

ENGINEERED TO MEET STRINGENT FINISHING REQUIREMENTS

The cost-saving solution for precision finishing or reconditioning applications whether you are looking for solid performance from our aluminum oxide or silicon carbide lapping abrasive discs, sheets and rolls - or the even more precise, tight tolerances of our foremost coated abrasive lapping film, Norton Nanozyte diamond film.

KEY INDUSTRIES

AEROSPACE | PRECISION AUTOMOTIVE | FIBER OPTICS | ELECTRONICS | PRINTING | PACKAGING | COATING

KEY APPLICATIONS

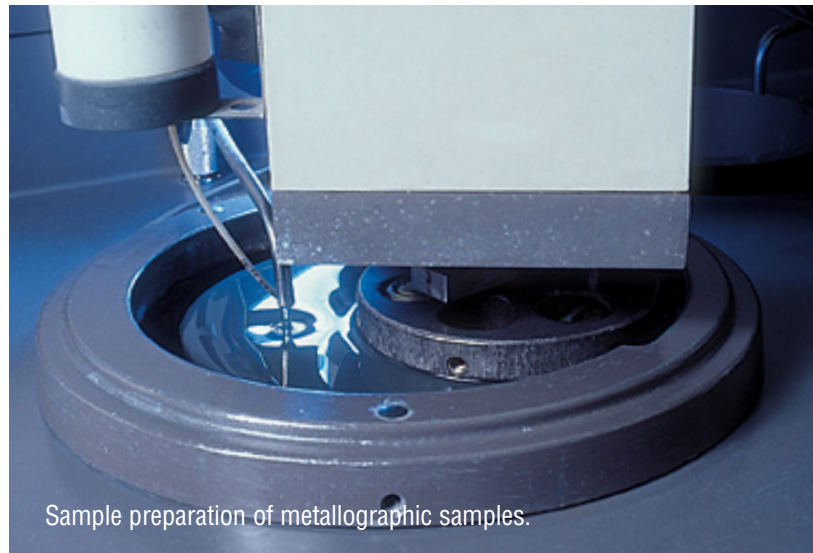
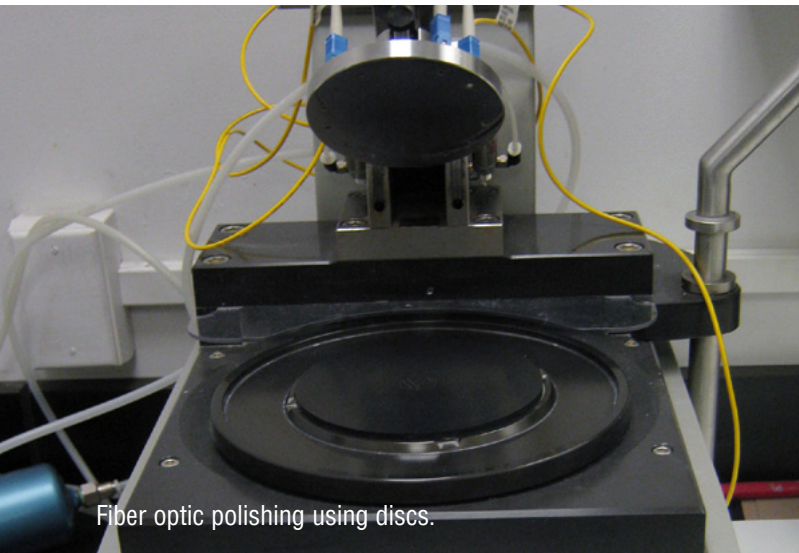
ROLL POLISHING | METALLOGRAPHY

KEY MATERIALS GROUND

CHROME | RUBBER | STEEL | THERMAL

www.nortonabrasives.com





FEATURES & BENEFITS

- Achieve high yields, reduce rework, and use fewer steps for lowest total abrasive costs with our Norton UltraLap film products that accommodate any material and can be made to many sizes
- Introduce flexibility into your process while meeting safety requirements; our lapping products may be used wet or dry and will not break down with most coolant use
- Generate scratch free surfaces and low Ra values with our tight grain particle size specifications
- Reduce inventory, downtime, and labor costs with long lasting product life; proprietary resin bond system improves grain adhesion and coolant access at point of contact
- Eliminate waste, because our uniform 3-mil polyester film backing ensures film flatness during entire process



NORTON ULTRALAP PRODUCT APPLICATION GUIDE

Conventional Abrasive Products (Aluminum Oxide and Silicon Carbide)

Created to be a good starting point specification due to their low initial price and consistent performance.

Diamond Abrasive Products

Designed with long-lasting diamond abrasive to provide exceptional finish on harder surfaces with increased product life and reduced inventory and downtime.

Norton Nanozyte Abrasive Products

Engineered to achieve the finest finish possible when using a coated abrasive product. Eliminate production process steps and generate extensive cost savings with Norton Nanozyte lapping technology, the optimum combination of grain size range and perfectly uniform placement of performance-enhanced, aggregate diamond abrasive grains.



NORTON ABRASIVE FILM AND PAPER LAPPING PRODUCTS MADE-TO-ORDER AVAILABILITY

All Norton high-performance lapping products are made-to-order to your exact requirements.

ABRASIVE TYPE	CAP CODE	ABRASIVE GRAIN	GRADING (MICRON/FEPA)	BACKING	APPLICATION	AVAILABILITY
Conventional	L11F3S	Aluminum Oxide	0.05, 0.3	3-mil film	Fiber optics; electronics; plastic; magnetic heads	Disc, Sheet
	L12F3	Aluminum Oxide	1, 3, 5, 9, 12, 15, 20, 30, 40	3-mil film	Fiber optics; roll finishing; electronics; plastic; magnetic heads	Disc, Sheet, Roll
	L41F3	Silicon Carbide	1, 3, 5, 8, 15, 30	3-mil film	Fiber optics; roll finishing; electronics; plastic; magnetic heads	Disc, Sheet, Roll
	L41PC	Silicon Carbide	P2400, P3000, P4000	C-wt. paper	Fine lapping; metallographic applications	Disc, Sheet
Diamond	L61F3	Diamond	1, 3, 6, 9, 15, 30	3-mil film	Carbides; ceramics; high-hardness metals; fiber optics; electronics	Disc, Sheet, Roll
	L63F3	Diamond	0.1, 0.5	3-mil film	Carbides; ceramics; high-hardness metals; fiber optics; electronics	Disc, Sheet
	L67F3	Diamond	9, 15, 30, 45, 60, 76, 100	3-mil film	Roll finishing; HVOF; carbides; ceramics; high-hardness metals; fiber optics; electronics	Disc, Sheet
Nanozyte	M631	Diamond Nanozyte	1, 3, 9	3-mil film	Fiber optics; electronics; hard metals	Disc, Sheet, Roll

Available Sizes – Roll Width: $\leq 12"$, Roll Length: 50' to 150', Disc Diameter: $\leq 12"$, Sheet Size: $\leq 12" \times 12"$



Case Study – HVOF Tungsten Carbide

Conventional Diamond Film Processes / Results

	GRINDING	M30	M15	M9
Ra	5.6	1.3	1.1	0.9
Rz	40	8.1	8.1	7

Norton Nanozyte Diamond Film Process / Results

One Nanozyte Diamond Film (M631 in M9) replaces three conventional film operations.

	GRINDING	M631 M9
Ra	5	0.8
Rz	33	8.5

Recommended Settings +

FILM SPEED: 3/8"/min PRESSURE: 40-60* psi
 TRAVERSE: 6"/min OSCILLATION: 10 cycles
 PART SPEED: 100-400* SFPM

* Nanozyte upper limits.
 + These are recommended starting settings, and might need to be fine tuned to your specific operation, for maximum desired results.

Case Study – Forged Steel

Conventional Diamond Film Processes / Results

	GRINDING	M45	M30	M15	M9
Ra	6.58	2.25	2.08	1.02	0.9
Rz	75	20	18	12	6.2

Norton Nanozyte Diamond Film Process / Results

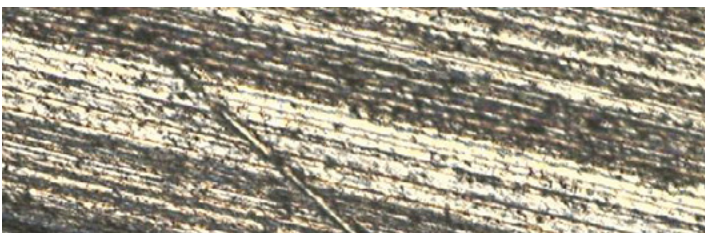
One Nanozyte Diamond Film (M631 in M9) replaces four conventional film operations.

	GRINDING	M631 M9
Ra	4.97	0.68
Rz	42	5

Recommended Settings +

FILM SPEED: 1"/min PRESSURE: 40-60* psi
 TRAVERSE: 2-6"/min OSCILLATION: 10 cycles
 PART SPEED: 100-400* SFPM

* Nanozyte upper limits.
 + These are recommended starting settings, and might need to be fine tuned to your specific operation, for maximum desired results.



Carbide surface after polishing with P220 grit silicon carbide waterproof paper. Note the irregularities and scratch pattern.



This is the same carbon surface after polishing with a Norton UltraLap Nanozyte M631 1-micron film disc. This scratch-free surface was obtained in one step.

BEST – NORTON A/O L11F3S,
S/C L41PC, Diamond, Nanozyte

BETTER – NORTON A/O L12F3,
S/C L41F3

GOOD – Defer to BETTER Product

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