objective evaluation of cork seal integrity.

It helps optimize product quality to reduce risk of injury to consumers from corks that may pop out too easily after removing the wire-cage, and identifying corks that may be too difficult for the consumer to open.

- Tested by CIVC France and used by leading cork producers and winemakers
- Identifies problems with corks that may release too easily under pressure (injuring the consumer) or too difficult to remove
- Suitable for bottle sizes from quarter up to magnum
- Simulates the helical action of the consumer when opening
- Tests at a fixed speed to ensure excellent repeatability
- Accurately measures extraction torque in N.m
- Safety guard ensures operator protection in case glass shatters



Screw cap

Manual torque testing

Manual solution: VTG Tornado

Measure the removal torque with the manually-operated VTG Tornado to perform a simple quality control check. This makes sure that the capping head is consistently applying the correct torque to ensure closures achieve a good seal that can be easily opened.

- 90 in.lbf capacity with data-output for recording results
- Bottle diameters from 10 – 190mm
- Simple operation with dual-zone display, including a live graphical plot
- Rugged, lightweight, and portable
- Allows testing to ASTM D2063.
note: manual testers are not as accurate/repeatable as semi-automated, motorized testers



One of the main characteristics of the ROPP metal screw cap (also referred to as Stelvin®) is its ability, after sealing by the bottler, to be unscrewed by the consumer and evenly screwed back again for consumption of the product at a later time. Key quality control checks include:

Slip torque

Measure the torque required to initiate movement by overcoming the friction between the liner and top surface of the bottle.

Bridge break

Torque - measure the twist force required to break the tamper-evident bridges. Use to troubleshoot pull-off and spinner issues + as a target for reverse/strip torque.

Reverse/strip torque

Measure the tightening torque required to cause the threads to strip or fail. Verifies that threads are significantly stronger than bridges so that 'spinners' are avoided. Helps identify when side-pressure from cap rollers is too low.

Screw cap

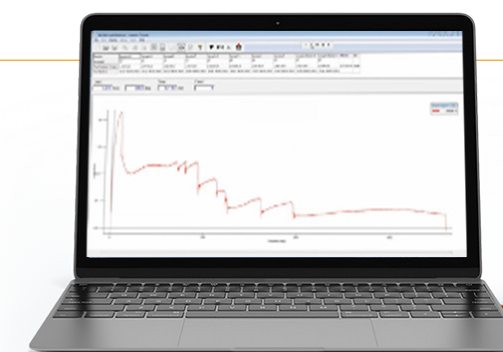
Semi-automated torque testing

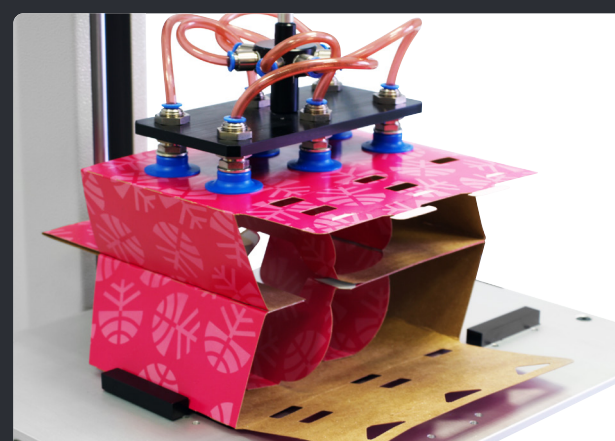
Motorized solution: Vortex-i with software control

The ultimate solution for semi-automated torque testing of screw caps. The Vortex removes the variability of a manual tester by testing at a constant speed.

Mecmesin's torque testing software automatically captures **slip, bridge-break and reverse/strip torque**. Easily generate test reports with graphs of torque vs angle. The ideal tester for making sure closures achieve a good seal that can be easily opened.

- Outstanding repeatability and accuracy by testing at constant speed to ASTM D7860
- Eliminates RSI injury risk to operators when batch testing using manual testers
- Sturdy test frame to 90 in.lbf capacity
- Precision plug-and-play torque sensors to capture removal torques
- Software programmable to perform test routines with minimum fuss for operators
- Suitable for bottles of 10 - 190mm diameter
- Mandrels available to hold caps with minimal deformation





The upsurge in demand for home delivery of bulky and heavy products has been felt strongly in the wine and spirits industry. Packaging must provide ample protection for the product inside otherwise it risks being damaged and affecting the retailer and manufacturers brand.

Packaging manufacturers and their customers use top-load (box-crush) testing to ensure that the outer cardboard cartons and their inner packaging protectors are sufficiently strong to withstand the rigors of transporting heavy glass bottles.



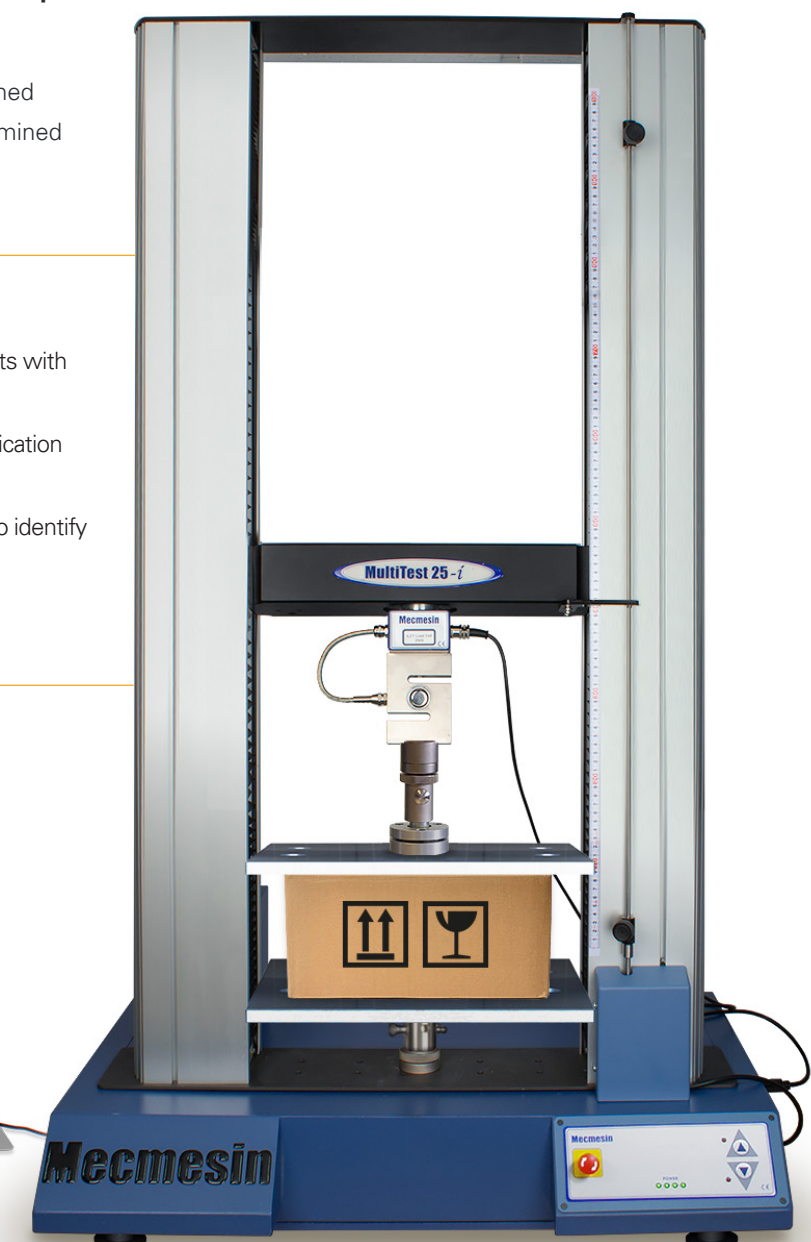
Package Compression: Top Load (Box-crush) testing

Motorized solution: Twin-column test frame with software control

The MultiTest-i twin-column test systems are ideally suited for testing the compressive strength of small to medium sized boxes, commonly used to transport wines and spirits.

The Top-load test is used to apply loads at a defined rate until the carton box collapses or a pre-determined load is reached.

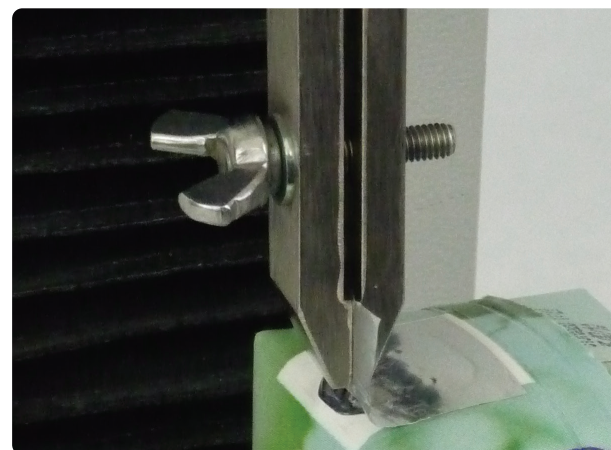
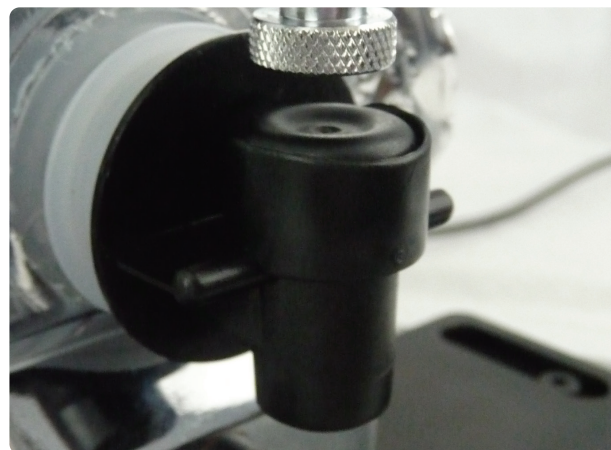
- Available in 10, 25 and 50 kN capacity
- Pre-configurable to run Top-Load / Box Crush tests with a single button press
- Extensive suite of calculations with Pass/Fail indication to alert operators
- Real-time graphs with zoom and label function to identify collapse points
- Custom reports as PDF and Excel format





Innovations in wine packaging: Consumer preferences around wines and spirits is evolving. Growth in outdoor socializing and demand from a new generation for sustainable single use and recyclable containers has resulted in wine and spirits becoming increasingly available in a range of innovative packaging, such as aluminum cans, tetra-pak plastic cartons, pouches and even paper bottles.

Mecmesin's force and torque testing equipment has the flexibility to perform many different application tests on a vast array of this packaging.



Versatile testing Solutions for push, peel, tear and pull

Motorized solution: Low force motorized tester (2.5 kN)

If you're looking for a versatile device for testing the physical strength of your packaging, Mecmesin's low force test system is the ideal choice for your quality control lab.

Tensile

- The adhesive seal strength of bag-in-box foil pouches
- The bond between the bag and dispenser
- The 'pop-and-tear' opening strength of a can's pull tab

Compression

- dispenser actuation force of a box wine tap to check smoothness and functionality
- top-load axial strength

Peel

- peel strength of glued or hot-sealed tabs and seams on foil or plastic packaging

Coefficient of friction

- measures slip properties or surface roughness of packaging materials

- MultiTest-dV motorized Tester (2.5 kN) combined with any of the 10 models of VFG force gauge to suit your tension/compression tests
- Accuracy and repeatability guaranteed
- Easy-to-use for inexperienced operators
- Full range of grips and accessories to meet your application needs





Materials testing quality control solutions

The common goal of the winemaker and packaging manufacturer is to deliver the drink to the consumer for them to enjoy the ultimate taste experience. Before the winegrower makes their selection of packaging to deliver the fruits of their harvest, there is an entire supply chain involved in the development of packaging materials and components.

Whether it is the cork stopper, glass bottle, metal screw cap, aluminum can or film bag, all mass-produced products are rigorously checked for the mechanical strength of their material, to make sure every batch is perfect.

In the words of Dominique Tourneix, CEO of Diam
“So much more than a simple stopper, the cork is the last oenological act of the winegrower... this is why the teams at Diam Bouchage work each and every day to ensure the quality of the company's products in terms of **mechanical performance**, sensorial neutrality and oxygen control”

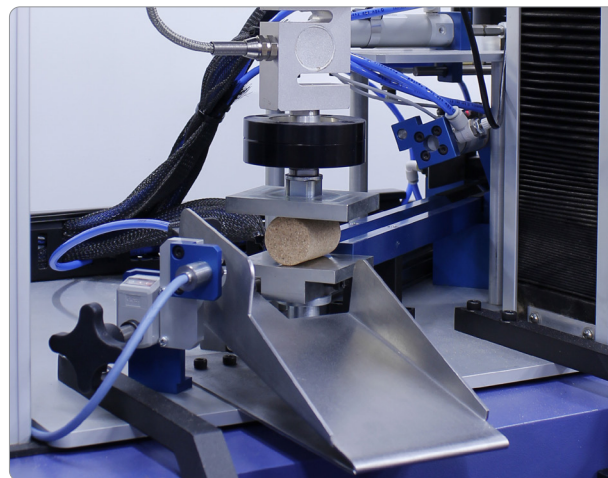
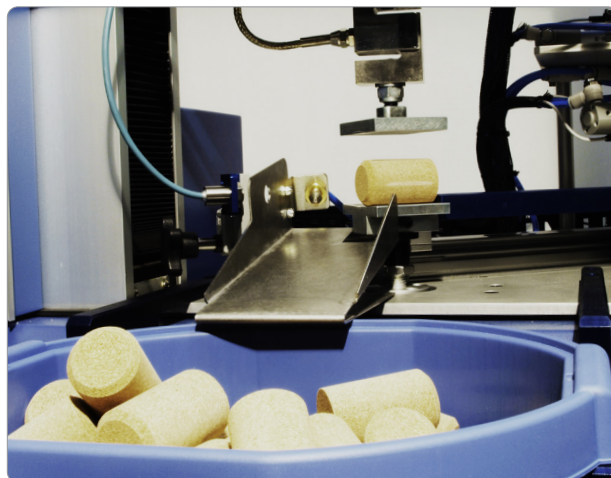


When testing high-volume components for use in the wine and spirits industry, it is critical to detect any flaws quickly so that the production process can be adjusted to minimize rejects. Mecmesin test systems help manufacturers achieve their quality control goals by providing automated test systems to check the tension, compression and torsional properties of their materials.



Automated testing

Cork compression and recovery



Testing the elastic properties of all types of cylindrical, straight cork stoppers is a key parameter in selecting their suitability for different wines and spirits. Good resilience enhances good corking impermeability.

Drawing upon key elements of the standard ISO 9727-4, the Cork Compression and Recovery Tester from Mecmesin is available in 2 versions:

- 1 Stand-alone system with the operator loading a cork one-at-a-time
- 2 Automated system which tests a batch of corks using a feed system which loads the corks onto the tester and removes them post-test.

The cork is positioned between the platens of the MultiTest stand and the initial diameter is measured. The tester compresses the cork to a pre-determined position, releases and pauses for 3 minutes before recording the cork diameter once more. The percentage of diameter recovery is calculated automatically by the tester's software and included in a test report.

Automated testing

Cork stopper adhesion strength

The stopper of choice for many spirits and fortified wine producers is often a capsulated closure, such as a Bar-top or T-top cork. Made from micro-agglomerated or natural cork that is bonded to a mold in plastic, wood, metal, or glass.

The consumer experience when opening and resealing their spirit of choice is fundamental, particularly for high end products.

Testing the cork stopper's fit to the bottle (tight or loose) is an important quality control parameter to establish an objective value to the subjective feel.

When produced in high volume it is critical that the cork does not detach from its mold when twisted. The torque required to break the adhesive bond is measured using Mecmesin's Vortex motorized torque tester.

Cork and mold are gripped by machine chucks and the Vortex applies torque at a constant speed to deliver an accurate and repeatable result. The test report provides clear pass/fail values for samples, according to manufacturer tolerances.



Mecmesin

Mecmesin wine testing solutions for you

Mecmesin force and torque products make sure manufacturers and suppliers of wine and spirits packaging are able to provide their customers with high quality packaging solutions.

From traditional wine bottles and corks, through to modern, environmentally friendly packaging such as aluminium cans, pouches and paper bottles Mecmesin has an innovative test solution, for a range of budgets.



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