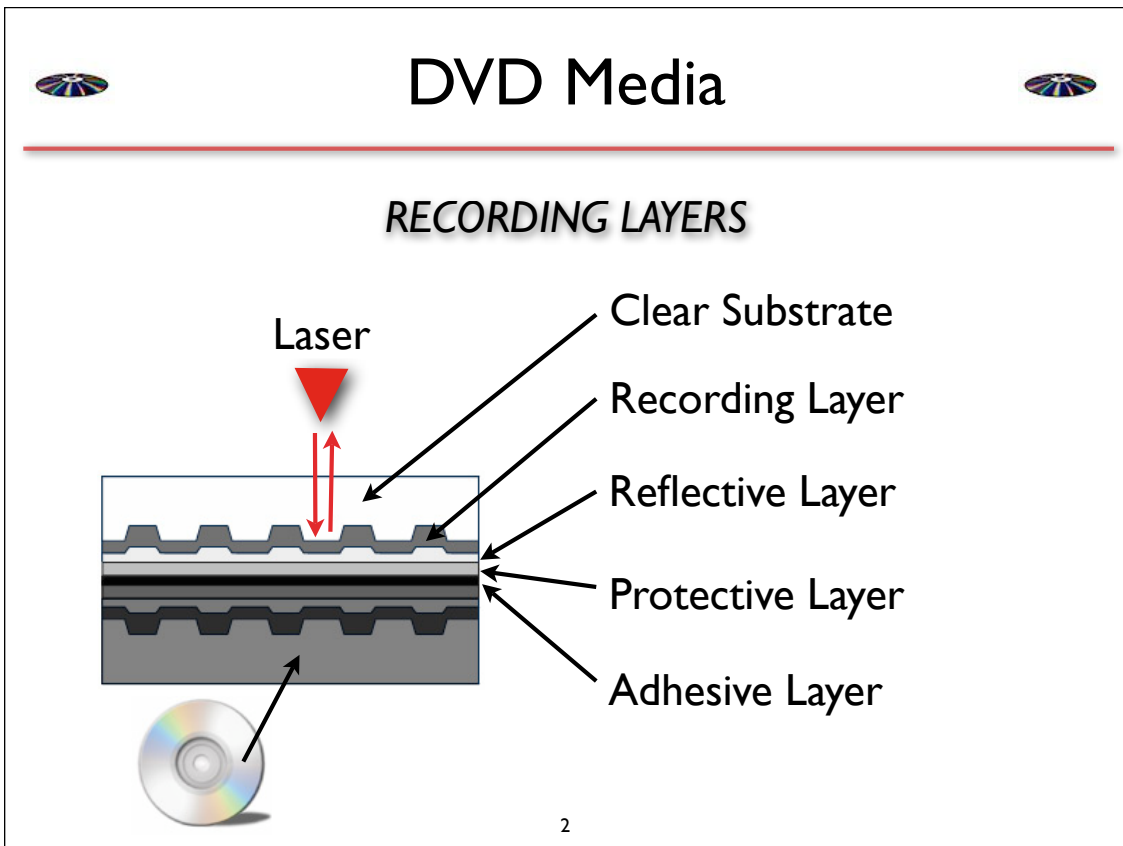




1

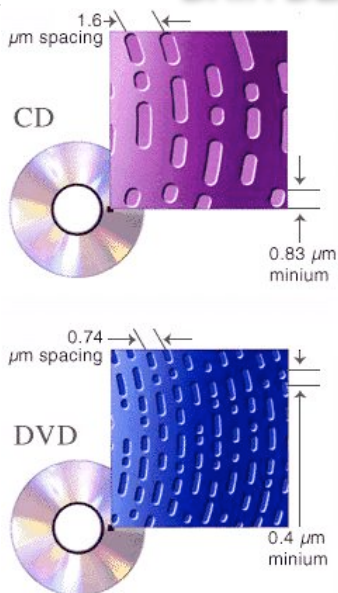


2

DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



► More information is packed onto a DVD-ROM by changing....

- **Track Pitch/Distance**
- **Pit Length**
- **Pit Width**
- **Pit Depth**
- **Laser Wavelength**
- **Rotational Speed**
- **Data Rate**
- **Sides**
- **Layers**

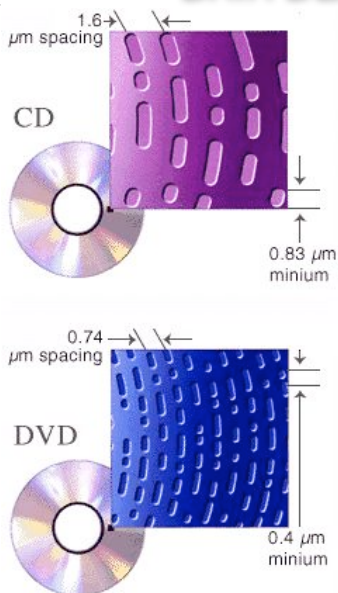
3

3

DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Storage Capacity

How much data can be encoded onto the surfaces of a disc?

DVD-ROM	CD-ROM
1.4 - 50 Gigabytes	640 - 700 Megabytes

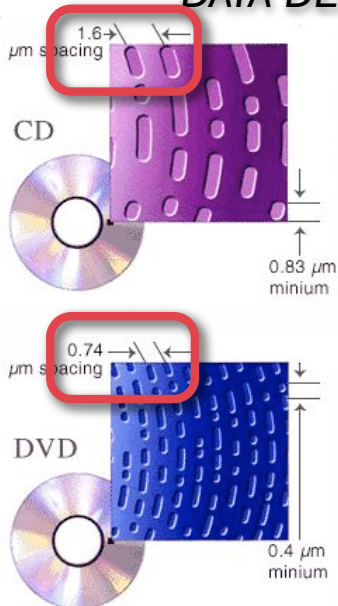
4

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Track Pitch/Distance

The space between the "rings" of pits is smaller on a DVD, thus packing more data into the same 120 mm disc size.

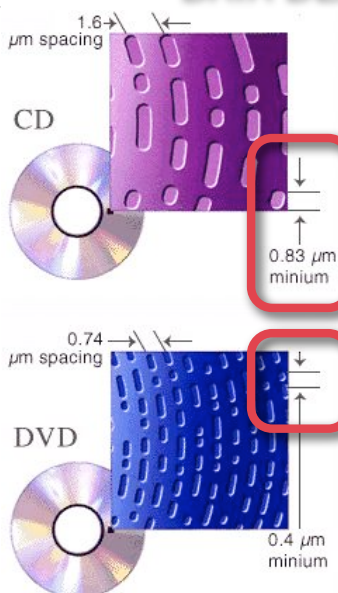
DVD-ROM	CD-ROM
0.74 microns	1.60 microns

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Pit Length

The digital "pits" are shorter and closer together on a DVD, thus packing more data into each ring.

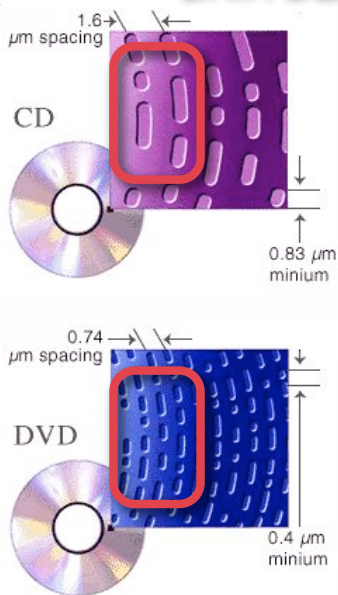
DVD-ROM	CD-ROM
0.40-0.44 microns	0.83 microns

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Pit Width

The digital "pits" are less wide. More rings of data can be packed into the DVD.

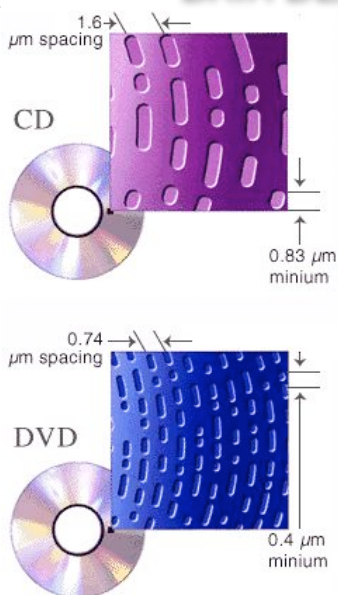
DVD-ROM	CD-ROM
0.32 microns	0.60 microns

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Pit Depth

DVD depth of a digital pit is slightly deeper.

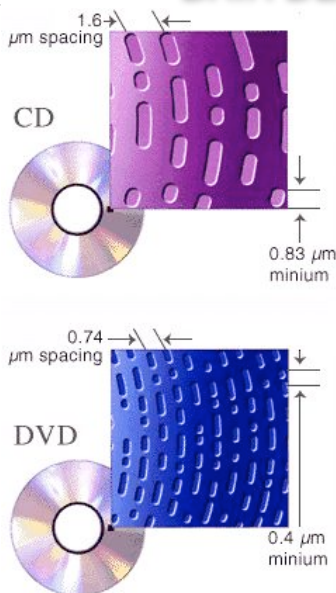
DVD-ROM	CD-ROM
0.12 nanometers	0.11 microns

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Laser Wavelength

The DVD player uses shorter wavelength lasers to read the digital pits in the rings, thus increasing the accuracy of reading the more densely packed data.

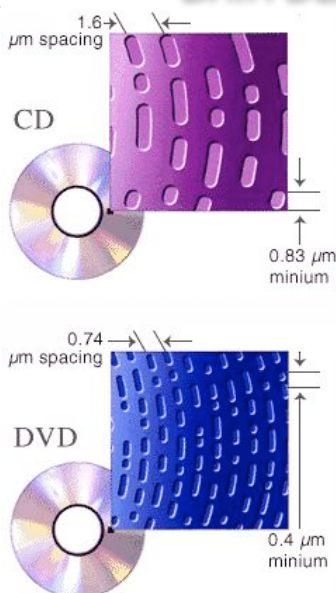
DVD-ROM	CD-ROM
635-650 nanometers	780-790 nanometers

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Rotational Speed

DVD has a faster rotational speed.
A 1x DVD-ROM drive is the equivalent of an 8x CD-ROM drive.

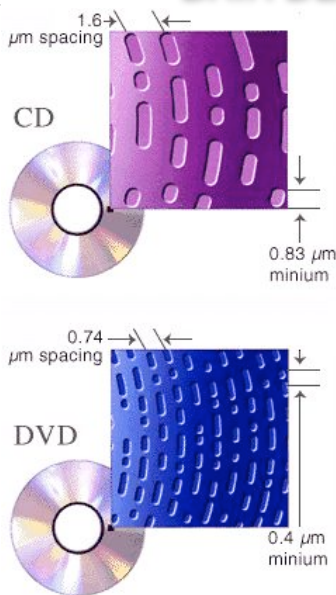
DVD-ROM	CD-ROM
570-1600 rpm	200-500 rpm

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



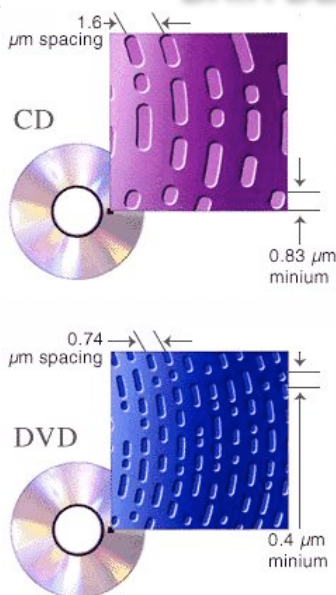
Maximum Data Rates	
With the faster rotational speeds of DVD-ROM media, the rate at which data can be read from the disc is higher. More demanding files, like video, require higher data rates.	
DVD-ROM	CD-ROM
11.08 Mbps	1.41 Mbps

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



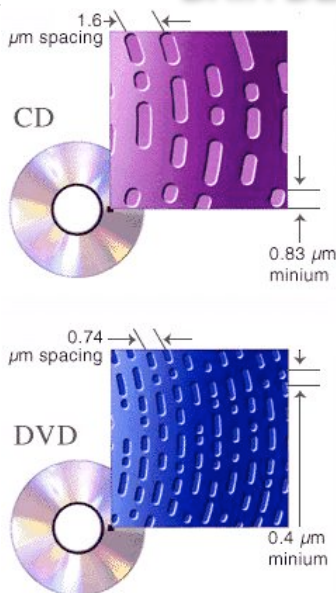
Sides Possible	
"Sides" refers to the ability to record data on one or both sides of the physical disc.	
DVD-ROM	CD-ROM
1 or 2 sides	1 side

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS



Layers Possible	
"Layers" refers to the ability to record data on one or more layers on a single side of a disc.	
DVD-ROM	CD-ROM
1 or 2 layers per side	1 layer per side

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DVD Media

Images from Pioneer

DATA DENSITY COMPARISONS SIDES & LAYERS

Single Side Single Layer	Single Side Dual Layer	Double Side Single Layer	Double Side Dual Layer
DVD-5	DVD-9	DVD-10	DVD-18
4.7 GB	8.54 GB	9.4 GB	17.08 GB

DVD+RW DL

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DVD Media



DVD FORMATS for CURRENT DVD STANDARD

Format	SS SL	SS DL	DS SL	DS DL
DVD-R AUTHORING MEDIA	✓	✓		
DVD-R GENERAL MEDIA	✓			
DVD+R	✓			
DVD-RW	✓			
DVD+RW	✓			
DVD-RAM			✓	
DVD+R DL		✓		