

MINISPACER Adapter Particle Size and Dosing Characteristics



The MINISPACER® dual-spray MDI adapter was evaluated for particle size and dosing characteristics using an 8 stage cascade impactor. The MINISPACER was connected to the cascade impactor with ventilator tubing, wye and an endotracheal (ET) tube as they would be used in a ventilator circuit. Air was drawn through the assembly at a flow rate of 28.3 l/min. The aerosol samples exited the ET tube into the cascade impactor and comprised the Total Delivered Dose.

1543

Drug Tested

Drug Tested		REF 1543 – Installed between the wye and ET tube of a 22mm circuit			REF 1543 – Installed between the wye and ET tube of a 15mm circuit		
		Ventolin** HFA	Atrovent** HFA	QVAR** 80	Ventolin** HFA	Atrovent** HFA	QVAR** 80
Labeled Metered Dose per Actuation (µg from valve)		120	21	100	120	21	100
Particle Size (MMAD) µm ± SD Range of Measurements		2.22 +/- 0.08 2.16 – 2.31	0.87 +/- 0.15 0.78 – 1.05	0.86 +/- 0.03 0.83 – 0.88	2.26 +/- 0.06 2.20 – 2.30	0.86 +/- 0.17 0.76 – 1.06	0.94 +/- 0.03 0.91 – 0.96
Geometric Standard Deviation µm ± SD Range of Measurements		1.55 +/- 0.02 1.53 – 1.57	1.90 +/- 0.12 1.82 - 2.04	1.71 +/- 0.01 1.70 – 1.72	1.55 +/- 0.04 1.53 – 1.60	1.86 +/- 0.17 1.74 – 2.06	1.70 +/- 0.02 1.69 – 1.72
Total Delivered Dose µg ± SD Range of Measurements		18.0 +/- 1.06 16.8 – 18.8	1.58 +/- 0.45 1.23 – 2.09	14.3 +/- 2.5 12.3 - 17.1	20.9 +/- 3.8 17.0 – 24.6	1.79 +/- 0.18 1.69 – 2.00	13.5 +/- 0.8 12.6 – 14.2
Total Respirable Dose (< 5.8µm) µg ± SD Range of Measurements		17.3 +/- 0.8 16.3 – 17.8	1.52 +/- 0.39 1.21 – 1.97	14.3 +/- 2.5 12.3 - 17.1	20.0 +/- 4.3 15.5 – 24.1	1.73 +/- 0.11 1.65 – 1.86	13.5 +/- 0.8 12.6 – 14.2
Respirable Fraction (<5.8 µm) % of valve label mean ± SD Range of Measurements		14.4 +/- 0.7 13.6 – 14.8	7.28 +/- 1.88 5.78 – 9.40	14.3 +/- 2.5 12.3 - 17.1	16.7 +/- 3.6 12.9 – 20.1	8.24 +/- 0.53 7.87 – 8.85	13.5 +/- 0.8 12.6 – 14.2
Mass Fraction of Total Delivered Dose	Coarse Particles (> 4.7 µm)	6.68%	4.96 %	0.12 %	7.13 %	5.41 %	0.00 %
	Fine Particles (1.1 - 4.7 µm)	83.14%	17.29 %	23.94 %	84.13 %	16.39 %	29.77 %
	Extra-Fine Particles (< 1.1 µm)	10.18 %	77.75 %	75.94 %	8.74 %	78.20 %	70.23 %

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