

**NORTON**

SAINT-GOBAIN



Transforming  
surfaces  
...and beyond

# THE **IDEAL** SOLUTION FOR INTERNAL DIAMETER GRINDING

- IMPROVED CUTTING EFFICIENCY
- IMPROVED WORKPIECE QUALITY
- INCREASED WHEEL LIFE
- SIGNIFICANTLY LOWER GRINDING POWER



## The IDEal Solution for Internal Diameter Grinding

Norton, a pioneer in providing abrasive solution to complex grinding challenges, is proud to introduce **Norton IDEal-Prime** - a unique solution to Internal grinding application. **Norton IDEal-Prime** comes with new nano crystalline ceramic grains from Saint-Gobain embedded in an optimized bond matrix. Thanks to this unique combination of a new ceramic grain with engineered micro-fracture properties & superior retention capability of the bond, **Norton IDEal-Prime** delivers excellent grinding efficiency at significantly low power, while controlling work piece geometry and ensuring outstanding part quality through the wheel life.

### IDEal-Prime Advantages:

#### REDUCED CYCLE TIMES

Our self-sharpening grain technology increases Material Removal Rates and reduces the need for dressing, cutting down on overall cycle times and effective cost per part.

#### IMPROVED WHEEL LIFE

The new grain micro-structure allows longer, cooler cuts and more stable profiles and shapes. Lowering dress requirement, significantly improves the wheel life of IDEal-Prime without sacrificing work piece quality.

#### IMPROVED GEOMETRIC CONSISTENCY

The innovative grain technology creates a product with unparalleled sharpness and cutting efficiency that reduces spindle power requirements even at increased Material Removal Rates. This means less mechanical stress and improved part geometry.

#### IMPROVED SURFACE FINISH

Norton IDEal-Prime utilizes latest bond technology and advances in manufacturing processes achieving unparalleled product consistency and thus stable surface finish over time.

#### REDUCED ENVIRONMENTAL IMPACT

From reduced carbon footprint in our production process and removal of artificial pore inducers, to longer product life reducing the number of abrasive tools consumed, choosing IDEal-Prime allows you to reduce environmental impact linked to your process.

### IDEal-Prime Product Availability:

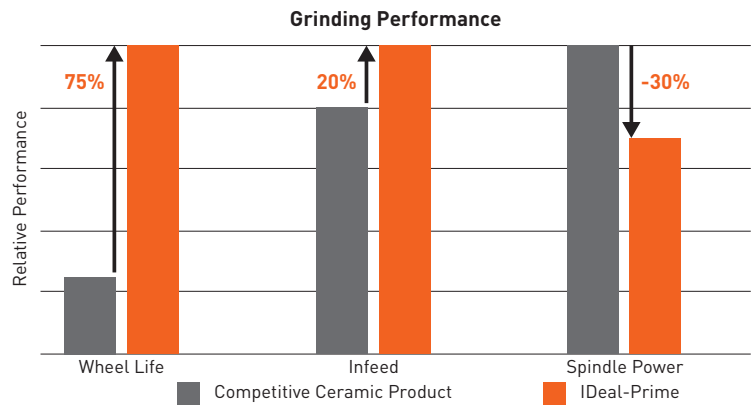
<b>Abrasive Type</b>	New Innovative Ceramic grain for extreme free cutting. With Option of blending with "partner grains" for combination of free cut and improved profile hold.	
<b>Grain Size (FEPA F)</b>	46 —————> 150 Coarse Grain for aggressive cutting action      Finer Grain for improved surface finish	
<b>Grade</b>	H —————> N Softer wheel hardness for easier grain refresh and free cutting ability.      Harder grade wheel for less aggressive cutting and improved form hold and wheel life.	
<b>Structure</b>	6 —————> 10 Less open structure for improved form hold and wheel wear.      More open structure for higher MRR and heat sensitive parts.	
<b>Bonds</b>	Latest Vitrified bonds for precision engineered grain holding.	
<b>Speed</b>	80m/s max.	

## CASE STUDY 1

**Application:** ID Grinding with Oscillation (Bore)  
**Part type / material:** DGBB Inner ring  
**Part dimensions (mm):** 12x12  
**Wheel dimensions (mm):** 8.8x11xM4  
**Specification:** NQN10008VT3  
**Compared with:** Competitive Ceramic Product  
**Coolant:** Emulsion  
**Dressing:** Rotary Traverse

### RESULTS:

Infeed: x1.2  
 Dressing: x1.75  
 Spindle power: -30%

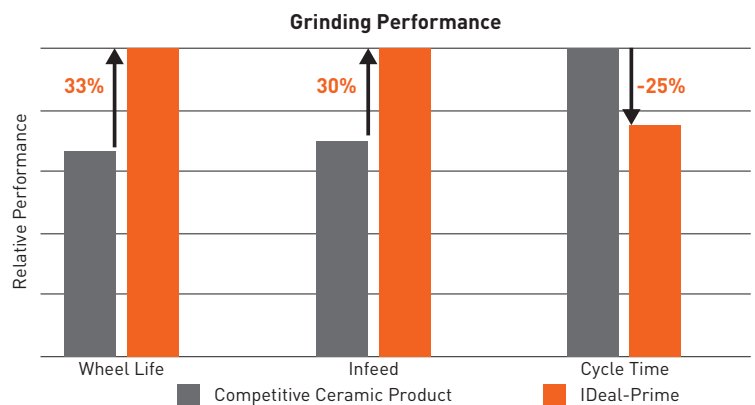


## CASE STUDY 2

**Application:** ID Grinding with Oscillation (Bore)  
**Part type / material:** TRB cone  
**Part dimensions (mm):** 35x38  
**Wheel dimensions (mm):** 25x35x12.7  
**Specification:** NQN120K8VT3  
**Compared with:** Competitive Ceramic Product  
**Coolant:** Emulsion  
**Dressing:** Single Point

### RESULTS:

Infeed: x1.3  
 Dressing: -25%  
 Spindle power: -25%



A RANGE OF PROFILES  
 AND SHAPES CAN  
 BE MADE TO SUIT  
 YOUR APPLICATION





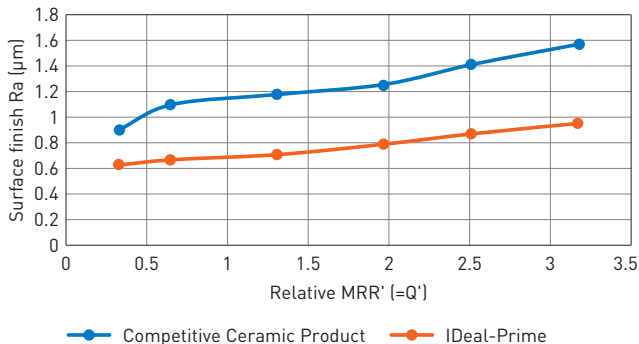
# Grinding Test Benefits:

## APPLICATION: INTERNAL DIAMETER GRINDING

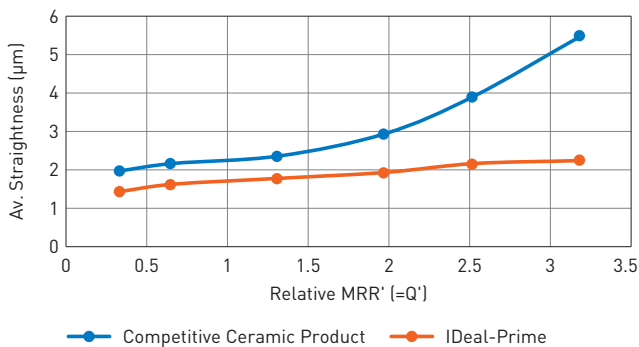
### TEST METHOD 1 - WORKPIECE QUALITY:

- Increasing Material Removal Rate (MRR) in Internal Diameter grinding application
- Benchmarked against a competitive ceramic product
- Measured workpiece quality including:
  - Workpiece Surface Finish
  - Workpiece Straightness.

Surface finish Ra ( $\mu\text{m}$ ) vs. relative MRR' ( $=Q'$ )



Av. Straightness ( $\mu\text{m}$ ) vs. relative MRR' ( $=Q'$ )



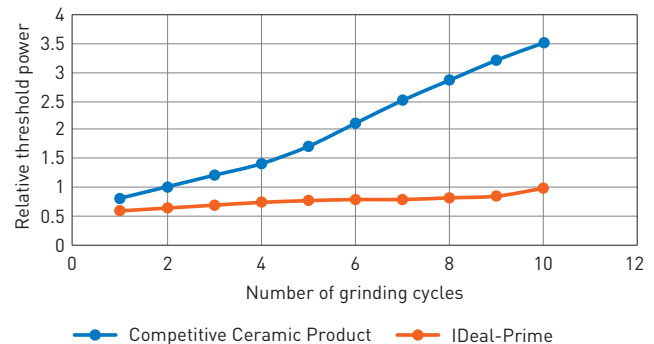
### IMPROVED GEOMETRIC CONSISTENCY

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 competitive ceramic product
- Measured grinding parameter, Threshold Power (Minimum power required for grain to start cutting).

Threshold power vs. number of grinding cycles.



### 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



#### GRINDWELL NORTON LTD.

5th Level, Leela Business Park,  
Andheri-Kurla Road, Marol, Andheri (East),  
Mumbai - 400059. Maharashtra.

Tollfree: 1800 3000 8199

Write to us at  
[norton.abrasives@saint-gobain.com](mailto:norton.abrasives@saint-gobain.com)



[www.nortonabrasives.com/en-in](http://www.nortonabrasives.com/en-in)

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