

You Should View It...

in **TRUE**  
**COLOR**

**NEW**



**COLOR  
CODED!** *Convolute  
Wheels*





GENERAL PURPOSE  
CONVOLUTE WHEELS

## IT'S NOT AS CONVOLUTED AS YOU MIGHT THINK WHEN YOU VIEW IT IN TRUE COLOR

It can seem like there are more non-woven convolute wheel varieties on the market than there are materials to be ground! At Norton, we don't think it has to be quite that complicated. That's why we are redesigning the entire category to simplify the decision making. Gone is the sea of gray sameness and here to stay is a more distinctive color-coding that makes choosing the right wheel more readily apparent by just identifying the application.

Our perfectly pared-down offering starts with the General Purpose category which represents approximately 80% of the production shop needs. These pliable wheels are a precise combination of abrasive, grit size, density and technology upgrades which, in turn, provide the ultimate combination of life, cut, and smear free finish. Add their new distinctive maroon wheel color and these wheels become easy to remember as the general purpose product on any workbench, storeroom, or production floor.

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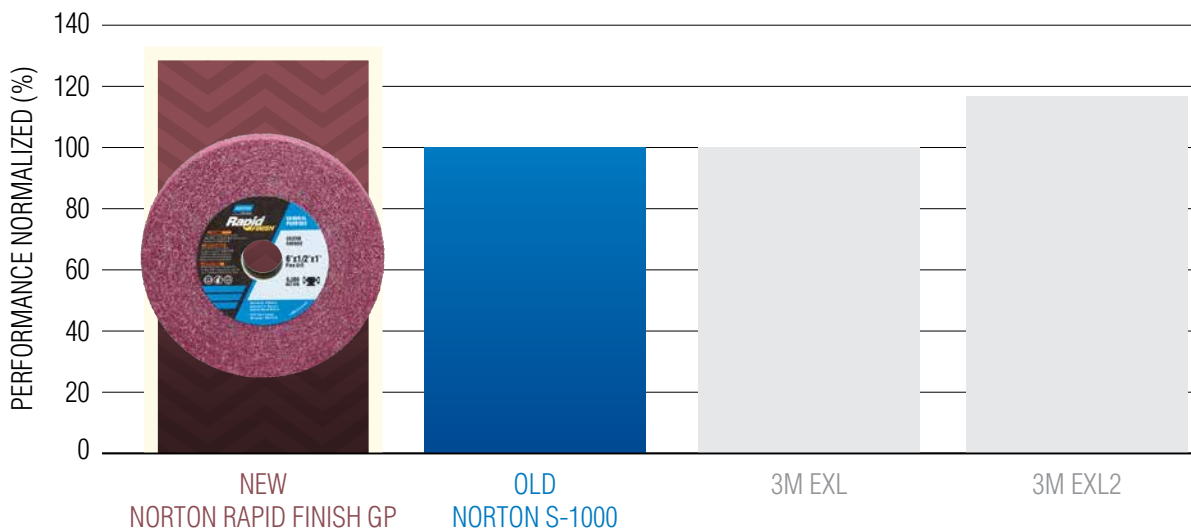
[nortonabrasives.com](http://nortonabrasives.com)



## PROVEN PERFORMANCE THE PROOF IS IN THE RESULTS!

Along with increased throughput and decreased wheel changes, the superior wheel form holding generates optimal cost savings and superior part quality. Consistent, reliable edge-breaking and finishing with less shedding, wheel wearing, dressing, and reshaping means saved time, which means saved money. Minimal surface-contaminating, airborne dust improves operator environment, safety and part finish quality. Design conformability makes these wheels operator-friendly with less body fatigue.

### CONVOLUTE WHEEL PERFORMANCE: THE RATIO OF CUT RATE OVER SHED RATE



### TECH TIP

- Convolute wheels must always run in the direction indicated by the arrow printed on the side of each wheel.
- Light to medium pressure is recommended. Excessive pressure might result in part damage.
- Lubricants such as water-soluble oil and straight oil will decrease the heat and improve the surface finish and lustre.



It is the user's responsibility to refer to and comply with all safety regulations.

#### KEY APPLICATIONS

Medium pressure and finishing applications:

- Blending
- Polishing
- Decorative finishing

#### KEY MATERIALS

- Steel (stainless, carbon, etc.)
- Inconel
- Titanium
- Cobalt
- Aluminum
- Soft metals

#### KEY MARKETS

- Aerospace
- Transportation
- Medical/Prosthesis

## CASE STUDIES

### CARBON STEEL 1095

#### CUSTOMER'S CHALLENGE

This customer was having difficulty removing the entire edge burr in their multi-head coil polishing operation. They were, reluctantly, considering investments in new machinery and additional post polishing operations. Hoping to avoid those additional costs, they asked the Norton representative to supply a performance-enhancing, more cost-effective solution. The rep chose to test Norton Rapid Finish General Purpose convolute wheels.

<i>APPLICATION:</i>	Top and bottom edge deburring on slicing-blade rolls
<i>MACHINE:</i>	Inline Roll Feeder/Collector and Baldor Reliance 8" grinders (6) @ 3,450 RPMs
<i>COMPETITIVE WHEEL:</i>	6" x 1" x 1" 9SF convolute wheel
<i>NORTON WHEEL:</i>	6" x 1" x 1" 9SF Norton Rapid Finish General Purpose convolute wheel

<b>RESULTS:</b>	<b>Norton RF GP Wheel</b>	<b>Incumbent Wheel</b>	<b>Norton Wheel Achievements</b>
Shedding (after 1 roll)	0.024	0.034	30% reduction
Cut Rate	20:35 minutes/part	38 minutes/part	2X faster

#### ADDITIONAL NORTON RAPID FINISH GENERAL PURPOSE WHEEL ACHIEVEMENTS

- Able to eliminate all burrs from blade roll in a single pass.
- Cuts cool and does not require lubricant application. Incumbent wheels generate excess heat and require constant application of lubricant to perform task. One grinder generated smoke.
- Operator commented that the Norton wheel is more concentric and does not generate vibration on the roll as it is being fed through the grinders, and is very satisfied with the Norton performance.

#### CUSTOMER'S ASSESSMENT

The Norton Rapid Finish GP Clean Bond wheel was able to remove 100% of the burr at a faster throughput rate and it also ran quieter; thus, reducing the overall level of process noise in the operation. This eliminated any need for additional investment machinery or process operations.

### CARBON STEEL

#### CUSTOMER'S CHALLENGE

This business received a lucrative order to manufacture a new part that was longer than any part they had previously made. A wider wheel was needed that not only would accommodate the part but would also create a smooth, smear-free part at an acceptable cost. The Norton senior product engineer and sales person brought in new Rapid Finish General Purpose convolute wheels to hopefully achieve these goals.

<i>APPLICATION:</i>	Polishing automotive admission valves
<i>MACHINE:</i>	Hammond Kalamazoo grinder @ 1,700 RPMs
<i>COMPETITIVE WHEEL:</i>	12" x 5-1/2" x 5" 7SVFN convolute wheel
<i>NORTON WHEEL:</i>	12" x 5-1/2" x 5" 7SVFN Norton Rapid Finish General Purpose convolute wheel

<b>RESULTS:</b>	<b>Norton RF GP Wheel</b>	<b>Incumbent Wheel</b>	<b>Norton Wheel Achievements</b>
Shedding (same no. of parts)	0.02	0.08	75% reduction
Finish	Ra= 0.12 um	Ra= 0.22 um	25% better finish

#### ADDITIONAL NORTON RAPID FINISH GENERAL PURPOSE WHEEL ACHIEVEMENTS

- Did not require any dressing over a 2.75 hour period. Engineer sees the Norton wheels as an opportunity to reduce cycle time.
- Incumbent wheel delaminates/chunks away excessively and dressing is needed 2X per 8-hour shift
- Local Engineering were so pleased that they ordered a test of a 12" x 4-1/4" x 5" wheel for another application

#### CUSTOMER'S ASSESSMENT

The Norton Rapid Finish GP Clean Bond wheel achieved a smoother surface. Less dressing was needed, resulting in minor lost time and major productivity, a win/win.

## SET A NEW STANDARD GET AN OPERATOR ADVANTAGE

- Increase throughput with a 30% faster finish delivered by a new grain/bond configuration
- Decrease wheel changes with a 10-30% longer life produced by a new fiber and high-temperature resin bond system that guarantees a smear-free finish
- Ease wheel selection with color-coding of the non-woven material to application and fiberglass core to abrasive grain
- Rationalize inventory with an essential set of SKUs defined by simplification

## NOT ALL THINGS ARE EQUAL TECHNOLOGY SETS US APART

Conventional abrasive products are generally a contributor to smear on a workpiece as applying the abrasive to the workpiece surface generates heat. That heat can often expend the abrasive grain early in the finishing process which then leaves only the coated fiber. Continued use, along with the heat, and the binder coating of the fiber further breaks down and, eventually, melts and ends up on the surface as smear. But, our new convolute line isn't like conventional products. Our patent-pending Norton Clean Bond technology guarantees smear-free finishes on a wide range of materials, including high-nickel-content alloys and soft metals. Other suppliers can't deliver the same smear-free results. That means they can't help you eliminate rework or reduce finishing steps and their associated additional costs like Norton can.



## REAL CORE STRENGTH BETTER TOLERANCES AND PART QUALITY

New Fiberglass Core vs. Old Phenolic Core

- Additional labor savings achieved through improved concentricity and reduced truing time
- Eliminate wear on wet applications as fiberglass is water-resistant
- Elevate operator comfort with a vibration-minimizing feel
- Ensure a cooler grind zone with a heat-resistant finish which decreases potential burn issues
- Ease wheel selection with color-coding of the core by abrasive type – white cores are aluminum oxide, and black cores silicon carbide



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## BECAUSE RIGHT CHOICES MATTER ESSENTIAL AVAILABILITY

### Stock Availability

SIZE (D x T x H)	ABRASIVE	GRIT	DENSITY	MAX. RPM	STD. PKG.	PRODUCT CODE	PART #
6" x 1/2" x 1"	A/O	Med.	7	6,000	4	C2315	66261134177
	A/O	Med.	8	6,000	4	C2315	66261134178
	A/O	Med.	9	6,000	4	C2315	66261134179
	S/C	Med.	9	6,000	4	C4315	66261108076
	S/C	Fine	7	6,000	4	C4415	66261133213
	S/C	Fine	8	6,000	4	C4415	66261106732
	S/C	Fine	9	6,000	4	C4415	66261112985
6" x 1" x 1"	A/O	Med.	6	6,000	3	C2315	66261134180
	A/O	Med.	7	6,000	3	C2315	66261134181
	A/O	Med.	8	6,000	3	C2315	66261134182
	A/O	Med.	9	6,000	3	C2315	66261134183
	A/O	Fine	6	6,000	3	C2408	66261132100
	A/O	Fine	7	6,000	3	C2408	66261132322
	A/O	Fine	8	6,000	3	C2408	66261132324
	S/C	Med.	7	6,000	3	C4315	66261108074
	S/C	Med.	8	6,000	3	C4315	66261133215
	S/C	Med.	9	6,000	3	C4315	66261108075
	S/C	Fine	6	6,000	3	C4415	66261114475
	S/C	Fine	7	6,000	3	C4415	66261119988
	S/C	Fine	8	6,000	3	C4415	63642577269
	S/C	Fine	9	6,000	3	C4415	63642581587
S/C	V. Fine	6	6,000	3	C4515	66261131970	
6" x 2" x 1"	A/O	Med.	7	6,000	2	C2315	66261134184
	S/C	Med.	7	6,000	2	C4315	66261114471
	S/C	Fine	7	6,000	2	C4415	66261132325
	S/C	Fine	9	6,000	2	C4415	66261114485

SIZE (D x T x H)	ABRASIVE	GRIT	DENSITY	MAX. RPM	STD. PKG.	PRODUCT CODE	PART #
8" x 1" x 3"	S/C	Med.	7	4,500	3	C4315	66261108066
	S/C	Med.	8	4,500	3	C4315	66261108069
	S/C	Fine	6	4,500	3	C4415	66261108064
	S/C	Fine	7	4,500	3	C4415	66261108065
	S/C	Fine	8	4,500	3	C4415	63642553754
	S/C	Fine	9	4,500	3	C4415	63642576004
	S/C	V. Fine	9	4,500	3	C4515	66261133209
8" x 2" x 3"	S/C	Med.	7	4,500	2	C4315	66261114473
	S/C	Fine	7	4,500	2	C4415	66261114480
	S/C	Fine	8	4,500	2	C4415	66261114483
	S/C	Fine	9	4,500	2	C4415	66261114486
	S/C	V. Fine	9	4,500	2	C4515	66261133210
10" x 1" x 5"	A/O	Med.	7	3,600	3	C2315	66261134185
	S/C	Fine	8	3,600	3	C4415	66261106554
	S/C	Fine	9	3,600	3	C4415	66261114488
10" x 2" x 5"	S/C	Fine	8	3,600	1	C4415	63642581044
	S/C	Fine	9	3,600	1	C4415	66261114489
12" x 1" x 5"	A/O	Med.	9	3,000	2	C2315	66261134186
	S/C	Fine	6	3,000	2	C4415	66261108053
	S/C	Fine	7	3,000	2	C4415	66261114481
	S/C	Fine	8	3,000	2	C4415	66261114484
	S/C	Fine	9	3,000	2	C4415	66261114074
12" x 2" x 5"	S/C	V. Fine	9	3,000	2	C4515	66261134187
	S/C	Fine	7	3,000	1	C4415	66261114482
	S/C	Fine	8	3,000	1	C4415	66261112766
	S/C	Fine	9	3,000	1	C4415	66261114490

### Made-to-Order Availability

Contact Norton for a recommendation and quotation.

ABRASIVE	GRIT	DENSITY	PRODUCT CODE
Aluminum Oxide	Medium	6-9	C2315
Aluminum Oxide	Fine	6-9	C2408
Silicon Carbide	Medium	6-9	C4315
Silicon Carbide	Fine	6-9	C4415
Silicon Carbide	Very Fine	6-9	C4515

### Cross Reference Guide

NEW NORTON RAPID FINISH LINE	GENERAL PURPOSE Available September 2016	HEAVY DEBURRING Available February 2017	FINAL FINISH Available April 2017
OLD NORTON LINE	Series 1000	Heavy Deburring, Series 4000	Clean & Finish, Light Finishing, Surface Finishing
3M	EXL, General Purpose	EXL2, EXL3, EXL, EXPRO	Multi-Finish, Light Deburring, SST
STANDARD	General Purpose Plus, Light Deburring	General Purpose Plus in 10 Density	Multi-Finishing, Light Deburring



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FORM #8645 REV. 03/17

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