

FS micro electrostatic spray gun

This is an electrostatic spray gun for thin film formation that enables uniform coating with fine particles by equipping the high-performance FS micro spray valve with electrostatic application.

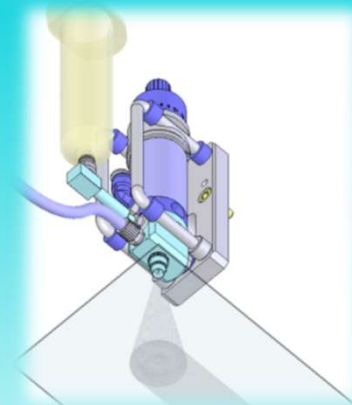
Separate coating is also possible with a coating pattern width of 4 mm or less!

Overview

Two types of electrostatic micro-spray are available, one for forming thin films of low-viscosity materials and the other for forming thin films of medium-to-high-viscosity liquid materials to several tens of micrometers.

feature

- Thin coating from 350 angstrom is possible
- Reduced amount of coating liquid used
- It is possible to coat three-dimensionally complicated shapes.
- Good edge coverage
- The atomization performance is improved and the drying rate is increased.

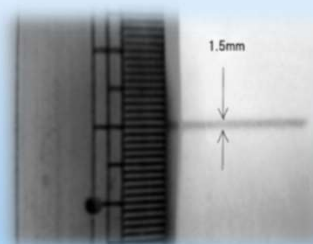


Solder mask material coating



Main use

- Selective thin film coating of functional liquid materials
- Nano-order coating of conductive materials such as PEDOT
- Partial application of resist material, etc.
- Thin wire application of various materials, etc.

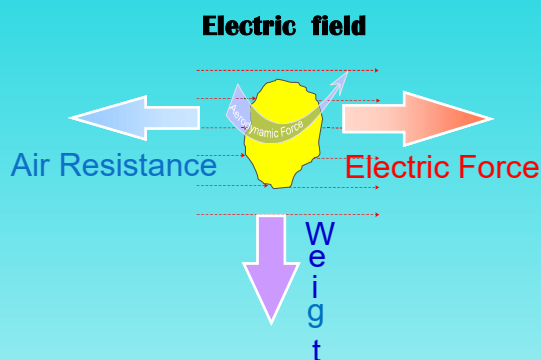


Fine line 200 nano coating of PEDOT material

A high voltage of -5 to 30 kV is applied to the needle at the tip of the gun from a high-voltage generator using a corona charging system, and corona discharge (corona-charging) occurs, creating an electric field between the object and the object to be coated, and the particles that pass through this electric field are charged and attached to the object to be coated. Fine particles cannot coat substrates only by their inertial force. The micro electrostatic force application spray makes it possible to adsorb fine particles that are difficult to adhere to the substrate by applying electrostatic force. Coating with the power of electrons has the property of concentrating the electric field on the edge, so it can be said that the coverage is good. Due to these features, it is possible to form films on substrates with complex shapes that cannot be coated by spin coating. The micro-electrostatic spray for forming a film of several tens of μm with medium- and high-viscosity coating materials electrostatically applies fine particles misted by a screw extension or a star-shaped air cap to finely atomize viscous materials. Electrostatic application by charging in the corona charging area.

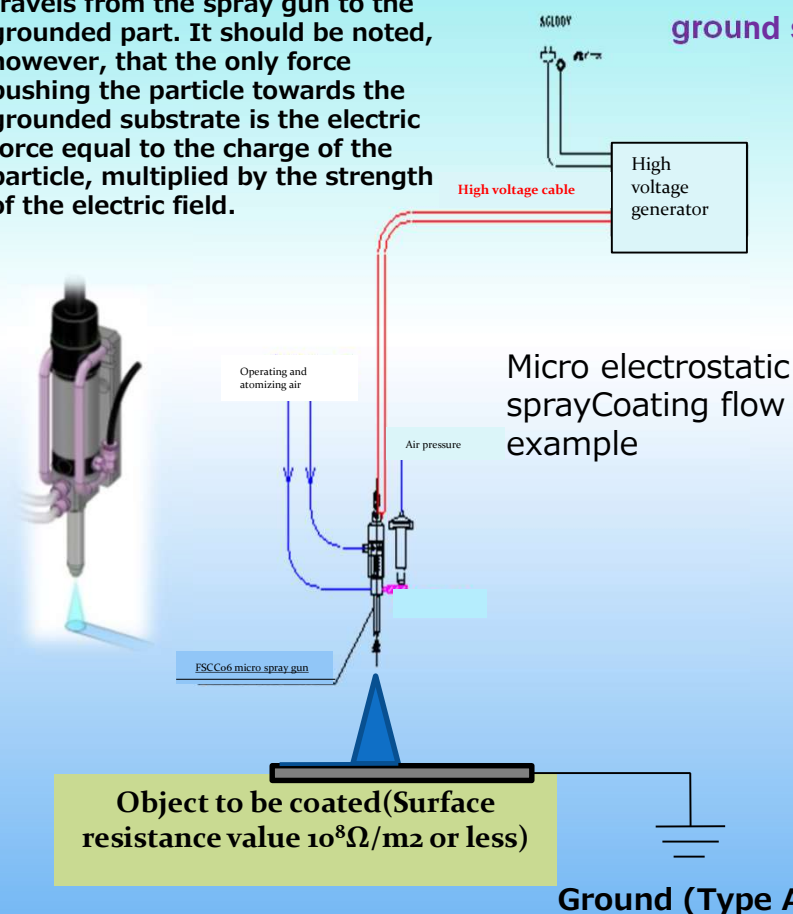
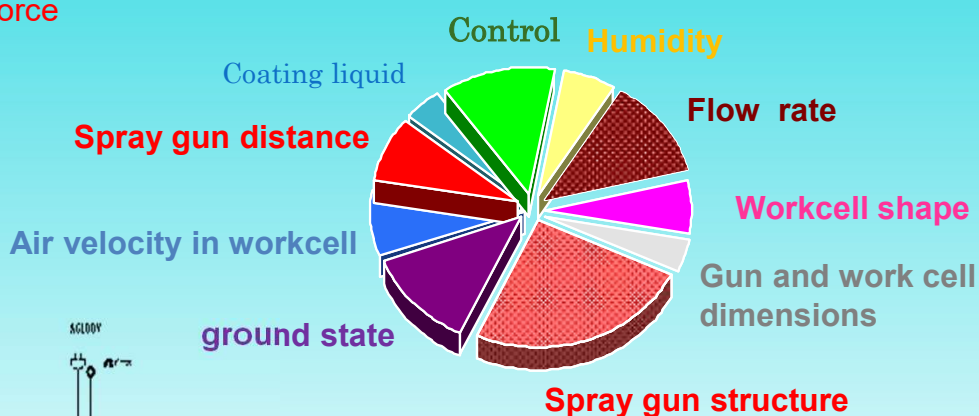
Factors Affecting Transfer Efficiency in Micro-Electrostatic Spray Coating

Transfer efficiency is an important concern in micro-electrostatic spray coating. It is a problem if the electrostatic mechanism is added to the spray device and the coating efficiency is the same as that without electrostatics. The figure below lists the factors that affect the transfer efficiency in micro-electrostatic spray coating, and shows the extent to which these factors affect the efficiency. From this figure, it can be seen that electrostatic coating is highly dependent on the shape of the coating gun, grounding, etc.



Above fig. illustrates forces affecting a charged particle as it travels from the spray gun to the grounded part. It should be noted, however, that the only force pushing the particle towards the grounded substrate is the electric force equal to the charge of the particle, multiplied by the strength of the electric field.

Factors of Transfer Efficiency in Micro-Electrostatic Coating
 Applied area VS spray charging efficiency
 Environment that affects efficiency



FS micro electrostatic spray method → 2 methods

1. Application method by electrostatic application using micro electrostatic spray valve
2. Electrostatic coating method using standard FS micro spray valve

Main requirements for peripheral equipment common to 1 and 2 above
 •Ground the conductor around the coating gun.

- Turn off the HV generator when replenishing the coating liquid and adjusting the coating gun.(Provide an interlock circuit,etc.)
- Do not approach grounded objects during electrostatic coating operation.(current limiter mechanism)
- Insulation is maintained for liquid supply, air hose, etc.

Please contact the following for orders for this equipment.



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