



ION-e

Electrostatic-free Powder Handling

1. Introduction

Electrostatic forces, also called as the Coulomb force, consist of the attraction or repulsion of particles due to their electrical charges, which can be positive or negative. When two different charges come to interaction (one positive and one negative) they attract each other, while when they are equally charged (two positives or two negatives), they repel each other. Wherever there are unequally charged particles present, electrostatics can be created.^{1,2,3}

In the pharmaceutical field, electrostatics can be easily created during pharmaceutical operations involving powder handling and processing, as the majority of dosage forms are solids. During these operations, powder particles get in contact with different materials and surfaces, therefore they can become electrically charged by a process known as triboelectrification.^{4,5}



2. Electrostatic of Pharmaceutical Powders

Triboelectricity is a complex phenomenon that arises when different materials come into contact with each other (by impact, friction, or shear), therefore creating electrical charges, and then they are separated, making particles to remain attached due to the charges that were created.⁶ Most of pharmaceutical powders are classified as insulators, meaning that they tend to retain any charge generated on their surfaces. While compounding, powders being handled are constantly in contact with different types of materials such as plastics, glass, and acrylic, and for this reason, perfect conditions for triboelectrification can be created.^{4,7}

Understanding and classifying powders according to their electrical properties is an important step in pharmaceutical compounding since this characteristic can lead to unusual particles behavior such as increased agglomeration, adhesion to surfaces, and aerolization, resulting in considerable problems to the compounding process.⁸ Not only this can cause equipment blockages and product losses, but also can lead to cross-contamination due to particles remaining in the environment, uneven content uniformity, batch variations, lack of reproducibility, lack of precision during weighing, among other problems.^{4,8}

Ionizers are equipment that can easily neutralize the electrical charges of different materials and ingredients. In order to bring a solution that is suitable for the daily routine of a compounding pharmacy, we have developed the ION-e.



3. ION-e

The ION-e is a benchtop ionizer, compact and especially developed to meet the daily needs of the compounding pharmacy, by neutralizing electrostatic charges created during pharmaceutical operations and powder handling. As the name suggests, the ION-e uses ions to neutralize static electricity by generating positive and negative ions constantly, providing a fast and efficient neutralization rate. Both negative and positive frequencies can be adjusted, providing even more precision to the pharmacy's needs.

By using the ION-e, the pharmacist can perform pharmaceutical operations involving powders and other electrostatic materials with much more precision, preventing consequences such as material loss during compounding, powders adherence to equipment, lack of content uniformity, cross-contamination from equipment, and also from the environment. With the ION-e, we bring even more quality to the compounding process, delivering safe and efficient formulations to patients.

Its modern design allows for quick and easy mobility, either standing on the benchtop or attached to an extensor arm, enabling the pharmacist to place it close to the operation being performed. Either to weigh, mix or encapsulate powders, the ION-e can eliminate electrostatic charges in the working area, preventing operational and quality issues.



Advantages

- Compact and practical
- Calibrated and ready to use
- Easy On/Off operation
- Mobile with a handle
- High neutralization rate
- Efficient negative and positive charge balance
- Long-distance reach



References

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