TensileMill

TECHNICAL BROCHURE

TensileMill CNC MICRO

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TABLE OF CONTENTS

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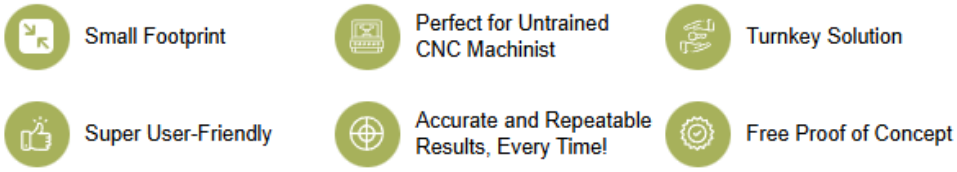
GENERAL DESCRIPTION

The TensileMill CNC MICRO is a compact, 2-axis machining system designed for preparing **flat tensile and impact test specimens** from metal, plastic, and composite materials. The system is suitable for laboratories and production environments where precise specimen geometry and consistent repeatability are required, but the volume of samples does not justify a full industrial CNC machining setup.



The MICRO uses a guided touchscreen interface and a dedicated workflow tailored specifically for specimen preparation. This allows technicians without prior CNC experience to produce accurate, test-ready specimens with stable dimensional results. A proprietary flip-jig fixture enables machining of both sides of the blank without realignment, which maintains symmetry and reduces operator involvement.

With its enclosed work area, integrated flood coolant recirculation system, and mobile base, the MICRO operates as a self-contained unit that fits efficiently into laboratory layouts. The system supports both standardized geometries and custom specimen dimensions, making it suitable for QA/QC teams, R&D facilities, educational institutions, and manufacturers conducting mechanical testing.

APPLICATION AND USE CASES

The TensileMill CNC MICRO is used for preparing flat specimens required for tensile and impact testing. Laboratories and testing facilities need to create specimens with the same shape to get trustworthy test results, and the MICRO helps achieve this by making consistent shapes within specific size limits.

The system is applied in QA/QC workflows, material qualification, research and development programs, and educational testing environments. It is suitable for metals, plastics, and composite materials processed in sheet or strip form. The MICRO can handle both standard sizes set by ASTM and ISO standards and special shapes defined by internal testing rules.

The machine is most commonly integrated into testing workflows where:

- mechanical properties need to be verified as part of production or batch release;
- research teams evaluate new alloys, polymers, or composite formulations;
- educational and training labs prepare specimens as part of academic instruction;
- outsourcing specimen preparation results in inconsistent geometry or delayed turnaround.

In these situations, the MICRO provides a stable method for preparing specimens with uniform thickness, width, and gauge dimensions, supporting repeatable and comparable testing outcomes.

KEY ADVANTAGES

This machine offers several practical advantages for preparing flat tensile and impact specimens across laboratory and production testing environments. Key advantages include:

- Purpose-built for flat specimen preparation rather than adapted from a general-purpose CNC system.
- Dimensional repeatability up to ±0.02 mm, supporting consistent mechanical test results across batches.
- Guided touchscreen workflow allows operation without prior CNC programming experience.
- Flip-jig fixture enables machining of both sides of the specimen without recentering, preserving alignment.
- Compact, enclosed, and self-contained layout supports installation in laboratory environments.
- Suitable for both standardized geometries and custom specimen dimensions.

TENSILESOFT INTERFACE

The system is operated through the TensileSoft interface on an integrated 15.6" touchscreen. The workflow is structured to guide the operator through specimen setup and machining without requiring CNC programming experience.

Key functions include:

- Selection of standardized specimen geometries or entry of custom dimensions.
- The machine provides guided prompts for blank alignment and fixture clamping.
- The system automatically pauses when a specimen flips during two-sided machining.
- Saving and recalling previously used specimen profiles for repeat work.

The interface is focused on consistent specimen geometry and straightforward operation in laboratory settings. Optional Carbon interface upgrade is available if extended CNC machining capability is required.

FLIP JIG FIXTURE

The MICRO uses a fixed flip-jig fixture to support two-sided machining of flat specimens. The blank is clamped once, and the fixture is manually rotated when prompted by the interface. This maintains the position of the gauge section and prevents dimensional shift between sides.

One flip-jig size is included with the system. Available sizes correspond to typical specimen lengths (4", 8", and 12"). Additional jigs can be supplied if multiple specimen formats are required.

TECHNICAL SPECIFICATIONS

If we speak about the technical specifications of this machine, there is sufficient capacity here for both routine specimen preparation and more advanced testing workflows. The specifications below reflect the main operating characteristics of the TensileMill CNC MICRO:

Parameter	Value
Controller	MachMotion
Travel (X / Y / Z)	8.27" × 4.72" × 0.79" (210 mm × 120 mm × 20 mm)
Spindle Speed	18,000 rpm
Spindle Power	3.5 kW
Tool Holder	ER25
Coolant System	Recirculating flood coolant
Traverse Speed (X / Y / Z)	up to 8,000 mm/min
Feed Rate	1–3,000 mm/min
Positioning Accuracy	±0.03 mm
Repeatability	±0.02 mm
Spindle Cooling	Air-cooled

Machine Dimensions	20.5" × 24" × 59" (52 × 60 × 150 cm)
Enclosure	Full safety enclosure
Base	Mobile stand with integrated coolant tank

BENEFITS OF IN-HOUSE SAMPLE PREPARATION

Outsourcing specimen preparation often appears to be convenient at first, but the costs accumulate steadily: preparation fees, testing fees when applicable, shipping, scheduling delays, and the added impact of extended turnaround times. These factors affect both budgets and workflow stability. When preparation is brought in-house, these recurring expenses are replaced with a one-time capital asset that performs predictably and on demand.

In a typical outsourcing scenario, laboratories pay per specimen or per batch. For example, preparing flat tensile specimens may cost several hundred dollars per batch, multiplied across multiple production runs or development cycles throughout the year. When testing frequency increases, the expense grows proportionally. At the same time, outsourcing introduces lead time — waiting for machining, transport, and queue processing. This delays decisions, slows development, and can interrupt production planning.

By preparing specimens internally, laboratories maintain control over scheduling and repeatability. The cost of each additional specimen decreases significantly once the equipment is in place. Over time, the total expenditure shifts from ongoing operational expense to a predictable asset-based model. The financial break-even point usually arrives within a relatively short period, depending on sample volume. After this point, each prepared specimen represents a cost reduction rather than a cost addition.

To support this evaluation, a structured ROI calculator is available. It allows you to enter your current outsourcing expenses, shipment frequency, batch sizes, and material categories. The calculator estimates your annual spend on external preparation and compares it to the projected costs of operating an in-house system. The output provides a clear view of when the investment pays itself back and how much can be saved over time.

In practice, laboratories that run regular tensile or impact testing cycles often reach a return on investment within the first year of operation. From that point forward, specimen preparation becomes both faster and more financially efficient, while improving control over geometry, repeatability, and scheduling.

PRE-ORDERS ARE NOW AVAILABLE

The TensileMill CNC MICRO can be reserved prior to the next production run. Pre-orders are processed in the sequence they are received, and lead time is confirmed at the time of scheduling. This allows laboratories to secure equipment in advance and plan installation around testing workflows.

For pricing and availability details, contact us directly or request a quote to receive a prompt response from our technical team.

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