RBG 2000



The RBG system disperses non-cohesive powders, e.g., mineral dusts, active pharmaceutical ingredients, pollen, etc., within the size range of < 100 μm and with a fine fraction of < 100 nm. Monolithic solid materials, e.g., blackboard chalk, are finely dispersed with optimal dosing constancy.The feedstock reservoirs of RBG 2000 are longer (fill level= 180 mm) than the feedstock reservoirs of RBG 1000. Also a reservoir with a bigger diameter is available. Thus, the dosing time with the same mass flow can be extended by more than a factor of 3. Mass flows of between approx. 200 mg/h and 560 g/h are dispersed with optimal dosing constancy.

Optional: Pressure-resistant up to 3 bar

Model Variations



RBG 2000 D
Pressure-resistant version at positive pressure values of up to 3 bar, higher mass flows



RBG 2000 SD
Pressure-resistant version at positive pressure values of up to 3 bar, also nitrogen as a dispersing gas

OPERATION PRINCIPLE

PROVEN TECHNOLOGY

The powder to be dispersed is gradually poured into the cylindrical solid material reservoir and compressed with a tamper. The filled reservoir is inserted into the dispersing head on the RBG, and the powder, which has been uniformly compressed at the filling level, is conveyed onto a rotating brush at a precisely controlled feed rate. The adjustable volume flow moves over the tightly woven precision brush at a very high speed and blows the particles out.

The dispersing head assembly comprises a dispersing head, dispersing cover, precision brush, and solid material reservoir.

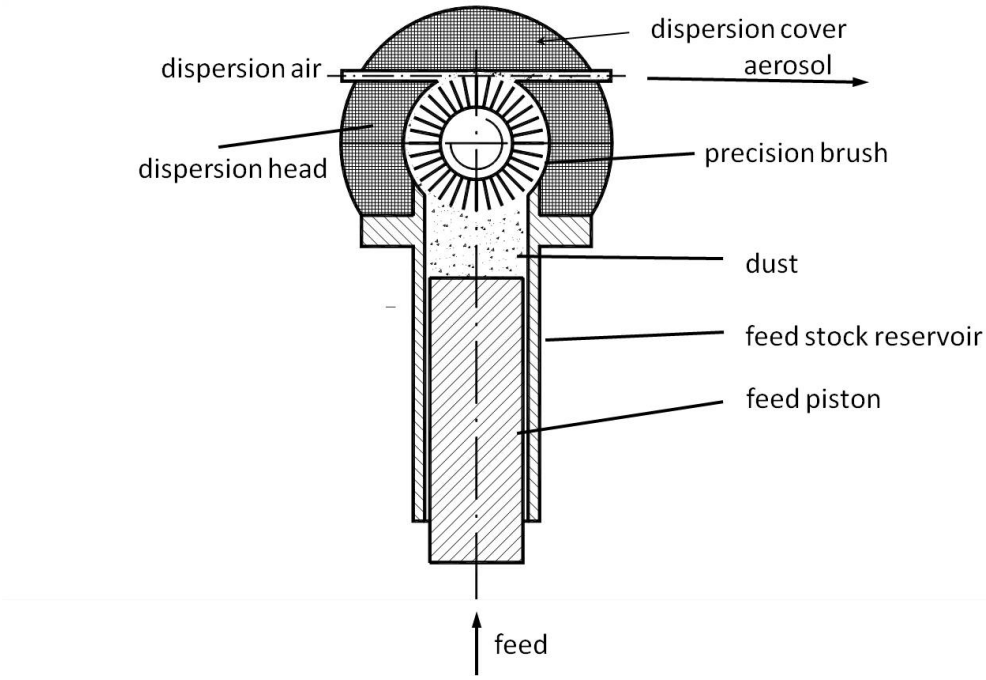


Fig. 1: RBG system schematic diagram

Dosing is performed based on a precisely controlled feed rate on the feed piston. The desired mass flows can be quickly and reproducibly defined based on the cross-section of the reservoir, the precisely adjustable feed rate of the feed piston, and the compacted density of the powder in the reservoir.

Reservoir diameter	Fill quantity	Feed rate 1 mm/h	Feed rate10 mm/h	Feed rate 100 mm/h	Feed rate 700 mm/h
7 mm (RBG 1000)	2.7 g	38 mg/h	380 mg/h	3.8 g/h	26.6 g/h
10 mm (RBG 1000)	5.5 g	78 mg/h	780 mg/h	7.8 g/h	54.6 g/h
14 mm (RBG 1000)	17 g	150 mg/h	1.5 g/h	15 g/h	105 g/h
16 mm (RBG 2000)	30 g	200 mg/h	2 g/h	20 g/h	140 g/h
20 mm (RBG 1000)	35 g	310 mg/h	3.1 g/h	31 g/h	217 g/h
28 mm (RBG 1000)	49.2 g	616 mg/h	6.16 g/h	61.6 g/h	430 g/h
32 mm (RBG 2000)	88 g	800 mg/h	8 g/h	80 g/h	560 g/h

Table 2: Mass flows of RBG 1000 / 2000 (compacted density 1 g/cm³)

Table 1: Mass flows of RBG system (compacted density 1 g/cm^3)

The powder conveyed from the reservoir by the precision brush is virtually completely dispersed into individual particles up to < 100 nm by the dispersing air in the dispersing head (see Fig. 2).

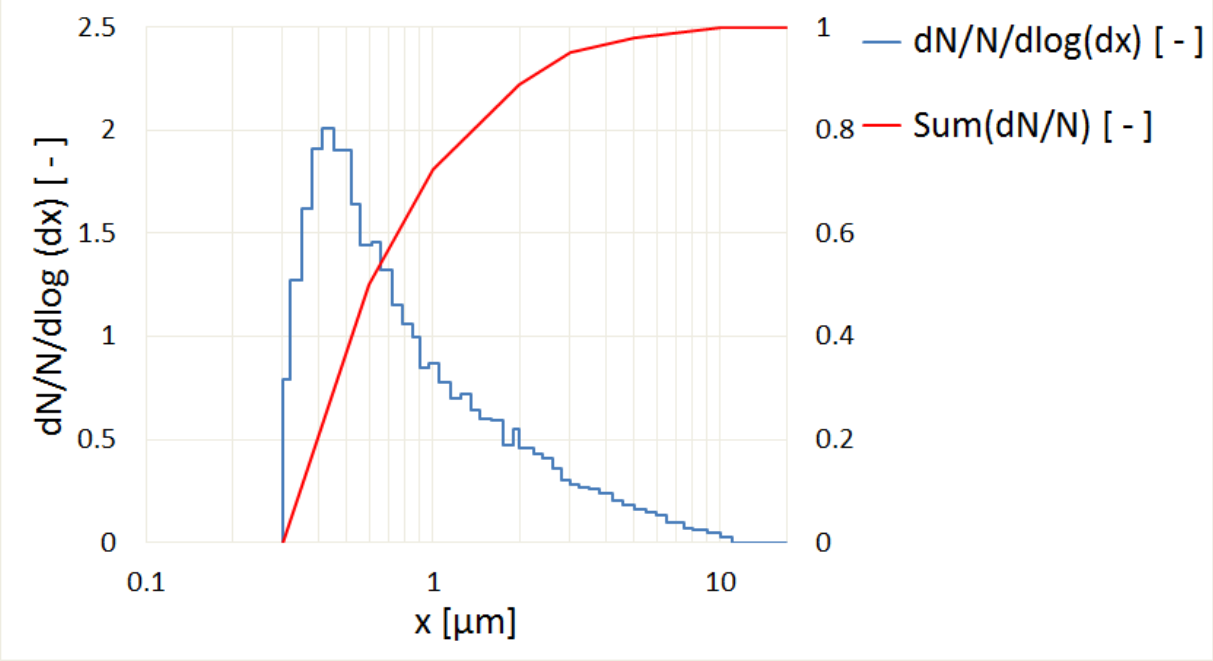


Fig. 2: Particle size distribution with welas® digital 2000



Fig. 3: Type A dispersing cover

Two different dispersing covers can be used for optimal dispersion (see Fig. 3, additional details under "Accessories"), including Type A and Type D.

Cover	Particle size	Reservoir diameter	Volume flow
A	< 0.1 – 200 µm	7 – 32 mm	33 – 80 l/min
B	< 0.1 – 200 µm	7, 10 and 14 mm	17 – 40 l/min
C	< 0.1 – 200 µm	7 mm	8 – 20 l/min
D	200 – 1,000 µm	7 – 32 mm	33 – 80 l/min

Table 4: Dispersion covers RBG system

Table 2: Dispersion covers

System	Feed rate mm/h	Reservoir diameter in mm	Reservoir length in mm	Min. mass flow	Max. mass flow
RBG 1000	700	7 - 28	70	3.8 g/h	430 g/h
RBG 1000 D	700	7 - 20	70	3.8 g/h	219 g/h
RBG 1000 G	300	7 - 28	70	3.8 g/h	184 g/h
RBG 1000 GD	300	7 - 20	70	3.8 g/h	94 g/h
RBG 1000 L	700	10, 14	70	3.8 g/h	107 g/h
RBG 1000 SD	700	7 - 20	70		
RBG 1000 SG	300	7 - 20	70		
RBG 1000 I	700	7 - 28	70		
RBG 1000 ID	700	7 - 20	70		
RBG 1000 ISD	700	7 - 20	70		
RBG 2000	700	16 - 32	180		
RBG 2000 D	700	16, 20, 28	180		
RBG 2000 SD	700	16, 20, 28	180		

Table 6: Different versions of the RBG system

Table 3: Different versions of the RBG system

I = version for inhalation
D = pressure-resistant
G = low feed rate
L = easily removable and weighable dosing unit
S = nitrogen version

The construction design of the RBG system allows for operation in ″powder″/″no powder″ pulse mode with cycle lengths ranging down to a second. The function can be set manually via the ″Stop/Start″ and ″Forward″ keys or automatically via an electric timer switch.

All RBG versions can be optionally controlled using a remote control or PC.

Benefits

- Optimal short-term and long-term dosing constancy
- Double the dosing time in comparison with the RBG 1000
- Disperses virtually any non-cohesive dusts
- Easy to switch out different solid material reservoirs and dispersion covers
- Easy to determine and adjust the mass flow
- Able to adjust higher mass flows than the RGB 1000
- Pulse mode
- Easy to clean
- Quick and easy to operate
- Reliable function
- Low maintenance
- Reduces your operating expenses

DATASHEET

Particle size range	0.1 – 100 μm
Maximum particle number concentration	Ca. 10^7 particles/cm^3
Volume flow	40 – 80 Nl/min
Mass flow (particles)	1 – 560 g/h (with an assumed compacted density of 1 g/cm^3)
Filling height	180 mm
Filling quantity	36 g (reservoir Ø = 16 mm), 56 g (reservoir Ø = 20 mm), 110 g (reservoir Ø = 28 mm), 144 g (reservoir Ø = 32 mm)
Power supply	115 – 230 V, 50/60 Hz
Particle material	Non-cohesive powders and bulks
Dosing time	Several hours nonstop
Pre-pressure	4 – 8 bar
Carrier/dispersion gas	Random (generally air)
Maximum counter pressure	0.2 barg
Compressed air connection	Quick coupling
Feed rate	5 – 700 mm/h
Reservoir inner diameter	16, 20, 28, 32 mm
Aerosol outlet connection	Dispersion cover type A: $Ø_{inside}$= 5 mm, $Ø_{outside}$ = 8 mm; Dispersion cover type D: $Ø_{inside}$= 5 mm, $Ø_{outside}$ = 8 mm
Dispersion lid	Type A, Type D
Dimensions	1.160 • 530 • 500 mm (H • B • T)
Weight	Approx. 40 kg

Applications

- Filter industry
  - Determination of fractional separation efficiency
  - Determination of total separation efficiency
  - Long-term dusting
  - Filter media and assembled filters
  - Dust filters
  - Vacuum cleaners and vacuum filters
  - Car interior filters
  - Engine air filters
- Calibrating particle measurement devices
- Flow visualization
- Inhalation experiments
- Tracer particles for LDV, PIV, etc.
- Surface coatings

Mehr Informationen:
https://www.palas.de/en/product/rbg2000