



Spray-painting can be a messy job, but some people use static electricity to attract spray paint to the objects being painted.

Painting with Static Electricity

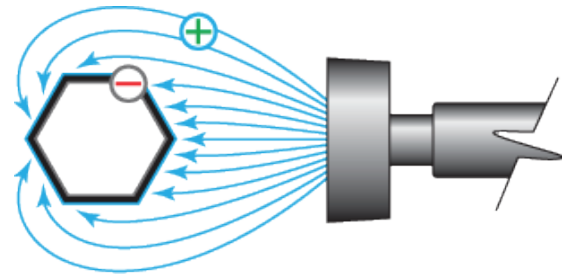
Have you ever spray-painted anything? If you have, you know that it can be messy—paint doesn't just end up on the object you're trying to paint. You might put down an old sheet or a big piece of plastic to protect the area from paint splatters, but even that might not catch everything. The tiny droplets of paint can end up on the ground and anything else that happens to be nearby . . . and if it's a windy day, they might not end up where you want them at all! Spray painting can also waste paint, since some of the paint in the can doesn't end up on the object you're painting. Some people avoid all these problems by using an electrostatic painting system. These painting systems use static electricity to make sure paint goes

where you want it to and not where you don't.

Electrostatic painting systems use electric fields to guide paint in the right direction. Just as magnets produce magnetic fields, electric charges create electric fields—these two types of fields aren't the same, but they behave in many similar ways. Electric fields move objects without touching them, extend in all directions from the charges that produce them, and can be modeled with field lines, just like magnetic fields. Both electric fields and magnetic fields can produce attractive forces and repulsive forces. Electric charges can be positive or negative. If two charges are the same—both positive or both negative—the force between them is repulsive. If one charge is negative and one is positive, the force between them is attractive.

Electrostatic painting systems work because opposite electrical charges are attracted to one another. Painters charge the object they're painting with a negative charge, and the paint

gets charged with a positive charge as it goes through the nozzle of the sprayer. Because they have opposite charges, the paint droplets are attracted to the object and go straight toward it. Droplets that are headed in the wrong direction will even change direction and move toward the object that's being painted! These systems make sure paint ends up where it's supposed to, and nowhere else.



Electrostatic paint systems work by charging the object that's being painted with a negative charge, then charging the paint with a positive charge. When the paint comes out of the nozzle, it's attracted to the object.