

Imation

LTO Ultrium

TAPE CARTRIDGES



Advancing the power of
LTO Ultrium technology

ULTRIUM
LTO **1**

ULTRIUM
LTO **2**

ULTRIUM
LTO **3**

Imation LTO Ultrium Tape Cartridges

The new standard in high-capacity, open system data storage

For years companies have relied on the power of LTO Ultrium technology to provide a scalable, adaptable open tape format for their storage requirements. Now Imation has advanced the power of LTO even further with LTO Ultrium generation 3 tape cartridges. These next-generation cartridges combine the advantages of linear, multi-channel, bi-directional formats with enhancements in servo technology, data compression, track layout and error correction. The result is an exciting new tape storage media that delivers outstanding performance and twice the capacity of LTO generation 2 cartridges. LTO Ultrium WORM Cartridges are also available for write-once archival applications.

Imation Tera Ångstrom Technology delivers the latest generation of LTO Ultrium tape

Imation's Weatherford manufacturing facility features Imation's proprietary Tera Ångstrom™ Technology. Consisting of an advanced metal particulate formulation and manufacturing process, Imation's Tera Ångstrom technology employs three unique steps—an impingement process, a quiescent drying process, and advanced in-line calendering. These steps combine to create magnetic media with a significantly smoother surface and a high signal-to-noise ratio (SNR), delivering reduced errors and increased productivity and throughput. With Tera Ångstrom technology, Imation continues to advance magnetic tape development by reaching the next milestone on the LTO Ultrium roadmap.

For more information, visit www.imation.com/teraangstrom



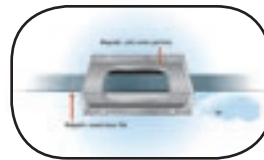
Imation Ultrium 3 Tape Cartridges offer increased capacity up to 800GB compressed (assuming 2:1 compression) and transfer rates of up to 160MB/sec. compressed (assuming 2:1 compression).



Imation Ultrium 2 Tape Cartridges offer capacity up to 400GB compressed (assuming 2:1 compression) and transfer rates of up to 80MB/sec. compressed (assuming 2:1 compression).



Impingement process to reach nanometer size particles using >10,000 psi, high-pressure jets.



Quiescent drying process with low air velocity and magnetic coils to achieve high degree of particle orientation.



In-line calendering process to achieve surface smoothness on the order of angstroms.

Imation Tera Ångstrom technology provides advancements in quality, reliability and performance

- **Quality:** The development of our new advanced terabyte-class manufacturing facility builds on Imation's quality discipline and incorporates state-of-the-art quality practices.
- **Reliability:** Is it a 0 or is it a 1? Surface uniformity (smoothness) and high signal-to-noise ratios (SNR) allow accurate data reading.
- **Performance:** High SNR and consistent signal strength help ensure efficient processing time. Noise can slow down processing time—a high SNR helps enable faster transfer rates for increased productivity.
- A proprietary servo-writing process optimizes tape tracking and helps ensure accurate read/write operations, enabling best-in-class Position Error Signal (PES) performance to minimize servo off-track errors and improve overall transfer rates.

Example - The digital letter "A" in magnetic bits (1s, 0s)

Weak signal amplitude with competitive process

01001001

ERROR!

Strong signal strength (high SNR) with Tera Ångstrom Technology

01000001

Accurate Data

The Imation Ultrium advantage

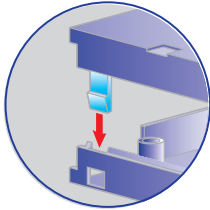
With Imation, you're getting reliability and support from the industry's most trusted media supplier. Plus, unmatched service and support set Imation cartridges apart from other brands.

Imation was the first manufacturer to ship LTO Ultrium 3 cartridges, which feature:

Robust cartridge construction

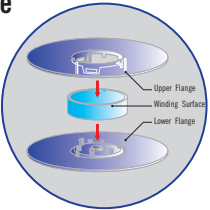
- Imation's proprietary **patented corner snap**

keeps the leader pin in place and the cartridge tightly closed. This prevents error-causing debris from entering the cartridge and helps ensure that the tape flows evenly for maximum read/write capability.



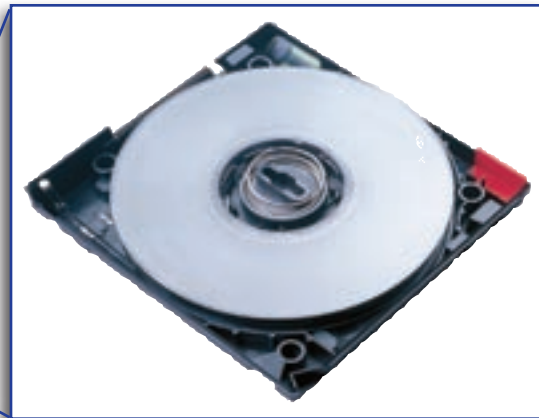
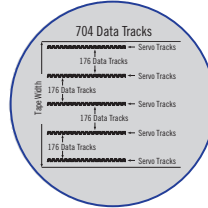
- Our **patented three-piece tape spool design**

distributes stress more evenly over the tape compared to two-piece spools. This construction keeps the tape flat, helping protect data across the entire tape.



Exceptional performance and quality

- Imation introduced the first servo-written tape cartridge more than 10 years ago and continues to improve the technology. **Advance servo writing** allows closer track spacing and more data, while keeping drive heads aligned on the data tracks for precise data reading/writing and improved reliability.



Unmatched service and support

- Imation's **manufacturing expertise** stems from more than 50 years in the media business. As part of 3M, we launched the world's first computer tape in 1952. Today we partner with leading drive manufacturers who count on us to provide the highest quality data storage media.
- Imation offers **data protection unlike any other LTO cartridge**. We pioneered backcoating technology, which is now standard on LTO/Ultrium cartridges. Today, we continue to advance technologies specifically designed to meet the storage demands of midrange and enterprise networks. And because Ultrium technology provides organizations with the first tape storage standard with a six-generation roadmap, not only is your data secure, but so is your technology investment.
- Imation's three-stage service platform includes a telephone helpline, root cause lab analysis and advice from our technical service engineers.
- Imation Ultrium cartridges come with a limited lifetime warranty against manufacturing defects.

Ultrium System Migration Path

		Generation 1	Generation 2	Generation 3	Generation 4†	Generation 5†	Generation 6†
Capacity 2:1 compression	Native	100GB	200GB	400GB	800GB		
	Compressed	200GB	400GB	800GB	1.6TB	3.2TB	6.4TB
Transfer Rate 2:1 compression	Native	20MB/sec	40MB/sec	80MB/sec	160MB/sec	240MB/sec	360MB/sec
	Compressed	40MB/sec	80MB/sec	160MB/sec	240MB/sec	360MB/sec	540MB/sec

† Hewlett-Packard, IBM, and Quantum reserve the right to change the information in this migration path without notice.



Product Specifications



Imation LTO Ultrium 3 Tape Cartridge

Imation LTO Ultrium 2 Tape Cartridge

Imation LTO Ultrium 1 Tape Cartridge

Characteristics	Imation LTO Ultrium 3 Tape Cartridge	Imation LTO Ultrium 2 Tape Cartridge	Imation LTO Ultrium 1 Tape Cartridge
Tape Width	12.65mm	12.65mm	12.65mm
Tape Length	680m	609m	609m
Cartridge Dimensions (W x L x H)	105.4 x 102 x 21.5mm	105.4 x 102 x 21.5mm	105.4 x 102 x 21.5mm
Tape Thickness	8.0um	8.9um	8.9um
Number of Data Tracks	704	512	384
Capacity (native)	400GB	200GB	100GB
Capacity (compressed)	800GB	400GB	200GB
Data Transfer Rate (compressed)	160MB/sec.	80MB/sec	40MB/sec
Cartridge Color	Blue-Gray	Purple	Black
Magnetic Layer Characteristics			
Coercivity	2690 Oersted	2100 Oersted	1850 Oersted
Surface Resistance	5×10^5 Ohm to 5×10^{10} Ohm	5×10^5 Ohm to 5×10^{10} Ohm	5×10^5 Ohm to 5×10^{10} Ohm
Media Type	Metal Particle (MP4)	Metal Particle (MP3)	Metal Particle (MP2)
Backcoat Layer Characteristics			
Surface Resistance	$< 2 \times 10^6$ Ohm	$< 2 \times 10^6$ Ohm	$< 2 \times 10^6$ Ohm
Tape Life			
Tape Durability	1,000,000 passes	1,000,000 passes	1,000,000 passes
Estimated Archival Life	30 years	30 years	30 years
Load/Unload	20,000	20,000	20,000

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Extend your system life

The Imation LTO Ultrium Universal Cleaning Cartridge can be used in all generation 1, 2 and 3 Ultrium format tape drives. Each cartridge provides approximately 15 – 50+ cleanings.

Order Number:

51122-15931

LTO Ultrium WORM Cartridge

Imation LTO Ultrium generation 3 WORM cartridges provide a non-rewritable solution to meet data retention and archival needs. Write once, read many (WORM) technology is designed for archival applications that require data to be unchanged through its retention period. The servo pattern and cartridge memory contain format information that identify the cartridge as write once for WORM-enabled LTO 3 drives.

LTO Ultrium Tape Cartridge Compatibility

LTO Cartridge	LTO Gen 1 Drive	LTO Gen 2 Drive	LTO Gen 3 Drive
LTO Gen 1 Cartridge	Write & Read at 100GB	Write & Read at 100GB	Read Only
LTO Gen 2 Cartridge	Will Not Function	Write & Read at 200GB	Write & Read at 200GB
LTO Gen 3 Cartridge	Will Not Function	Will Not Function	Write & Read at 400GB
LTO Gen 3 WORM Cartridge	Will Not Function	Will Not Function	Write-once & Read at 400GB
Universal Cleaning Cartridge	Will Clean	Will Clean	Will Clean

Ordering Information

20 each/box	Imation LTO Ultrium 3 Tape Cartridge	Imation LTO Ultrium 3 WORM Tape Cartridge	Imation LTO Ultrium 2 Tape Cartridge	Imation LTO Ultrium 1 Tape Cartridge
Cartridge with Case	51122-17532	51122-17961	51122-16598	51122-41089
Cartridge with Case - Labeled	51122-17533	51122-17960	51122-16599	51122-16232
Cartridge without Case	51122-17534		51122-16601	51122-41277
Cartridge without Case - Labeled	51122-17535		51122-16600	51122-41278

For more information about Imation LTO Ultrium tape cartridges, visit www.imation.com