

Enabling a Healthier World

Lonza

Capsules & Health
Ingredients

Capsugel[®] Zephyr[™]

Dry-powder inhalation capsule portfolio



Capsugel® Zephyr™

Dry-powder inhalation capsule portfolio

Customized approach to optimize performance of the product

Compatible with a large selection of device principles and opening systems

Available in both gelatin and hypromellose capsules



Given patient convenience and compatibility with a range of formulations and doses, **capsule based DPI (Dry-Powder Inhalation) technology is becoming the preferred DPI drug delivery platform** for respiratory and systemic applications.

Capsugel's customized capsules, in both gelatin and hypromellose, are optimized to provide superior performance and compatibility between the capsule/device and capsule/formulation.

Capsugel® DPI portfolio

- Consistent powder release
- Customized approach to guarantee optimal performance of the end product
- Compatible with a large selection of device principles and opening systems
- Ideal puncturing and cutting performance
- Available in gelatin capsules
- Available in HPMC capsules (Vcaps® or Vcaps® Plus)
- R&D and Regulatory support throughout the development including QbD approach



Our customized approach

Step 1 Product target profile	Step 2 Setting DPI capsule specifications	Step 3 Support throughout validation and dossier filling
<p>Project synopsis Reference product, targeted market, regulatory route</p> <p>Targeted patients Characteristics and needs</p> <p>Device selection support, characterization</p>	<p>Active principle ingredient (API) profiling Formulation approach discussion</p> <p>Support to QbD approach On critical capsule parameters</p> <p>Rapid supply of R&D capsule quantities For preliminary tests</p> <p>On-site technical support For first filling trials</p>	<p>Capsule branding Color matching and custom color and print development</p> <p>Rapid supply of customized DPI capsule For validation/clinical batches</p> <p>On-Site technical support Scale-up, filling process optimization</p> <p>QA and Regulatory support Required statements for dossier filling, support on questions from agencies</p>

R&D added-value services

Water activity testing

Device compatibility testing

Powder retention with standard Lactose blend

Impact of storage conditions on performance



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