



TORONTECH



PULVERIZER

Pulverizer - ToronPVZ™ Series

ToronPVZ™ pulverizer reduces plastic granules, regrind, and production scrap into fine, free-flowing powder for recyclers, compounders, and rotomoulding producers. The system handles a wide range of thermoplastics, from rigid PVC and polyethylene to engineering resins, and delivers consistent particle size at high throughput. A serrated disc-mill grinding chamber, an enlarged cyclone, and an integrated screening loop work together so material is pulverized, classified, and collected in one continuous pass. Qualitest supplies the ToronPVZ™ Series in four frame sizes to match everything from small in-house recycling cells to high-capacity production lines.

Each model pairs a quality SKF bearing assembly with externally adjustable grinding discs, giving operators direct control over powder fineness without dismantling the machine. A dual cooling system on both the rotating and stationary discs keeps grinding close to ambient temperature, which protects heat-sensitive polymers from melting or thermal damage. The output is powder with uniform particle size distribution, good flowability, and high bulk density, which supports smooth downstream processing and lower material waste.

APPLICATIONS

Pulverizer - ToronPVZ™ Series Applications

The ToronPVZ™ pulverizer supports size reduction across plastics production, compounding, and recycling operations where consistent powder quality drives the next process step.

- Pipe and Profile Recycling: grinds rigid PVC and PE offcuts and rejects from extrusion lines back into reusable powder, closing the loop on in-house scrap
- Rotomoulding Powder Production: converts PE and LLDPE pellets into free-flowing micronized powder with the fineness and bulk density needed for uniform wall thickness in molded tanks and containers

- Masterbatch Production and Compounding: prepares fine carrier and additive powders for even dispersion and homogeneous blending
- Plastic (Powder) Coating: produces controlled-particle-size powders that improve adhesion and surface finish on coated parts
- Post-Industrial Scrap Recycling: recovers injection and extrusion waste into powder feedstock, reducing dependence on outside powder suppliers
- Thermoforming Reclaim: pulverizes sheet and film trim into powder or fine regrind for reintroduction into the process
- Engineering Plastics Compounding: handles PA, PC, ABS, POM, and similar resins for size reduction ahead of compounding and modification



FEATURES

Pulverizer - ToronPVZ™ Series Key Features

The ToronPVZ™ Series combines precision disc control, durable wear parts, and a sealed air-conveying system to deliver consistent powder with low operating cost.

- One-Axis Disc Alignment with SKF Bearing: a quality imported bearing holds the grinding gap steady during rotation, keeping fineness consistent through long continuous runs
- External Handwheel Gap Adjustment: operators fine-tune the distance between rotating and stationary discs from outside the machine, with no teardown required
- Hardened Serrated Grinding Discs: abrasion-resistant material at 58 to 61 HRC extends disc life, and the segmented design allows quick, low-cost replacement of individual key segments
- Material Versatility: swapping grinding elements lets a single machine process rigid and flexible plastics as well as engineering and elastomeric resins
- Large-Diameter Grinding Disc: maximizes throughput at a given power draw for a favorable energy-per-kilogram cost
- Heavy-Duty Grinding Chamber: built for sustained size reduction of plastic scrap in production environments
- Dual Disc Cooling: cooling on both discs allows ambient-temperature pulverizing and protects heat-sensitive polymers from thermal damage
- Enlarged Cyclone: improves powder recovery and flowability through the air-conveying circuit
- Ex-Large Stainless Steel Hopper: holds larger feed batches and keeps the powder stream clean and contamination-free
- Premium Electrical Components: Schneider Electric controls support reliable, repeatable operation
- Optional PLC and Touchscreen Control: monitors and manages the process for repeatable settings and simpler operator handover
- Compact, Space-Saving Footprint: fits the system into tighter plant layouts

THEORY & METHOD

Theory and Method

Disc-mill pulverization reduces particle size by shearing material between two facing grinding discs, one rotating at high speed and one stationary. A vibratory feeder meters granules into the center of the grinding chamber, and centrifugal force drives them radially outward across the disc faces. The serrated segments on each disc form opposing cutting edges that act like a continuous scissor, slicing and abrading the granules into progressively smaller particles as they travel toward the disc rim. Turning the external handwheel narrows or widens the gap between the discs, which sets the target powder fineness.

Air handling does the classification. A blower draws the freshly ground powder out of the chamber and carries it through an enlarged cyclone, where the powder separates from the air stream and discharges through a rotary airlock onto a vibration screener. Particles that meet the target size pass through and collect as finished product, while oversize material returns to the grinding chamber automatically for a second pass. This closed loop holds the particle size distribution tight and keeps throughput steady.

Heat management is what makes ambient-temperature pulverizing possible. Friction between the discs and the polymer generates heat that can soften or smear thermoplastics and blunt the cutting action. The ToronPVZ™ Series cools both the rotating and stationary discs so the grinding zone stays near room temperature, which preserves the polymer's properties and produces clean, granular powder rather than fused agglomerates. For heat-sensitive resins, a cryogenic option chills the feed further to keep material brittle through the grind.

TECHNICAL SPECIFICATIONS

Pulverizer - ToronPVZ™ Series Technical Specifications

Parameter	ToronPVZ™ -25	ToronPVZ™ -38	ToronPVZ™ -61	ToronPVZ™ -80
Grinding Disc Diameter	250 mm	380 mm	610 mm	800 mm

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Main Drive Motor	10 HP (7.5 kW)	30 HP (22 kW)	75 HP (55 kW)	75-150 HP (55-110 kW)
Blower Motor	4 HP (3 kW)	15 HP (11 kW)	15 HP (11 kW)	15 HP (11 kW)
Machine Weight	1 t	2.2 t	3.2 t	5 t
Dimensions (L × W × H)	1.8 × 1.2 × 3.2 m	3.2 × 1.8 × 3.2 m	3.5 × 2.0 × 4.3 m	4.0 × 2.0 × 5.2 m
Output Rate, Rigid PVC	50-70 kg/hr	200-280 kg/hr	400-500 kg/hr	800-1000 kg/hr
Output Rate, LDPE (MFI 70)	30-50 kg/hr	100-200 kg/hr	250-500 kg/hr	400-700 kg/hr

Output rates depend on resin grade, target powder fineness, and operating conditions. Specifications are subject to change as part of ongoing product development.

Standard Configuration

Component	Function
Stainless steel feed hopper	Holds and feeds incoming granules or scrap
Vibratory feeder	Meters material into the grinding chamber at a controlled rate
Grinding chamber with rotating and stationary discs	Performs the shear-cutting size reduction
Blower	Conveys ground powder out of the chamber pneumatically
Cyclone	Separates powder from the air stream
Rotary airlock	Discharges powder to the screener while sealing the air circuit
Vibration screener	Classifies powder by size and returns oversize for re-grinding
Electrical control cabinet	Houses Schneider Electric controls for the drive and air system

Optional Accessories and Auxiliaries

Accessory	Description
PLC and touchscreen control	Process monitoring, recipe storage, and centralized operation
Automatic loader	Continuous feeding for unattended running
Metal separator	Removes ferrous and non-ferrous contamination ahead of grinding
Cryogenic cooling system	Chills feedstock for heat-sensitive and elastomeric materials
Separation screener with auto re-grind	Returns oversize material to the chamber for a second pass
Custom and wear-resistant grinding discs	Discs tailored to a specific resin grade, drawing, or sample



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