NORTON®
SAINT-GOBAIN

QUANTUM™ PRIME

PERFORMANCE REVOLUTION

Reshaping your world®

REDUCED CYCLE TIME

IMPROVED PART QUALITY

IMPROVED WHEEL LIFE

SAINT-GOBAIN

MICRO-FRACTURING AT ITS SHARPEST

Norton Quantum Prime is a prime example of optimized performance from the worldwide leader in bonded abrasive grinding wheels.

The new, proprietary, nano-crystalline ceramic grain from Saint-Gobain offers **unparalleled grinding productivity** across multiple applications.

ADVANTAGES

REDUCED CYCLE TIME
Unparalleled sharpness and cutting efficiency of the micro-fracturing grain results in reduced power draw, allowing for increased Material Removal Rates (MRR) and faster overall cycle times.

IMPROVED PART QUALITY AND SURFACE FINISH
The unique free cutting grain, along with the latest bond technologies, allows the grain to break down more consistently leading to improved part quality and geometry and excellent surface finish even at high MRR.

IMPROVED WHEEL LIFE AND MORE PARTS PER DRESS
More friable self-sharpening grain technology means the wheel stays sharper for longer, lowering dress requirements and significantly improving wheel life.

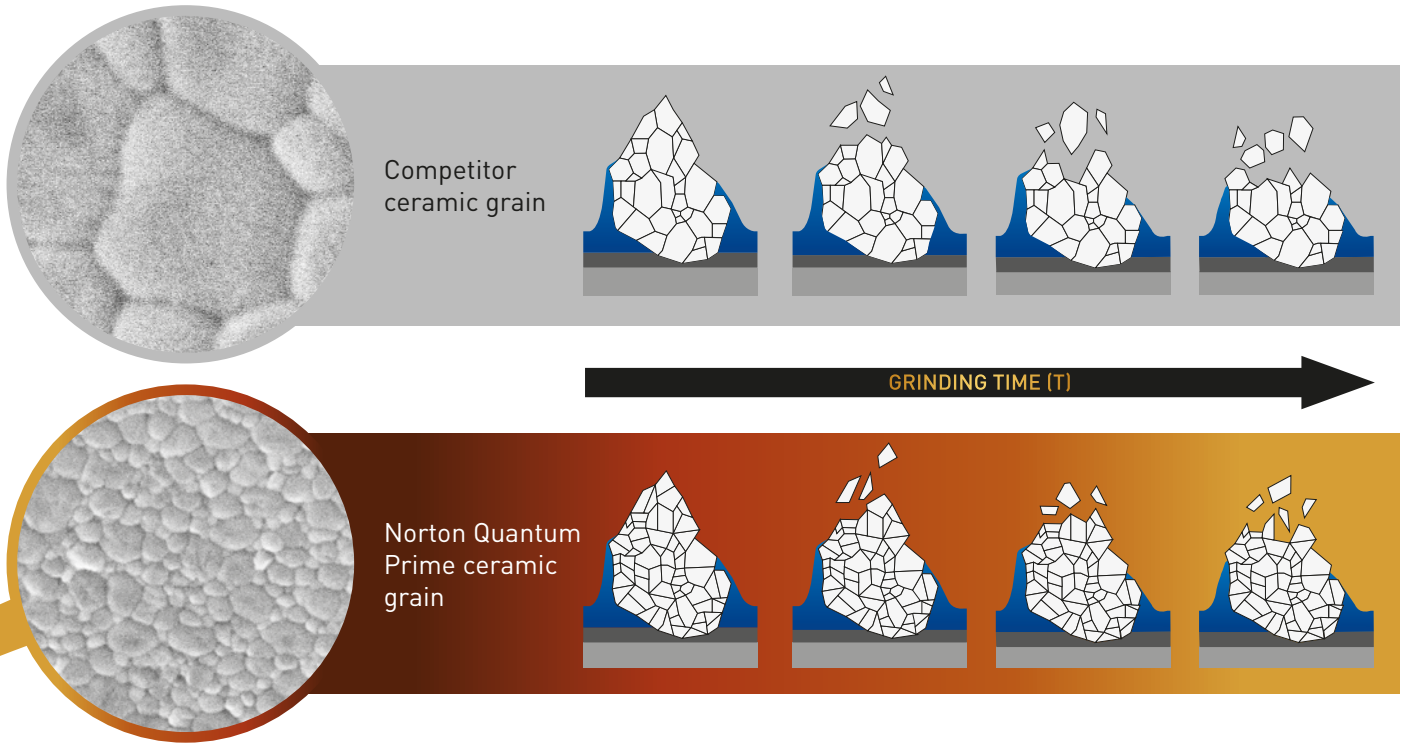
KEY MARKET SEGMENTS
AUTOMOTIVE | AEROSPACE | ENERGY | STEEL & ROLLING MILLS | GEAR | BEARING | CUTTING TOOLS

PERFORMANCE REVOLUTION WITH NORTON QUANTUM PRIME GRAIN

THE SCIENCE BEHIND THE GRAIN

The new micro-structure of the Norton Quantum Prime grain features a significant crystal size reduction compared to previous generation ceramic grains. The unique formulation and reduced crystal size allows the grain to micro-fracture and self-sharpen more efficiently. This keeps the wheel sharper for longer, reducing heat, wear flats, and minimizing the need for dressing.

SELF-SHARPENING PROCESS



CONTROLLED GRAIN MICRO-FRACTURE → ENHANCED SELF-SHARPENING → REDUCED CYCLE TIME, IMPROVED PART QUALITY & IMPROVED WHEEL LIFE

ULTIMATE PAIRING FOR GRINDING EFFICIENCY

Pair Norton Quantum Prime with the revolutionary Vitrium³ bond for the ultimate in grinding efficiency. Vitrium³ bond provides unprecedented grain adhesion and lowers your process cost in 3 ways:

NORTON SAINT-GOBAIN VITRIUM³

VITRIFIED BOND

1. COOL CUTTING	2. PRECISE PROFILE	3. HIGH SPEED
Improved holding power (using less bond-to-abrasive ratio) exposes a larger grain surface area, improving freer cut rate.	Superior grain-holding properties significantly improve wheel form and corner holding vs. other bond systems – reducing dressing time and dresser wear.	High Speed – Norton Vitrium³ bond provides the ultimate wheel strength. This allows for high speed operation on equipment designed and rated for high speed.

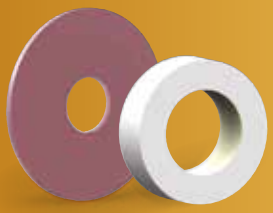
For ultimate results in roll, centrelss and disc grinding, combine Norton Quantum Prime with our innovative organic and vitrified bond technology.

Our organic grinding wheels offer the perfect combination of free cut, versatility and part quality.

ORGANIC BOND

ROLL GRINDING - Hot Mill Roll / Cold Mill Roll Bond: B74-B36 & Vortex	**CENTERLESS GRINDING** - Throughfeed Bond: Century 45 & Vortex	**DISC GRINDING** Bond: B98 & Vortex
Advantages: • Increased material removal rate (MRR) • Longer wheel life (G-ratio) • Better surface quality (no chatter and feed lines, reduced scratches)	**Advantages:** • Longer wheel life • Increased versatility • Improved surface finish • Grinding noise and vibration reduction	**Advantages:** • Longer wheel life • Increased material removal rate (MRR) • Increased versatility • Improved surface finish • Reduced grinding temperature • Reduced power consumption

COMMON APPLICATIONS



OD GRINDING

DISC GRINDING

FLUTE GRINDING / SAW SHARPENING

ROLL /CENTRELESS GRINDING

SURFACE GRINDING

CREEPFEED

ID GRINDING

MOUNTED WHEELS

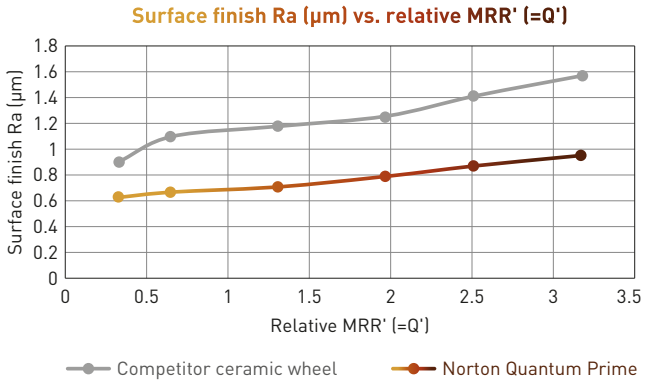
GRINDING TEST BENEFITS

TEST METHOD 1 - WORKPIECE QUALITY

- Increasing MRR in ID grinding
- Benchmarked against a competitor ceramic product
- Measured workpiece quality including:
  - Workpiece surface finish
  - Workpiece straightness.

IMPROVED GEOMETRIC CONSISTENCY

Workpiece quality remains stable without dressing due to improved shape hold of product.

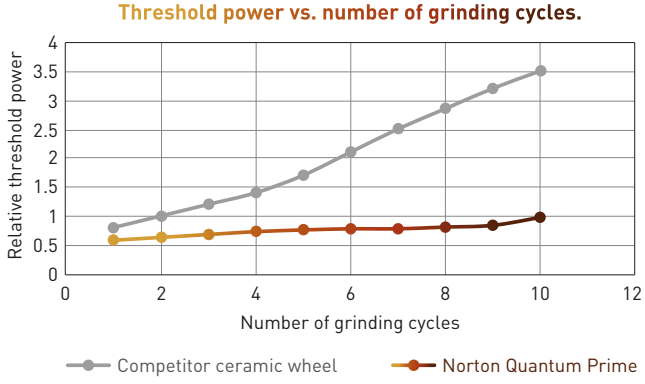


TEST METHOD 2 - THRESHOLD POWER

- Performing repeated grinding cycles without dressing in between cycles
- Benchmarked against a competitor ceramic product
- Measured grinding parameter, threshold power (minimum power required for grain to start cutting).

LOWER THRESHOLD POWER THAN THE COMPETITION

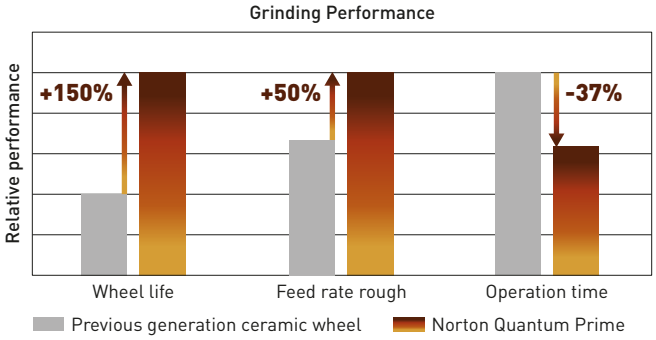
Threshold power does not increase regardless of the number of cycles thanks to an easier and more stable cut.



PERFORMANCE REVOLUTION

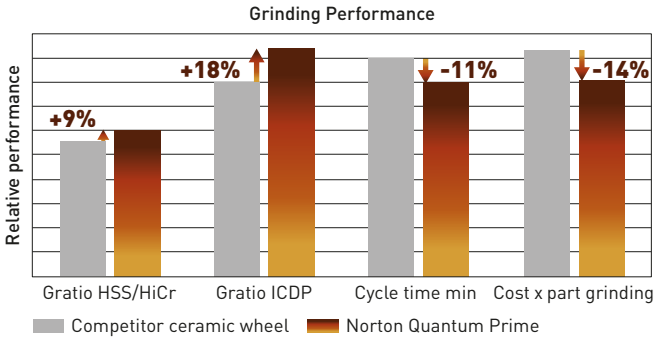
CASE STUDY #1 OD GRINDING - BEARING MARKET

APPLICATION	Bearing OD track
MATERIAL	100Cr6
HARDNESS	62 HRc
PART DIMENSIONS	Æ110 x 28 mm
SURFACE FINISH	Ra 0.5
COOLANT	Emulsion
WHEEL DIMENSIONS	610 x 35 x 203
WHEEL SPEED	80 m/s
COMPETITION	Previous generation ceramic wheel
NORTON SPEC	3NQN120/6 L8 VS3



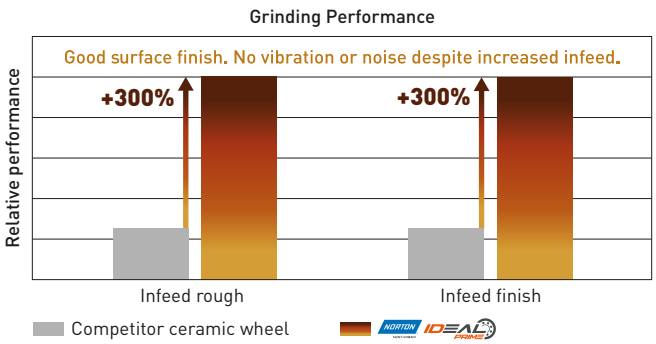
CASE STUDY #2 ROLL GRINDING - STEEL & ROLLING MILL MARKET

APPLICATION	Hot Mill Roll Grinding
MATERIAL	HSS / HiCr + Indefinite Cast Iron (ICDP)
HARDNESS	78-85 ShC
PART DIMENSIONS	HSS/HiCr D 800 x 2500 / ICDP D700 x 2500
SURFACE FINISH	HSS Ra=1,5 / ICDP Ra=0,8
MACHINE	POMINI HD409
COOLANT	WSO Semi Synt 3-4%
WHEEL DIMENSIONS	01_915 x 100 x 304,8
COMPETITION	Competitor
NORTON SPEC.	7NQNG54 G9B36



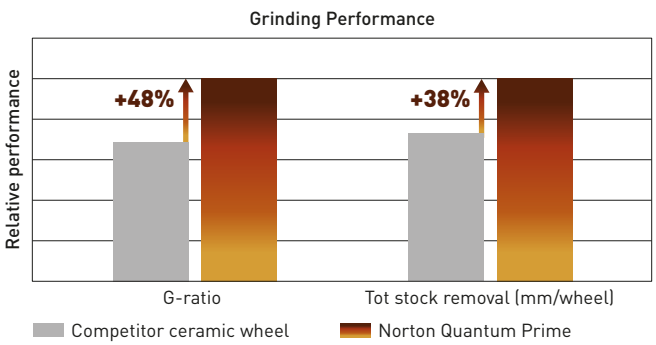
CASE STUDY #3 ID GRINDING - BEARING MARKET

APPLICATION	ID Grinding
MATERIAL	16MnCr5
HARDNESS	HRC 60
PART DIMENSIONS	Recess and inner diameter of spindle parts
SURFACE FINISH	Within tolerances
MACHINE	Studer S31
COOLANT	Emulsion
WHEEL DIMENSIONS	01_63 x 40 x 20
COMPETITION	Competitor ceramic wheel
NORTON SPEC	5NQN1007M13VQNP15A



CASE STUDY #4 ROLL GRINDING - STEEL & ROLLING MILL MARKET

APPLICATION	Hot Mill Roll Grinding
MATERIAL	Indefinite Cast Iron (ICDP)
HARDNESS	78-82 ShC
PART DIMENSIONS	ICDP D 700 x L 2200
SURFACE FINISH	Ra 0.8 - 1
MACHINE	WALDRICH SIEGEN W25 105KW
COOLANT	WSO 3-4%
WHEEL DIMENSIONS	01_915 x 120 x 508
COMPETITION	Competitor ceramic wheel
NORTON SPEC	QN3A465 GBVORTEX



PRODUCT OFFERING

	VITRIFIED BOND		ORGANIC BOND	
ABRASIVE BLENDS	New innovative ceramic grain "NQN" for extreme free cutting. Possibility of blending with partner grains for free cutting action and improved profile retention.		New innovative ceramic grain "NQN" for extreme free cutting. Possibility of blending with partner grains, including SiC, for the ultimate combination of free cutting, versatility and part quality.	
GRIT	46 to 150		20 to 150	
GRADE	F to S		C to V	
STRUCTURE	5 to 13		4 to 14	
BONDS	VITRIUM³ & VQN TYPE		ALL NORTON BONDS	
STANDARD DIMENSIONS LIMITS	DIAMETER (mm)	THICKNESS (mm)	DIAMETER (mm)	THICKNESS (mm)
	0 to 400	4 to 200	150 to 500	2 to 250
	400+ to 650	8 to 300	500+ to 660	20 to 250
	650+ to 920	10 to 150	660+ to 915	20 to 150
	920+ to 1200	20 to 100	915+ to 1080	60 to 150
SPEED	Up to 80 m/s (63m/s for porous products) (higher speed upon request)		Up to 100 m/s for flute grinding. Other applications up to 50 m/s (higher speed upon request)	

SAINT-GOBAIN

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