

Product Insert: 96 microTUBE Plates

Introduction

The 96 microTUBE and 96 microTUBE-50 Plates are a ready-to-use sample processing consumable optimized for use with Covaris Adaptive Focused Acoustics® (AFA®). Each plate contains 96 microTUBEs and allows great flexibility when processing samples in varying batch sizes. Each tube contains an AFA fiber that improves reproducibility, promotes an isothermal process, reduces fragmenting times, and allows small sample volumes to be processed.

The plates are manufactured with a pre-slit adhesive foil for dispensing samples. There are 2 versions of the 96 microTUBE Plates that include an updated Thin Foil seal. This is the only difference between the plates. An additional foil seal is included with each plate, and the Thin Foil plates have an additional Thin Foil seal. It is recommended to use the Thin Foil for automation. The plates have a barcode for traceability.

The 96 microTUBE and 96 microTUBE-50 Plates are compatible with the E220 and L-Series Covaris instruments and do not require the use of an instrument specific Rack. For the LE-series instruments, Rack-XT 96 microTUBE plate is recommended for chromatin shearing applications. Refer to the Covaris-certified Consumable Guide for further information (<https://covaris.com/wp-content/uploads/M020065.pdf>).

The 96 microTUBE Plates comply with the ANSI/SBS-4 standard for 96 well microplates. They are designed for use with automated 1, 8, and 96 channel pipettes.

DNA shearing protocols with the 96 microTUBE Plates are also instrument specific. Do not store sheared samples in the microTUBEs. Recommended instructions are subject to change without notice.

Ordering Information

- 96 microTUBE-50 AFA Fiber Plate (1) ([PN 520168](#))
- 96 microTUBE-50 AFA Fiber Plate (10) ([PN 520169](#))
- 96 microTUBE-50 AFA Fiber Thin Foil Plate (1) ([PN 520232](#))
- 96 microTUBE-50 AFA Fiber Thin Foil Plate (10) ([PN 520233](#))
- 96 microTUBE Plate (1) ([PN 520078](#))
- 96 microTUBE Plate (10) ([PN 520069](#))
- 96 microTUBE AFA Fiber Thin Foil Plate (1) ([PN 520230](#))
- 96 microTUBE AFA Fiber Thin Foil Plate (10) ([PN 520231](#))
- Rack-XT 96 microTUBE Plate ([PN 520239](#)) (for chromatin shearing on the LE-series instruments)
- 96 microTUBE Plate Foil Seal (25) ([PN 520073](#))
- 96 microTUBE Plate Thin Foil Seals (25) ([PN 520235](#))

DNA Shearing Protocols

- Quick Guide: DNA Shearing with E220 (www.covaris.com/wp-content/uploads/pn_010308.pdf)
- Quick Guide: DNA Shearing with LE220 (www.covaris.com/wp-content/uploads/pn_010156.pdf)
- Quick Guide: DNA Shearing with LE220-plus/R-plus/Rsc (www.covaris.com/wp-content/uploads/pn_010433.pdf)

Operating Limits and Conditions

Temperature (water bath)	4 °C minimum; 25 °C maximum
Recommended Sample Volume	<ul style="list-style-type: none"> • 96 microTUBE-50: 55 µL, ± 2.5 µL • 96 microTUBE: 130 µL, ± 5 µL
Centrifuge	180 RCF
Storage	Room temperature (15 °C to 30 °C)

CAUTION: All Covaris microTUBEs must operate within energy constraints. The power maximum levels are guides and should not be exceeded. Operating outside of these limits or limits published in Covaris protocols may compromise the integrity of the microTUBE.

E220

Peak Incident Power	<ul style="list-style-type: none"> • 96 microTUBE-50: 100 W maximum • 96 microTUBE: 175 W maximum
Duty Factor	<ul style="list-style-type: none"> • 96 microTUBE-50: 30% maximum • 96 microTUBE: 10% maximum
Intensifier	500141 required, installed on transducer (See Appendix A for details)
Water level (RUN scale)	<ul style="list-style-type: none"> • 96 microTUBE-50: Level 0 • 96 microTUBE: Level 6
E220 Plate Definitions	<ul style="list-style-type: none"> • 96 microTUBE-50: E220_520168 96 microTUBE-50 Plate -10.5mm offset • E220_520232 96 microTUBE-50 Thin Foil Plate -10.5mm offset • 96 microTUBE: E220_520078 96 microTUBE Plate -6mm offset • E220_520230 96 microTUBE Plate -6mm offset

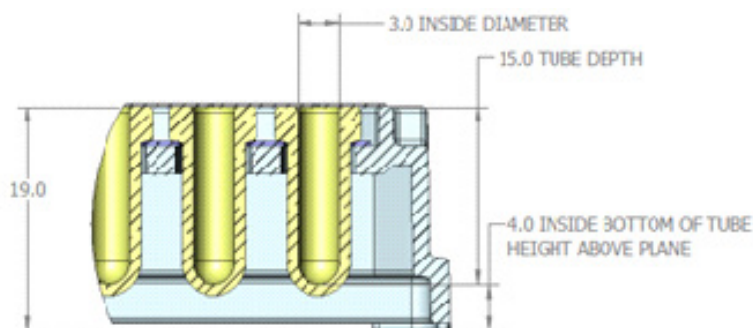
LE-Series

Peak Incident Power (PIP)	450 W maximum
Duty Factor	30% maximum
LE220 Water level (RUN scale)	<ul style="list-style-type: none"> • 96 microTUBE-50: Level -2 • 96 microTUBE: Level 6
LE220 Plate Definition	<ul style="list-style-type: none"> • 96 microTUBE-50: LE220_520168 96 microTUBE-50 Plate -12mm offset • 96 microTUBE-50 Thin Foil: LE220_520232 96 microTUBE-50 Thin Foil Plate -12mm offset • 96 microTUBE: LE220_520078 96 microTUBE Plate -4mm offset • 96 microTUBE Thin Foil: LE220_520230 96 microTUBE Plate -4mm offset
LE220-plus/R-plus Plate Definition	<ul style="list-style-type: none"> • 96 microTUBE-50: LE220plus_520168 96 microTUBE-50 Plate -12mm offset • 96 microTUBE-50 Thin Foil: LE220plus_520232 96 microTUBE-50 Thin Foil Plate -12mm offset • 96 microTUBE: LE220plus_520078 96 microTUBE Plate -4mm offset • 96 microTUBE Thin Foil: LE220plus_520230 96 microTUBE Plate -4mm offset
LE220Rsc-plus	<ul style="list-style-type: none"> • 96 microTUBE-50: LE220PRSC_520168 96 microTUBE-50 Plate -12mm offset • 96 microTUBE-50 Thin Foil: LE220PRSC_520232 96 microTUBE-50 Thin Foil Plate -12mm offset • 96 microTUBE: LE220PRSC_520078 96 microTUBE Plate -4mm offset • 96 microTUBE Thin Foil: LE220PRSC_520230 96 microTUBE Plate -4mm offset

NOTE: If the plate definition is not present on the system, contact Covaris Technical Support (TechSupport@covaris.com) with the system serial number.

Nominal Rack Dimensions (E220 and LE-series)

- Overall Plate Height (top of tubes) 19.0 mm above mounting plane
- Tube center-to-center spacing 9.0 mm (SBS standard pattern)
- Interior clearance diameter 3.0 mm (maximum tip diameter 15 mm from end)
- 96 microTUBE: Tube depth 15.0 mm (bottom is 4.0 mm above mounting plane) (pictured)
- 96 microTUBE-50: Tube depth 7.0 mm (bottom is 4.0mm above mounting plane)



Recommended Pipette Tips

To avoid binding against the tube interior when fully inserted into the microTUBE, use pipette tips that maintain a diameter no greater than 3 mm within 15 mm of their dispensing end.

NOTE: Many robotic systems use proprietary tips so this diameter should be verified prior to use.

CAUTION: In automated liquid handling systems, friction between the 96 pipette tips and foil seal may cause the Rack to lift off the deck as pipette tips are raised. A hold-down clamp for SBS plates is recommended.

Please refer to the following documents for pipette recommendations.

- Automated NGS Sample Preparation Workflows: Combining the Agilent Bravo Liquid Handling Platform with Covaris Focused-Ultrasonicators for Complete Automation of SureSelect Workflows: www.agilent.com/cs/library/whitepaper/public/whitepaper-automated-ngs-sample-preparation-bravo-covaris-5994-0130en-agilent.pdf
- Pipetting Best Practices for Covaris 96 microTUBE Plate and 8 microTUBE Strip in Automated Liquid Handlers: covaris.com/wp-content/uploads/M020085_RevA_PipettingBestPractices.pdf

Instructions for Use

1. Remove the shrink film and desiccant pack prior to use.
2. Do not remove the pre-slit foil seal from the plate. The foil seals can be pierced with pipette tips before sample addition if desired.

NOTE: To prevent the AFA Fiber from falling out, do not tip the plate once the seal has been pierced.

3. Aspirate the recommended volume of sample and add it to the microTUBE. A single-channel or multi-channel pipette may be used. Ensure the foil is pierced so there is ample air exchange when dispensing the sample.
4. Seal the plate with the enclosed foil seal. Only microTUBEs that contain sample need to be sealed. The foil seal may be cut to the appropriate size if less than 96 microTUBEs are used.
5. Process the samples according to the appropriate protocol for the respective instrument.
6. To retrieve the sample, the top foil seal can be pierced with pipette tips.
7. If fewer than 96 samples are processed, save the plate and remaining foil seal and store at 15 to 30 °C.

Recommended Sequence for Automated Use

1. **Pierce the foil seal:** Load pipette tips and press the tips through the foil seal, fully piercing the foil by going to the bottom of the tube. This will allow air to flow out of the tube during filling. This helps to avoid bubble formation.

NOTE: To prevent the AFA Fiber from falling out, do not tip the plate once the seal has been pierced.

2. **Fill the tubes:** Aspirate sample and dispense into the pre-pierced, open microTUBEs. Since the recommended sample and tube volume are nearly identical, you will need to take care that the pipette tip does not displace the sample as it is loaded. To avoid fluid displacement and bubble formation either, 1) extract the tip as the sample is dispensed, or 2) dispense slowly with the tip located just below the top of the tube.
3. **Reseal the plate for processing:** Remove the backing from the spare foil seal and carefully align it over the plate. Using a sealing paddle or roller (or your fingers), thoroughly press the new seal over the pierced seal, verifying that the seal is adhered to the top of each tube. The plate is now ready to be processed.
4. **Sample aspiration:** After processing, the samples are ready to be aspirated. Samples should be aspirated as soon as is practical after treatment. Do not use the 96 microTUBE Plate for long term storage. Be careful not to displace the sample by inserting the tip directly to the bottom of the microTUBE. Air must also be allowed to enter the tube during sample withdrawal. Carefully pierce the foil and aspirate as you lower the tip into the tube, maintaining contact with the fluid to avoid aspirating air. You may have to raise the tip once or twice during aspiration to allow the tube to vent.
5. **Centrifugation:** If necessary, centrifugation is permitted (up to 180 g (RCF)). This is about 1000 RPM in a benchtop centrifuge with a swinging bucket rotor. Do not stack plates in the centrifuge.

Revision History

Document Part #	Revision	Date	Description of change
010112	M	1/2017	Addition of 96 microTUBE AFA Fiber Plate Thin Foil and 96 microTUBE-50 AFA Fiber Plate Thin Foil
010112	N	8/2017	Add the names and the plate definitions for 520230 & 520232
010112	O	6/2020	Power limits for the 96 microTUBE-50 Plate part numbers; Add Introduction; Update document template.

Appendix A: Removing or Installing the Intensifier (Covaris PN 500141) from a Covaris E System

The 500141 Intensifier is a small inverted stainless steel cone centered over the E-Series transducer by four stainless wires. The wires are held in place by a black plastic ring pressed into the transducer well.

If an AFA protocol requires “no Intensifier”, please remove the Intensifier, using the following steps:

1. Empty the water bath. Start the instrument and start the SonoLab™ software.
2. Wait for the homing sequence to complete (the transducer will be lowered with the rack holder at the home position, allowing easy access to the Intensifier).
3. Grasp opposite sides of plastic ring and gently pull the entire assembly out of the transducer well. Do not pull on the steel cone or the wires. The ring is a friction fit in the well – no hardware is used to hold it in place.



The 500141 Intensifier (left) shown installed in the E-Series transducer well and (right) removed. Note the “UP” marking at the center of the Intensifier.

If a protocol requires the Intensifier to be present, simply reverse this process:

4. Align the black plastic ring with the perimeter of the transducer well. Note that the flat side of the center cone (marked UP) should be facing up (away from the transducer).
5. Gently press each section of the ring into the well until the ring is seated uniformly in contact with the transducer, with approximately 2 mm of the ring evenly exposed above the transducer assembly. Do not press on the cone or wires. The rotation of the ring relative to the transducer assembly is not important.
6. Refill the tank. Degas and chill the water before proceeding.

Technical Support – Ongoing assistance with the operation or application of the equipment and/or troubleshooting is provided via:

- Telephone
 - United States: Tel: +1 781.932.3959 during the hours of 9:00 a.m. to 5:00 p.m., Monday through Friday, Eastern Standard Time (EST), Greenwich Mean Time (GMT-05:00)
 - Europe: Tel: 44 (0) 845 872 0100, during the hours of 9:00 a.m. to 5:00 p.m., Monday through Friday, Greenwich Mean Time
- E-mail queries to techsupport@covaris.com or applicationsupport@covaris.com