

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.



1543A

Drug Tested		REF 1543A – Installed between the wye and ET tube of a 22mm circuit			REF 1543A – 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		2.26 +/- 0.07 2.18 – 2.32	0.81 +/- 0.10 0.75 – 0.93	0.90 +/- 0.02 0.89 – 0.93	2.31 +/- 0.05 2.28 – 2.37	0.89 +/- 0.06 0.85 – 0.96	0.98 +/- 0.05 0.92 – 1.03
Geometric Standard Deviation µm ± SD Range of Measurements		1.56 +/- 0.05 1.51 – 1.61	1.93 +/- 0.11 1.80 -2.01	1.70 +/- 0.01 1.69 – 1.71	1.55 +/- 0.04 1.53 – 1.60	1.88 +/- 0.14 1.76 – 2.03	1.73 +/- 0.03 1.70 – 1.76
Total Delivered Dose µg ± SD Range of Measurements		17.5 +/- 4.2 13.8 – 22.0	1.46 +/- 0.29 1.23 – 1.78	14.4 +/- 1.0 13.3 -15.3	22.3 +/- 1.9 20.2 – 24.0	1.63 +/- 0.42 1.28 – 2.10	14.6 +/- 1.5 13.0 – 16.1
Total Respirable Dose (< 5.8µm) µg ± SD Range of Measurements		16.7 +/- 4.0 13.2 – 21.0	1.44 +/- 0.31 1.19 – 1.79	14.4 +/- 1.0 13.3 -15.3	21.3 +/- 1.9 19.2 – 23.0	1.57 +/- 0.37 1.25 – 1.96	14.6 +/- 1.5 13.0 – 16.1
Respirable Fraction (<5.8 µm) % of valve label mean ± SD Range of Measurements		13.9 +/- 3.3 11.0 – 17.5	6.86 +/- 1.47 5.65 – 8.50	14.4 +/- 1.0 13.3 – 15.3	17.8 +/- 1.6 16.0 – 19.2	7.47 +/- 1.74 5.94 – 9.35	14.6 +/- 1.5 13.0 – 16.1
Mass Fraction of Total Delivered Dose	Coarse Particles (> 4.7 µm)	7.47 %	3.11 %	0.00 %	5.98 %	5.83 %	0.00 %
	Fine Particles (1.1 - 4.7 µm)	83.37 %	14.68 %	27.03 %	86.61 %	18.13 %	32.59 %
	Extra-Fine Particles (< 1.1 µm)	9.16 %	82.22 %	72.97 %	7.41 %	76.04 %	67.41 %

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