

# Magnetic Remote Holder: A Big Help in Society

Many people in today's society have remote controls, and a device that would be helpful is the remote control holder. The remote controller holder I will be engineering uses magnets to hold controllers to the pouch. To fully understand this project, magnets need to be defined. How magnets work needs to be understood to know what they can do. There are also many magnet materials that all have their advantages and disadvantages. Knowing how magnets will affect electronics is important to consider for this project. The use of magnets may be the best way for a remote holder to have the most performance over other ways to make a holder.

For a full understanding of magnets, the word must be defined to understand. A magnet is an object that can make a magnetic field that interacts with other magnetic fields. A magnet also has a north and a south pole. When the poles are similar, the magnets repel each other and different sides of the magnet attract each other. The poles are like the poles on the Earth. When like poles are next to each other, the magnetic fields bounce off and this causes the repelling force. When the poles are different, the magnetic fields connect and the magnets attract each other. This is called magnetism. Magnetism is the force exerted by magnets when they attract or repel each other.

There are many ways that magnets work. Magnets work by producing magnetic fields that cause metal to come closer to the magnet. The magnetic field is formed from the use of charged atoms with a positive charge. An atom is a fundamental piece of matter made up of three tiny kinds of particles called subatomic particles: protons, neutrons, and electrons. The protons and the neutrons make up the center of the atom called the nucleus and the electrons fly around above the nucleus in a small cloud. The positive charged core is surrounded by negatively charged electrons. Because the electrons are spinning around the core, the atom becomes a tiny magnet and magnets are just lots of these atoms. The atoms are aligned in a way that the charges become the magnet. If the magnet's atoms are not in order, the forces cancel out and the magnet does not work.

A permanent magnet is a magnet that retains its magnetism after removal of the magnetizing force. Permanent magnets can be made of many different resources and some can be hazardous to people. The five main types of permanent magnets are Neodymium, Samarium cobalt, Anico, ferrite, and flexible rubber. A permeate magnet is a magnet that retains its magnetism after removal of the magnetizing force. The Neodymium and Samarium cobalt magnets are examples of Rare-Earth magnets. Some magnets can also damage electronics though.

A permanent magnet can't destroy a cell phone but an electromagnet can. An electromagnet is a magnet that is made from a nail that has electricity running through it. Magnets can be measured by teslas. A tesla is the universal way to measure magnetic fields. The website also explains that a neodymium magnet can remove data from SSD and HDD drives. The site also said that if 2 neodymium magnets snap together, the forces are so great, there can be permanent harm.

Televisions, game consoles, and sound bars all use remote controls. You can lose your remote controls if

they are not organized properly. By making a magnetic remote control holder, people will not lose their remotes because they will have a place to go. Magnets will be attached to the remote controls and to my engineered pouch to create a magnetic field that will keep these items together. Based on this research, I will test different magnets to see which works best. I want my design to be safe for electronics and people. This research is needed to be able to make this device and have it work and not fail.

## **Bibliography**

*Electromagnets*, [ece.northeastern.edu/fac-ece/nian/mom/electromagnets.html](http://ece.northeastern.edu/fac-ece/nian/mom/electromagnets.html). Accessed 11 Sept. 2023.

“Magnetic Materials Information.” *Magnet Expert*, [www.magnetexpert.com/technical-advice-for-every-application-magnet-expert-i685/materials-information-i682](http://www.magnetexpert.com/technical-advice-for-every-application-magnet-expert-i685/materials-information-i682). Accessed 13 Sept. 2023.

“Magnetic Field Intensity Unit.” *Glossary: Tesla (T) - Magnetic Field Intensity Unit*, [ec.europa.eu/health/scientific\\_committees/opinions\\_layman/en/electromagnetic-fields/glossary/tuv/tesla.htm#:~:text=English%20%5Ben%5D-,Tesla%20\(T\)%20%2D%20Magnetic%20Field%20Intensity%20Unit,s%2D2%20%C3%97%20A%2D1](http://ec.europa.eu/health/scientific_committees/opinions_layman/en/electromagnetic-fields/glossary/tuv/tesla.htm#:~:text=English%20%5Ben%5D-,Tesla%20(T)%20%2D%20Magnetic%20Field%20Intensity%20Unit,s%2D2%20%C3%97%20A%2D1). Accessed 11 Sept. 2023.

“Magnetism Basics.” *How Magnets Work*, [ece.northeastern.edu/fac-ece/nian/mom/work.html](http://ece.northeastern.edu/fac-ece/nian/mom/work.html). Accessed 11 Sept. 2023.

“Magnetism.” *Education*, [education.nationalgeographic.org/resource/magnetism/](http://education.nationalgeographic.org/resource/magnetism/). Accessed 11 Sept. 2023.

Manager, Content. “Can Neodymium Magnets Damage Electronics?” *ElectronicsHacks*, 6 Mar. 2023, [electronicshacks.com/can-neodymium-magnets-damage-electronics/#:~:text=The%20answer%20to%20this%20question,electrical%20components%20in%20a%20device](http://electronicshacks.com/can-neodymium-magnets-damage-electronics/#:~:text=The%20answer%20to%20this%20question,electrical%20components%20in%20a%20device).

“Permanent Magnet Definition & Meaning.” *Merriam-Webster*, Merriam-Webster, [www.merriam-webster.com/dictionary/permanent%20magnet](http://www.merriam-webster.com/dictionary/permanent%20magnet). Accessed 11 Sept. 2023.

“Propulsion.” *What Is an Atom?*, [www.qrg.northwestern.edu/projects/vss/docs/propulsion/1-what-is-an-atom.html](http://www.qrg.northwestern.edu/projects/vss/docs/propulsion/1-what-is-an-atom.html). Accessed 11 Sept. 2023.

Waters, Brandi. “How Do Magnets Work.” *How Do Magnets Work?*, 2012, [www.mrsd.org/cms/lib/NH01912397/Centricity/Domain/194/22-How%20Do%20Magnets%20Work.pdf](http://www.mrsd.org/cms/lib/NH01912397/Centricity/Domain/194/22-How%20Do%20Magnets%20Work.pdf).

