WHAT YOU NEED TO KNOW ABOUT 3M™ BRISTLE PRODUCTS

I. WHAT IS THE 3M BRISTLE PRODUCTS?

If you think that the Bristle product looks nothing but a simple piece of plastic, think again. The 3M Bristle product is a revolutionary 3-dimensional abrasive made from unique molded bristle technology designed to apply a continuous fresh supply of abrasives to a work piece for a fast and consistent finish.

The family of Bristle products can be classified into five categories:

1. Radial Bristle Brush
2. Radial Bristle Discs
3. Roloc™ Bristle Discs
4. Bristle Discs (Right Angle Grinder)
5. SR Products

II. WHAT DOES 3M BRISTLE PRODUCTS DO?

These Bristle products can do a whole lot: from deburring, finishing, polishing, texturing, light cleaning, defuzzing and sanding to heavy duty cleaning, and material removal from metal surfaces.

3M Bristle products are primarily used on metal surfaces and parts such as steel, stainless steel, brass, copper, platinum, aluminum, gold, silver, pewter, alloys but they can be used on wood surfaces as well.

The general applications of 3M Bristle products can be classified as follows:

<table>
<thead>
<tr>
<th>APPLICATIONS OF 3M BRISTLE PRODUCTS</th>
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<tbody>
<tr>
<td>Radial Bristle Brush</td>
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<tr>
<td>Radial Bristle Discs</td>
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<tr>
<td>Roloc Bristle Discs</td>
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<tr>
<td>Bristle Discs</td>
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<tr>
<td>SR Products</td>
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</table>

*For more details, please refer to products’ technical bulletins and brochures.*
III. MARKET SEGMENTS

Since 3M Bristle products are designed using a revolutionary new technology, the range of surface conditioning applications they are capable of is more extensive than most conventional products. This is attributed to the Bristle products’ great conformability and long lasting life. Hence it is not surprising to find the use of Bristle products in a wide range of market segments in the industrial market.

The chart below highlights the targeted market segments for 3M Bristle products
IV. COMPETITORS

The family of 3M Bristle products is a relatively new to the world product, therefore the competition that the Bristle product go after includes indirect competition such as:

1. Wire Brushes: Osborne, Weiler
2. Nylon Brushes
3. High strength discs
4. Hand scrappers, sand blasters
5. Chemicals and compounds
6. Standard abrasives products
7. Norton abrasives products

V. WHY SHOULD CUSTOMERS CHOOSE 3M?

<table>
<thead>
<tr>
<th>Top 10 Reasons for Choosing 3M Bristle Products</th>
<th>Hence they...</th>
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<tbody>
<tr>
<td>1. Are conformable and flexible</td>
<td>Are able to reach tight/awkward areas easily</td>
</tr>
<tr>
<td>2. Last longer than conventional abrasives</td>
<td>Save money and time</td>
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<tr>
<td>3. Eliminate danger of flying wires</td>
<td>Are very safe to use</td>
</tr>
<tr>
<td>4. Gives uniform and high quality finishes</td>
<td>Help customers differentiate their products</td>
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<tr>
<td>5. Do not damage base material</td>
<td>Reduce costs of reworking and saves time</td>
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<tr>
<td>6. Gives fast performance</td>
<td>Increases productivity and saves time</td>
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<tr>
<td>7. Run clean and leave little debris</td>
<td>Are very safe and easy to use</td>
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<tr>
<td>8. Have minimal loading problems</td>
<td>Increases productivity</td>
</tr>
<tr>
<td>9. Generate very little heat</td>
<td>Are very safe and easy to use</td>
</tr>
<tr>
<td>10. Comes in a wide range of grades</td>
<td>Can meet different needs of customers</td>
</tr>
</tbody>
</table>
VI. HOW TO USE 3M BRISTLE PRODUCTS?

If you have never use a 3M Bristle product before, here are 3 quick easy steps to get you started:

1. Read the product brochures and technical bulletins.
2. View the attached “3M Bristle Products Applications CD ROM”
3. Carry out hands-on practice to get a feel for the product.

Below are application guidelines to bring the best out of using 3M Bristle products.

GENERAL GUIDELINES:

a. Define the application: What you are going to do (coating removal, deburring, cleaning, finishing, etc) and the features of the work piece will determine your choice of the Bristle product, product grade and product size to use.

b. Use the optimum grade that will get the job done: Avoid using a coarse grade for an application which can be carried out equally well with a finer grade. More steps will be required to get to the polishing stage if a coarse grade is used initially.

c. Let the Bristle do the work: Bristle is not a conventional abrasive. Only minimal pressure or force is required for most applications. Do not work the Bristle with excessive force; let the Bristle do the work for you.

d. Conformability is the key: The strength of the Bristle products lies in their ability to conform to non-planar surfaces and irregular shapes. Bristle products work best for applications involving irregular work pieces that require abrasive with a high degree of flexibility and conformability. For such applications, the unique ability of the radial Bristle disc is enhanced: the hollows and creases of the work piece can be reached without leaving additional marks.

e. Use a larger disc/brush whenever possible: A larger disc/wheel works more efficiently. Bristle products have no hard edges the way other wheel products do, so they can be compressed to fit into curves and hollows without inducing damaging gouges and trails on the work piece. Thus, a larger disc/brush should be utilized whenever possible.
PRODUCTS GUIDELINES:

**Radial Bristle Disc/Brush:**
Keep your strokes slow and steady, covering as much of the work piece as possible with each stroke. There is **no need** to bear down hard, unless it is needed so as to make the disc/brush conform to a convex or concave region. Smearing may be encountered when using the finer grade products on thin work pieces. In such cases, a slower rotation speed or quicker polishing stroke should be used.

**Roloc Bristle Disc & Right Angle Grinder:**
Work with slow and steady strokes, without exerting excessive force on the tool. These products are designed to be run with a small angle to the working surface. Running them flat on the surface or with too much tilt will be inefficient and may damage the products. An angle of about 10 to 15° to the surface is the optimum to work with.

![10 to 15°](image1) ![over 15°](image2)

**SR Cutters:**
For fillet seals and flat applications, the underlying layer will be damaged if excessive downward force is being applied. Ease off on the downward force, most of the force should be directed to moving the tool forward/backward instead of downward. When using the SR cutter on fastener heads with thick sealant, remove the sealant around the fasteners in increments by starting and stopping the drill a few times. This will prevent the buildup of frictional heat, which can result in sealant degradation and cutter blunting.
### VII. TOOLS AND EQUIPMENT

<table>
<thead>
<tr>
<th>Tool</th>
<th>3M Bristle Product</th>
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<td>Radial Bristle Brush</td>
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<td></td>
<td>Radial Bristle Discs</td>
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<td></td>
<td>SR Radial Bristle Discs</td>
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<td></td>
<td>Roloc Radial Bristle Discs</td>
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<tr>
<td>Flexible Shaft Motor</td>
<td>Radial Bristle Brush</td>
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<tr>
<td></td>
<td>Radial Bristle Discs</td>
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<tr>
<td>Right Angle Grinder</td>
<td>Roloc Bristle Discs</td>
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<tr>
<td></td>
<td>SR Cutters (Integral 1/4&quot; - 28 mandrel)</td>
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<tr>
<td>Vertical Grinder</td>
<td>Bristle Discs</td>
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<td>Mini Grinder</td>
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<tr>
<td>Bench Motor</td>
<td>Radial Bristle Brush</td>
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<td></td>
<td>Radial Bristle Discs</td>
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<td>Back Stand</td>
<td>Radial Bristle Brush</td>
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<td>Pedestal Grinder</td>
<td>Radial Bristle Brush</td>
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<td>Robotic Equipment</td>
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3M™ Bristle Discs

3M™ Radial Bristle Discs

- **Size:** Various sizes available
- **Grade:** Various grades available
- **Color:** Yellow, White, Green, Brown
- **Speed (MOS):** Various speeds
- **Box Case:** Various quantities

3M™ Roloc™ Radial Bristle Discs

- **Size:** Various sizes available
- **Grade:** Various grades available
- **Color:** Yellow, White, Green, Brown
- **Speed (MOS):** Various speeds
- **Box Case:** Various quantities

3M™ Radial Brushes

- **Size:** Various sizes available
- **Grade:** Various grades available
- **Color:** Yellow, White, Green, Brown
- **Speed (MOS):** Various speeds
- **Box Case:** Various quantities

**UPC Maxima**

- **Product Use:** Revolutionary 3-D abrasives for safer operation and consistent performance in hard to reach areas.

**IMPORTANCE TO PURCHASER**

Product Use: Please remember that many factors can affect the use and performance of a 3M product. In particular, the materials to be used with the 3M product, the surface preparation of these materials for optimum use of the 3M product, the conditions in which the product is expected to perform are among the many factors that can affect the use and performance of a 3M product. Since the conditions in which the product is expected to perform are beyond 3M's control, 3M MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE USE AND PERFORMANCE OF THE 3M PRODUCT AND SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limited Warranty and Limited Remedy: The 3M product will be free from defects in material and manufacture for a period of one (1) year from the date of manufacture. During this period, 3M's sole obligation and your exclusive remedy shall be the repair or replacement of the 3M product or refund of the purchase price of the 3M product, at 3M's option, to the extent permitted by law. 3M MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability: Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental, or consequential regardless of the legal theory asserted, including but not limited to contract, warranty, negligence, or strict liability. For the state of California, this limitation shall not apply to California residents. Use caution when handling products, follow label instructions, and consult the safety data sheet. Product use in environments containing hazardous materials may require additional requirements.

For more information and assistance:

- **Contact your local 3M distribution center or 3M:**
  - **48 United States:** 1-866-742-9546
  - **Canada:** 1-800-363-5200
  - **Puerto Rico:** 866-632-7273
  - **Mexico:** 52-55-1-0500
  - **3M Center, Building 223-6N-01, St. Paul, MN 55144-1000
  - **950-835-5911
  - **3M Canada:** PO Box 5757, Mississauga, Ontario, Canada N6A 4T1
  - **3M Canada:** PO Box 155, London, Ontario, Canada N6A 4T1
  - **3M Canada:** PO Box 455, Lachine, Quebec, Canada H9S 3K9
  - **3M Canada:** PO Box 66, Montreal, Quebec, Canada H9S 3K9
  - **3M Canada:** PO Box 100, Toronto, Ontario, Canada M8W 3W4
  - **3M Canada:** PO Box 425, Mississauga, Ontario, Canada L5R 4L2
  - **3M Canada:** PO Box 305, Toronto, Ontario, Canada M3C 3P4

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  - **3M Canada:** PO Box 305, Toronto, Ontario, Canada M3C 3P4

**A Note of Caution:**

- Always use appropriate protective glasses, face shields and body protection. Do not exceed maximum operating RPM's. Use guards provided with this product. For the state of California, this limitation shall not apply to California residents.
Why choose the revolutionary 3M™ Bristle Discs?

Flexibility
Unlike most abrasives, 3M bristle discs are flexible to provide precise finishing and conform to irregular surfaces. This provides a consistent finish even on the most complex parts.

Safety
To help you meet increasingly tough safety standards, 3M bristle discs last longer than most abrasives and provide the same final finish throughout their life. For productivity in automated processes, there are fewer changeovers.

Long, consistent performance life
3M bristle discs last longer than most abrasives and provide the same final finish throughout their life for productivity in automated processes, there are fewer changeovers.

Choice of discs or brushes for a wide variety of applications
The 6” radial bristle brush works on most bench motors in place of a flap brush for general applications and production. The 3” radial bristle disc works on common high-speed die grinders for right angles.

Applications:
• Brushes on four-speed engine crankcase threads with diametrically opposed threads to remove heavy cast iron and grime from metal finish. Can be used for both mild and heavy applications.
• Remove corrosion and paint from aircraft parts
• Sealcoat metal before painting

Product Information:
• 6” brush in 5 grades: 50, 80, 120, 180, 240 grit, complete with 3M™ SandBlaster™ abrasive grain; adapter for most bench motors included; 3M™ Mandrel™ required.
• See charts on flap for part numbers.

Fast deburring and cleaning of small areas
The 3” disc is for small areas with heavy duty requirements. The 4”” rod 12” x 3” radial bristle disc has a very flexible bristle for deburring, cleaning, finishing, and polishing detailed parts of right angles. With these discs, you can automate many previous manual operations. Replace chemicals and compounds to help reduce worker safety issues of chemical finishing.

Applications:
• Deburr small plastic and metal casings for hi-tech housings
• Brush on metal castings to form a steel bead and then deburr with metal radial bristle discs
• Deburr plastic and aluminum automobile parts
• Deburr plastic and aluminum automobile parts

Product Information:
• 3” radial bristle disc, thin bristle, grade 50, removing rust from steel blade
• 3” radial bristle disc, grade 60, removing rust from steel blade

3M™ SR Radial Bristle Discs – for seam sealant removal
Fast sealant removal without affecting underlying paint
These plastic abrasive particle-filled products remove 1/16” to 1 1/16” thick coats of sealants, silicones, RTVs, and adhesives from most surfaces. The unique construction removes the sealant but not the underlying paint or other coating. That means less time to scrape.

Applications:
• Sealant removal from window sealing surfaces on fuselage ( WARNING—do not use directly on window surfaces as windows may be damaged)
• Sealant cleaning from fasteners prior to removal
• Silicone and RTV removal from engine components
• Sealant removal from access/inspection panel faying surfaces

Product Information:
• Grades: Not applicable, no mineral used
• Diameters: 2” and 3”
• 2” SR radial bristle disc cleaning final layer of seam sealant around engine wing fasteners.
• 3” SR radial bristle disc clearing the lap joint of seam sealant around aircraft wheel fasteners.

3M™ Bristle Discs – for wide variety of applications
High maximum operating speed discs for most right angle tools
These high performance discs with a standard 3M™ Mandrel™ attachment system have a maximum operating speed in excess of 20,000 RPM, deliver a high-quality, consistent finish with light pressure.

Applications:
• Gasket removal in turbine repair
• Remove paint, rust, and dirt from machinery
• Deburr and finish medical implants
• Aircraft paint and rust removal
• Clean and deburr large areas from aluminum aircraft panels

Product Information:
• Dimensions: 2”, 3”, and 5”
• Grades: 50, 80, and 120 with Cubitron™ mineral
• 4 Introductory Packs available
• Roll disc pad holder required

5” radial bristle disc, grade 50, removing paint from aircraft wing.
6” SR radial bristle disc, grade 50, removing paint from aircraft wing.
4” SR radial disc, grade 50, removing rust from steel blade.
1” thin radial bristle disc, grade 42, removing tight oil scale and finishing inside of copper tube.
1” radial bristle disc, grade 60, removing rust from steel blade.