



Cubitron™ 3
Performance Abrasives

A close-up photograph of a person wearing a dark jacket and a grey work glove, using a black angle grinder with a purple abrasive disc to grind a metal piece. A large spray of bright orange sparks is being generated from the point of contact.

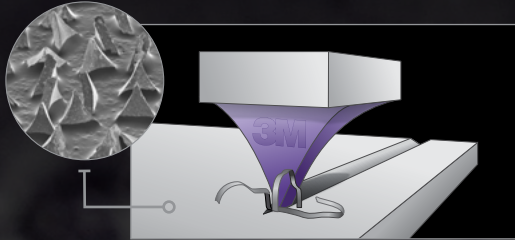
Produce more. With less.

Heavy Grinding and Cutting Application Guide

Featuring:

**3M™ Cubitron™ 3 Performance Abrasives and
Scotch-Brite™ Nonwoven Abrasive Products**

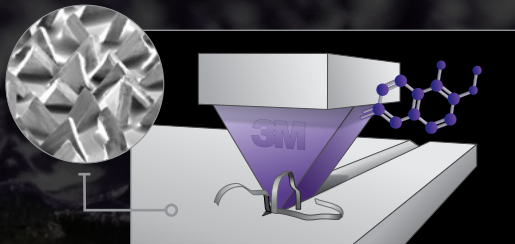
The science of 3M re-engineered Precision-Shaped Grain.



Cubitron™ 3
Performance Abrasives

Our latest 3M Precision-Shaped Grain

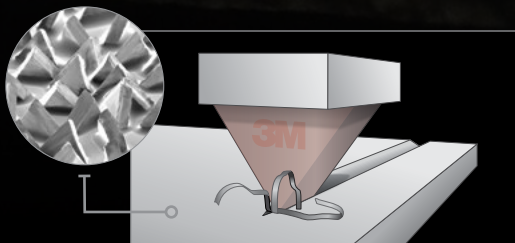
- Re-engineered precision-shaped ceramic grain using a proprietary breakthrough in grain shape with curved sides. This helps increase productivity and lower overall grinding costs.
- Re-engineered precision-shaped ceramic grain using proprietary breakthroughs in molecular bonded technology.



Cubitron™ 2
Performance Abrasives

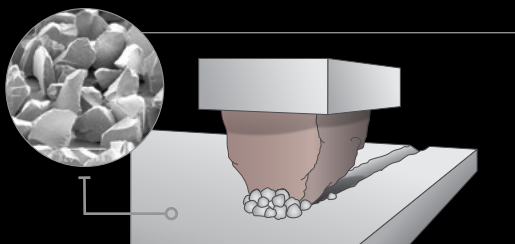
3M Precision-Shaped Grain

- 3M pioneered the first precision-shaped grain using 3M microreplication technology to form consistent sharp peaks that easily “slice” through metal—cutting cooler, faster, and lasting longer than conventional abrasive grain.



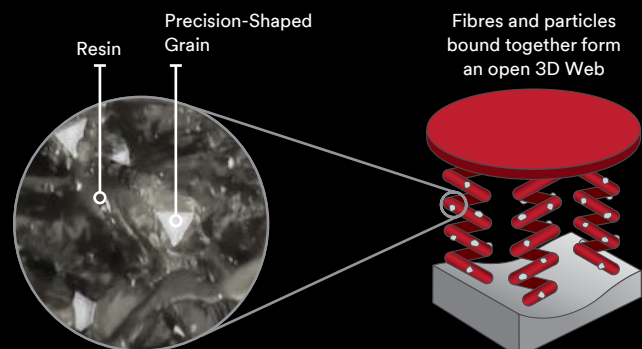
Conventional ceramic abrasive

- Conventional ceramic abrasive grain tends to “plow” through metal, causing heat to build up in the workpiece and abrasive, resulting in a slower cut and shorter abrasive life compared to our latest precision-shaped grain.



3M Precision-Shaped Grain and Nonwoven Abrasives

Combine benefits of two 3M technologies that can clean and finish surfaces without changing material geometry or dimension. You get a product that's soft enough to reduce defects but wears like iron without sacrificing the smooth feel and control you expect from Scotch-Brite™ Products.



The advantages of our cutting edge abrasive grain technology delivers measurable benefits for our customers.



The transformative power of technology.

Productivity Delivered

Enhanced Productivity

With a significantly faster cut rate, this technology helps manufacturers to process more parts with smaller workforces, helping boost efficiency and output.

Safety Built In

Improved Worker Safety

Reduced hand-arm vibration and noise prioritize the well-being of employees, helping employers develop better working conditions.

Sustainably Forward

Sustainability at the Core

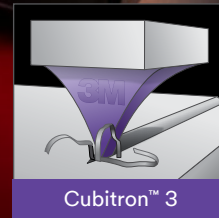
Longer-lasting abrasives and eco-friendly packaging align with the industry's sustainability objectives, helping to reduce carbon footprints and waste.



Cubitron™ 3
Performance Abrasives

Fibre Discs

Breakthroughs in technology are redefining the limits of cut rate and total stock removal, with a focus on prioritising productivity, safety, sustainability and optimizing automation.



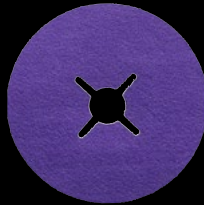
Cubitron™ 3



Cubitron™ 2



**3M™ Cubitron™ 3
Fibre Disc 1182C**
For carbon steel



**3M™ Cubitron™ 3
Fibre Disc 1187C**
Includes grinding aid
for stainless steel

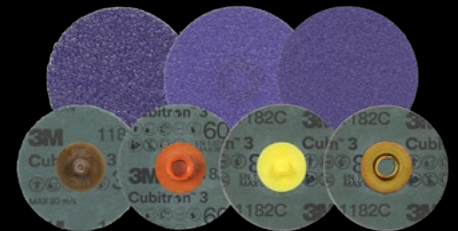
11-Series Discs & Roloc™

Grade	36+	60+	80+
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- ✓ Beveling
- ✓ Surface Grinding
- ✓ Flame Cut Smoothing
- ✓ Weld Grinding

3M™ Cubitron™ 3 Roloc™ Fibre Discs

Disc buttons are colour-coded when needed to identify its grade, making it easy to select the grade required for different applications from corner or curved surfaces to removing weld splatter on small areas.



CB3 Fibre Disc	Color	Grade
1184F Durable edge	○ White	All*
1184F	● Brown	36+
1182C	● Orange	60+
1187C	● Yellow	80+

1182C, 36+ up to

3X
Faster Initial
Cut Rate¹

vs. Competitive High-
Quality Grinding Wheel

1182C, 36+ up to

60%
More Life
More Speed²

vs. 3M™ Cubitron™ 2
Fibre Disc 982C, 36+

1182C up to

88% Less Vibration
Exposure³

70% Less Noise
Energy⁴

vs. Competitive High-Quality Grinding Wheel

Scan for more
detailed product
ordering info



1182C



1187C

**Learn about the Full System
Advantage on page 11.**

Flap Discs



**3M™ Cubitron™ 3
Flap Disc 1169F**

Ideal for use on carbon steel,
stainless steel, and other
heat-sensitive alloys

Grade	40+	60+	80+
-------	-----	-----	-----

- ✓ Weld Removal
- ✓ Finishing
- ✓ Blending
- ✓ Deburring
- ✓ Surface Preparation

- ✓ Deburring Edges
- ✓ Weld Preparation
- ✓ Sanding
- ✓ Edge Beveling
- ✓ Weld Grinding

Scan for more
detailed product
ordering info



Up to

49% More
Material
Removed⁵

on carbon steel vs. 3M™
Cubitron™ II Flap Disc 969F

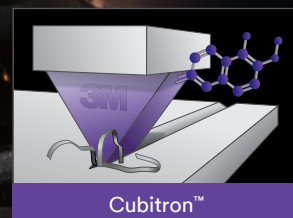
Up to

46% Faster
Sustained
Cut Rate⁵

on carbon steel vs. 3M™
Cubitron™ II Flap Disc 969F



Cubitron™ 3
Performance Abrasives



Cut-Off and Grinding Wheels

Using re-engineered Precision-Shaped Grain with new molecular bonding technology and sharp, angular structures that continuously fracture to form sharp points to wear evenly, run cool and optimise mineral breakdown.



**3M™ Cubitron™ 3
Cut-Off Wheels**

For carbon and stainless steel

Up to
3X More Life⁶
10% More Speed⁶
vs. 3M™ Cubitron™ 2
Cut-Off Wheels

Up to
33%
Less Vibration⁷
vs. Competitive
Ceramic Grain Wheels

- ✓ For ultra-fast cutting through sheet metal, metal tubing and more

Scan for more detailed product ordering info



**3M™ Cubitron™ 3 Depressed
Center Grinding Wheels**

For carbon and stainless steel

Designed for exceptional life and speed in heavy-duty grinding applications on stainless steel, mild steel and other specialist alloys.

Up to
50% More Life⁸
14% More Speed⁸
vs. 3M™ Cubitron™ 2 Depressed
Center Grinding Wheels

Up to
33%
Less Vibration⁹
vs. Competitive
Ceramic Grain Wheels

- ✓ Beveling
- ✓ Surface Grinding
- ✓ Weld Grinding
- ✓ Gouging
- ✓ Flame Cut Smoothing



**3M™ Cubitron™ 3
Cut & Grind Wheels**

For carbon and stainless steel

Fast and versatile — designed to be used both as a grinding wheel and as a cut-off wheel on stainless steel, mild steel and other specialist alloys.

Up to
5% More Speed¹⁰
vs. 3M™ Cubitron™ 2
Cut & Grind Wheels



Better Balance



More Speed

We've reformulated the product to further improve ergonomics vs. Cubitron™ 2

- ✓ All the combined applications of grinding and cut-off wheels





Surface Conditioning Discs

For surface finishing after heavy grinding.



Scotch-Brite™ Precision Surface Conditioning Discs

 3M Precision-Shaped Grain

Grades	VFIN	FIN	MED
	CRS	XCRS	

Contains 3M Precision-Shaped Grain for fast cut and long life.

Expanded grades for a large range of applications.

Balance of conformability and durability.

Bright, vivid colours help to identify easier.

Up to **40% More Speed¹¹** | Up to **2X More Life¹²**
vs. Competitive CRS Discs

Attachment Types



Roloc™



TN Quick Change



7/8 Center Hole



Hook and Loop

- ✓ Light Grinding
- ✓ Deburring
- ✓ Blending
- ✓ Refining
- ✓ Cleaning
- ✓ Finishing

Scan for more detailed product ordering info



Scotch-Brite™ Precision Heavy Duty Surface Conditioning Discs

 3M Precision-Shaped Grain

Grades	MED	CRS
	XCRS	XCRS

Grinds and blends in one step.

Fast aggressive cut, long life and consistent finish.

Durable construction resists edge wear.

Attachment Types



Roloc™



TN Quick Change



7/8 Center Hole



Hook and Loop

- ✓ Light Grinding
- ✓ Blending
- ✓ Deburring
- ✓ Edge Break

Coming Soon!



Safety
Built In

No steel wires or high-impact particles that could injure workers.

Stripping Discs

For cleaning after heavy grinding.



Scotch-Brite™ Clean and Strip
XT Pro Disc

Silicon Carbide Mineral

Grade **S XCS**

Quickly removes rust, paint, mill scale, coatings from metal and leaves a fine finish.

Silicon carbide mineral cuts aggressively with low sparking.

Maintains workpiece shape.

Up to
90% Less Vibration¹³ | Up to
54% More Speed¹³
vs. Crimped Wire Cup Brushes

Attachment Types



RoLoc™



TN Quick Change



Center Hole



5/8-11

- ✓ Finishing
- ✓ Surface Preparation
- ✓ Light Scale Removal
- ✓ Coating Removal

Scan for more detailed product ordering info



Scotch-Brite™ Clean and Strip
XT Pro Extra Cut Disc

Aluminum Oxide Mineral

Grade **A XCS**

Heavy rust / rust pit removal without leaving divots, ideal for weld refinement and removing weld discolouration.

Aluminum oxide mineral cuts to bare metal quickly.

Resists chunking and loading, and performs well on edges.

Attachment Types



RoLoc™



TN Quick Change



Center Hole



5/8-11

- ✓ Cleaning
- ✓ Surface Preparation
- ✓ Finishing



Product Selection by Application



3M™ Cubitron™ 3
Fibre Discs

11-Series



3M™ Fibre
Discs

7-Series



Scotch-Brite™ Precision
Surface Conditioning Discs

XCRS CRS MED FIN



Scotch-Brite™ Precision Heavy
Duty Surface Conditioning Discs

MED CRS XCRS XXCRS



Flat Weld Grinding



Substrate	Mild Steel			Stainless Steel		
Weld Type	Large MIG	Med MIG	Small MIG	Large TIG	Med TIG	Small TIG
→	1182C 36+	1182C 60+	1182C 80+	1187C 60+	1187C 80+	787C 120+ Precision XCRS
Start Here	3M™ Cubitron™ 3 Fibre Disc 11-Series 3M™ Fibre Disc 7-Series Scotch-Brite™ Precision Surface Conditioning Discs					
Pre-Finish Point	1	2	3	4	5	6

For the ultimate in
process speed and stock
removal capability



Surface Grinding



Substrate	Mild Steel			Stainless Steel		
Duty	Heavy	Med	Light	Heavy	Med	Light
→	1182C 36+	1182C 60+	1182C 80+	1187C 60+	1187C 80+	787C 120+ Precision XCRS
Start Here	3M™ Cubitron™ 3 Fibre Disc 11-Series 3M™ Fibre Disc 7-Series Scotch-Brite™ Precision Surface Conditioning Discs					
Pre-Finish Point	1	2	3	4	5	6

For the ultimate in
process speed and stock
removal capability



Finish after Weld/ Surface Grinding

Following the grinding step with these innovative finishing products in as few as just one extra step.

Mild Steel Pre-Finish Point (Coating Thickness / Ra)		+3 mil / 1.23 Ra	+2 mil / 0.61 Ra	+1.5 mil / 0.5 Ra
→	1	Precision XCRS	Rarely required	Rarely required
	2	Precision XCRS	Precision CRS	Precision MED
	3	Rarely required	Precision CRS	Precision MED
Stainless Steel Pre-Finish Point (Ra)		0.8 Ra	0.6 Ra	0.4 Ra
→	4	Precision XCRS	Precision MED	Precision FIN
	5		Precision MED	Precision FIN
	6		Precision MED	Precision FIN

Alternatives to Fibre Discs in these applications

While we propose 3M™ Cubitron™ 3 Fibre Discs as the recommended solution for these applications, sometimes a strong preference for Grinding Wheels or Flap Discs remains. This could be due to the greater range of applications they can be used for. 3M™ Cubitron™ 3 Depressed Center Grinding Wheels or 3M™ Cubitron™ 2 Flap Discs are available providing exceptional cut speed and life.



3M™ Cubitron™ 3 Depressed
Center Grinding Wheels



3M™ Cubitron™ 3
Flap Disc 1169F

Need more durability?

For outer corners and sharp edges switch to Scotch-Brite™ Precision Heavy Duty in the same grade.



Product Selection by Application



3M™ Cubitron™ 3 Depressed Center Grinding Wheels

Type 27



3M™ Cubitron™ 3 Cut & Grind Wheels

Type 27



Scotch-Brite™ Deburr & Finish Pro Unitized Wheel

9C XCRS+



3M™ Cubitron™ 3 Fibre Discs

11-Series



Fillet Weld Grinding

Substrate	Mild Steel			Stainless Steel		
Weld Type	Large MIG	Med MIG	Small MIG	Large TIG	Med TIG	Small TIG
 Recommended	3M™ Cubitron™ 3 Depressed Center Grinding Wheel, Type 27			Scotch-Brite™ Deburr & Finish Pro Unitized Wheel, 9C XCRS+		
	Benchmark speed and life getting into corners			Aggressive cut with more control and low heat		



Beveling

Substrate	Mild Steel			Stainless Steel		
Gauge	Heavy	Med	Light	Heavy	Med	Light
 Start Here	1182C 36+	1182C 60+	1182C 80+	1182C 60+	1182C 60+	1182C 80+
	3M™ Cubitron™ 3 Fibre Disc 11-Series			For the ultimate in process speed and stock removal capability		
Alternative	3M™ Cubitron™ 3 Depressed Center Grinding Wheel, Type 27			Great speed and life with better application versatility		



Back Grinding and Gouging

 Start Here	3M™ Cubitron™ 3 Depressed Center Grinding Wheel, Type 27	Minimum 7 mm gouge channel	Maximum stock removal speed
Alternative	3M™ Cubitron™ 3 Cut & Grind Wheel, Type 27	Either 3.2 mm or 4.2 mm gouge channel	More control



Cutting



3M™ Cubitron™ 3 Cut-Off Wheel

Optimized for

Carbon Steel

Stainless Steel

Thickness (mm)

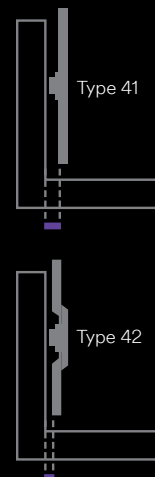
- 4.2
- 3.2
- 3.0
- 2.5
- 2.0
- 1.6
- 1.3
- 1.0
- 0.8

Metal

Heavy Gauge

Thin Sheet

Could the customer increase wheel thickness?
Cut rate will still be great, but the extra life will be worth it!



Type 41

Type 42



3M™ Cubitron™ 3 Wheels (Type 42) are ideal for cutting applications with difficult access.



Cubitron™ 3
Performance Abrasives



Get more value from your automation investment.

At 3M, we have a deep understanding of the factors that affect an automated abrasive process. Our 100+ years of abrasive experience and 35+ years of abrasive automation experience is accessible through our Technical Experts, our 17 Global Proof of Concept automation labs, and deployed into how we engineer our products.

Products engineered with automation in mind.

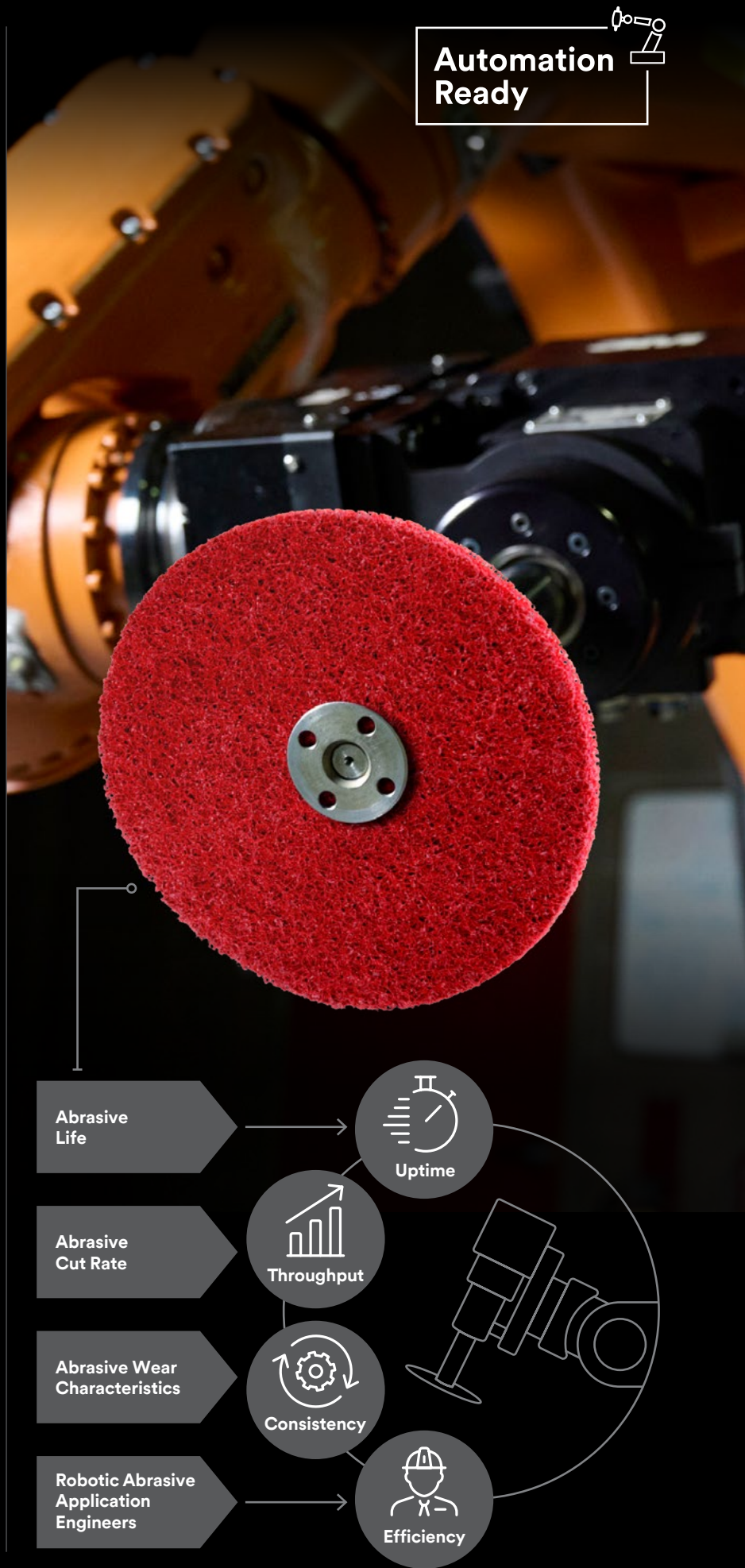
3M™ Cubitron™ 3 Performance Abrasives and Scotch-Brite™ Nonwoven Abrasives elevate product life, cut rate and wear consistency. This enhances processes that are already automated or increases the appeal of automating current manual ones.

Start your journey with 3M.

Download the
3M Automation and
Robotics Handbook



**Automation
Ready**



Tools that take it to the next

The new electric grinder is available in 115 mm and 125 mm and fixed or variable speed. Designed with robust components, these grinders are built for durability in the harshest industrial conditions. They're the powerful and long-lasting tools you need to get more done.

3M™ Electric Angle Grinder Features:

- ▶ 1900 W power
- ▶ Available in fixed or variable speeds
- ▶ World class ergonomic design
- ▶ Robust design and components provide durability in industrial conditions
- ▶ Restart protection
- ▶ Adjustable guard
- ▶ Accessories for maximum functionality and flexibility
- ▶ Direct cooling for a long service life
- ▶ Overload protection
- ▶ Kickback control



See the difference when using the full system.



3M Abrasives Customer Story

“ We quickly realised we couldn't afford to use anything else but Cubitron™ 3. ”

Graham Hanks, Production Manager at Reddish Electroplating

The Challenge

Graham Hanks, Production Manager, needed to find a faster way of removing the topcoat, machine marks, and welds down to sound metal before the chrome plating and subsequent finishing steps could be completed. The substrate they use are particularly hard to grind fast with speed and consistency.

The Solution

With support from a 3M Process Specialist, Graham oversaw a trial of 3M™ Cubitron™ 3 Fibre Discs on the 3M™ 1900W Angle Grinder and 3M™ Cubitron™ 3 Cloth Belts on his existing portable belt machines. The patented grain technology meant that even on these hard to grind substrates, the work got done faster and the scratch pattern left behind was more than good enough to chrome plate and polish to the desired finish specification.

Here's what Graham had to say:

“Tom is one of our most experienced metalworkers and his feedback was critical in our assessment of the trial. Once we saw the significant increase in through-put these products are capable of delivering, without compromising on our commitment to quality, we quickly realized we couldn't afford to use anything else but Cubitron™ 3. We now get twice the work done in half the time and the products are lasting at least twice as long. Cubitron™ 3 has transformed our process and supports our commitment to quality work.”

Up to

60%

↓
**Less
Abrasives
Used**



Tom Gibson, Experienced Metalworker at Reddish Electroplating



Sustainability matters to 3M Abrasives.

When you buy from the SEAM value chain, you are helping to build a sustainable future for our industry, for people and for the planet. 3M is a founding member of the SEAM abrasives manufacturers program and aligns to the world's highest standards

of quality, safety and performance in a sustainable environment. We commit to transparency, accountability, innovation and progress. When buying from the SEAM value chain, customers are helping to build themselves a sustainable future.



Find out more at
www.seam.earth

Get the abrasives that get more done at 3M.co.UK/Abrasives

- Performance testing in a typical weld preparation process:** 3M™ Cubitron™ 3 Fibre Disc 1182C, 36+ average compared to the average result of 10 globally selected high-quality competitive type 27 grinding wheels including ceramic grain products, according to independent testing by Fraunhofer Institute, January 2024.
- The 'total material removed' claim is determined by averaging the amount of metal ground over the entire test method (30 cycles or 30 minutes of grinding). Error bars represent the results with a 95% confidence level.
- Performance testing in a typical weld preparation process:** 3M™ Cubitron™ 3 Fibre disc average compared to the average result of 10 globally selected high-quality competitive type 27 Grinding wheels including ceramic grain products, according to independent testing by Fraunhofer Institute, January 2024.
- Noise energy operator exposure testing in a typical weld preparation process:** Cubitron™ 3 Fibre disc average compared to the average result of 10 globally selected high-quality competitive type 27 Grinding wheels including ceramic grain products, according to independent testing by Fraunhofer Institute, January 2024.
- Results are based on an automated, 37.5 minute, medium pressure test on 1045 steel using 4.5 inch 40 grit flap discs on a servo motor.
- Results are based on an automated, cutting of a 3 mm thick 304 stainless steel sheet. Cut-off wheel geometry was T41 125 mm x 16 mm x 22 mm mounted on a 1.5 hp angle grinder with an applied force of 9 lbs. Cut speed was defined by time needed to cut 1 meter of stainless steel. The number of cuts was estimated by the amount of wheel that was used after cutting a distance of 1 meter. End of life is assumed to be 50% of initial wheel mass.
- Performance testing in a typical weld preparation process or cutting operation; 3M™ Cubitron™ 3 Cut-Off Wheels average compared to the average results of the high-quality competitive ceramic grain competitive wheels tested, according to independent testing, August 2023.
- Results are based on an automated beveling of 1018 carbon steel bars. Grinding wheel geometry was 115 mm outer diameter mounted on a servo motor with an applied force of 12 lbs. Cut speed was defined by metal removed after 10 minutes of testing life. End of life is assumed to be 50% of the initial wheel mass.
- Performance testing in a typical weld preparation process or cutting operation; 3M™ Cubitron™ 3 Depressed Center Grinding Wheels average compared to the average results of the high-quality competitive ceramic grain competitive wheels tested, according to independent testing, August 2023.
- Results are based on an automated beveling of 1018 carbon steel bars. Grinding wheel geometry was 115 mm outer diameter mounted on a servo motor with an applied force of 12 lb. Cut speed was defined by metal removed after 10 minutes of testing. The total material removal was estimated based on the amount of wheel that was used for 10 minutes of testing life. End of life is assumed to be 50% of the initial wheel mass.
- Based on 3M Internal Testing: CRS 3" discs were tested robotically on 304 series stainless steel for 12 minutes, using a 3" 3M™ Hard Back-Up, part number: 45091. One part is equivalent to 20 g of material removed.
- Based on 3M internal testing: MED 3" discs were tested robotically on 6061 aluminum until the end of life (end of life is determined to be 50% of the averaged cut rate of the first three minutes) using a 3" 3M™ Hard Back-Up, part number: 45091. One part is equivalent to 20 g of material removed.
- Hand-arm vibration compared to listed competitor and Scotch-Brite™ Clean and Strip XT Pro Disc, Type 27, according to independent testing by Fraunhofer Institute on October 2021.



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