

Mill Series – MP



Equipment Specifications

Suitable for grinding tendentially hard or fragile materials, of particle size ranging from fine to medium – fine (30 micron – 1 mm).

The grinding principle and the grinding chamber design are especially suitable for cryogenic grinding or cryogenic powder processing, and for grinding harder materials at room temperature. Cryogenic grinding is used successfully and economically in the milling of elastomer scraps, plastics, or any other material where cryogenic methods preserve the physical, chemical or organoleptic properties of the end product.



The Mill can be provided in two grinding arrangementsMPMill with one fixed disk and one rotating diskMPCMill with two facing contra-rotating impellers

The equipment can be installed on skid or on slabMP / MPCMill installed on common skid with filterMP-F / MPC-FMill installed on slab connecting piping to filter



Principles of Operation

The material is fed between one fixed and one rotating disc or between two discs rotating against other. Each disk is provided with steel pins whose number, dimensions and spacing can be modified according to actual requirements. The final particle size is determined by the space between the pins and by the rotational speed of the disks. Operational parameters, such as disk speed and air flow, can be adjusted to the exact milling requirements.



Cryogenic Application – Liquid Nitrogen

Liquid nitrogen works primarily in three ways

- Rapidly cools the material, bringing it to its embrittlement temperature, before being subject to grinding
- · Maintains a constant working temperature, absorbing heat developed during milling operations
- Provides an inert, non-toxic, and extremely dry environment withn the milling equipment

Cryogenically ground material differs in physical structure from material ground with traditional methods. Cryogenically embrittled material will produce homogenous grain structure, with a cubic crystalline shape. Material ground at ambient temperatures will instead reveal tears in the original matrix, due to slippage along the lattice structure or crystalline flakes, resulting in a final product lacking uniformity.



Cryogenic Grinding

Pulverization processes normally carried out at ambient temperature can be done at cryogenic temperatures, obtaining higher quality ground products and reducing energy costs. Heat-sensitive substances with low softening points such as plastics, elastomers, resins and oily products, can be milled effectively by using liquid nitrogen to bring them to their embrittlement temperature.

Materials that cannot be processed in conventional mills can today be easily pulverized with cryogenic methods.

Technical Data - Mill Series MP / MPC

MP – MONOROTATING SERIES Total Installed Total Power STM Mill Series Hourly Production Noise Level Power Consumption Supply Particle Size* size kW kW dBA type Range kg/hr MP 150 5.5 5.0 0.5 - 20 d.99 < 100µm < 85 < 10 mm 10 - 100 MP 300 18.5 16.7 < 10 mm d.99 < 200µm < 85 MP 400 30.0 27.0 20 - 250 < 10 mm d.99 < 300µm < 85 37.0 d.99 < 300µm MP 500 33.3 50 - 500 < 10 mm < 85 < 85 MP 600 55.0 49.5 120 - 1500 d.99 < 300µm < 10 mm MPC – CONTRA-ROTATING SERIES MPC 300 37.0 10 - 150 < 10 mm < 85 33.3 d.99 < 200µm MPC 400 48.5 20 - 400 43.7 < 10 mm d.99 < 300µm < 85 MPC 500 67.0 60.3 50 - 600 < 10 mm d.99 < 300µm < 85 MPC 600 105.0 94.5 100 - 2000 < 10 mm d.99 < 300µm < 85

* Data Reference: VITON (recovered material)

Mill Series MPC - 400



Operational Advantages

- High rotational disk velocities, providing consistent granulometry
- Spacious grinding chamber prevents material accumulation
- Fully adjustable operational parameters
- Interchangeable disks
- Tools available in multiple configurations
- Surface treated pins to satisfy specific requirements

Tool A – Pins with tapered section

Tool B - Pins with small diameter

- Specialty pin combinations available
- Disks available in multiple large and small diameters
- Easy access for maintenance



PIN MILL MP / MPC (Granulometry database available):					
Cellulose Acetate	< 400 µm	Methylcellulose	< 200 µm	Epoxy Resins	< 100 µm
Choline Chloride	< 300 µm	Nylon 12	< 500 μm	Silicone	< 200 μm
EPDM	< 800 µm	Polyethylene LDPE	< 200 μm	Viton (green/black)	< 300 μm
Tire Rubber	< 500 µm	Polyethylene HDPE	< 500 μm	Granular Urea 46%	< 100 µm
Shoe Rubber	< 500 µm	PVC	< 800 μm		

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