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# TABLET HARDNESS TESTER (200 N)

# Tablet Hardness Tester (200 N) - ToronTHT™ 200

ToronTHT™ 200 compact tablet hardness tester measures breaking force and derived statistics for compressed tablets in the small-to-mid tablet size range across pharmaceutical QC labs, teaching facilities, compounding pharmacies, and small-batch manufacturing operations. The instrument applies calibrated compressive force perpendicular to the tablet axis, records the force at fracture, and computes maximum, minimum, and average hardness across a programmable sample series. Torontech built the platform around a touchscreen operator interface, USB report export, and a compact benchtop footprint suited to shared laboratory space.

Force capacity of 10 to 200 N covers the hardness range of standard uncoated tablets, small film-coated tablets, chewables, and typical veterinary formulations. Resolution of 0.01 N and accuracy of ±1.5% ±1 digit deliver the measurement precision needed for routine batch release and formulation comparison studies. Automatic single-test and continuous-test modes support both individual sample measurement and multi-tablet series analysis with automatic statistical calculation across the run.

Torontech supplies the ToronTHT™ 200 with IQ/OQ qualification documentation for GMP validation and CE certification for the EU market. Universal-voltage DC power supply and a portable form factor let the tester deploy in any laboratory or production floor environment without hardware modification.

## APPLICATIONS

# Tablet Hardness Tester (200 N) - ToronTHT™ 200 Applications

The ToronTHT™ 200 supports tablet hardness measurement across pharmaceutical QC, R&D, and small-batch production workflows for tablets in the 10 to 200 N breaking force range.

- Batch Release Testing of Small Tablets: routine hardness QC of uncoated tablets, small film-coated tablets, and chewable formulations with automatic statistical reporting for lot acceptance
- Compounding Pharmacy Quality Checks: hardness verification of custom-compounded tablets requiring compendial method testing at a small-lab bench footprint
- In-Process Manufacturing Control: hardness spot-checks at the tablet press to verify compression force settings during small production runs
- Formulation Development: comparative hardness profiling of prototype formulations to guide binder selection and compression force optimization
- Veterinary Pharmaceutical Testing: hardness QC of veterinary tablet formulations where the 200 N range covers typical dosage form specifications
- Nutraceutical and Supplement Manufacturing: hardness verification of dietary supplement tablets, vitamin tablets, and herbal preparations
- Academic Pharmaceutical Research: teaching and research labs evaluating compression parameters, excipient behavior, and tablet mechanical properties
- Contract Testing Laboratories: hardness analysis for small-volume CRO and CDMO clients supporting formulation development studies


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## Standards

The ToronTHT™ 200 carries CE certification for the EU market under the Machinery Directive and Electromagnetic Compatibility Directive.

- EN ISO 12100:2010 - Safety of Machinery: General Principles for Design, Risk Assessment and Risk Reduction
- EN 60204-1:2018 - Safety of Machinery: Electrical Equipment of Machines
- EN 61010-1:2010+A1:2019 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use
- EN IEC 61326-1:2021 - Electrical Equipment for Measurement, Control, and Laboratory Use: EMC Requirements

CE certification covers the EU Machinery Directive 2006/42/EC and EMC Directive 2014/30/EU. IQ/OQ qualification documentation is available upon request.

## FEATURES

## Tablet Hardness Tester (200 N) - ToronTHT™ 200 Key Features

The ToronTHT™ 200 combines calibrated force measurement with touchscreen operation and a compact portable form factor for pharmaceutical hardness testing at the benchtop scale.

- 10 to 200 N Force Range: covers the hardness range of standard uncoated tablets, small film-coated tablets, chewables, and typical veterinary and nutraceutical formulations
- 0.01 N Force Resolution: high-precision load cell resolution supports formulation optimization studies and batch-to-batch consistency monitoring
- ±1.5% ±1 Digit Accuracy: calibrated force measurement accuracy suitable for GMP release testing and compliance-audit documentation

- Automatic Statistical Calculation: maximum, minimum, mean, and standard deviation compute automatically across the sample series, removing manual transcription and calculation errors
- Single and Continuous Test Modes: single-tablet measurements for spot checks plus programmed multi-tablet series analysis for batch release and formulation comparison studies
- Full-Color Touchscreen HMI: intuitive touchscreen navigation for test setup, run control, and result review, replacing multi-button controllers and paper method sheets
- Customizable Force Unit Reporting: report results in Newtons, kilograms-force, or kilopond per site convention and product specification requirements
- USB Data Export and Report Generation: raw hardness records and formatted reports transfer to lab PCs for downstream documentation without proprietary drivers
- Multi-Language Interface: interface language selection supports laboratories operating in multiple regional languages
- Universal Voltage Power Supply: DC 12 V input with a universal AC adapter runs the instrument on any regional mains voltage without hardware change
- Compact Portable Form Factor: small benchtop footprint fits shared bench space in QC labs, compounding pharmacies, teaching labs, and R&D groups
- IQ/OQ Qualification Package: factory-supplied installation and operational qualification documentation supports GMP validation on delivery

## THEORY & METHOD

# Theory and Method

Tablet hardness testing measures the breaking force required to fracture a tablet under diametric compression. The tablet is placed between two jaws that close at controlled speed, and the force at the moment of fracture is recorded as the tablet hardness value, reported in Newtons, kilograms-force, or kilopond per pharmacopoeial and regional convention. This value quantifies the mechanical strength of the tablet against handling stress during coating, packaging, and shipping, and

correlates with downstream disintegration and dissolution behavior.

Reproducibility depends on tight control of applied force calibration, jaw closure speed, and tablet positioning geometry. The ToronTHT™ 200 delivers force measurement resolution of 0.01 N across a 10 to 200 N range with accuracy of ±1.5% ±1 digit, matching the precision required for pharmacopoeial batch release testing on standard-size tablets. Automatic sample handling and statistical processing remove the manual transcription and calculation steps that limit reproducibility on older analog and mechanical hardness testers.

Two operating modes serve different laboratory workflows. Single-test mode records one hardness value per tablet, ideal for spot checks and quick verification measurements. Continuous-test mode records a programmed series of tablets automatically and computes maximum, minimum, mean, and standard deviation across the run, supporting batch release statistics and formulation comparison studies with minimal operator effort between measurements.

## TECHNICAL SPECIFICATIONS

# Tablet Hardness Tester (200 N) - ToronTHT™ 200 Technical Specifications

| Parameter | Specification |
|---|---|
| Hardness Measurement Range | 10 to 200 N |
| Force Resolution | 0.01 N |
| Force Accuracy | ±1.5% ±1 digit |
| Reporting Unit | N, kgf, or kp (customizable) |
| Testing Method | Automatic single-test / continuous-test mode |
| Voltage | DC 12 V, 3.0 A (universal voltage adapter) |

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