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# PEAK Class 101: Flash Memory - X-Speed Ratings

All Flash cards or Flash drives today are sold with an "X" speed rating that is similar to the way CD-ROM drives are sold. This rating system gives users a performance indicator of how fast the card can transfer files.

PEAK uses the "read" speed as the basis for its X-speed rating as different manufacturers define this rating differently. Some definitions refer to the X-speed as "read" speed or "write" speed. Others use it to mean both and call it "data transfer" speed.

## Definition of X-Speed Performance

Flash memory products with a higher X-speed rating are designed to perform faster. The X-speed rating can also be translated into another measurement of performance - MegaBytes (MB) per second. The actual MB per second can be determined using the multiplier number and the value of X as claimed by the product. For example:

<b>Value of X = 150 KiloBytes* per second, noted as 150 KB/sec.</b>
<b>200X = 200 times 150 KiloBytes = 30000 KB/sec = 30 MB/sec</b>

1 KB = 1,000 Bytes; 1 MB = 1 million Bytes.

PEAK Flash Product Memory	
X Speed	Comparable MB/sec.
52X	7.8
60X	9
80X	12
120X	18
150X	22.5
200X	30

The table shows PEAK Flash Product X-speed rating versus MB/sec

(Continued)

- Flash memory products with a higher X-speed rating are designed to perform faster.
- To support these results, PEAK tests its flash memory product under high-end testers, Testmetrix®. These testers measure the true read and write speed of the flash memory.



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As an example, PEAK Xtreme 150X 2GB SD card is rated at a 150X; this translates to  $150 * (150 \text{ KB/sec.})$  meaning 22500 KB/sec or 22.5 MB/sec. To support these results, PEAK tests its flash memory product under high-end testers, Testmetrix®. These testers measure the true read and write speed of the flash memory.

## Faster "X" Rating Always Better?

When it comes to flash product, many of us will have the following question in mind:

When a flash card is rated at 150X, does this mean that data will transfer at 22.5 MB/sec. in any host device, such as a digital camera? Not necessarily.

A digital camera, mobile phone, PDA, personal computer or other host device is limited by the speed of its interface to the Flash memory product. Often, the host devices have a lower read and write speed than the Flash memory product. Therefore, the flash card or flash drive cannot operate at its best. A good example of this is that a mobile phone may only support 10X speeds, so using a 150X or faster flash card will not get to 22.5 MB/sec.

If you are using a high-quality flash card reader or a USB 2.0 port to transfer data to a computer, a flash product with a higher X-speed rating will generally transfer its data faster, thereby reducing the time to copy data from the Flash product to the computer's hard drive.