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How a CD-RW and DVD-RW works:
CD-Roms and DVDs both have rewriteable equivalents. These are CD-RW, DVD-RAM or DVD-RW. They all use the same technology to write, change and erase data.



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How a CD-RW and DVD-RW works:

The process is called *Phase Change Technology*.



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How a CD-RW and DVD-RW works:

To write data, a high-intensity laser beam is focused on a special material layer. This layer is typically made up of silver, indium, antimony and tellurium.



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How a CD-RW and DVD-RW works:

In the layer's original state, it represents a rigid, polycrystalline structure, kind of like a honeycomb.



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How a CD-RW and DVD-RW works:

To write data, the laser is sent to the surface and it will melt (about 900-1300°F) the crystals to a non-crystalline state, or *amorphous phase*. These melted areas will now be like pits and not reflect light.



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How a CD-RW and DVD-RW works:

To read the data, a weaker laser beam is sent to the surface. It will now detect the lands and pits just like a CD-Rom. The weaker beam will not distort the surface.



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How a CD-RW and DVD-RW works:

Now to erase the data so the surface is ready to be rewritten to, we use a process called *annealing phase*.



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How a CD-RW and DVD-RW works:

This starts by using a laser that has a lower energy than the write laser, but higher energy than the read laser. The beam heats the pits to about 400°F.



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How a CD-RW and DVD-RW works:

This amount of heat is below the melting point, but it is still enough to loosen up the phase change media so that it recrystallizes back to its original state.



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How a CD-RW and DVD-RW works:

The difference in CD-RW versus a DVD-RW is in the laser. The CD-RW uses a wider infrared laser. The DVD-RW uses a narrow, red laser.



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References

How Computer Work: Millenium Edition

by: Ron White, 1999 QUE

