

NORTON

SAINT-GOBAIN

WINTER

MORE PARTS PER WHEEL THAN EVER BEFORE

IRONCLAD® SUPERABRASIVE FOUNDRY GRINDING WHEELS

Norton Winter Ironclad wheels offer a superior solution for cut-off, fettling, and snag grinding. These diamond superabrasive wheels offer an excellent choice when looking to achieve maximum material removal rates and increased productivity. The advanced, high performance bond offers heat resistance, lubricity, and maximum grain exposure allowing for cooler grinding and lower grinding power. With the strongest and most durable bond on the market, Ironclad wheels can be used to finish more parts per wheel than ever before.

KEY MARKETS

FOUNDRY - CNC GRINDING

KEY APPLICATIONS

CASTING GATE SNAGGING | CASTING RISER CUT OFF
SPRUE CUT OFF | CASTING PARTING LINES FETTLING
OFFHAND | STAND GRINDING

MATERIALS

DUCTILE AND GREY CAST IRON | BRASS | BRONZE

www.nortonabrasives.com

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NORTON WINTER IRONCLAD
SUPERABRASIVE FOUNDRY WHEELS

IRONCLAD[®]

AN IRONCLAD DIFFERENCE

- Increased parts per wheel
 - Larger chips for less burrs
 - Reduced friction for cooler grinding
 - Lower specific grinding energy
-
- Significantly higher stock removal rates, increased productivity and lower cost per part compared to other foundry product offerings
 - Up to 100% increase in parts per wheel compared to electroplated products
 - High-performance bond allows maximum grain exposure for larger depths of cut
 - Up to 75% grain exposure
 - More burr free parts for less secondary operations
 - Patented bond reduces friction allowing for lower grinding power
 - Longer wheel life means longer time in between set-ups and reduced downtime
 - Less bluing of castings even towards the end of the wheel life
 - Allows for a cleaner, healthier work environment
 - Significantly less dust and odor generated than traditional bonded wheels

Starting Specifications for Ductile and Grey Cast Iron

WHEEL SPEED: Grey Iron 10,000 SPFPM
Ductile Iron 14,000 SFPM

FEED RATE: 31 IPM

DEPTH OF CUT: Up to 0.25"

No Coolant Required



NORTON

WINTER

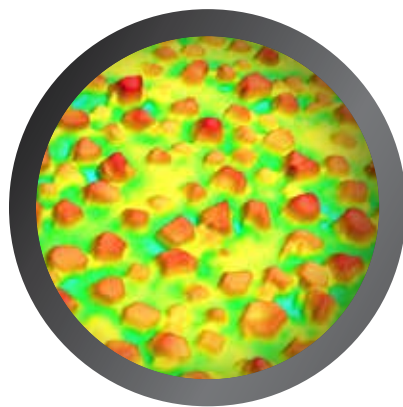
SAINT-GOBAIN

NORTON WINTER IRONCLAD
SUPERABRASIVE FOUNDRY WHEELS

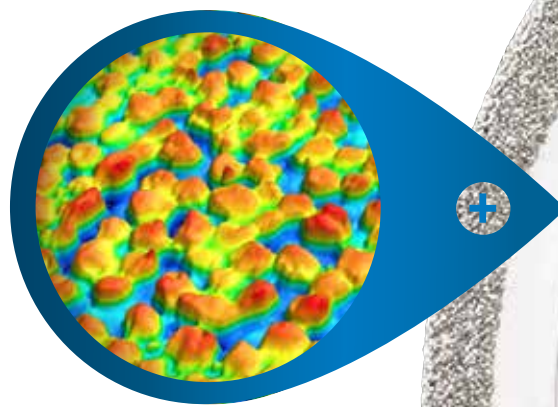
IRONCLAD®

ADVANTAGES OF IRONCLAD WHEELS FOR CNC GRINDING

- Long life reduces wheel changes and downtime
- Consistent wheel dimensions and minimal wheel wear
- No wheel dressing required
- Rigid steel hub reduces vibration and increases safety
- Known grinding wheel location allows for easier programming



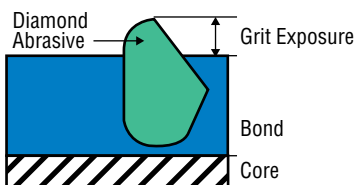
Standard Plated Wheel
(Topographical)



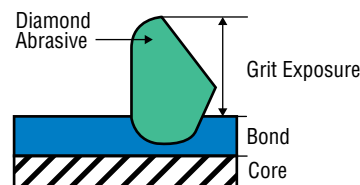
Ironclad (Topographical)
50% More Grit Exposure

Advanced Bond Technology

Ironclad wheel's unique bond technology enables high grain exposure compared to other superabrasive wheel types - allowing for cooler cutting, reduced loading and more usable abrasive for longer life.



Electroplated superabrasive with reduced exposure of the diamond grains results in higher loading, higher heat generation and reduced life.



New Ironclad bond technology enables exposure of 75% of the diamond grains for reduced loading and cooler cutting

IMPROVING HEALTH & SAFETY

Switching from conventional bonded to superabrasive wheels in a foundry environment offers significant improvements in health and safety. The steel hub of the superabrasive wheel minimizes the risk of wheels breaking while in use. A significant reduction in dust generated during grinding minimizes the risk of airborne respiratory hazards, and odors typically associated with foundry grinding are virtually eliminated. Your dust collection system will be more efficient and will not contain foreign particles from the wheels. Ironclad wheels contain zero crystalline silica and no radioactive materials.



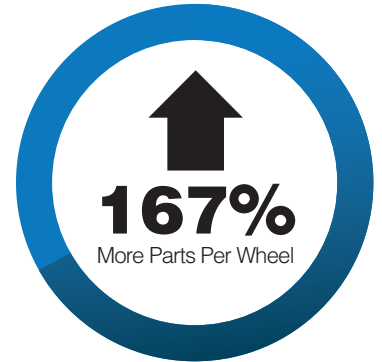
Conventional grinding wheels can generate 10X the amount of dust compared to superabrasive wheels

IRONCLAD[®]

Case Study #1

Ironclad vs. Electroplated: Robotic Cut-off

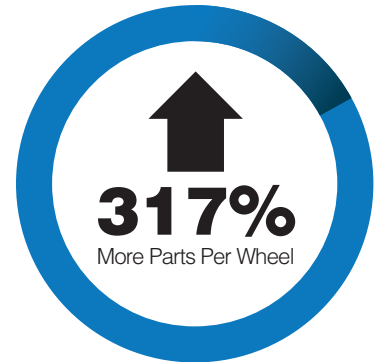
	COMPETITIVE ELECTROPLATED WHEEL	IRONCLAD WHEEL
MATERIAL	Ductile iron tractor engine frame	Ductile iron tractor engine frame
DIMENSIONS	12" x .125" x 1"	12" x .195" x 1"
GRIT SIZE	20/30	20/30
PARTS PRODUCED	30	80
RESULTS	167% increase in parts per wheel and 26% reduction in abrasive cost per part	



Case Study #2

Ironclad vs. Electroplated: Robotic Foundry Snagging

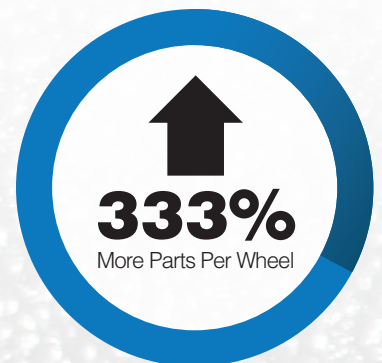
	COMPETITIVE ELECTROPLATED WHEEL	IRONCLAD WHEEL
MATERIAL	Gray and ductile Iron	Gray and ductile Iron
DIMENSIONS	15.75" x 0.475" x 5"	15.75" x 0.475" x 5"
GRIT SIZE	18/20	18/20
PARTS PRODUCED	60,000	250,000
RESULTS	317% increase in parts per wheel and 51% reduction in abrasive cost per part	



Case Study #3

Ironclad vs. Electroplated: Backstand Grinding

	COMPETITIVE ELECTROPLATED WHEEL	IRONCLAD WHEEL
MATERIAL	Ductile Iron for municipalities and commercial applications	
DIMENSIONS	23.625" x 1.87" x 14.00"	23.625" x 1.87" x 14.00"
GRIT SIZE	20/30	20/30
PARTS PRODUCED	6,000	26,000
RESULTS	333% increase in parts per wheel and 35% reduction in abrasive cost per part	



BLANK STOCK PART AVAILABILITY

DIMENSIONS	WHEEL SHAPE	GRIT SIZE	ADDITIONAL INFORMATION	PART #
Snagging*				
13.98" x 0.47" x 3.15"	9LL1B	20/30	Standard bolt hole pattern, fits most new Barinder machines	662602 41137
13.98" x 0.47" x 1.25"	9LL1	20/30	No bolt hole pattern and smaller arbor hole, fits most older Barinder machines	662602 23931
Backstand Grinding				
24.00" x 2.00" x 12.00"	9LL1	30/40		662602 54117
30.00" x 2.00" x 12.00"	9LL1	20/30	1/2" corner radii	662602 49865
30.00" x 2.00" x 12.00"	9LL1	20/30	1/4" corner radii	662602 42497
Right Angle Grinding, Type 29				
7.00" x 0.25" x .875"	2FF1P	30/40	Suitable for most right angle grinding applications	662602 34309

Various part numbers available for use on Maus Machines - Contact your local Norton rep for blueprints and wheel specifications

*For use on Barinder Machines

Blank Stock Cut-Off:

Blank stock is available for a reduced lead-time. Standard grit size, diameter, and widths below. Mounting pattern and arbor made to specification.

12" OD	14" OD	16" OD
18/20 width		
0.182"	0.199"	0.215"
20/30 width		
0.170"	0.187"	0.203"
30/40 width		
0.150"	0.167"	0.183"

MADE-TO-ORDER AVAILABILITY

Norton Winter Ironclad wheels can be made to meet your precise requirements. They are available in a variety of profile shapes and wheel sizes to meet your specific needs for grinding cast materials. Some common wheel shapes are shown below, additional shapes and sizes are available upon request. Since every application is unique, speak with our team of experts for recommendations on the best wheel for your application.



Snagging
1LL1, 9LL1, 14LL1, 1F+LL1



Small Wheels CNC
1FF1, 1FF1S, 1LL1, 1V1, 14LL1, DW



Cut-off Blades
1FF1, 1FF1R, 1FF1S, 1LL1



CNC Mounted Points
DW

RECOATING SERVICES

For maximum value, Norton Winter used wheel hubs can be sent back for recoating. Recoated wheels offer the same performance, but at a reduced price and a faster lead time. Competitive cores are also accepted. Contact your Norton representative for more details.

*Recoating is not available for wheels under 3/8" thick. All cores are thoroughly inspected upon receipt.



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