

How-to

Choosing the Right Abrasive Product for Welding and Metal Fabrication

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Wondering which abrasive is right for your welding and metal fabrication project? Norton provides tips and a reference guide to help you make the right choices, in both the selection and usage of the product, so that you can minimize your costs and maximize your output.

What Is the Right Choice for Your Operation?

Tip: Start by Weighing Priorities

Abrasive products come in various levels of performance, which Norton labels "good," "better" and "best."

- If initial price is your primary consideration, choose good abrasives; be aware that a lower purchase price up front may not end up being economical in the long run.
- If you're running high-productivity applications and have to keep initial abrasive prices in mind, choose better abrasives.
- If maximum productivity and lowest total cost are critical to your operation, consider the best abrasive products.

Tip: Test to Determine the Best Solution

When testing abrasive products, there are three measurements to consider:

1. Time
2. Material removed
3. Product wear

By holding one of these constant and measuring the other two, you can come up with an objective comparison between multiple products, helping you to find the best solution for your operation.

Abrasive Selection Guide

If you're choosing an abrasive for welding and metal fabrication, refer to the guide below. Each application lists the relevant products in the order of best, better and good.

APPLICATION	ABRASIVE PRODUCTS	FORMULATIONS
Grinding down metals:		
Cut-off applications:	Cut-off wheels	1. Ceramic alumina and zirconia alumina blend for stainless and carbon steels, other ferrous and exotic metals
Cutting sheet metal		2. Zirconia alumina for stainless and carbon steels and other non-ferrous metals
Cutting, notching pipe		3. Aluminum oxide blend for carbon steels
Grinding:	Depressed center grinding wheels	1. Ceramic alumina and zirconia alumina blend for stainless steel and other ferrous metals
All weld grinding	(24 or 36 grit)	2. Mix of zirconia alumina and premium aluminum oxide grains for metals ranging from alloys and stainless steel to gray iron and non-ferrous metals
Pipe notching, beveling		3. Aluminum oxide for ferrous metals, aluminum and other soft metals
Heavy stock removal		

APPLICATION	ABRASIVE PRODUCTS	FORMULATIONS
Grinding down metals (continued):		
Blending:	Coated abrasive flap discs	1 a) Ceramic alumina for stainless steel and other ferrous metals
Blending welds	(36 or 40 to 80 grit)	1 b) Ceramic alumina and zirconia blend for low pressure grinding of ferrous metals.
Medium to light stock removal		2. Zirconia alumina for ferrous and non-ferrous metals
		3. Aluminum oxide for ferrous metals
Blending welds	Fiber discs	1 a) ceramic alumina for difficult-to-grind materials,
Metal fabrication	(24 or 36 to 80 grit)	including super alloys and hardened steel
		1 b) Zirconia alumina for fast stock removal and rough cutting applications
		2. Aluminum oxide blending disc for a consistent finish
		3. Aluminum oxide for general purpose applications
Dimensioning and shaping	Coated abrasive cloth belts	1) Ceramic alumina for hard-to-grind alloys
Heavy stock removal	(for bench stand grinders)	2 a) Zirconia alumina blend for exotic and heat-sensitive metals 2b) Zirconia alumina for stainless steel
		3) Aluminum oxide for general use and maintenance/repair operations.

APPLICATION	ABRASIVE PRODUCTS	FORMULATIONS
Blending the surfaces:		
Deburring welds	Coated abrasive flap discs (60 or 80 grit)	1. Ceramic alumina 2. Zirconia alumina blend 3. Aluminum oxide
Light deburring and finishing	Resin fiber discs (80 to 120 grit)	1 a) Ceramic alumina 1 b) Zirconia alumina blend 2. Ceramic alumina and zirconia alumina blend 3. Aluminum oxide
Blending and leveling (contours or flat surfaces)	Non-woven deburring discs	1. 1) Engineered alumina oxide 2. Aluminum oxide
Blending	Non-woven deburring and finishing discs	3. 1) Engineered alumina oxide
Finishing		4. 2) Aluminum oxide
Polishing		
Blending welds	Fiber discs	1. Ceramic alumina for difficult-to-grind materials
Deburring	(60 to 120 grit for light deburring)	2. Aluminum oxide disc for a consistent finish 3. Aluminum oxide for general purpose applications
Surface preparation	Coated abrasive cloth belts	1) Ceramic alumina
Blending welds	(120 grit)	2 a) Zirconia alumina blend for exotic and heat-sensitive metals 2 b) Zirconia alumina blend for stainless steel 3) Aluminum oxide
Surface preparation	Non-woven surface preparation discs	5. 1) Engineered alumina oxide
Blending welds		2) Aluminum oxide
Blending welds	Coated abrasive flap wheels (80 to 120 grit)	1) Ceramic alumina 3) Aluminum oxide
Cleaning	Non-woven discs specifically for surface finishing (Medium, 120 grit)	6. 1) Engineered alumina oxide
Polishing		2) Aluminum oxide
Blending scratch patterns		

APPLICATION	ABRASIVE PRODUCTS	FORMULATIONS
Creating the final finish:		
Polishing	Non-woven, surface-finishing discs (Medium, 120 grit, or fine, 320 grit)	1) Aluminum oxide
Finishing		
Weld polishing	Surface-finishing convolute wheels	1) Silicon carbide
Cleaning	(Medium, 120 grit)	
Finishing		
Blending weld areas on stainless steel		
Final blending	Non-woven deburring and finishing discs	7. 1) Engineered alumina oxide
Touch-up		8. 2) Aluminum oxide

Tip: Use Safely and Maintain

Following safety and maintenance guidelines is very important and will also save time and money, contributing to the longevity of the abrasive, the production time, and the quality of the finished product.

For safety and maintenance information, check the manufacturer's catalog and product packaging. The manufacturing catalog will detail what products are designed for which machines, and some use icons to make the machine-to-abrasive match clear and easy. The product packaging also contains helpful information; mount it on your machine so your operators always have access to it.

We all want higher productivity and lower cost, but safety comes first. Start by making sure your operators take the appropriate safety precautions, and then use the correct abrasive products to get the job done right.

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