Munson’s unique, four-way mixing action gently folds, tumbles, cuts and turns the material, producing a thorough blend in only 1 to 3 minutes, while imparting minimal energy and intensity to the product. The same blending action prevents segregation regardless of particle sizes, shapes or bulk densities, and provides an ideal fluid bed for liquid additions.

Unlike stationary mixers with agitators, Munson Rotary Batch Mixers produce homogeneous blends with no shear, discharge completely with no stratification and have no internal shafts or shaft seals to contact material. Internal mixing flights direct material towards and through a stationary discharge gate which, together with multiple clean-out doors and unrestricted access to all internal surfaces, allows thorough cleaning and sanitizing in minutes.

Capacities range from 5 to 600 cu ft (142 liters to 17 cu m), with equal mixing efficiency at 100% down to 10% of rated capacity, providing unsurpassed flexibility.

This superior combination of attributes makes the Munson Rotary Batch Mixer ideal for a broad range of applications, from pharmaceutical, nutraceutical and food applications requiring absolute cleanliness, to minerals, glass and concrete blending requiring extraordinary durability.

Munson also offers small production lab/pilot Mini-Mixers with capacities from 0.25 to 15 cu ft (7 to 425 liters), and Rotary Continuous Mixers with capacities from 25 to 5000 cu ft/h (708 liters to 142 cu m/h).
Munson Rotary Batch Mixers provide a superior combination of standard features that improve quality and cut cycle times while reducing maintenance and operating cost.

1 to 3 Minute Mixing Times
A Munson Rotary Batch Mixer requires only 1 to 3 minutes to blend a batch, boosting output while eliminating or minimizing any effect on the integrity, temperature, moisture and density of your material. Short cycle times also allow smaller Rotary Batch Mixers to equal the production of larger, slower mixers, saving floor space.

Uniform Dry Blends
Munson Rotary Batch Mixers are efficient, distributing particles throughout the batch with uniformity to one-tenth of one percent typical—even when blending particles of widely disparate sizes, shapes and bulk densities—maintaining consistent product quality.

Gentle Mixing
The Munson Rotary Mixer folds, cuts and turns material as it tumbles, achieving batch uniformity gently as well as quickly—with no free-fall of material that can damage particles. Light and fluffy materials remain in that condition during mixing and upon discharge, with no densification. Similarly, materials that are dense under ideal circumstances remain dense during mixing and discharge—an added benefit when packaging blended material by weight or volume.

Total Discharge
In addition to blending, proprietary mixing flights also serve to move all material to and through the plug gate discharge valve until the vessel is completely empty, eliminating residual that would otherwise be wasted or require manual removal prior to cleaning.

Ultra-Fast Cleaning and Sanitizing
Cleaning and sanitizing are fast and easy for several reasons exclusive to the Munson Rotary Batch Mixer: 1) complete discharge with only minimal residual dust on interior surfaces, 2) Unlike other rotary designs, no shaft seals and no dead spots or deep recesses to harbor contamination, 3) multiple drum clean-out doors, 4) unrestricted access for spraying with air, cleaning solutions or steam, 5) available wash/rinse-in-place spray nozzles, 6) convenient drain plug, 7) cross ventilation of one large open area for rapid drying and 8) ability to visually inspect all internal surfaces.
Uniform Liquid Additions, Coatings, Flavorings, Impregnations

Munson offers all Rotary Batch Mixers with single or multiple internal spray lines for liquid coatings, flavorings and impregnations. Unlike mixers that spray liquid additions onto a thin waterfall of material (as well as through the material and onto inaccessible internal surfaces), Munson Rotary Batch Mixers spray liquid additions onto a wide expanse of moving material, rapidly achieving batch uniformity to one-tenth of one percent at ratios down to 1 part per million of liquid to solids.

Wide Range of Flexible Capacities

Useable capacities range from 5 to 600 cu ft (142 liters to 17 cu m), with equal mixing efficiency at 100% down to 5% of rated capacity, providing unsurpassed flexibility.

No Segregation on Discharge

The constant motion of a Rotary Batch Mixer during loading, blending and discharging cuts cycle times significantly, and prevents the segregation of ingredients during discharge.

Full Interior Access

Unlike competitive designs, the Munson Rotary Batch Mixer has no recesses, hidden chutes, scoops or buckets that make cleaning, inspection and maintenance difficult or impossible. Instead, it is equipped with large doors allowing unrestricted access to every surface of the unobstructed mixing vessel interior.

Dust-Tight Operation

The Munson Rotary Mixer is particularly suitable for enclosed, automated systems where dust-tight connections link it to other equipment. Equipped with a single radial seal that prevents dust leakage from the drum, it allows materials ranging from pharmaceuticals to toxic substances to be mixed safely, with no contamination of the material or of the plant environment.

No Reversing or Tilting for Loading, Discharging

Internal flights within the rotating vessel move the material toward and through the discharge gate (when open), eliminating the need to tilt the machine for emptying, while minimizing floor space. Stationary inlets and outlets also allow hard piping into upstream and downstream equipment, and permit the drum to rotate continuously during loading and discharge, cutting cycle times.

Long Life with Minimal Maintenance

With periodic monitoring and minimal maintenance, even minor downtime can be eliminated. Seals can be replaced in minutes—10- to 20-times faster and more economically than with other rotary designs.

Features Overview

- Uniform mixing in 1 to 3 minutes
- Ultra-fast cleaning and sanitizing
- Capacities from 5 to 600 cu ft (142 liters to 17 cu m)
- Gentle tumbling action plus short cycles eliminate or minimize degradation
- No stratification, segregation or densification
- Equally efficient mixing from 100% down to 10% of rated capacity
- Handles dry powder and granular products
- Totally dust tight
- Loads, mixes, unloads at the same floor level—no need for multi-level structures
- Ideal for uniform liquid additions, coatings, flavorings and impregnations
- Low horsepower, high mechanical efficiency
- Exhaust vent for air and dust displaced during loading
- Quick opening access door in the mixer drum section
- Internal lifter and baffle design variations to meet the mixing requirements of unusually difficult and/or fibrous material
- Rotating vessel supported by two oversized trunnion rings for superior load capacity and exceptional life
- Completely self-emptying except for possible dust on interior drum surface
- Completely welded frame and drum assemblies
- No need to stop or reverse mixer for loading or discharging
- Constant motion ensures uniform distribution of batch ingredients during loading and mixing as well as discharging
- Manual or solenoid-operated discharge valve
Sanitary Rotary Batch Mixers offer numerous features that prevent material contamination and allow rapid, thorough wash down required for pharmaceutical, nutraceutical and food applications:

- Internal mixing flights spaced for easy access are continuously welded to the drum wall, and are configured for complete material discharge as well as complete drainage following wash down.
- All internal welds have minimum 0.25 in. (6.35 mm) radius, and are polished to 80 grit as standard. Available with polishes up to 240 grit.
- CIP (Clean-in-Place) spray lines with multi-directional nozzles for convenient cleaning and sanitizing.
- All product contact surfaces constructed of #304 or #316 stainless steel, in #2B Mill Finish standard with options available for #4 or #7 polish. USDA Dairy suitable upon request.
- External inlet seal resides outside of the mixing drum and is easily removed and replaced.
- Support structure and guards available in #304 stainless steel construction.

Industrial and Abrasion-Resistant Models

Munson offers Rotary Batch Mixers for demanding industrial applications such as concrete premix, ceramics, powdered metal, fertilizers, plastics and catalysts. Also offered are “GB” models for glass batching, refractories and other poor-flowing, highly abrasive materials. These extreme-duty machines produce uniform blends containing numerous ingredients in 1 to 3 minutes, discharge completely in minimum time with no residual, and operate quietly and vibration-free.

Like all Munson Rotary Batch Mixers, these machines allow rapid cleaning while minimizing power requirements, even when mixing exceptionally heavy materials with bulk densities exceeding 200 lbs/cu ft (3.2 gm/cc).

Ideal for basic batch mixing systems as well as integrated, automated operation, these units can be equipped with flexible connections and radial seals to assure dust-tight operation, and hardened, easy-to-replace wear plates to protect areas prone to abrasion.

Intensifier De-Agglomerates, Homogenizes

The optional Intensifier promotes uniform dispersion of non-free-flowing and other difficult-to-blend materials, imparting shear into the batch to break apart agglomerates and separate non-free-flowing materials into discreet particles. It is also fully accessible and removable for cleaning and sanitizing.

Heating or Cooling Applications

Munson offers Rotary Batch Mixers with jackets for connection to liquid heaters or chillers (top), or with ports (bottom) for introducing heated, cooled or moisturized air directly into the batch, allowing the temperature and moisture levels of materials to be altered or maintained during loading, mixing and discharging cycles.
OPTIONS OVERVIEW

- Polished construction and sanitary finishes to meet USDA, FDA and pharmaceutical requirements
- Stainless steel guards and bedframe
- Intensifier for dispersion of difficult-to-blend materials
- Locking casters for mixer mobility
- Single or multiple internal spray lines for the introduction of liquids for coating, flavoring, coloring or impregnation
- Special ports for trace ingredient additions, or sampling
- #304 or #316 stainless steel, exotic alloys, carbon steel and abrasion-resistant steel construction
- Abrasion-resistant steel, or UHMW PE or Nylon liners for special applications
- Flexible spout connections, and/or any inlet/discharge modifications or transitions to connect Rotary Mixer to other equipment
- Solenoid or mechanical gear motor actuated discharge gate
- Easily incorporated into automated PLC systems
- Variable speed controllers and electrical soft starts
- Multiple quick-opening doors for easy access to interior of drum
- Pressure pot with scale for liquid additions
- Load cells for precise control of batch ingredients
- Discharge gate position sensing switches to indicate discharge gate position (for use in automated systems)
- Extra-heavy-duty construction for materials of high bulk densities and/or extreme abrasiveness
- Variations in the design of internal lifters and baffles to satisfy the characteristics of unusually difficult-to-mix and fibrous materials
- Retractable inlet for ease of cleaning
- Piping for heated, cooled or dehumidified air
- Low pressure and ASME-code jackets for heating or cooling with water, steam or oil
- Drain plug for complete discharge of water or cleaning solutions following wash down or sanitizing
- Position-sensing air cylinder for control of discharge gate

The sliding intake chute of the Rotary Batch Mixer shown in the open position, allows rapid access to the drum interior as well as the intake spout and seal area for cleaning and inspection.
Munson Rotary Batch Mixers feature a stationary inlet, an opposing stationary discharge, and a rotating drum in between. Material is charged via the inlet chute while the drum is rotating. Internal mixing flights tumble, fold, cut and turn batch materials, while directing material toward the plug gate valve when closed, and through it when opened.

Internal mixing flights create a gentle, four-way mixing action that tumbles, folds, cuts and turns the material.

This provides free space between particles, and causes them to recombine 288 times per minute—without the free fall that can damage material.

The efficient, dynamic flow pattern also creates ideal conditions for spraying liquid coatings, flavors, colors and impregnations onto a large area of moving material, achieving batch uniformity rapidly.

When the blend is complete, typically from 1 to 3 minutes, the discharge gate pivots into the machine and allows the material to exit through the discharge spout.

Unlike mixers that spray liquid additions onto a narrow “waterfall” of moving material with the hope it will transfer to dry material, Munson Rotary Batch Mixers spray liquid additions onto a wide, deep bed of moving material, rapidly achieving batch uniformity to one-tenth of one percent at ratios down to 1 part per million of liquid to solids.

The plug gate discharge valve body remains stationary at all times. During discharge, the valve plug pivots inward, allowing internal flights to direct material toward and through the valve opening—with no stratification—until the vessel is empty.

Optional retractable intake chute allows rapid cleaning and inspection. The chute remains stationary while the vessel rotates and material is loaded, cutting cycle times significantly.

Trunnion ring at discharge end eliminates the need for internal shafts and shaft seals contacting material.

Trunnion ring at intake end eliminates the need for internal shafts and shaft seals contacting material.

Mixing vessel rotates continuously during loading, mixing and unloading, cutting cycle times and preventing stratification during discharge.

Large access door(s) provide unobstructed access to every interior surface for cleaning, ventilation and inspection.

Low power motor due to slow rotation and extreme mixing efficiency. See MunsonMachinery.com for energy saving calculations.
**TYPICAL APPLICATIONS**

- **Sanitary**
  - Agricultural feed/nutrition
  - Aquaculture products
  - Bacteria, enzymes and other biological products
  - Coffee: green, roasted, whole, ground and instant with and without flavorings
  - Drink mix/milk powder
  - Enzymes
  - Frozen meats/vegetables
  - Grain, bran, seed, flour, croutons, meal, cereal, soup mix, cheese and other food products
  - Nuts
  - Nutraceuticals/vitamins/minerals
  - Pet/fish foods
  - Pharmaceuticals

- **Non-Sanitary**
  - Snack foods including trail mix
  - Spices
  - Sugar and sugar substitutes
  - Tea: leaf and cut with and without flavorings
  - Tobacco

- **Abrasive**
  - Absorbent materials including polyacrylate, kitty litter, oil absorbents and dessicants
  - Agricultural chemicals
  - Battery/fuel cell materials
  - Catalysts
  - Clays
  - Compost
  - Detergents/soaps
  - Fertilizer, herbicide, pesticide, biocide
  - Lawn seed and lawn care products
  - Metal powder
  - Mortar mix and grouts
  - Pigments including carbon black and various oxides
  - Plastics, resin, regrind, pellets, PVC
  - Potpourri
  - Toner
  - Wood flour, chips
  - Bulk chemicals of any kind
  - Abrasive metal powders
  - Welding rod materials/flux

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**MINI MIXER SERIES**

In addition to Inline Rotary Batch Mixers shown on this page, Munson offers Mini-Mixers for small production and lab/pilot off-line applications from 0.25 to 15 cu ft (7 to 425 liters). 5 cu ft (141 liter) sanitary model shown.
Failure to do so may result in personal injury and/or damage to the machine components.

**WARNING:** In order to clearly show details of machines, some covers, shields, doors and guards have either been removed or are shown in the open position in photographs throughout this brochure. All protective devices must be properly installed before operation of equipment.

The above power requirements are generalizations that may not apply to your application. Please consult factory.

**Dual drive units available for ultra-dense materials.**

*Specialized "GB" models for glass batching, refractories and other poor-flowing, highly abrasive materials.

"FACTORY TYPICAL TUB OPENING" means the tub opening in photographs throughout this brochure is the size of the opening in the tub. The actual size of the opening may vary due to the different types of full-scale mixing equipment Munson maintains a 5000 sq ft (465 sq m) laboratory for free testing of customer-supplied materials on eight different types of full-scale mixing machines to ensure the optimum selection of equipment, and document the performance each customer can expect. A variety of equipment is also available for on-site testing or interim production on a rental basis.

### RELATED MUNSON EQUIPMENT:

**MIXERS:** Ribbon/Paddle/Plow, Fluidized Bed, Vee-Cone, Rotary Continuous, High Intensity

**SIZE REDUCTION EQUIPMENT:** Screen Classifying Cutters, Knife Cutters, Pin Mills, Attrition Mills, Hammer Mills, Lump Breakers, Shredders

**FREE LAB TESTING AND EQUIPMENT RENTAL**

Munson maintains a 5000 sq ft (465 sq m) laboratory for free testing of customer-supplied materials on eight different types of full-scale mixing machines to ensure the optimum selection of equipment, and document the performance each customer can expect. A variety of equipment is also available for on-site testing or interim production on a rental basis.