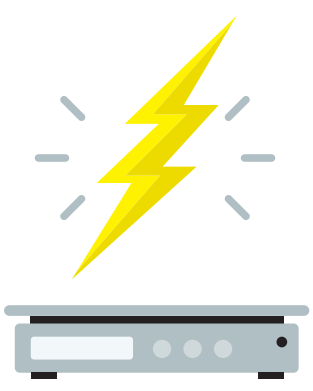
Charge Neutralizing Technology Ensures Accurate Weighing

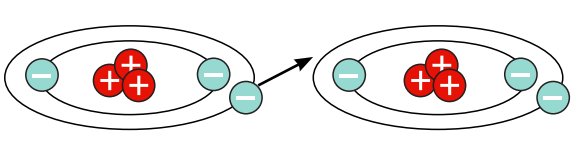
The Cubis® II analytical and semimicro balances integrate charge neutralizing technology to achieve accurate weighing performance



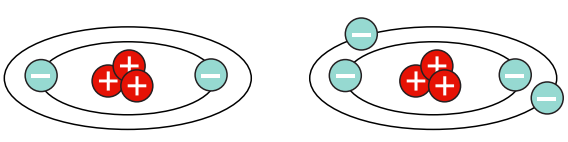
Electrostatic charges pose challenges for analytical weighing. In addition to producing inaccurate absolute weights, they contribute to drift and poor repeatability thereby compromising data quality. Analytical balances with integrated electrostatic charge neutralizing technology are a compact and effective solution to address static charges and ensure accuracy for a wide range of analytical weighing applications.

How Electrostatic Charges are Formed

Electron work function is a measure of the amount of energy required to extract an electron from a metal surface. Friction between two objects initiates ion formation, whereby an object with a lower electron work functions readily donates electrons to an object with higher electron work function. Electrostatic charges develop during weighing applications as a result of friction within the sample, or between the sample and the container or tare vessel.



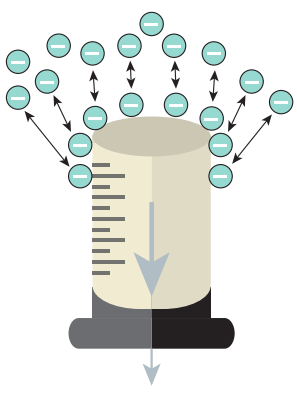
When two neutral atoms collide, the atom with the lower electron work function loses an electron.



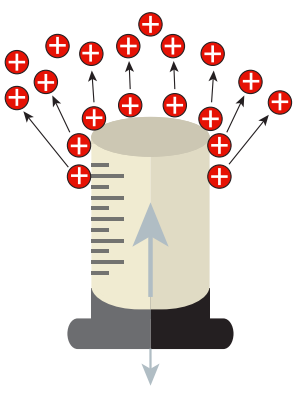
The atom that loses an electron becomes positively charged, and the atom accepting the electron becomes negatively charged.

The effects of electrostatic charge on analytical weighing

Charges that build up on the materials to be weighed interact with the fixed part of the balance that are not conductively connected to the weighing pan, including the draft shield or base plate, creating electrostatic force. These forces can produce false absolute weights— deviating significantly from the actual weight— and compromise weighing accuracy. As the charge dissipates via the weighing pan, the inconsistent force results in drift, producing inconsistent results and reducing repeatability.



If the weighing container and the environment are both negatively charged, the resulting repulsive force will weigh down on the balance, producing a false absolute weight that is heavier than the actual weight.



If the weighing container and the environment are oppositely charged, the resulting attractive forces will produce a false absolute weight that is lighter than the actual weight.

Electrostatic charge neutralizing technology

The Sartorius Cubis® II features integrated charge neutralization technology that effectively removes charges from samples and vessels for more accurate analytical weighing.



The Q-stat ionizer is integrated directly into the draft shield, to eliminate charges in seconds with the push of a button. Four ion blower nozzles are positioned in the rear of the balance, with opposing polarities to create a focusing effect in the area of the weighing pan. Q-stat neutralizes charges on samples and containers without disturbing airflows.

The draft shield has a transparent conductive coating to protect against electrostatic charges in the area surrounding the balance.



Faraday cages are grounded metal shields that neutralize electrostatic charges during applications such as filter weighing.



Filter pans ranging from 50 to 150 mm can increase the shielding effect of the weighing pan.

For more information, visit
www.sartorius.com/cubis