



Pharmatech Blenders

Brands of Terriva



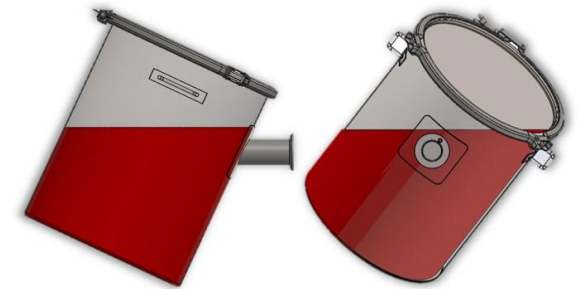
- Blending Systems
- Flexisieve
- Vessels
- Control Systems



- Dust Cap Seals
- Flexiducts
- Silicone Hoses

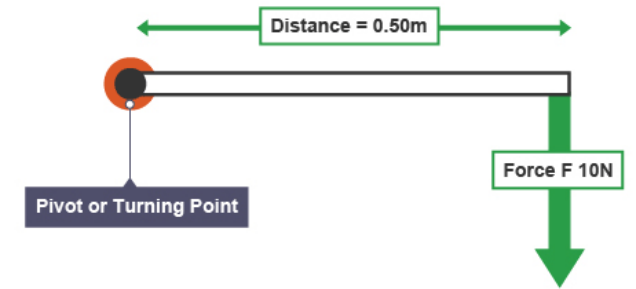
Background to Tumble Blending

- Pharmatech blenders are generally “Tumble Blenders”
- Typical speed range 5 – 25 RPM
- 33% - 66% Vessel Fill – 50% is Optimal
- Gentle mixing action via gravity



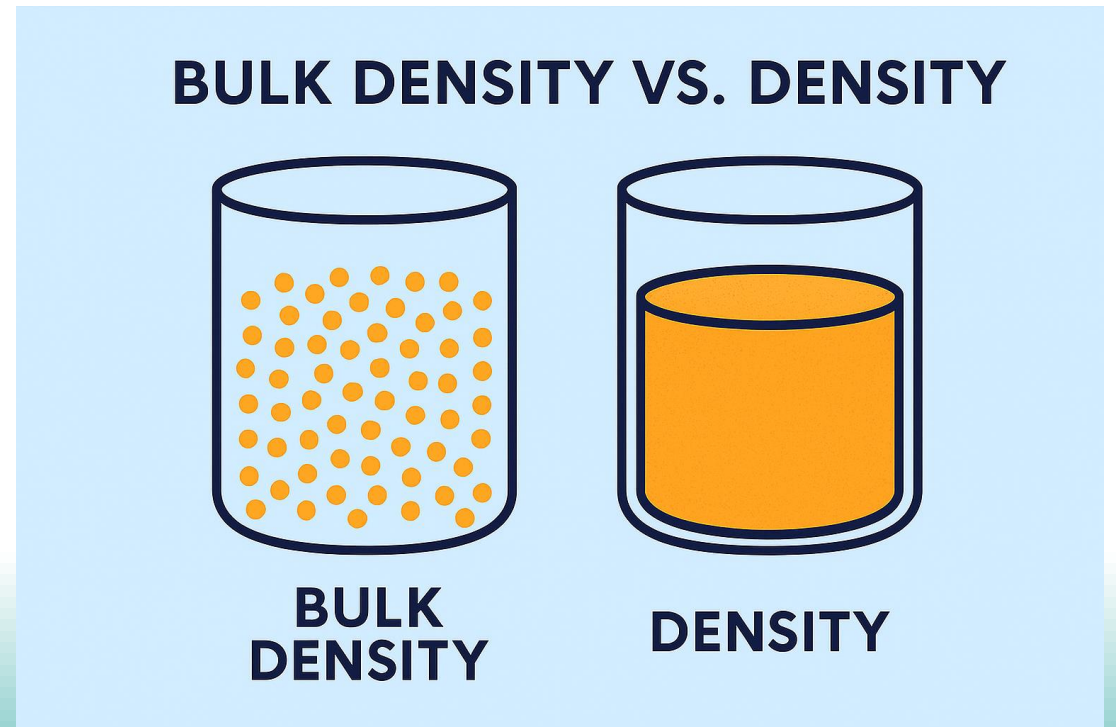
Blender Sizing Calculator

- Customers work in Batch Mass or Batch Volume
- $\text{Volume} = \text{Mass} / \text{Bulk Density}$
- Each blender has Mass and Volume limit combining to calculate turning moment.
- Use our calculator for a recommendation



Bulk Density vs Density

- Having the correct density value is crucial
- Power processing should use bulk density rather than “true” density
 - Bulk density includes the air gaps
 - Density (true density) is the density of the solid material



Blender Naming

- Our blender naming is not linked to maximum volume or batch weight
- It is instead... Turning Moment
- Treat the blender name as a product name rather than being descriptive

General Blender Size Categories

Blender size	Typical Maximum Capacity
Lab Based Blenders	Up to 50L
Small Production / Pilot Scale	50L to 200L
Standard Production Blenders	200L to 1000L
Bespoke Production Blenders	Upwards of 1000L

Design Philosophy

- Interchangeable blending vessels
 - Different shapes and sizes can be used on the same blender
 - Quick and easy interchange
 - Maximises efficiency and diversity
- “GMP Friendly” design
 - Smooth edges allowing easy to clean
 - Stainless Steel Construction
 - Internals of blender sealed from external
- CE Marked and provided with declaration of conformity
 - Full risk assessment available on request

MB005 Blender

- The True Lab Blender
- Vessels up to 5L
- Generally, Benchtop Based
- Very small batch volumes for GMP Labs



MB005 Blender



Detail	MB005
Max Vessel Size	5L
Max Batch Volume	3.3L
Max Mass Capacity	10Kg
Blend Speed	5 – 30 RPM
Controls	Basic Controls
Mobility	Desktop Trolley based on request
Agitation Option	No
ATEX Option	No
PAT/NIR Option	Possible

MB015 Blender

- Vessels up to 30L*
- Can handle sub 5L vessels
- Trolley based
- Small batch volumes for GMP Labs



MB015 Blender



Detail	MB015
Max Vessel Size	30L* (* V-Shell 20L)
Max Batch Volume	20L
Max Mass Capacity	30Kg
Blend Speed	5 – 30 RPM
Controls	Basic Controls 21 CFR Part 11 Controls
Mobility	Trolley based
Agitation Option	Yes
ATEX Option	Yes
PAT/NIR Option	Yes

MB100 Blender

- Vessels up to 100L
- Mobile chassis
- Space saving sliding guard
- Floor loaded



MB100 Blender



Detail	MB100
Max Vessel Size	100L
Max Batch Volume	66L
Max Mass Capacity	100kg
Blend Speed	5 – 30 RPM
Controls	Basic Controls 21 CFR Part 11 Controls
Mobility	Mobile chassis
Agitation Option	Yes
ATEX Option	Yes
PAT/NIR Option	Yes

MB400 Blender

- Vessels up to 300L
- Tilting motion to lift vessels from trolley
- Fixed or Moveable Pallet
- Guarding options



MB400 Blender



Detail	MB400
Max Vessel Size	300L
Max Batch Volume	200L
Max Mass Capacity	300kg
Blend Speed	5 – 30 RPM
Controls	Basic Controls 21 CFR Part 11 Controls
Mobility	Fixed or Mobile Pallet
Agitation Option	No
ATEX Option	No
PAT/NIR Option	Yes

MB1200A Blender

- Vessels up to 750L
- Tilting motion to lift vessels from trolley
- Fixed
- Through-Wall Option
- Guarding options



MB1200A Blender



Detail	MB1200A
Max Vessel Size	750L
Max Batch Volume	500L
Max Mass Capacity	750kg
Blend Speed	5 – 20 RPM
Controls	Basic Controls 21 CFR Part 11 Controls
Mobility	Fixed
Agitation Option	Yes
ATEX Option	Yes
PAT/NIR Option	Yes

MB2000A Blender

- Vessels up to 1000L
- Tilting motion to lift vessels from trolley
- Fixed
- Through-Wall Option
- Guarding options



MB2000A Blender



Detail	MB2000A
Max Vessel Size	1000L
Max Batch Volume	660L
Max Mass Capacity	1000kg
Blend Speed	5 – 20 RPM
Controls	Basic Controls 21 CFR Part 11 Controls
Mobility	Fixed
Agitation Option	Yes
ATEX Option	Yes
PAT/NIR Option	Yes

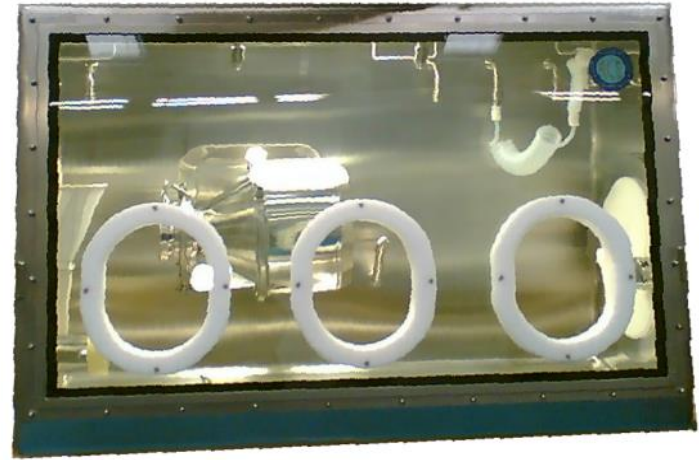
Large Production Blenders

- Generally, 1000L and upwards
- Fixed vessel designed
- Bespoke designed systems



Isolator Blenders

- Custom blenders designed for isolators
- Blending is within isolator
- Typically, up to 15L in size



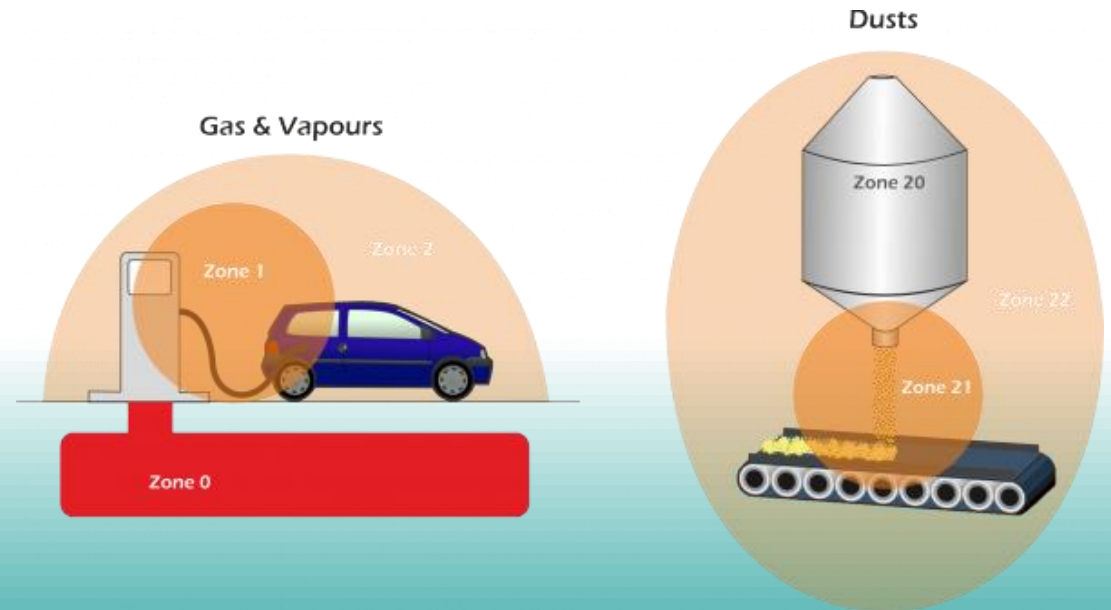
Agitated Blending

- Also known as intensifier bars
- Higher Shear Blending
- 50% - 85% Vessel Fill
66% is Optimal



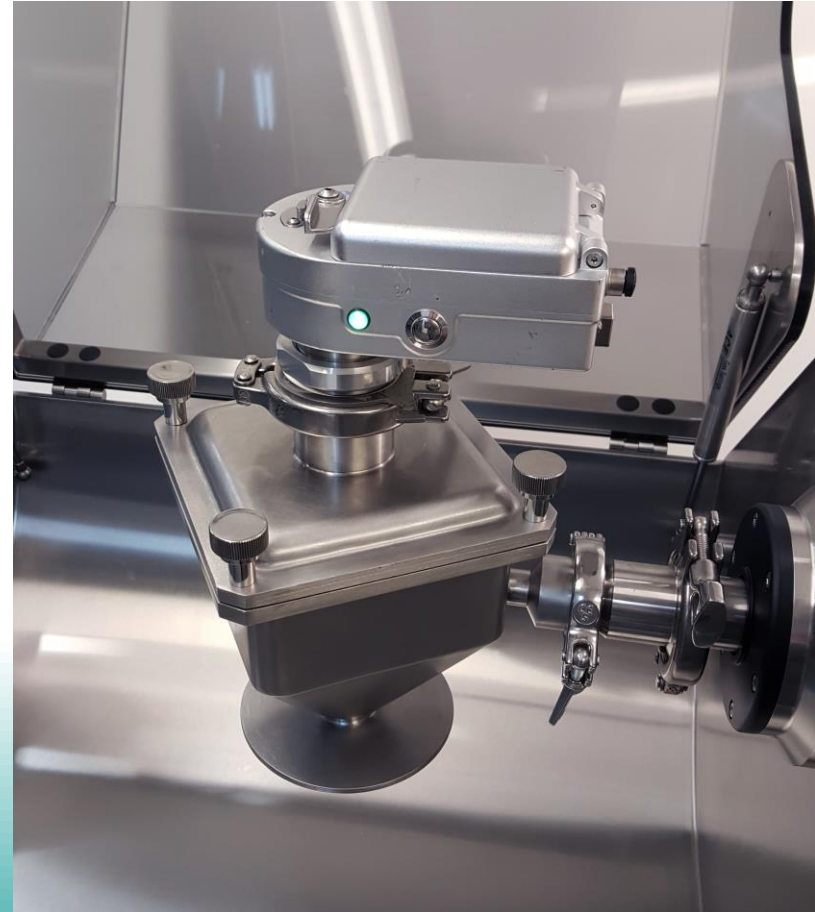
ATEX - ATmosphères EXplosibles

- Standard machines range is NOT ATEX Rated
- ATEX rules are about preventing explosions in places where dust or gases could ignite.
- In powder blending, fine powders can form dust clouds, which can explode if a spark or hot surface is present.



NIR/PAT

- NIR/PAT is a real-time monitoring system that uses light sensors to confirm powders are fully and evenly mixed during blending.
- Control integrations are available



Control Systems

- **Basic “GMP” Controls**
 - Paper based records – printed batch reports
 - Control of access via Key Switch
 - Ideal for environments where 21 CFR Part 11 is not required



Control Systems

- 21 CFR Part 11 “GXP” Controls
 - Fully audited system
 - Electronic signatures
 - Electronic user access control – local or domain based
 - PDF electronic batch reports



System Build Considerations

- Facility size limits
- Upstream and Downstream processes
- Connections between these systems
- Movement of vessels between processes
 - Trolleys and hoists

FAQs

- Can you do Lift/Lower Blenders
 - Yes, we can look at this if it appropriate to customer needs
- Can we mix liquids?
 - Yes, there is no reason pure liquid mixing cannot be conducted on Pharmatech blenders
- Can you disperse liquids during the blend?
 - Yes, but this is rare due to cost and packaging constraints
- Can CIP be incorporated?
 - Yes, generally this is restricted to fixed shell vessels

