

FUJIFILM

Media / Drive Compatibility

Drive	G1 Drive	G2 Drive	G3 Drive	G4 Drive	G5 Drive	G6 Drive
Media	G1	○	○	△	×	×
	G2	×	○	○	△	×
	G3	×	×	○	○	△
	G4	×	×	×	○	○
	G5	×	×	×	×	○
	G6	×	×	×	×	○

○: Able to Read / Write    △: Able to Read Only    ×: Not Compatible

FUJIFILM Brand LTO – Media Specification–

LTO Generation	LTO G1	LTO G2	LTO G3 / G3 WORM	LTO G4 / G4 WORM
Basic Specifications	Capacity (Native / Compressed)	100GB(200GB)	200GB(400GB)	400GB(800GB)
	Transfer Rate (Native / Compressed)	Up to 20MB/sec.(Up to 40MB/sec.)	Up to 40MB/sec.(Up to 80MB/sec.)	Up to 80MB/sec. (Up to 160MB/sec.)
	Number of Tracks	384	512	704
	Servo Method	Timing-based servo		
	Cartridge Memory	32,768 bits(4,096 bytes); Internal EEPROM		65,280bits(8,160bytes); Internal EEPROM
	Encryption function	—		
Durability	Tape Running (Nominal)	1,000,000 passes		
	Estimated Archival Life	30 years		
Physical Characteristics	Tape Width	12.65mm		
	Tape Thickness	8.9 μm	8.0 μm	6.6 μm
	Tape Length	609m	680m	820m
	Cartridge Dimensions	H. 102.0 × W. 105.4 × D. 21.5mm		
Operating Environmental Conditions	Temperature	10-45°C		
	Humidity	10-80% (No Dew Condensation)		
	Max. Wet Bulb Temperature	26°C		
Storage Environmental Conditions	Temperature(Short Term / Archival)	16-35°C / 16-25°C		
	Humidity(Short Term / Archival)	20-80% / 20-50% (No Dew Condensation)		
	Max. Wet Bulb Temperature (Short Term / Archival)	26°C		

LTO Generation	LTO G5 / G5 WORM	LTO G6 / G6 WORM	Universal Cleaning Cartridge*	
Basic Specifications	Capacity (Native / Compressed)	1.5TB(3.0TB)	2.5TB(6.25TB)	
	Transfer Rate (Native / Compressed)	Up to 140MB/sec.(Up to 280MB/sec.)	Up to 160MB/sec.(Up to 400MB/sec.)	
	Number of Tracks	1,280	2,176	
	Servo Method	Timing-based servo		
	Cartridge Memory	65,280 bits(8,160 bytes); Internal EEPROM	130,816 bits(16,352 bytes); Internal EEPROM	32,768 bits(4,096 bytes); Internal EEPROM
	Encryption function	○		
Durability	Tape Running (Nominal)	1,000,000 passes		
	Estimated Archival Life	30 years		
Physical Characteristics	Tape Width	12.65mm		
	Tape Thickness	6.4 μm	6.1 μm	
	Tape Length	846m		
	Cartridge Dimensions	H. 102.0 × W. 105.4 × D. 21.5mm		
Operating Environmental Conditions	Temperature	10-45°C		
	Humidity	10-80% (No Dew Condensation)		
	Max. Wet Bulb Temperature	26°C		
Storage Environmental Conditions	Temperature(Short Term / Archival)	16-35°C / 16-25°C		
	Humidity(Short Term / Archival)	20-80% / 20-50% (No Dew Condensation)		
	Max. Wet Bulb Temperature (Short Term / Archival)	26°C		

Note: Specifications are subjected to change without notice.  
 \*The universal cleaning cartridge is capable of being used in all generation 1/2/3/4/5/6 Ultrium format tape drives. Specific revisions of firmware may be required for proper operation.

Linear Tape-Open, LTO, the LTO Logo, Ultrium and the Ultrium Logo are registered trademarks of HP, IBM and Quantum in the US and other countries.

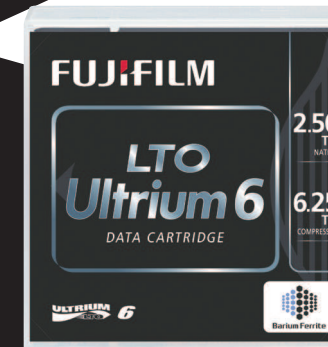
# Tappeis

# Alive

Generation 6  
LTO ULTRIUM DATA CARTRIDGE



Barium Ferrite



FUJIFILM  
FUJIFILM Corporation

[http://www.fujifilm.com/products/recording\\_media/](http://www.fujifilm.com/products/recording_media/)

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# TAPE IS ALIVE

Management of exponential data growth continues to be one of the great challenges for IT managers in light of shrinking IT budgets and environmental concerns. Tape storage is indeed alive and is the key to success in meeting the data growth challenge in a reliable, cost effective and environmentally safe manner!

Studies show that the total cost of ownership of LTO 5 tape systems is 15X less than disk for long term data archives while disk consumes 238X more energy to store the same amount of data. Tape systems have further advantages such as greater capacity with potential density increases, better reliability, ease of removability and scalability, and support of WORM and encryption. With LTFS (Linear Tape File System) making tape faster and easier to use, tape is truly the ideal solution for long term data storage, now and in the future!

**From Photographic Film to LTO**  
Expertise in "coating technology" used to make superior quality photo film was applied to our magnetic tape manufacturing.

Photographic Film

Data Cartridge Tape

## History of Tape Technology

### What is a Magnetic Particle?

Data tape consists of tiny microscopic "magnetic particles" uniformly dispersed and coated on the surface of the tape. These particles are magnetized as either positive or negative and multiple combinations become data (just as digital data is made up of 1s and 0s).

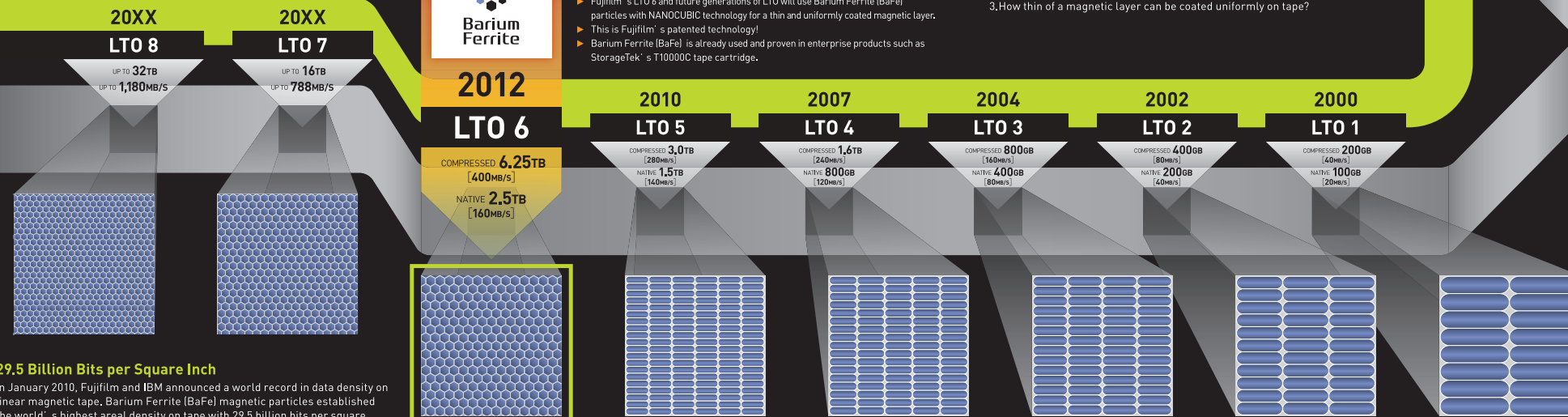
### The Challenges for Tape

1. How small can magnetic particles be without losing their magnetic power?
2. How well are these smaller particles uniformly dispersed within new polymer compounds?
3. How thin of a magnetic layer can be coated uniformly on tape?

### About Barium Ferrite (BaFe)

- ▶ Barium Ferrite (BaFe) is a new type of magnetic particle which can be greatly reduced in size to improve recording density without magnetic signal loss.
- ▶ Fujifilm's LTO 6 and future generations of LTO will use Barium Ferrite (BaFe) particles with NANOCUBIC technology for a thin and uniformly coated magnetic layer.
- ▶ This is Fujifilm's patented technology!
- ▶ Barium Ferrite (BaFe) is already used and proven in enterprise products such as StorageTek's T11000C tape cartridge.

And to the future .....



### 29.5 Billion Bits per Square Inch

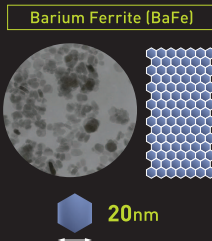
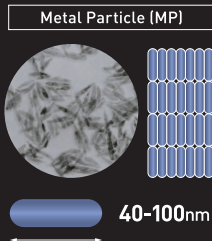
In January 2010, Fujifilm and IBM announced a world record in data density on linear magnetic tape. Barium Ferrite (BaFe) magnetic particles established the world's highest areal density on tape with 29.5 billion bits per square inch. This would result in a 35.0 TB (native) tape cartridge!

\*The picture shown is a concept image and does not depict the actual size or disposition of the particles.

### Higher Capacity

Regular metal particle (MP) is approximately 40-100nm whereas Barium Ferrite (BaFe) is approximately 20nm\*. The smaller size enables much higher recording density resulting in super high capacity data cartridges.

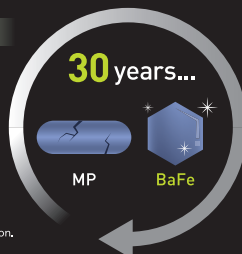
\*Measured by Fujifilm evaluation method.



### Long Archival Life

Oxidization is one of the causes of data deterioration. However, Barium Ferrite (BaFe) is already oxidized and therefore has a much longer life compared to metal particles (MP). While LTO drive systems are recommended for upgrade every 10 years, the road map is purely hardware manufacturer dependent, so longer archival life is preferred.

\*Measured by Fujifilm accelerated evaluation.



### Recording Stability

Barium Ferrite (BaFe) has better frequency characteristics compared to metal particles (MP) resulting in a significantly increased margin of recording capability. Therefore, it is expected that Fujifilm LTO 6 can be written to and read even when the ability of the drive's recording head has diminished after repeated use.

