

**APARAT DE AEROSOLI PORTABIL
SUPER MESH
USER MANUAL
Model: NEPLUS SM1**



DEAR NePlus SM1 SUPER MESH NEBULIZER OWNER

Thank you for choosing the Ultrasonic Nebulizer model NE-SM1. We are sure that having appraised worthily the high quality and reliability of this device you will become a regular user of the our products.

Please read this manual carefully before operating the unit. For any ques-tions arising during unit operation, please contact service center.

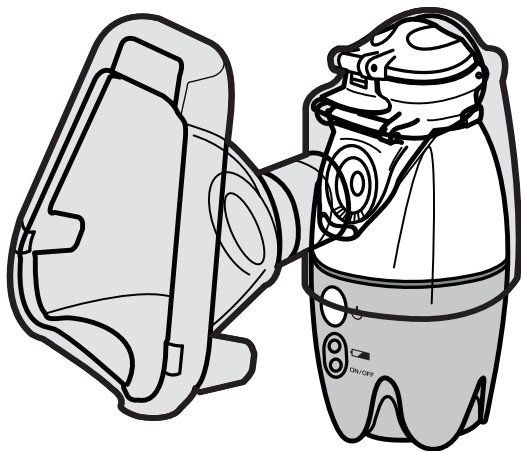


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INTRODUCTION

What Is Nebulizer and How Does It Work?

The nebulizer system is a device that turns a liquid drug into a fine aerosol under the influence of ultrasound. An aerosol contains larger and smaller particles. When breathing the gravity makes the larger particles accumulate on the walls of the upper respiratory passages while the smaller particles have enough time to reach the lower bronchial branches. Therefore the drug comes to all parts of the patient's bronchial tree, including the smallest bronchi and alveole, and gets into the blood vessels on the walls of the alveole in big therapeutic doses with tiny or none side effects.

What Is Nebulizing Therapy Used for?

Nebulizer systems are used by the patients with:

- acute respiratory diseases;
- obstructive pulmonary disease;
- chronic inflammatory processes in respiratory passages such as chronic bronchitis, bronchial asthma (incl. chronic or unstable ones, exacerbation of asthma), chronic pharyngitis;
- respiratory passages infections;
- abnormalities in secretion quality and secreting in bronchi;
- different types of coughing.

Advantages of Nebulizing Therapy

Nebulizing therapy gives a possibility to quickly effect the inflammatory zone by big drug doses which increases the influence of the treatment and reduces the risk of side effects to other organs. Nebulizing therapy is the easiest way of inhalation treatment and it is also an economical means of treatments from the point of view of purposeful use of drug. Aerosol treatment with the help of nebulizing systems can be used for children, elderly and infirm patients.

Mesh Technology.

Advantages of Nebulizer NE-SM1

1. Nebulizer NE-SM1 belongs to a new generation of ultrasonic nebulizers. Membrane mesh nebulizers with Vibrating MESH Technology (VMT) operate on an advanced mechanism - vibrating membrane with many microscopic holes (mesh) through which liquid drug passes and turns into an aerosol. Ultrasonic vibrating mesh releases medication via 4 µm of fine holes. Vibrations of ultrasonic mesh do not damage the large molecules as it happens with compressor nebulizers.
2. Membrane nebulizer NE-SM1 is featured in very small residual volume of medication bottle (approximately 0,1 ml). The unit provides high lung deposition of medications, carries out nebulizing of solutions and suspensions, also medications with large molecules (proteins, peptides, insulin, glucocorticosteroids and antibiotics).
3. Portable device of pocket size (operates on built-in battery) delivers medication to upper and lower respiratory tracks.
4. The device allows to nebulize at different angles. It can be used to nebulize in lying position (children, infants).
5. Totally noiseless technology allows to nebulize sleeping child.
6. The device can be used both for adults and for children.
7. The device is simple in operation: only one button.

BEFORE STARTING TO USE THE UNIT

Essential Safety Rules

1. Operate the unit only as directed by this manual.
2. Electrical connections must comply with relevant regulations.
3. To avoid viral or bacterial infections, disinfect and wash medication bottle, mouthpiece, mask adapter and mask before use. Disinfect and wash after purchase and after long periods of storage.
4. Follow your physician-prescribed regimen of drug therapy or symptoms may worsen.
5. Thoroughly disinfect, wash and dry medication bottle, mesh cartridge, mouthpiece, mask adapter and especially the mask after each use.

6. Rinse thoroughly with water after disinfection. Symptoms may worsen if disinfectant remains on surfaces.
7. Don't turn on power without medication, as this may cause damage to the mesh cartridge.
8. Don't immerse the main unit in water. This may cause damage and/or electrical shock.
9. This unit has small parts. Keep these parts away from infants and small children to prevent swallowing.
10. This unit is a medical device intended for use with a single patient.

KEEP THESE INSTRUCTIONS IN A SAFE PLACE FOR FUTURE REFERENCE





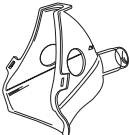

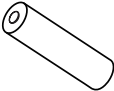

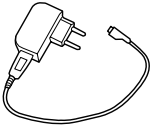
Important Information

- Use only factory packed batteries with the unit. Using or charging unspecified batteries will cause loss of warranty, endanger the user and may cause injury from fire.
- Do not use battery with equipment other than the NE-SM1 nebulizer, or attempt to modify battery for other uses.
- To save battery power and avoid accidental operation, always turn the switch to 'off' when not in use.
- Don't use water for inhalation.
- Don't hit, drop or cause impact to this instrument.
- Don't drop medications or liquids on the main unit; particularly the charging inlet as this may cause damage and/or electric shock.
- Don't disassemble, modify or repair the main unit as this may cause fire and/or electrical shock.
- Don't touch mesh with fingers or any objects.
- The unit can't be used while charging the battery.
- This unit is approved by IEC60601-1, please use in areas free from potential electromagnetic waves.
- Inhalation masks are «applied part of type B», any other parts are «accessible part».
- Please separate the battery from unit when not in use for long periods.

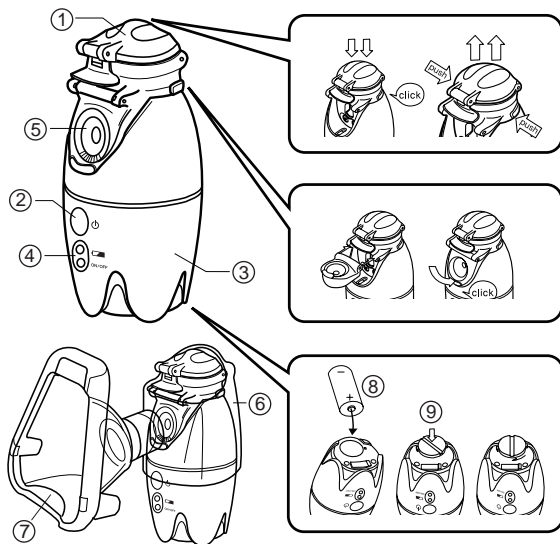


Please dispose of properly at the end of useful life, following relevant state and local laws. Battery disposal may be illegal in municipal waste streams.

Product Components

Mesh cartridge (NE-SM1-1)	Medication bottle (NE-SM1-2)	Mask adapter (NE-SM1-3)
		
Small inhalation mask (NE-SM1-4)	Large inhalation mask (optional: NE-SM1-5)	Battery locker (NE-SM1-6)
		
Rechargeable lithium battery (NE-SM1-7)	Mouthpiece (NE-SM1-8)	AC adaptor & USB charger (NE-SM1-9)
		

Product descriptions



- ① Medication bottle and bottle cap.
- ② ON/OFF switch.
- ③ The main unit.
- ④ ON lamp (green) and Battery indicator lamp (yellow).
- ⑤ Mesh cartridge.
- ⑥ Mask adapter.
- ⑦ Inhalation mask.
- ⑧ Battery.
- ⑨ Battery cover.

Use procedure

STEP 1: HOW TO CLEAN THE NEBULIZER (See page 16)

NOTE:

Clean and disinfect nebulizer parts and applicable inhalation attachments before initial use, or after long periods of storage.



STEP 2: HOW TO INSERT & CHARGE BATTERY (See pages 14&20)

NOTES:

- Insert battery after purchase.
- Charge battery if yellow battery indicator lamp blinks.



STEP 3: HOW TO FILL WITH MEDICATION (See page 15)

NOTES:

- Follow a physician-prescribed regimen of drug therapy.
- Do not drop medication or liquid onto the main unit.



STEP 4: HOW TO INSTALL THE INHALATION MASK (See page 12)

NOTES:

- Nebulizing will not occur if the units is tilted at too great an angle.
- Be sure to clean washable parts after each use.



STEP 5: HOW TO OPERATE THE NEBULIZER (See page 15)

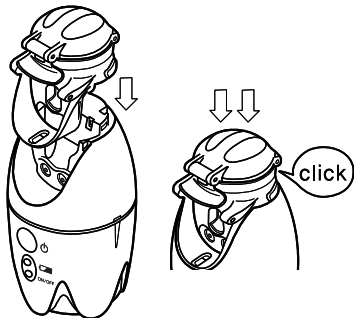
NOTES:

- Do not turn on power without medication.
- Do not turn on power while battery is charging.
- Nebulizing will not occur when the unit is tilted at too great an angle.

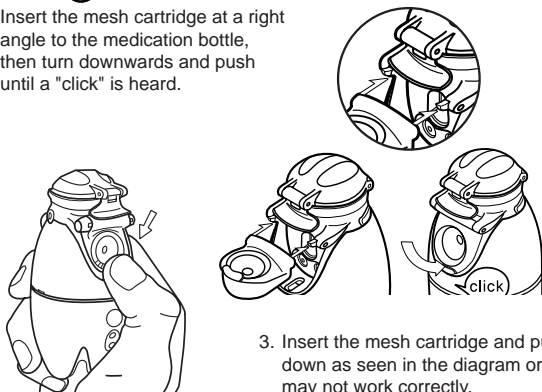
HOW TO USE THE UNIT

Assembly

1. Insert the medication bottle into the main unit until a "click" is heard, or the unit may not work correctly.



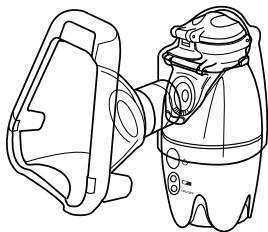
2. Insert the mesh cartridge at a right angle to the medication bottle, then turn downwards and push until a "click" is heard.



3. Insert the mesh cartridge and push down as seen in the diagram or unit may not work correctly.

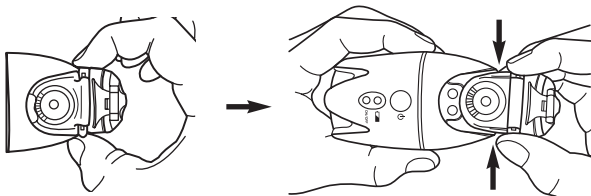


4. Insert the mask adapter into the main unit until a «click» is heard.

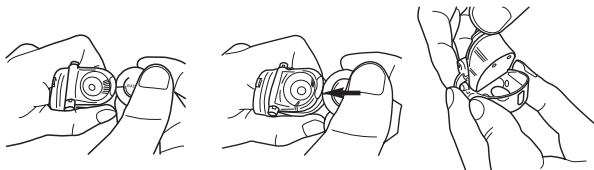


5. Install mask adapter or mouth piece, mask to the unit. (mask for adult is optional).

How to remove the Mesh cartridge



1. Remove the medication bottle by pushing buttons on both sides of the bottle.
2. Push the Battery locker or a coin into the edge of the medication bottle in the direction of the arrow as seen in the diagram. The mesh cartridge will pop out.

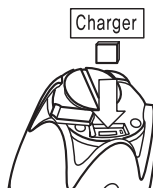
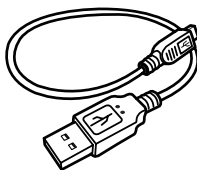
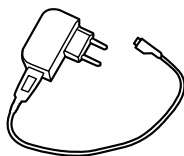
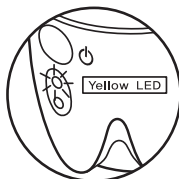


Charging the internal battery

1. Charge battery after use if the yellow battery indicator lamp blinks during use.

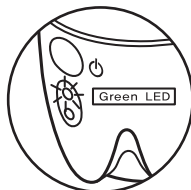
Use a USB power cable for PCs or a micro 5pin USB smart phone charge adapter (individual purchase). If you use the unit without charging, the unit will stop automatically.

2. Connect the charge adapter to the charge receptacle in the main unit after inserting the specified battery into the main unit; charging will begin. Over 90% will charge within 3 hours Low battery. (1000 mA charger adapter). Charging is complete when the yellow LED changes over to the green LED. Remove the USB charger from the unit.



CAUTION:

- Don't use the unit when the yellow battery indicator lamp is on during charging.
- Charge battery after emptying residual medication from the bottle.
- Charging time required: approximately 3 hours.
- Charging life cycle of battery: over 500 cycles.



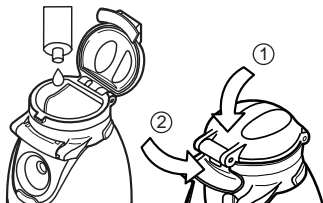
NOTE: Use a Micro 5pin USB smart phone charge adapter (IEC 60950 -1 approved travel adapter, input 100~240V~/50~60 Hz output DC5V, 500~1000 mA) as shown in the following diagram.

Filling with medication

1. Push up the hook on the medication bottle, as seen in diagram. The bottle cover will open. Make sure there is a silicone ring on the cover which provides a proper seal when the cover is closed.



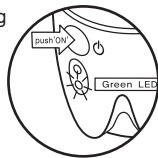
2. Following a physician-prescribed regimen, pour medication into the medication bottle and close the cover until a "click" is heard.



3. Use the unit as soon as the medication bottle has filled.

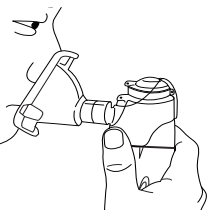
Basic operation

1. Push the on/off switch in front of the unit; nebulizing will begin.
2. Inhale gas while holding down the sides of the unit as seen in diagram. In cases where the inhalation angle is tilted more than 75°, nebulizing will not occur because mesh must be soaked with medication.



3. **Model 1:** Nebulizing stops if the on/off switch is pushed again.

Model 2: If the on/off switch is pressed for more than 1.5 seconds, the unit nebulizes only while the switch is pushed. In this way you can synchronize nebulizing and inhalation so that medication can be used efficiently.



4. The unit will stop automatically after 20 minutes. The unit may also stop if running out of medication.

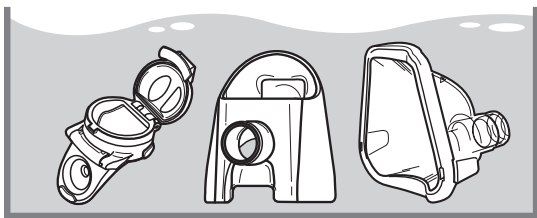
CAUTION:

- The rate of nebulization may be greatly reduced if used with a high viscosity medication or a medication at low temperature.
- If the unit isn't used within 10 minutes after filling with medication, liquid may leak. If so, wipe with gauze or turn on power. Nebulizing will begin after 2 seconds of absorption.
- **Do not leave children alone while using the nebulizer.**



HOW TO MAINTAIN THE UNIT

Cleaning









1. Dispose of residual medication after use. Don't store medication or carry the unit while filled with medication. Medication may leak and/or the unit may become damaged. After filling with water, nebulize for 60 seconds in order to clean mesh.
2. Wash and dry all the following parts completely after every use: medication bottle, mesh cartridge, mask adapter, mouthpiece and mask.



3. Washable parts: medication bottle, mesh cartridge, mask adapter,

mouthpiece and mask.

WASHABLE PARTS

Mesh cartridge	Medication bottle	Mask adapter
		
Small inhalation mask	Large inhalation mask	Mouthpiece
		

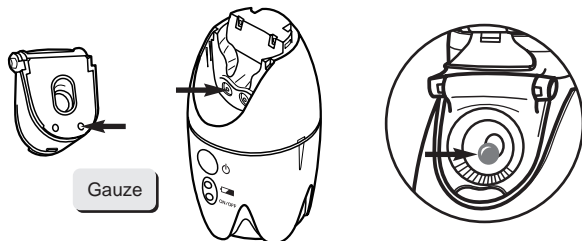
4. There is no need to remove the mesh cartridge from the medication bottle for cleaning. Put clean water in a container. Gently shake parts in water after disassembly. Do not clean parts under running water.
5. Dry parts with sterile gauze after washing.
5. Main body: Clean with a soft cloth moistened with water and a non-abrasive cleanser.
7. Keep all parts dry.
8. Reassemble.

CAUTION:

- Never immerse the main unit in water as this may damage the unit.
- Do not clean parts under running water to avoid possible damage.
- Gently shake parts in water.
- Do not touch mesh with fingers.
- Never dry in a microwave oven.

- Always unplug this product before cleaning.

CAUTION:




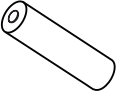
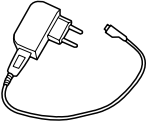
- Maintain cleanliness of electrodes between main unit and mesh cartridge.
- If Medication or saliva on the outside of the mesh surface will block-nebulization, absorb with gauze.

Disinfecting

1. Disinfect the medication bottle, mesh cartridge, mask adapter, mouth-piece and mask by boiling at 100°C for 2 minutes. Don't boil the mesh cartridge for more than 2 minutes or damage may occur.
2. When disinfecting with disinfectant, soak parts in a 0.1% solution of Benzalkonium Chloride for 10 minutes. Don't soak in disinfectant for more than 10 minutes.
3. Other types of disinfection agents may cause rust within the unit. You must rinse off disinfectant with clean water after disinfection and dry with sterile gauze. Don't dry with cotton or cloths, as they may be contaminated.
4. Dry completely.
5. Reassemble. Make sure you do not lose the silicone ring which provides a proper seal when the cover is closed. If the silicone ring separated from the cover, put it back on its place.

CAUTION: DO NOT BOIL MAIN UNIT, BATTERY, AC ADAPTOR & USB

**CHARGER OR BATTERY COVER.
DO NOT BOIL THESE PARTS:**

Main unit	Battery	AC adaptor & USB charger
		

Storage

- Keep unit and accessories dry.
- Keep unit out of the reach of small children.
- Always keep unit unplugged when not in use.
- Do not store battery in direct sunlight, high temperatures or in humid conditions.
- Do not place battery on metal or wet surfaces, or inside metal boxes.
- Such placement could short-circuit the battery's positive & negative contacts and cause the battery to heat or explode.
- Do not place unit where it could be exposed to excessive impact or vibration.
- Do not expose unit to chemical or explosive gases.

Maintenance

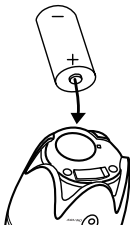
- Repairs must be performed by authorized personnel. Disassembling unit or battery may short circuit the battery, causing accidents.
- Should the main unit become contaminated, wipe with sterile gauze.
- Don't immerse main unit or battery in water as this may cause damage and electrical shock.
- Don't touch mesh vibrator or insides of medication bottle as this may cause breakdown or contamination.
- The unit must be washed after use to prevent contamination with germs.
- If medication or saliva sticks to the mesh cartridge, it may be broken.
- If medication or saliva sticks to the mesh cartridge you can remove contaminants by boiling the mesh cartridge. The mesh cartridge is

consumable.

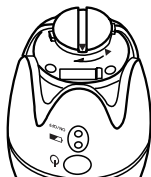
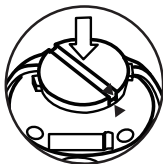
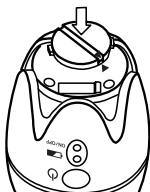
- If there is residual medication in the bottle after use, liquid can leak through the mesh. Wipe with sterile gauze.

Replacing Battery

1. Open battery cover with a battery locker or coin.
2. Insert the provided lithium ion battery into the main unit in the proper polarity direction.



3. When inserting the battery cover, arrow marks must be aligned. Close the battery cover with a battery locker or use a coin while pushing and turning clockwise.
4. Close battery cover until a "click" is heard.



NOTE: Use only batteries supplied by the manufacturer. Replace battery pack after 500 cycles of discharge/charging. Batteries are recyclable. At the end of their useful life, various state and local laws, may prohibit battery disposal into municipal waste streams.

Replacing Mesh cartridge

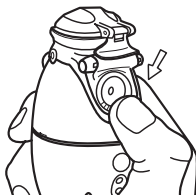
2. Install new mesh cartridge into medication bottle as shown in diagrams.



1. Remove mesh cartridge.



3. Push the mesh cover with finger until a «click» is heard.








NOTE: Use only Mesh cartridges supplied by the manufacturer. At the end of one year, replace Mesh cartridge with a new one, or sooner if need arises. To replace the mesh cartridge contact service center of TM Dr. Frei®. At the end of its useful life, state and local laws may prohibit disposal of this battery into municipal waste streams.

TROUBLESHOOTING

In case of problems, please refer to the table shown below. If problems persist, please contact service centre TM Dr. Frei in your country.

Problem	Cause and Solution
Power on (green) lamp does not come on	Battery inserted in wrong direction. ➔ Correct battery direction. (see page 20)
	The battery is exhausted. ➔ Charge battery. (see page 14)
	The unit is charging. The unit doesn't work and yellow battery indicator lamp is on indicating charging. ➔ Disconnect charger before use.
Power lamp is on but unit does not nebulize	The unit is tilted too much. ➔ Straighten the unit, as nebulization will only occur when medication touches the mesh cartridge. (see page 15)
	Medication or saliva sticks to mesh cartridge. ➔ Wash according to cleaning instructions. If unit does not nebulize even after washing, replace mesh cartridge with a new one. (see pages 13 & 21)
	The mesh is broken. ➔ Replace mesh cartridge with a new one. It is replaceable. (see page 21)
	The electrodes between main unit and mesh cartridge are dirty. ➔ Wipe lightly with moist gauze. (see page 18)
	The medication bottle isn't properly connected to the main unit. ➔ Insert medication bottle tightly into the main unit until a "click" is heard. (see page 12)
Nebulizing rate decreases	Mesh cartridge is dirty. ➔ Wash according to cleaning instructions. If washing does not improve nebulization, replace mesh cartridge with a new one. (see pages 13 & 21)
	The yellow low battery lamp is blinking. ➔ Charge battery. (see page 14)

SYMBOL DESCRIPTION

 Serial Number	This symbol shall accompany the manufacturer's serial number.
 Operating instructions	Consult enclosed documents.
 Applied part of type B	This symbol shall accompany equipment classification.
IP22 IP degree	This symbol shows degree of Protection against dust and water. (When sprayed vertically at a 15° tilt for 1 minute)
 Manufacturer	This symbol shall accompany manufacturers name and address.
 EU representative	This symbol shall accompany the name and address of the European Community authorized representative.

WARRANTY

This device is guaranteed for 1 year from the date of purchase. The guarantee does not extend to consumable parts such as mesh cartridge, mask, mouthpiece. The guarantee is valid only on presentation of the guarantee card completed by the dealer confirming date of purchase and the receipt.

- Should the unit be damaged due to user misuse or negligence, the manufacturer or authorized dealers shall not be responsible for any damage or loss to the unit.
- All assembly, extension, adjustment or repair of this unit must be performed only by the authorized service centre of distributor

in your country.

- For repairs or to purchase parts, please call authorized service centre of distributor in your country.

SPECIFICATIONS

MODEL NE-SM1

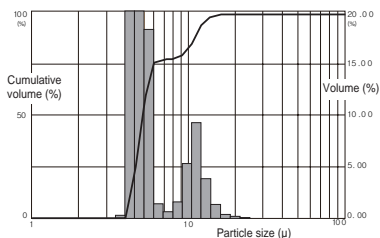
Model	NE-SM1
Power & Consumption	Lithium ion Battery 3.6~4.2V DC 1.4 W
Dimensions	(W)×(D)×(H) = 52 mm×53 mm×109 mm
Weight	Main unit: 88 g, mask: 50 g
Nebulization rate	Approximately 0.25 ml/min (23°C)
Particle size	Average 5 µm
Volume of medication bottles	6 ml
Operating time with full charge	5 hours 30 minutes
Charging life cycle of battery	Over 500 cycles (battery life differs according to usage and charging conditions).
Ultrasound frequency	Approximately 108 KHz
Operating environment	Temperature: 10~40°C, humidity: 30~85% R.H. Pressure: 70~106 kPa
Battery charging environment	0~45 °C
Storage environment	Temperature: -20~60°C, humidity: 10~95% R.H. Pressure: 70~106 KPa
Expected service life	Main unit: 5 years from purchase Mesh cartridge: 1 year from purchase

Instrument warranty	1 year from purchase. Mesh cartridge is consumable part.
Contents	Nebulizer unit, mask, mouthpiece, AC adaptor & USB charger, user's manual, carrying bag
Battery	Fairman 1ICR19/66, 3.7V 2600 mAh (Li-ion)
Recommended charger	IEC 60950-1 approved travel adapter input 100~240 V~/50~60 Hz output DC5V (500-1,000 mA)

1. Particle size was measured in accordance with European standard EN 13544-1.
2. The device NE-SM1 meets the requirements of European standard EN 13544-1.



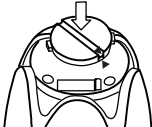

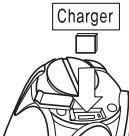
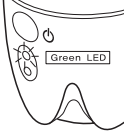
TECHNICAL DATA

DISTRIBUTION OF AEROSOL CLOUD MASS ACROSS PARTICLE SIZES

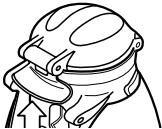




APPENDIX QUICK USE GUIDE

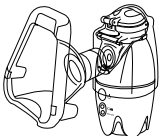
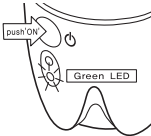

How to insert the battery

1. Open the battery cover with battery locker or a coin	2. Insert the battery	3. Put battery cover (align with 2 arrow marks)
		
4. Push and close the battery cover with battery locker or a coin	5. Charge battery if yellow indicator lamp blinks	6. Charging is complete when yellow LED turns to green LED
		




How to fill with medication

1. Open the medication cover	2. Fill with medication	3. Close medication cover until a "click" is heard
		

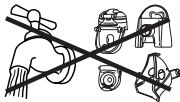


How to use the unit

1. Install the mask adapter & inhalation mask	2. Push the power button to start/stop	3. Inhale
		

Caution (during use)

Inhalation is impossible at angles over 75°	Do not power the unit without medication	If medication leaks before use, wipe with gauze and use unit promptly
		

How to Clean (after use)

Do not rinse with running water	Insert the medication until tightly into the main unit a "click" is heard	Boil all washable parts for 2 minutes at least once a week
		
Do not dry with microwave oven	Do not touch mesh with pins or other objects	For cleaning, wipe parts with gauze, not cotton or cloths
