



ASERVO® EQUIHALER®

Soft Mist™ Technology

Soft Mist™ Inhaler (SMI)

Upgrade your patient's inhalation experience



High fine particle fraction



>90% of particles in Aservo® EquiHaler® are <5µm diameter

Optimal size for deep peripheral lung deposition

Low velocity stream



The mist in Aservo® EquiHaler® is released at low velocity (0.8m/sec) for longer duration (>1 sec)²⁴

Easy to inhale
Validated in horses with severe equine asthma¹⁹

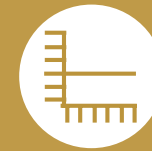
Propellant-free



Mechanical energy of the compressed spring generates the soft mist

Propellant-free inhaler has lower carbon footprint compared to pMDI²⁵

Dosing accuracy

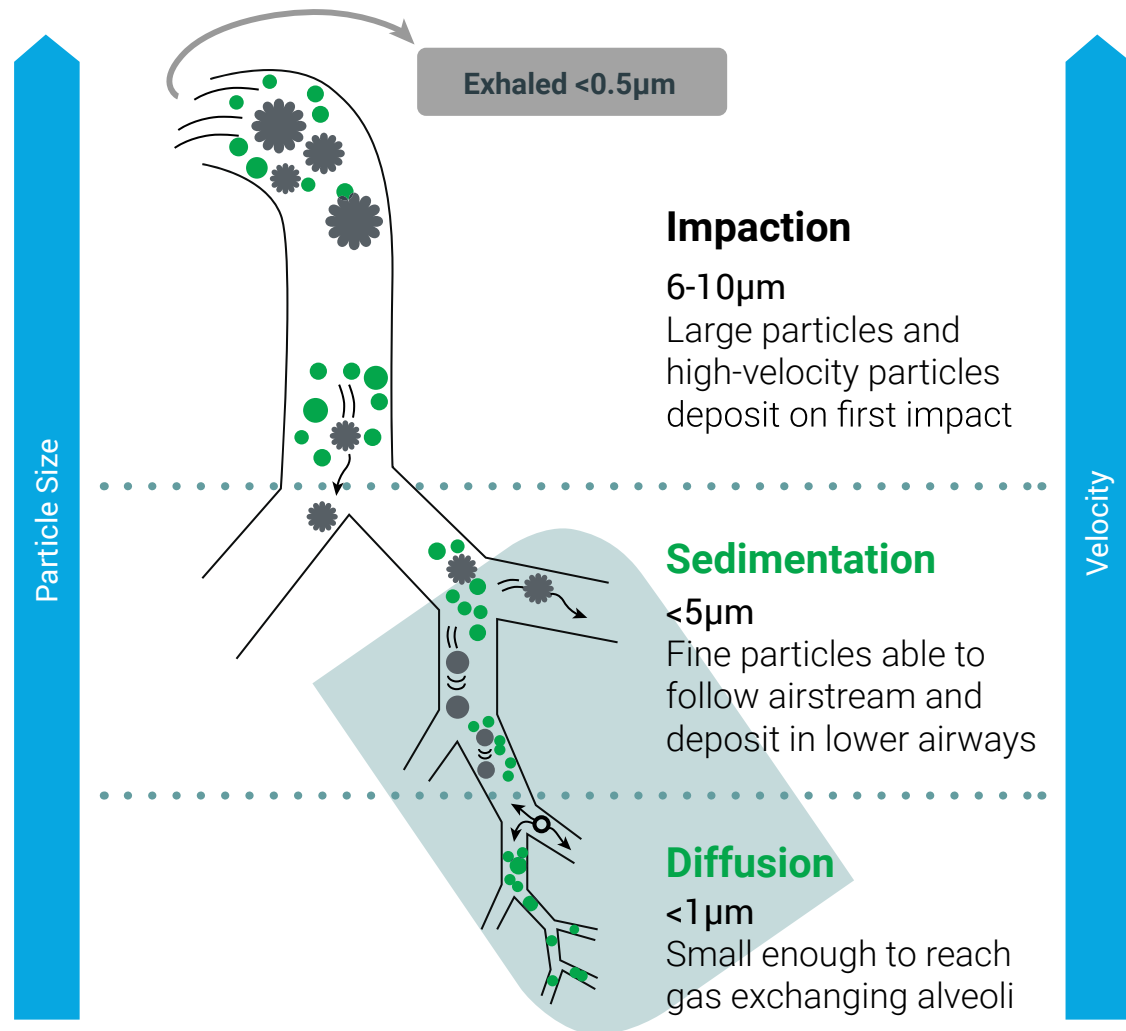


Each actuation consistently delivers a pre-determined dose

Characteristics of inhaled therapies

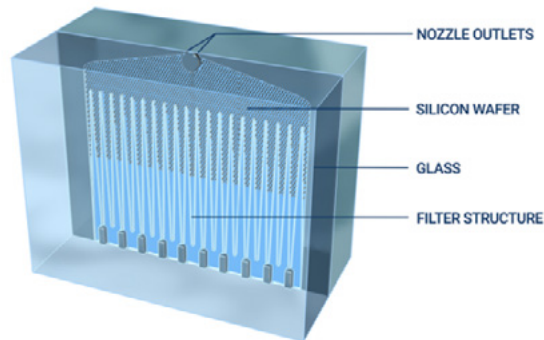
Soft Mist™ Technology =
small particle size x low velocity

Smaller particles (respirable size)
administered at low velocity travel
with inhaled air deep into
peripheral lung²⁶



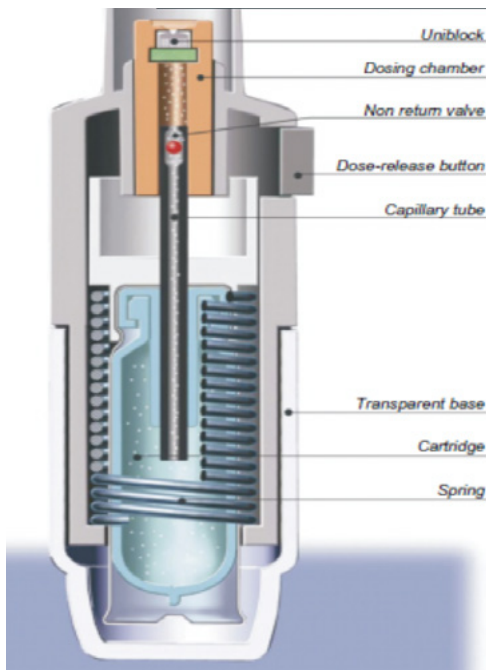
Soft Mist™ Inhaler (SMI)

From humans to horses, the same unique technology is used to generate an easy to breathe, medical mist.



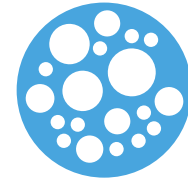
UNIBLOCK TECHNOLOGY

Micro structured system designed to generate two jets that converge at an angle, which turns medication stream into a slow-moving mist.

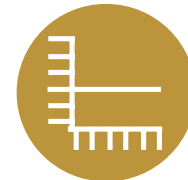


SPRING

Uses mechanical power for drug delivery.



Ideal Particle size



Consistent Dosing



Slow moving mist



Propellant free

1. Couëtil, L.L., Cardwell, J.M., Gerber, V., Lavoie, J.P., Léguillette, R. and Richard, E.A., 2016. Inflammatory airway disease of horses—revised consensus statement. *Journal of veterinary internal medicine*, 30(2), pp.503-515.
2. Mazan, M.R., 2015. Update on noninfectious inflammatory diseases of the lower airway. *Veterinary Clinics: Equine Practice*, 31(1), pp.159-185.
3. Burrell, M.H., Wood, J.L.N., Whitwell, K.E., Chanter, N., Mackintosh, M.E. and Mumford, J.A., 1996. Respiratory disease in thoroughbred horses in training: the relationships between disease and viruses, bacteria and environment. *Veterinary Record*, 139(13), pp.308-313.
4. Wasko, A.J., Barkema, H.W., Nicol, J., Fernandez, N., Logie, N. and Léguillette, R., 2011. Evaluation of a risk screening questionnaire to detect equine lung inflammation: results of a large field study. *Equine veterinary journal*, 43(2), pp.145-152.
5. Couëtil, L.L., Ward MP., 2003. Analysis of risk factors for recurrent airway obstruction in North American horses: 1,444 cases (1990-1999). *J Am Vet Med Assoc*. 223:1645–50.
6. Hotchkiss, J.W., Reid, S.W.J. and Christley, R.M., 2007. A survey of horse owners in Great Britain regarding horses in their care. Part 2: Risk factors for recurrent airway obstruction. *Equine veterinary journal*, 39(4), pp.301-308
7. Swiderski, C.E., Bowser, J.E. and Costa, L.R.R., 2017. Pasture associated asthma. *Proceedings of the American College of Veterinary Internal Medicine*, National Harbor, Maryland, USA.
8. Art, T., McGorum, B.C. and Lekeux, P., 2002. Environmental control of respiratory disease. *Equine respiratory diseases*.
9. Clements, J.M. and Pirie, R.S., 2007. Respirable dust concentrations in equine stables. Part 1: validation of equipment and effect of various management systems. *Research in veterinary science*, 83(2), pp.256-262.
10. Gerber, V., Baleri, D., Klukowska Rötzler, J., Swinburne, J.E. and Dolf, G., 2009. Mixed inheritance of equine recurrent airway obstruction. *Journal of veterinary internal medicine*, 23(3), pp.626-630.
11. Houtsma, A., Bedenice, D., Pusterla, N., Pugliese, B., Mapes, S., Hoffman, A.M., Paxson, J., Rozanski, E., Mukherjee, J., Wigley, M. and Mazan, M.R., 2015. Association between inflammatory airway disease of horses and exposure to respiratory viruses: a case control study. *Multidisciplinary respiratory medicine*, 10(1), p.33.
12. Hoffman, A.M., 2002. Clinical application of pulmonary function testing in horses. *Equine respiratory diseases international veterinary information service Ithaca*, DocumentNo B, 3040802.
13. Bullone M, Lavoie J-P. Science-in-brief: Equine asthma diagnosis: beyond bronchoalveolar lavage cytology. *Equine Vet*

14. Gerber, V., Schott li, H.C. and Robinson, N.E., 2011. Owner assessment in judging the efficacy of airway disease treatment. *Equine veterinary journal*, 43(2), pp.153-158.
15. Pirie, R.S., 2018. Severe equine asthma—an overview. *Equine Health*, 2018(39), pp.21-28.
16. Mazan, M.R., 2017. Therapy and Management of Equine Asthma. *Proceedings of the American Association of Equine Practitioners*, San Antonio, Texas, USA.
17. Dalby, R., Spallek, M. and Voshaar, T., 2004. A review of the development of Respimat® Soft Mist™ Inhaler. *International journal of pharmaceutics*, 283(1-2), pp.1-9.
18. Mukker, J.K., Singh, R.S.P. and Derendorf, H., 2016. Ciclesonide: a pro-soft drug approach for mitigation of side effects of inhaled corticosteroids. *Journal of pharmaceutical sciences*, 105(9), pp.2509-2514.
19. Lavoie, J.P., Bullone, M., Rodrigues, N., Germim, P., Albrecht, B. and von Salis Soglio, M., 2019. Effect of different doses of inhaled ciclesonide on lung function, clinical signs related to airflow limitation and serum cortisol levels in horses with experimentally induced mild to severe airway obstruction. *Equine veterinary journal*.
20. Derom, E., Van De Velde, V., Marissens, S., Engelstätter, R., Vincken, W. and Pauwels, R., 2005. Effects of inhaled ciclesonide and fluticasone propionate on cortisol secretion and airway responsiveness to adenosine 5' monophosphate in asthmatic patients. *Pulmonary pharmacology & therapeutics*, 18(5), pp.328-336.
21. Data on file 1: Pivotal EU study
22. Data on file 2: Pivotal US study
23. Data on file 3: Target Animal Safety
24. Tamura, G., 2015. Comparison of the aerosol velocity of Respimat® soft mist inhaler and seven pressurized metered dose inhalers. *Allergology International*, 64(4), pp.390-392.
25. Hänsel, M., Bambach, T. and Wachtel, H., 2019. Reduced Environmental Impact of the Reusable Respimat® Soft Mist™ Inhaler Compared with Pressurised Metered-Dose Inhalers. *Advances in therapy*, 36(9), pp.2487-2492.
26. Capstick, T.G., Clifton, I.J., Lavorini, Crompton, Broeders, Horne, Horne, Menckeberg, Cochrane, Horne and Newman, 2012. Inhaler technique and training in people with chronic obstructive pulmonary disease and asthma. *Expert review of respiratory medicine*, 6(1), pp.91-103.
27. Cuming, R.S., Groover, E.S., Wooldridge, A.A. and Caldwell, F.J., 2018. Review of glucocorticoid therapy in horses. Part 1: Pharmacology. *Equine Veterinary Education*, 30(3), pp.141-150.
28. Calzetta, L., Roncada, P., di Cave, D., Bonizzi, L., Urbani, A., Pistocchini, E., Rogliani, P. and Matera, M.G., 2017. Pharmacological treatments in asthma affected horses: A pair wise and network meta analysis. *Equine veterinary journal*, 49(6), pp.710-717.