



LABORATORY VERTICAL MIXER

Laboratory Vertical Mixer - ToronMix™ LV 300

Precision Micro-Batch Mixer & Pelletizer

ToronMix™ LV 300 combines dispersive mixing and pelletizing in one benchtop unit, working charges of roughly 20 g into uniform pellets ready for testing or molding. A pneumatic ram pushes material through a heated 16 mm barrel fitted with a dispersion structure, and a motor-driven scraper cuts the emerging extrudate into small, even particles. Laboratories gain a mixing route that costs a fraction of a trial on larger equipment. Everything runs from a single-phase outlet and a compressed air line.

The ToronMix™ LV 300 Laboratory Vertical Mixer serves formulation work where only grams of material exist. A pneumatic cylinder drives the charge down a 16 mm bore against an internal dispersion structure, which breaks up additive agglomerates and distributes them through the polymer. Barrel temperature adjusts anywhere from ambient to 300°C, covering commodity resins through higher-melting engineering thermoplastics. Batch size sits at approximately 20 g, small enough that a newly synthesized material or a costly additive package supports several trials.

Pelletizing happens on the same machine. Compounded material extrudes through the die and a motor-driven scraper assembly cuts it at the face into uniform particles rather than a strand or an irregular lump. Free-flowing pellets feed straight into micro injection molding, melt flow index testing, thermal analysis, or compression molding without a separate granulation step. Sample handling therefore stays consistent between formulations.

Total power draw stays at or below 0.5 kW on a single-phase 220 V supply, and the machine occupies a footprint of 350 by 285 mm. Development groups, quality laboratories, and teaching programs can add micro-scale compounding capability without dedicated services or floor space. Vertical construction keeps the flow path short, which limits the material stranded in the barrel at the end of a run. Cleanout between formulations stays quick for the same reason.

APPLICATIONS

Laboratory Vertical Mixer - ToronMix™ LV 300 Applications

The ToronMix™ LV 300 fits the earliest stage of formulation work, where material quantity rules out any larger mixer.

- New Material Evaluation: compounds and pellets the few grams a synthesis or pilot reaction actually yields
- Masterbatch and Pigment Micro-Trials: mixes concentrated color and additive batches for dispersion and shade assessment
- Additive Screening: compares stabilizers, plasticizers, flame retardants, and coupling agents across many small trials at low material cost
- Pellet Sample Preparation: produces uniform, free-flowing pellets for melt flow index, DSC, TGA, and capillary rheometry
- Micro Injection Molding Feed: supplies consistent pellet charges for specimen molding and property testing
- Nanocomposite and Functional Filler Studies: disperses nanoclay, graphene, and conductive fillers where material cost limits batch size
- Biopolymer and Compostable Resin Work: processes PLA, PBAT, and starch blends inside a narrow thermal window
- Pharmaceutical and Nutraceutical Blending: mixes active compounds with polymer carriers for early feasibility screening
- Recycled Polymer Micro-Trials: assesses additive and compatibilizer packages on small quantities of reclaimed material
- Color Matching and Shade Correction: turns around small trial batches quickly when a target shade needs adjustment
- University Teaching Laboratories: demonstrates dispersion, melt processing, and pelletizing at a cost per run suited to student use



FEATURES

Laboratory Vertical Mixer - ToronMix™ LV 300 Key Features

The ToronMix™ LV 300 is built around three constraints that dominate early formulation work: material quantity, turnaround time, and cost per trial.

- 20 g Batch Capacity: brings compounding within reach of newly synthesized or high-cost materials available only in gram quantities
- Integrated Pelletizing: a motor-driven scraper cuts extrudate into uniform particles, removing the need for a separate granulator
- Dedicated Dispersion Structure: internal geometry works additives into the polymer as the ram forces material through the barrel
- Ø16 mm Barrel Bore: converts modest ram force into high working pressure and keeps the heat path to the melt center short
- Ambient to 300°C Control: adjustable across the range for commodity resins through higher-melting engineering thermoplastics
- Pneumatic Ram Drive: steady, controllable pressure on the charge without a gearbox or screw drive to maintain
- 0.5 kW Total Power: runs on a standard single-phase 220 V outlet with no three-phase supply required
- Compact Vertical Frame: 350 × 285 × 640 mm fits a shared bench or a fume hood
- Short Flow Path: vertical layout limits residual material in the barrel, cutting both waste and cleanout time
- Fast Changeover: low thermal mass and a small charge volume allow several formulation trials in a working day
- Low Cost per Trial: minimal material, power, and setup time per run compared with pilot-scale compounding
- Panel Controls with Emergency Stop: direct temperature and drive controls with an accessible stop button
- Levelling Feet: adjustable supports keep the vertical barrel plumb on an uneven bench

THEORY & METHOD

Theory and Method

Ram extrusion drives the mixing action here, not a rotating screw. A pneumatic cylinder applies force to the charge, and the narrow 16 mm bore converts that modest force into high pressure across a small cross-section. Pressure pushes the softened material through the dispersion structure inside the barrel, where the flow path repeatedly splits, contracts, and recombines. Contracting sections generate extensional flow, which pulls filler agglomerates apart efficiently, while the splitting and recombining distributes those broken particles through the bulk.

Bore diameter also governs the thermal side of the process. Heat travels from the barrel wall to the center of a 16 mm channel across only 8 mm, so a 20 g charge reaches working temperature quickly and holds it evenly. Small thermal mass shortens both heat-up and cooldown, which suits a laboratory running several different formulations in a day. Temperature control across the ambient to 300°C range sets melt viscosity, and viscosity in turn decides how much stress the flow transmits to agglomerates.

Pelletizing works by cutting at the die face. Compound leaves the die as a continuous extrudate, and a motor-driven scraper sweeps across that face, shearing off a particle on each pass. Pellet length follows the ratio between extrusion rate and cutter speed, so uniform particles come from holding both steady. Pellets matter downstream because free-flowing, consistently sized feed loads reproducibly into molding barrels and test crucibles, while irregular lumps introduce packing and melting variation.

TECHNICAL SPECIFICATIONS

Laboratory Vertical Mixer - ToronMix™ LV 300 Technical Specifications

Parameter	Specification
Batch Load Capacity	Approximately 20 g

Parameter	Specification
Barrel Inner Diameter	Ø16 mm
Barrel Temperature Range	Ambient to 300°C, adjustable
Mixing Method	Pneumatic ram extrusion through an internal dispersion structure
Pelletizing	Motor-driven scraper assembly, die-face cutting
Power	0.5 kW (total draw ≤0.5 kW)
Voltage	220 V ±10%, 50 Hz, single phase (110V is also available)
Overall Dimensions	350 × 285 × 640 mm
Services Required	Compressed air supply for the ram cylinder



Torontech Inc.

251 Consumers Road, Suite 1200
Toronto, Ontario, M2J 4R3, Canada 🇨🇦

Phone: +1 416 368 2721 | Fax: +1 416 981 7652
Email: info@torontech.com

Torontech, LLC

601 Brickell Key Drive, Suite 700
Miami, FL 33131, USA 🇺🇸

Toll-Free: 1-866-383-7919
Email: sales@torontech.com

Torontech ME FZE

Meydan Grandstand, 6th Floor,
Meydan Road, Nad Al Sheba,
Dubai-261440, UAE 🇦🇪

Phone: +971 488 19252
Email: me@torontech.com

