# **3M Abrasives Systems**

Scotch-Brite™
Unitized Wheels
Product and Application
Training Playbook

**Channel / Distribution Partners** version



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Application: Surface Preparation- food equipment



**Application: Gear Deburring** 



Application: Edge Break



**Application: Tig Weld Removal** 



Application: Pipe Thread Deburring



**Sales Tools and Resources** 

# Scotch-Brite™ Unitized Wheels Fundamentals

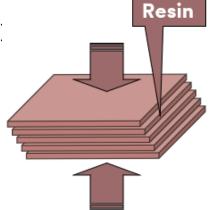


Scotch-Brite™ Unitized Wheels are stacked, compressed layers of nonwoven web designed to bring abrasive to the part. Wheels have unique identification scrim and performance differences, attributed to mineral (aggressiveness)

and density (hardness). The combination of these two characteristics and other subtle variations determine if the wheel will cut more aggressively or will be more durable and less conformable.

#### Unitized

- Layers of nonwoven web "compressed" into a slabs then cookie cut into shapes
- Wheels Sizes:
  - 1" 14" diameter
  - 1/8" 1" Wide (thick)
  - Various Center Holes
  - Non-directional





Applications:
Deburring, Blending,
Finishing, Defect
removal

Product made in the USA

3M quality and consistency

Use on portable and stationary tools on either edge or flat of the wheel

Scotch-Brite™ promises <u>to improve surfaces with ease</u>. Scotch-Brite products <u>last longer</u> than alternative products while <u>safely</u> providing the desired <u>finish</u> and providing overall <u>value</u> to the manufacturing operation.

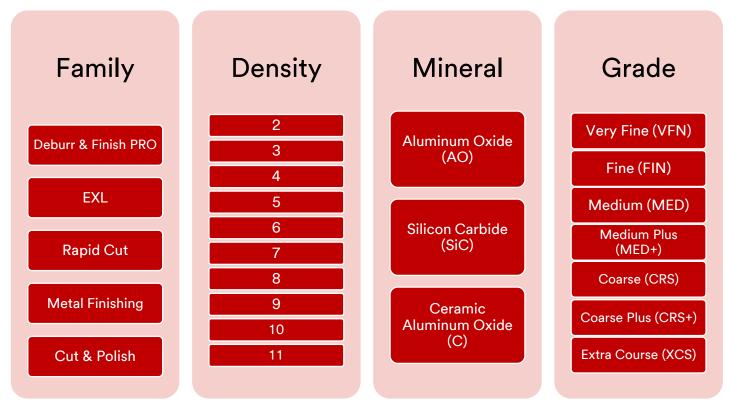


# Scotch-Brite™ Unitized Wheels Classification



#### Scotch-Brite™ Unitized Wheels are available by:

Product Family – Density – Mineral - Grade Such as; *EXL 2S Fine* 



<sup>\*</sup>NOTE: Laser Braze Finishing and EXL PRO are Unitized Wheels, developed specific for Roof Ditch application in automotive. Please see your 3M contact for more info or to inquire about training playbooks for these products.

## **Product Family Characteristics:**

- Deburr & Finish PRO
  - Go-to product for deburring and blending
  - Utilizes new shaped ceramic grain to increase aggressiveness, but not affect finish
  - New web construction for increased durability
- EXL
  - Aggressive, yet conformable to not undercut
  - · Largest grade and density ranges
- Cut & Polish
  - · Aggressive Ideal for removing oxides, rusts, & colors
  - Less conformable but more durable
  - Limited grade range
  - "Shiny" or "Polished" finish
- Metal Finishing
  - For finishing and blending of all metals
  - Creates a consistent satin finish
- Rapid Cut
  - For larger/aggressive burrs and blending larger welds
  - Extended product life



# Scotch-Brite™ Unitized Wheels Product Training Guide Focus on EXL and Deburr & Finish PRO

# Scotch-Brite™ EXL Unitized Wheels



EXL wheels feature a soft, conformable consistency that effectively smooths, deburrs and finishes the edges of metal alloys, as well as many plastics and composites. These wheels feature a variety of densities and grades starting from a very soft 2 density for applications requiring conformability to a hard, aggressive 8 density for maximum cut and durability.

#### **Available Products**

EXL has Densities and grades ranging from soft and conformable to hard and aggressive **Densities:** 2, 3, 4, 6, 8

#### **Grades:**

Coarse, Extra Coarse, Fine, Medium, Very Fine

## Engineered by mixing abrasive mineral and nylon fibers with resin

- High performance and durability for deburring and finishing applications
- A layered, durable unitized disc construction



## **Core Technologies**

- Open web material
- Nonwoven nylon fibers

#### **Substrates**

- Variety of substrates
- Metal alloysSteel
- Plastics
- Composites

## **Applications**

**Deburring** > 8A MED, 8A CRS, 8A XCRS

**Blending** ▶ 2A MED, 4A MED, 6A MED

**Finishing** ► 2S FIN

#### Value to the Customer

- Largest grade and density ranges
- Conformability allows abrasive to stay in contact with complex-shaped parts and to not undercut
- Resists smearing for cleaner surfaces and less preparation
- Minimizes heat build-up to lessen impact on heatsensitive materials



# Scotch-Brite™ Deburr & Finish PRO Unitized Wheels



Deburr and Finish PRO is designed to make a variety of metalworking applications easier and more efficient for industrial professionals. Typically, abrasives excel in one area: deburring, finishing or blending. This multipurpose wheel/disc is unique, because it's engineered to do all three.

#### 4 Available Products

- ✓ 8C CRS+
- ✓ 8C MED+
- ✓ 6C MED+
- √4C MED+
- ✓ 2S FIN

# YOUR "GO-TO" family of Unitized Wheels for Deburring / Blending / Polishing

## **Core Technologies**

- Precision-Shaped Grain
- New web technology
- Nylon fibers

#### **Substrates**

- Copper
- Aluminum
- Inconel
- Steel
- Titanium
- Stainless Steel

## Offering faster and more consistent performance

- 30 to 50% faster burr removal
- Up to 3x longer wheel life in deburring applications
- Minimal dust and debris less dust equals less cleanup
- Minimizes overcutting results in fewer rejects

## Markets and Applications

- Oil & Gas Deburring of Threaded pipes, Coupler threads and other tubular goods
- Aerospace Deburring, Finishing and Blending of Rotors, shrouds, buckets, ducting titanium, turbine blades
- Automotive Deburring and Finishing of Machined gears, engine components, sheet metal, mild steel, hardened steel
- Metal ▶ Deb Fabrication mac

Deburring and Finishing of various machined parts mild steel, stainless steel and TIG weld blending

## **Value Proposition**

Wheels are an excellent indirect solution to coated abrasive wheels used to deburr radius and blend. Typically you get 2.5x-3x life at about 2x the cost.

3M Precision-Shaped Grain



# 3M Precision Shaped Grain – Deburr & Finish PRO



So what's the magic?

Scotch-Brite™ Deburr & Finish PRO Unitized Wheels leverage the Science of Ceramic Precision-Shaped Grain.



How does the technology work?

Traditional non-woven abrasive products are constructed from particles of irregular-shaped abrasive materials, such as aluminum oxide, bound to a nylon web.

In Scotch-Brite™ Deburr & Finish PRO Unitized Wheels, conventional abrasive particles have been replaced with our proprietary ceramic precision-shaped grain.

The hardness of the ceramic material, combined with the self-sharpening grain, provides longer life and helps get the job done faster – without sacrificing the smooth feel and control you expect from Scotch-Brite wheels.



# Markets and Applications



# Key **Markets**

Oil & Gas



#### **Rotor Repair**



Parts/ Description Steel rotor / minor lobe

Blending mill marks from minor lobe

- Finish / refine surface
- Prep surface for chrome carbide coating
- 3" & 6" Wheels offhand
- 12" semi automated

Fine finishing / polishing / blending / deburring - 6C MED+

Heavier deburring / blending - 8C CRS+

#### **Pipe Thread**



Steel API and Premium **Drill Pipe Thread** 

- O.D. Thread Deburring
- I.D. Thread Deburring

3"x1/2"x1/4"

3"x1/4"x1/4"

3"x1"x1/4"

API Pipe Thread - 8C CRS+ Premium Pipe Thread - 6C MED+

## **Machinery Manufacturing**



## **Transportation**



#### **Food Processing**



Dairy tank, food tank, kitchen equipment, sheet metal food service equipment, refrigerators, freezers, microwave, industrial dairy mixer

 Weld finishing • Filet Weld

· Removal/ blending/ polishing

Polishing

2" & 3" Roloc • 4.5" Type 27

1", 2", 3" & 6" Wheels

Weld Leveling - 8C CRS+ Weld Refining – 6C MED+ • Final Polishing - 2S Fine

#### Aerospace



Turbine blade / vane deburring, structural component / housing deburring, formed component deburring / blending

 Blending milling marks Blending forming marks

Deburring cutouts / edges

• 2" & 3" Roloc 2" & 3" Wheels

6" and larger Wheels

Polishing / finishing - 2S Fine

 Light/ Medium deburring – 4C & 6C MED+

Heavier Deburring – 8C CRS+

Deburr & Finish PRO and EXL are the 'go-to' Unitized Wheels to start with for these applications



# Markets and Applications



# Key **Markets**

## **Fabricated** Metals



#### **Formed Sheet Metal**



**Applications** 

Aluminum / Titanium aerospace components, sheet metal components, sheared / stamped part deburring, weld polishing / highlighting

- Blending
- · Light / medium deburring
- 2" & 3" Roloc
- 4.5" Type 27
- 3" & 6" wheels
- Light Deburring / Polishing 2S
- Heavier Deburring / Blending -8C CRS+

## **Machine Shops**



Description

Blending machine marks

parts, pipe deburring, trim panels

- Refining machine marks
- Deburring

- 2" & 3" Roloc
- 6" and larger Wheels

Grade / Density

- Fine finishing / polishing / blending / deburring- 2S Fine
- Light deburring / blending 6C MED+
- Heavier deburring / blending 8C CRS+

#### **Power Generation**



Parts/ Descriptior

- Deburring Blades
- Deburring Rotors
- Weld Blending Repair

Turbine Blade Deburring, Rotor

Deburring, Weld refining / repair

- 2" & 3" Roloc
- 2" & 3" Wheels
- 6" and Larger Wheels

- Fine finishing / polishing / blending / deburring - 2S Fine
  - Heavier deburring / blending -8C CRS+

#### **Forged Aluminum**



Deburring / Flash Removal

- Deburring / blending
- Forged Aluminum components

- 2" & 3" Roloc
- 6" and larger Wheels
- Fine finishing / polishing / blending / deburring - 2S Fine
  - Heavier deburring / blending 8C CRS+

Deburr & Finish PRO and EXL are the 'go-to' Unitized Wheels to start with for these applications



# Metal Fabrication – Surface Preparation





#### **Market Segment**

**Sheet Metal Fabrication** 

#### **Application Picture**



**Competitive Solutions** 

Surface Conditioning Discs

Coated Abrasive Flap

Fine grade Coated

**Abrasive Discs** 

#### **Application Description**

Deburring of metals

#### **Target NAICS/SIC Codes**

Sheet Metal Work Manufacturing

332322 3444

#### **Questions to Ask**

- 1. What is your current overall abrasive process?
- 2. Would increasing speed in your deburring have a positive impact on your business?
- 3. Do you have rework attributed to your abrasive process?

#### **Go-To Products**

Blending and Deburring: Deburr & Finish PRO 6C MED+ Weld cleanup / Polishing: Deburr & Finish PRO 2S FIN

**Objections to Overcome** 

1. We have tried Scotch-

aggressive enough.

2. It will take too long to

process the part.

Brite before – it's not

#### **Tools**

3M™ Disc Sander 20231, 2 in .5 hp 20,000 RPM



3M™ Die Grinder 20239, 1 hp 1/4 in Collet 12,000 RPM



3M™ Die Grinder 28330, .5 hp 1/4





**RPM** 





# in Collet 18,000

#### © 3M 2021 Channel version.

## **Value Proposition to the Customer**



3M's proprietary precision-shaped ceramic grain enables faster and sustained cut rates

**Fast Cut Rates** 

Consistency

Consistent and repeatable finishes and quality

Wire Wheels

Wheels

Cotton Reinforced Discs / Wheels

**Reduce Costs** 

Increased throughput and overall reduction in abrasives and manufacturing costs



# Food Manufacturing Equipment – Surface Preparation





#### **Market Segment**

**Food Equipment** Manufacturing

#### **Application Picture**



#### **Application Description**

- Weld cleanup and blending
- Blending of secondary burrs created by coated abrasives
- Deburring of cut edges

#### **Target NAICS/SIC Codes**

Food Product Machinery 333241 3556 Manufacturing

#### **Questions to Ask**

- 1. What is your process for removing, blending, and finishing welds?
- 2. Do you need to remove filet welds?
- 3. Is speed important?
- 4. What is your biggest challenge when finishing your stainless steel?

#### **Go-To Products**

Weld cleanup / Polishing: Deburr & Finish PRO 2S Blending / Edge Break: Deburr & Finish PRO 6C Weld Removal (tig welds): Deburr & Finish PRO 8C

#### Tools

3M™ Disc Sander 20231, 2 in .5 hp 20,000 RPM



3M™ Die Grinder 20239, 1 hp 1/4 in Collet 12,000 RPM



# 3M™ Die Grinder 28330, .5 hp 1/4 in Collet 18,000

**RPM** 





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# **Competitive Solutions**

- Coated Abrasive Flap Wheels
- Surface Conditioning Discs
- Fine grade Coated **Abrasive Discs**
- Wire Wheels
- Cotton Reinforced Discs / Wheels

## **Value Proposition to the Customer**



Extended Life

Longer life, Faster processing times. Overall reduction in abrasives and manufacturing costs with increased productivity, due to less wheel change outs



Improved operator "feel"

Reduce rejects

No part gouging or damage. Improved surface quality and finish consistency. Limits material removal, maintaining critical part dimensions

## **Objections to Overcome**

- 1. We have tried Scotch-Brite before – it's not aggressive enough.
- 2. It will take too long to process the part.

# Gear Manufacturing – Gear Deburring





#### **Market Segment**

Gear Manufacturing

#### **Application Picture**





#### **Application Description**

- Gear deburring (automated and off-hand)
- The deburring process removes unwanted elements which hinder productivity

#### **Questions to Ask**

- 1. What process do you use to deburr?
- 2. Does this process require a more skilled operator?
- 3. How important is surface finish?
- 4. What percentage of your parts require rework?

#### **Go-To Products**

Blending and Deburring: Deburr & Finish PRO 6C Med+ **Heavy Deburring or Light** Weld Removal: Deburr & Finish PRO 8C CRS+



#### **Tools**

3M™ Die Grinder 20239, 1 hp 1/4 in Collet 12,000 RPM



28330, .5 hp 1/4 in Collet 18,000 **RPM** 

# 3M™ Die Grinder



#### **Competitive Solutions**

- Competitive Unitized wheels
- Wire Brushes
- **Nylon Brushes**
- Rubberized Wheels
- Carbide tools

## Value Proposition to the Customer



Longer wheel life in the deburring application, along with increased speed



Minimal dust and debris, less dust equals less cleanup

Reduce cleanup



Minimizes thread overcutting, will not damage/ undercut the workpiece, results in fewer rejects

# **Objections to Overcome**

1. We have tried Scotch-Brite before - it's not aggressive enough.

Address this with info that D&F PRO wheels have 3M Precision Shaped Grain which is engineered to cut fast and sharp to help remove burrs 30-50% faster than other Scotch-Brite™ Wheels.



# Aerospace – Edge Break





#### **Market Segment**

Aerospace

#### **Application Picture**



#### **Application Description**

- Edge break radius on machined parts
- Blending mill marks
- Blending secondary burrs and chatter from previous milling or abrasive steps
- Deburring of cut and formed metal edges

#### **Questions to Ask**

- 1. Does your current process have an excessive amount of dust generated?
- 2. Does your process restrict the use of silicon carbide on aluminum?
- 3. What is your finish requirement?

#### **Go-To Products**

#### **EXL 2A Med**

• For applications sensitive to Silicone Carbide

#### **Deburr & Finish PRO 2S Fine**

 Designed to quickly polish, finish, blend and deburr

#### Deburr & Finish PRO 6C MED+

 Highly effective for edge breaks and applying a radius

#### **Tools**

3M™ Disc Sander 20231, 2 in .5 hp 20,000 RPM



3M™ Die Grinder 20239. 1 hp 1/4 in Collet 12,000



3M™ Die Grinder 28330, .5 hp 1/4 in Collet 18,000 RPM



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#### **Competitive Solutions**

- Wire Wheels
- Surface Conditioning Discs
- Fine grade Coated Abrasive Discs
- **Rotary Burrs**
- **Burr Knife**

## Value Proposition to the Customer



Lasts longer and finishes stronger, for an overall reduction in abrasives and manufacturing costs

**Extended Life** 



Consistent and repeatable results

Consistency



Reduction of dust and debris

Reduce cleanup

## **Objections to Overcome**

- 1. We have tried Scotch-Brite before – it's not aggressive enough.
- 2. It will take too long to process the part.
- 3. If silicone carbide not allowed, we have portfolio of aluminum oxide products.

# Food Grade Tank - Tig Weld Removal





#### **Market Segment**

Food Grade Tank Manufacturing

#### **Application Picture**



#### **Application Description**

- Cleanup, blend, and polish tig weld. Objective is to produce a finish finer than 16 Ra
- Edge break on machined aluminum parts

#### **Target NAICS/SIC Codes**

Other Metal Container 332439 3412 Manufacturing

#### **Questions to Ask**

- 1. Do you remove tig welds in your process today?
- 2. How many steps are required to achieve the desired finish?
- 3. How do you measure finish?
- 4. Is their rework attributed to your current process?

#### **Go-To Products**

#### **Level Tig Weld:**

Deburr & Finish PRO 8C CRS+ or Rapid Cut

#### **Blend Surface:**

Deburr & Finish PRO 6C MFD+

#### **Polish Surface:**

Deburr & Finish PRO 2S Fine

#### Tools

3M™ Disc Sander 20231, 2 in .5 hp 20,000 RPM



3M™ Die Grinder 20239, 1 hp 1/4 in Collet 12,000 **RPM** 



# 3M™ Die Grinder 28330, .5 hp 1/4

in Collet 18,000 **RPM** 

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#### **Competitive Solutions**

- Coated Abrasive Flap Wheel
- Coated Abrasive Belt
- Coated Abrasive Flap Disc
- Coated Abrasive Band
- Coated Abrasive Cartridge Roll

## **Value Proposition to the Customer**

Reduction in steps and eliminates damage to

adjoining surfaces. Improve performance and

Reduction in rework, better finish and smoother

feel with repeatable finishes and quality



Process Step Reduction

Reduce rejects



simplify your process

Improved operator "feel"

## **Objections to Overcome**

- 1. We have tried Scotch-Brite before – it's not aggressive enough.
- 2. It will take too long to process the part.
- 3. My tool won't allow me to gain access with a wheel.

# Oil & Gas - Pipe Thread Deburring





#### **Market Segment**

Oil & Gas

#### **Application Picture**



#### **Application Description**

- Pipe thread deburring
- O-ring seal deburring
- Ideal for API, Semi-Premium
   & Premium Oil Country
   Tubular Goods Threads

#### **Target NAICS/SIC Codes**

Drilling Oil and Gas Wells	213111	1381
Supporting Activities for Oil and Gas Operations	213112	1389

#### **Questions to Ask**

- 1. What is your current process? EX: using a spindle mounted flap wheel, wire wheel, etc.
- 2. Are your operators having to change out wheels often?
- 3. Do you want fast, consistent pipe deburring?

#### **Go-To Products**

O-ring Grove Deburring:
Deburr & Finish PRO 2S FIN
General Deburring

Deburr & Finish PRO 6C MED+

Heavy Deburring:
Deburr & Finish PRO 8C CRS+

#### Tools

3M<sup>™</sup> Die Grinder 20239, 1 hp 1/4 in Collet 12,000 RPM



3M<sup>™</sup> Die Grinder 20240, 1 hp 1/4 in Collet 8,000 RPM



3M<sup>™</sup> Disc Sander 20231, 2 in .5 hp 20,000 RPM



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## **Competitive Solutions**

- Coated Abrasive Flap Wheel
- Competitive Unitized Wheels
- Competitive Nonwoven Discs

## Value Proposition to the Customer



Faster burr removal

contaminants without loading or changing the thread geometry; so pipes can be returned to service faster

Repeatable finishes and quality



Repeatable

**Extended Life** 

Typically get 2.5X life at 2X cost. Also can show 4-8X the life over spindle mounted flap wheels

Wheels blast through dirt, corrosion and other

#### **Objections to Overcome**

1. We've already tried Scotch-Brite wheels.

Address this with info that D&F PRO wheels have 3M Precision Shaped Grain which is engineered to cut fast and sharp to help remove burrs 30-50% faster than other Scotch-Brite™ Wheels

# **Sales Tool and Resources**



		Multimedia Link	Collateral Type	Celum ID	Product	Application	Tool
	Scotch-Brite™ Deburr and Finish Pro Brochure	https://multimedia.3m.com/mws/media/10874 64O/scotch-brite-deburr-finish-pro-unitized- discs-and-wheels.pdf	Brochure	1087464	· Discs · Wheels · Tools & Accessories	<ul><li>Deburring</li><li>Finishing</li><li>Surface Preparation</li></ul>	· Right Angle Grinder · Die Grinder
100 (100 m) (1	Scotch-Brite™ Deburr & Finish Pro Application Guide	https://multimedia.3m.com/mws/media/15211 87O/scotch-brite-deburr-finish-pro-app-guide- hr-english.pdf	Application Guide	1521187	· Discs · Wheels	<ul><li>Deburring</li><li>Finishing</li><li>Polishing</li><li>Surface Preparation</li></ul>	<ul><li>Right Angle Grinder</li><li>Die Grinder</li><li>Bench Motor</li></ul>
COOL UNDER PRESSURE.	Scotch-Brite™ EXL Pro Unitized Wheel Flyer	https://multimedia.3m.com/mws/media/15121 08O/scotch-brite-exl-pro-unitized-wheel.pdf	Flyer	1512108	· Wheels	<ul><li>Deburring</li><li>Finishing</li><li>Surface Preparation</li></ul>	· Right Angle Grinder · Die Grinder · Bench Motor
Finish Bu a Fre	Scotch-Brite™ Deburr & Finish PRO Unitized Wheels Brochure	https://multimedia.3m.com/mws/securemedia/ 1238648O/scotch-brite-deburr-finish-pro- unitized-wheels-brochure.pdf	Brochure	1238648	· Discs · Wheels · Tools & Accessories	· Deburring · Finishing	· Right Angle Grinder
	Deburr & Finish PRO Unitized Wheels for Oil & Gas Tubular Goods	https://multimedia.3m.com/mws/media/10175 07O/scotch-brite-deburr-and-finish-pro- unitized-wheels-celum.pdf	Brochure	1017507	· Wheels · Discs · Tools & Accessories	<ul><li>Deburring</li><li>Finishing</li><li>Polishing</li></ul>	· Right Angle Grinder · Die Grinder
COOL UNDER PRESSURE	3M Scotch-Brite™ EXL Pro Flyer	file:///C:/Users/A59YVZZ/AppData/Local/Temp/1/Temp1_2020-08-19_15-24-39.zip/Scotch-Brite%20EXL%20Pro%20Flyer%20Celum.pdf	Flyer	1512108	· EXL Pro Wheels	· Roof Ditch Brazes	
	3M Scotch-Brite™ Unitized Wheels	https://www.youtube.com/watch?v=8qk4gf3wt 9w	Video	996719	·Wheels	<ul><li>Finishing</li><li>Surface Preparation</li></ul>	
THE FRANCE SAST FOR MERONAND.	Scotch-Brite™ Nonwoven Abrasives Product Guide	https://multimedia.3m.com/mws/securemedia/2010476O/scotch-brite-nonwoven-abrasives-product-guide-high-resolution.pdf	Comprehensi ve Product Guide	2010476	All 8 SCP Categories     Tools & Accessories     Robotics & Automation	<ul><li>Cleaning/Surface Prep</li><li>Deburring</li><li>Blending</li><li>Polishing/Polishing Prep</li></ul>	· Recommended Tools

★ = *NEW* assets in 2021!

# **NEW Scotch-Brite™ Nonwoven Abrasives Product Guide**



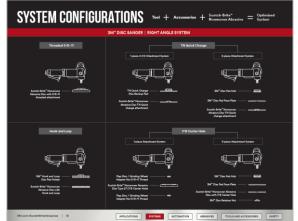


Click here for the NEW Scotch-Brite™
Nonwoven Abrasives
Product Guide!

Great product resource for channel and end-users!











# Thank you for your support of 3M Scotch-Brite<sup>TM</sup> Unitized Wheels!