

Combination inhalation devices



A world-leading manufacturer of inhalation devices

Around 300 million people worldwide live with asthma¹ and 250 million with COPD². Many of these people rely on one of a range of inhalation device technologies to deliver lifesaving medication to their lungs. As a world-leading developer of drug delivery devices, Recipharm has more than 60 years of experience as a trusted supplier of innovative dry powder inhalers, and valves and actuators for pressurised metered dose inhalers (pMDIs).

We have contributed to the design, development, and commercialisation of some of the world's leading inhalation devices. We are firmly established as one of the major pMDI valve suppliers worldwide. Our proprietary pMDI valves and actuators are critical components in several products approved by the US FDA.





Bespak® pMDI valves

As the most technically complex element in a pMDI, the valve is critical to delivering a consistent and precise metered dose of medication to patients.

Developed to work with a wide range of formulations with low levels of extractables and leachables to ensure that they are both versatile and clean.

Robust and sterile manufacture to meet stringent regulatory requirements.

Reliable cGMP compliant commercial supply chain.

Bespak® actuators

Optimised to work with our pMDI valves and are compatible with a wide range of canisters.

They are 100% airflow tested and supplied ready for immediate use in final packaging operations.

Uniquely customisable to meet the specific needs of your product.

Supplied with dust cap to keep the mouthpiece clean.



Dry powder inhalers

We offer integrated drug, device and combination product development and manufacturing support for dry powder inhalers (DPIs).

Harnessing our 'Design for Manufacture' experience, we can optimise DPI product designs and manage the risks associated with scaling-up manufacturing capabilities.

Dose counting actuator

Reliably displays the remaining doses in the pMDI so end-users can see at a glance when they need to obtain a replacement device.



Soft mist nasal spray device

The NSPY™ device is an open nasal spray platform for application of medication to the nasal mucosa. It is a spraying adapter that can be connected via luer-lock to a disposable or pre-filled syringe.

It is a gentle spray with a long duration (1–2 seconds).

It reaches the whole nasal cavity because of the fine droplets.

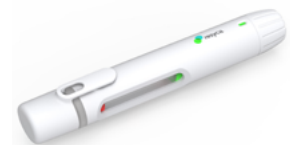
Dose per spray: 100 µL. Fill dose: 200 µL (two sprays).

Pre-filled syringe inhaler (PFSI™)

The soft mist inhaler (SMI) harnesses proprietary spray nozzle technology to deliver aerosols as a liquid solution.

Ideal for the delivery of both small and complex large molecules.

Specially designed to optimise lung deposition whilst minimising oropharyngeal deposition.



NasaDose™ nasal spray devices

Offers unique performance advantages through the use of IP-protected mechanisms that control device actuation and ensure consistent dosing and spray performance.

Simple, unit dose meaning no priming is required.

Ease of use: Simple push button operation | minimal button depression distance.

Pulmospray™

Designed to substitute nebulisers in:

Clinical environment (e.g. COVID-19).

Products requiring reconstitution.

Single-dose treatments.

Clinical trials, investigational drug products.

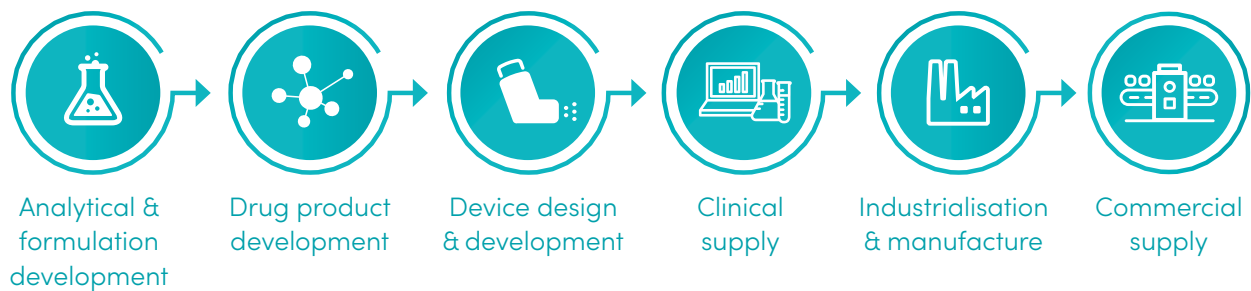


Formulation development and commercial supply

Our inhalation product development group has extensive experience in formulating suspensions, solutions, and dry powder blends. We offer:

- ▶ API characterisation and dosage form selection
- ▶ Formulation development, screening, and optimisation
- ▶ Aerosol and device performance characterisation
- ▶ Reverse engineering (e.g. Q1 and Q2 matching of generics)
- ▶ Analytical method development and validation
- ▶ Tech-transfer and scale-up capabilities
- ▶ Clinical and commercial manufacturing capabilities
- ▶ Analytical testing services including clinical and registration stability as well as product characterisation and IVBE studies

From development to commercial – experience at every stage



Recipharm offers a fully integrated service for developing and manufacturing inhalation drug products and devices to the global pharmaceutical market, including pressurised metered dose inhalers (pMDIs), soft mist inhalers (SMIs), dry powder inhalers (DPIs), unit dose and multi dose nasal sprays.

Recipharm has a long history in inhalation device design & development and manufacturing. By developing inhalation products with the device and commercial manufacture in mind we minimise hurdles and reduce time to market.

References: 1. <https://ginasthma.org/wp-content/uploads/2021/05/GINA-Pocket-Guide-2021-V2-WMS.pdf>. 2. <https://copd.net/statistics>

About us

Established in 1995, Recipharm's manufacturing, fill & finish, and delivery-device services encompass a wide variety of drug dosage forms and modalities. Recipharm is an industry leading CDMO with over 30 facilities and 9,000 employees globally – supporting companies that are developing small molecules, biologics, and drug-device combinations. The company operates development and manufacturing facilities in France, Germany, India, Israel, Italy, Portugal, Spain, Sweden, the UK and the US.

Introducing ReciBioPharm, Recipharm's biologics business combining the capabilities of recently acquired CDMOs Arranta Bio, Genlbet and Vibalogics. Our expanded biologics drug development and manufacturing services encompass technologies based on live viruses and viral vectors, live-microbial biopharmaceutical products, recombinant proteins, nucleic acid-based mRNA and plasmid DNA production.