



KNIFE MILL

Knife Mill - TT-HM300

The Knife Mill TT-HM300 is a benchtop grinder built to homogenize large volumes of soft, moist, fibrous, and fatty samples down to analytical fineness. Qualitest supplies it to food, agricultural, biological, and pharmaceutical laboratories that need consistent sample preparation before analysis. Four titanium-coated blades rotate inside a sealed grinding cup and cut the material until it reaches a uniform state. The instrument handles both dry and wet grinding, so one unit covers a wide range of sample conditions.

Large or bulky feedstock is no obstacle for the TT-HM300, which accepts pieces up to 130 mm and processes batches as large as 4 liters. Operators select from interval, regular, and reverse modes to match the grinding action to each material, and the brushless motor drives the blades across a 500 to 4000 rpm range. The unit stores 20 standard operating procedures, so recurring methods stay repeatable across shifts and technicians. A 5-inch touchscreen keeps setup and monitoring straightforward.

Safety and cleanup were built into the design. An electromagnetic lock keeps the cover closed while the blades spin, so the mill cannot be opened mid-cycle. The grinding cup and lid detach for quick washing between samples, which limits carryover between batches. The TT-HM300 gives labs a straightforward way to turn raw, heterogeneous material into a representative analytical sample.

APPLICATIONS

Knife Mill - TT-HM300 Applications



The Knife Mill TT-HM300 supports sample preparation across laboratories that process food, biological, agricultural, and pharmaceutical materials. Its ability to handle wet, oily, and fibrous samples makes it a fit wherever bulk material must be reduced to a uniform analytical state.

- Food and Beverage Analysis: homogenizes vegetables, dried fruit, frozen food, cocoa, candy, preserved fruit, and meat into uniform samples for moisture, fat, and nutritional testing
- Agriculture and Feed Testing: grinds grain and animal feed to a consistent fineness for compositional and quality analysis
- Biological and Life Science Research: prepares mouse tissue, plant leaves, seeds, seedlings, and germ material for extraction and downstream assays
- Pharmaceutical and Herbal Products: reduces tablets, pills, and herbal medicines to a fine, representative powder for content and quality control
- Fish, Seafood, and Bone Samples: homogenizes fresh fish, seafood, and chicken bones for protein, fat, and contaminant analysis on large loads
- Nuts and Oilseeds: processes hazelnuts and other oily, fatty material without smearing, supporting fat and residue testing

Before grinding		After grinding		Parameter	
		Sample	apple		
		Speed setting	2000rpm		
		Sample characteristic	Juicy		
		Remarks	use the gravity lid with overflow channels		
		Time	40s		
		Sample	fish		
		Speed setting	1500rpm		
		Sample characteristic	soft		
		Remarks	the feed size must be less than 10 cm; use the gravity lid		
		Time	2 mins		



FEATURES

Knife Mill - TT-HM300 Features

The Knife Mill TT-HM300 combines flexible grinding control with features that keep operation safe and repeatable.



- Stored Operating Procedures: saves up to 20 methods so recurring sample types run under identical settings every time
- Dry and Wet Grinding: processes both dry powders and liquid-bearing samples, covering a broad range of materials in one instrument
- Variable-Speed Brushless Motor: adjustable between 500 and 4000 rpm for coarse reduction or fine homogenization, with quiet, low-maintenance running
- Double-Deck Four-Blade Cutter: two blade planes increase cutting frequency for higher throughput and more even fineness
- Three Grinding Modes: interval, regular, and reverse operation let the operator tune the cutting action to each sample and limit heat
- 5-Inch LED Touchscreen: gives clear, at-a-glance control of speed, time, and mode with straightforward menu navigation

- Electromagnetic Safety Lock: holds the cover closed while the blades spin and prevents opening mid-cycle, protecting the operator
- Titanium-Coated Blades: hardened stainless steel edges resist wear and corrosion for a long service life across wet and dry runs
- High Feed and Batch Capacity: accepts pieces up to 130 mm and batches up to 4 liters, suited to large-volume sample loads

THEORY & METHOD

Working Principle

Knife milling reduces particle size by high-speed cutting rather than by crushing or grinding between hard surfaces. Sharp rotating blades strike the sample thousands of times per minute, slicing it into progressively smaller fragments. Because the action is a clean cut, the method suits soft, moist, elastic, and fatty materials that would smear, clog, or heat up in a mortar or ball mill. The sealed cup keeps volatile moisture and fat inside the sample, which protects the material before analysis.

The TT-HM300 places four blades at the base of the grinding cup on a double-deck arrangement. A controlled gap between the upper and lower blades pulls material through two cutting planes on every rotation, raising throughput and evening out particle size. Blade geometry gives the operator a choice: the blunt edge fractures bulk or harder pieces for a coarse result, while the sharp edge shears softer material into a fine homogenate. Titanium-coated stainless steel keeps the edges hard and corrosion resistant across repeated runs.

Reaching analytical fineness depends on matching speed and time to the sample. Softer, wetter material homogenizes in seconds at moderate speed, while denser or tougher material needs longer cycles at higher rpm. Interval mode pulses the blades to limit heat buildup in temperature-sensitive samples, and reverse mode helps redistribute material that packs against the cup wall. The result is a consistent, representative sample that reflects the composition of the original bulk material.

TECHNICAL SPECIFICATIONS

Knife Mill - TT-HM300 Technical Specification

Parameter	Specification
Feed Size	< 130 mm
Final Fineness	< 300 µm
Speed Range	500 to 4000 rpm
Motor	Variable-speed brushless
Rated Power	3 kW
Time Setting	00:00 to 99:59 (min:s)
Grinding Modes	Interval, regular, reverse
Batch Capacity	< 4 L
Number of Blades	4 (double-deck straight blades)

Blade Material	Stainless steel, titanium coating
SOP Storage	Up to 20
Display	5-inch LED touchscreen
Safety	Electromagnetic cover lock
Power Supply	220 V, 50/60 Hz
Dimensions (mm)	360 × 510 × 450
Package Dimensions (mm)	705 × 475 × 700
Net Weight	40 kg

Included Accessories



Item	Description
Double-deck straight blade set	Four-piece straight blade cutter in a two-tier configuration for the grinding cup



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