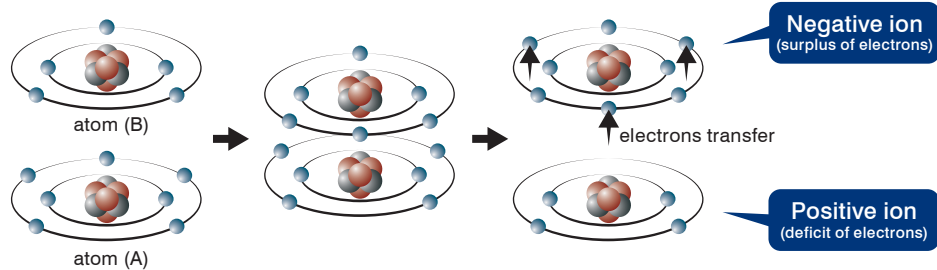




# THE STATIC ELECTRICITY

## Theory

The static electricity comes from the transfer of electrons between two or more atoms becoming electrically unbalanced.

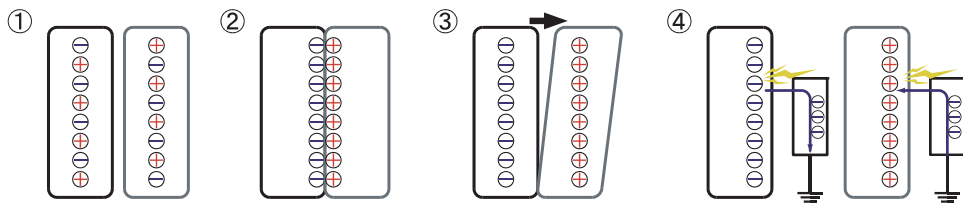


## How is it created?

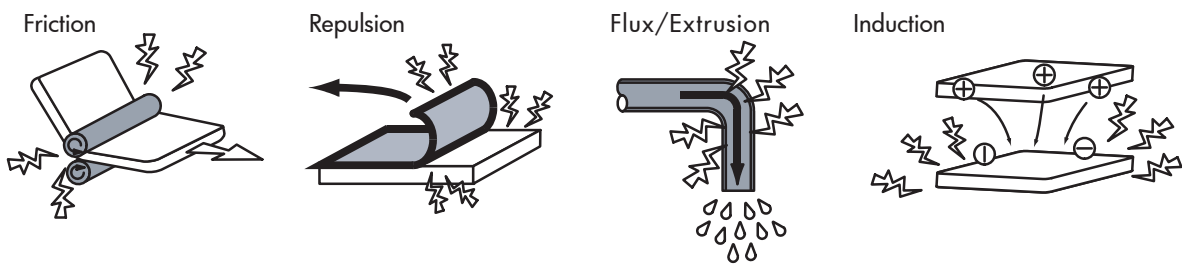
The static electricity is created after contact between two materials (which at least one of them is an insulator).

The static electricity level depends on humidity, materials, as well as on the pressure, the time, and the surface of contact.

An electric voltage of several kV might be easily generated.

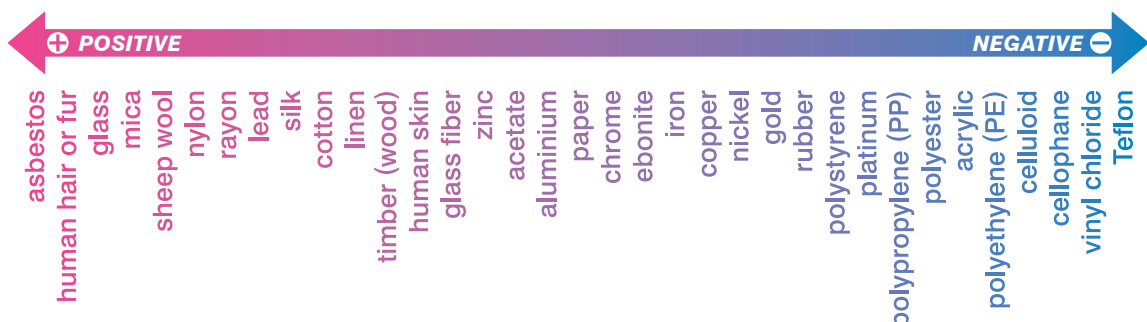


- ① Usually an object contains positive ions and negative ions. They are same in quantity and keep balance.
- ② When two objects come into contact, unstable electrons start moving (Charge Transfer).  
In such a state, however, electrons just move, and two objects in touch as a whole are not charged.
- ③ Dragging these objects away makes the number of electrons unbalanced.  
At this time, one object which receives electrons is negatively charged, while another object which loses them is positively charged.
- ④ Then, the electrons transfer, once the object, either negatively or positively charged, approaches to a grounded metal.



## Triboelectric series

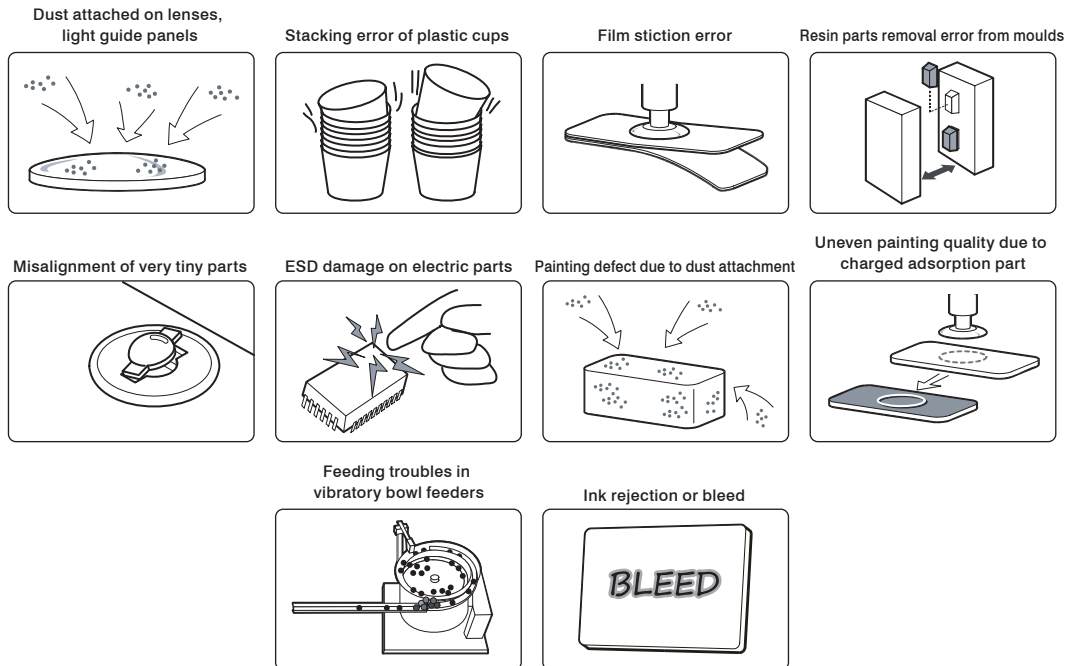
The Triboelectric Series chart shows the relative positive or negative charge of various materials.



# Consequences

## **Three types of problems can result from static electricity:**

- Apparition of electric arcs, which can damage the electronic circuits,
- Dust attraction, which can lead to unwanted defaults after parts painting or cause hygiene and cleanliness problems,
- And attraction or repulsion of other materials, which can cause, for instance, printing problems due to the repulsion of the ink or labeling problems due to the unwanted repulsion or attraction of the paper when being positioned.



## **How is it eliminated?**

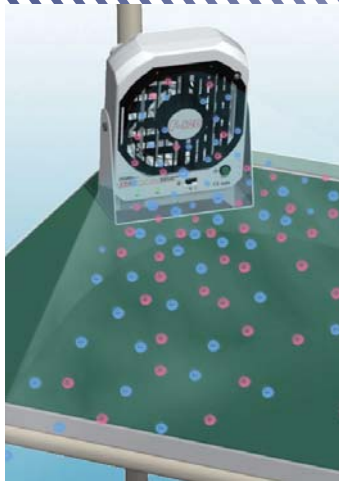
### **Different methods are used:**

If possible and if it is a conductor, connect the part to the ground:

- The voltage of the part will be equal to 0V. However in certain cases, in order to avoid any sudden discharge, which could lead to electric arcs, it is necessary to use dissipative material with a controlled conductivity.

### **Otherwise use a ionizer:**

- The ionizer will send positive and negative ions to be combined with the positive and negative charges on the targeted surface.  
The ions are created thanks to the corona discharge principle.  
The static electricity elimination is made without any contact.



## BLOWER

### FOR STATIC ELECTRICITY ELIMINATION



#### **F6CL-E** Ionizing Mini Fan with clip

Clip onto workbench or pillar  
for pinpoint neutralization



#### **F6ST-E** Ionizing Mini Fan with stand

Compact fan can be installed  
anywhere for pinpoint  
neutralization



#### **F12E-E** Fan-type Ionizer

Maintains an ion balance of  
 $\pm 5$  V using capacitive-  
coupled electrode needles



#### **F120R-E** Fan-type Ionizer

Butterfly Louver !  
for wider and far reach static  
erasing area







## MANUAL APPLICATIONS IONIZERS

### GUN TYPES AND ION PARTS CLEANER

FOR STATIC ELECTRICITY ELIMINATION AND DUST REMOVAL



**G7R-E**  
Gun-type Ionizer

Our most popular ionizing air gun is compact, lightweight and user-friendly



**BBZ-E**  
Gun-type Ionizer

Silent and high durability model ideal for air blowing in wide areas



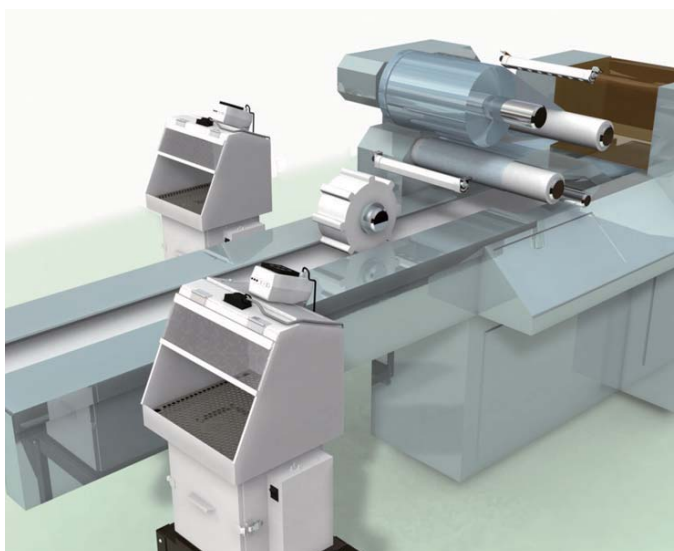
**IPC-A4 / A3**  
Ion Parts Cleaner

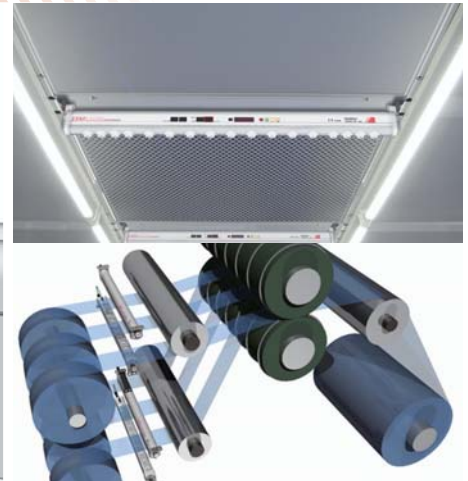
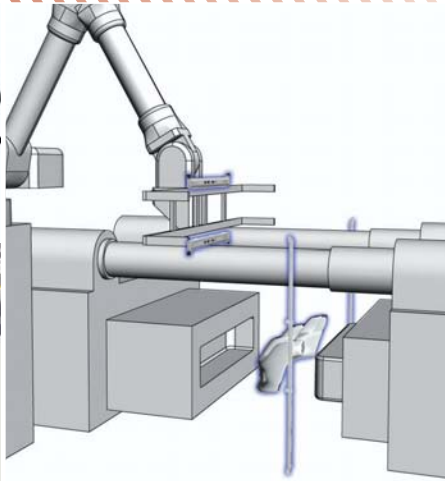
A4/A3 size is ideal for capturing dust with adhesive urethane gel at cell workbench



**IPC20-E / IPC40-E**  
Ion Parts Cleaner

Work piece is detected with sensor, and dust eliminating air is sprayed and particles are attracted by a vacuum





## AUTOMATIC APPLICATIONS IONIZERS

### NOZZLE TYPES AND BARS

FOR STATIC ELECTRICITY ELIMINATION AND DUST REMOVAL



#### **N-1** **Super Slim** **Nozzle-Type Ionizer**

Super Compact Slim Body.  
A rotating nozzle enables to  
ionize anywhere



#### **N-2** **Pinpoint Nozzle** **Ionizer**

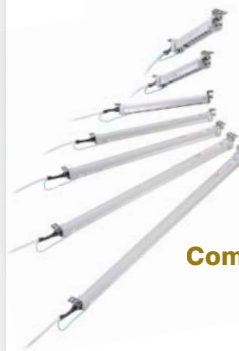
Featuring an LED indicator  
that communicates  
the device's operating status



#### **C-bar Series**

#### **AC Pulse Ionizing Clean Bar** **(Length from 90 to 300 cm)**

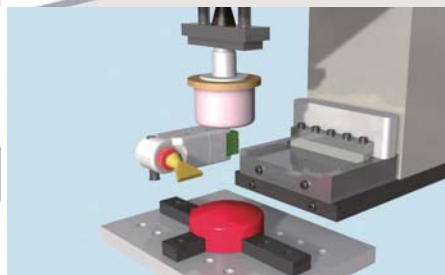
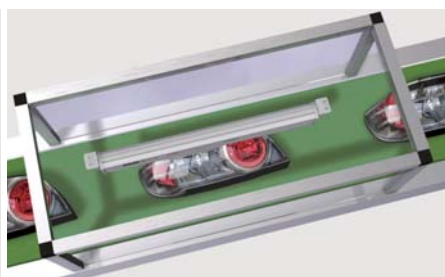
Clean & Compact.  
Newly designed high-precision and  
high-speed ionizer applying  
a new technology



#### **SH-bar Series**

#### **Compact AC Pulse Ionizing Bars** **(Length from 16 to 70 cm)**

Slim & High-speed Neutralization.  
Compact bar type ionizer with  
separate power supply for easy installation





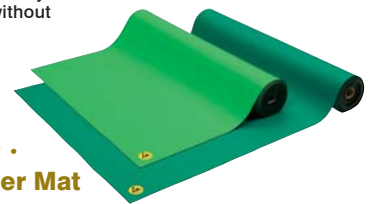


## CONDUCTIVE RUBBER MAT

**FOR CONTROLLED STATIC  
ELECTRICITY DISSIPATION**

Controlling electroconductivity between  $10^6\Omega$  and  $10^7\Omega$  without influencing the working environment. Ideal for workbenches requiring static electricity measures

**EPA Working Mat ·  
Conductive Rubber Mat  
LG-100/SG-100**



Visualizing invisible static electricity  
Peak hold supports long-time  
measurements

**Electrostatic  
Field Meter  
Eye-02**



## ELECTROSTATIC FIELD METER

**ESSENTIAL ITEM FOR  
STATIC ELECTRICITY MEASURES.  
VISUALIZE THE STATIC CHARGE AND  
DISCHARGE STATE**



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