

New Mini Cyclomix for Blending DPI Formulations

To support R&D work for the blending of DPI (dry-powder inhaler) formulations, Hosokawa Micron has developed the Mini Cyclomix lab mixer. Based on the proven Cyclomix high shear blending technology the Mini Cyclomix incorporates many key features that add real benefits for use in the development of pharmaceutical powders.

Blending formulations for dry-powder inhalers (DPIs) is a delicate matter. Delivering a fully homogeneous blend, without deterioration of the particles is a prerequisite. To disperse the actives in the lactose, the cohesive forces between the fine particles need to be broken, requiring a certain amount of mechanical energy. If too much energy is applied however, adhesive forces between the carrier and the actives will be too high, limiting the separation during inhalation. Finding the right balance for the required mixing energy is a critical issue and calls for a very efficient mixer.

Exchangeable product bowls

The unit is highly versatile with exchangeable product bowls of 100 ml, 1 ltr or 2 ltr. These can be easily connected to the drive unit by a bayonet ring without any special tools. It is also possible to extend the range of bowls in the future.

Offline filling and discharging

Because the product bowls are detachable, they can be filled and discharged in a separate location such as a dispensary or a glovebox. The bowl can be taken to the drive unit as a contained bowl.

Simple, efficient operation

The unit can be operated by means of an integrated touch panel. It features straightforward recipe management, data logging and data export.

The large surface area, in relation to the product volume, makes the Cyclomix a very efficient mixer compared with other high shear blenders, resulting in a homogeneous blend with a minimum input of mechanical energy.



Versatile

Because of the adjustable mixing speed and time the Mini Cyclomix is able to perform other processes like coating, bonding, rounding or densification, making it a very versatile device.

Cyclomix high shear mixing technology

The Cyclomix uses a combination of impact mixing and shear mixing. The product is rotated by an agitator with paddles and a knife blade. The rotational movement applies centrifugal forces on the powder particles which move the particles upwards along the wall of the conical vessel. At the top of the cone, the specially formed dome guides the particles downwards again through the centre of the vessel. This flow-pattern is combined with a rotational pattern.

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