

WORK SMARTER

FROM START TO FINISH

INTRODUCTION

Stainless steel is one of the most widely used metals. Its strength, durability and corrosion resistance make it the perfect choice for a broad variety of industries – from transportation, food and beverage, to pharmaceutical, petrochemical, metal fabrication and more.

Most stainless steels can be cut, welded, formed, machined, fabricated and finished; however, metal finishing is a tedious process that requires a balance of time and precision. Since stainless steel tends to be more expensive than other steel options, it is imperative that workers and shops use the right tools and processes to avoid wasting both time and money.

Steel is also a widely used metal for such markets as oil and gas, shipyards, transportation and more. For coatings to be applied to steel parts, the surface must be prepared accurately. This preparation is usually completed with various abrasives for surface cleaning, surface preparation, weld blending and beveling.

Finishing solutions are designed to help metalworkers increase productivity. In three easy steps, you can achieve your desired finish and create products made to withstand industrial wear and tear.



More and more industries are recognizing the importance of workers being able to do their jobs more efficiently, comfortably and with less fatigue.

Working better and smarter requires the right tools and processes to consistently

achieve the desired finish, especially when working with stainless steel. The tools and abrasives used for the job, the grit type, grain and operator technique, all affect surface finish.

MOST COMMON TYPES OF FINISHES

2B

A bright reflective finish, and the basis for a polished and brushed finish.

Application: Architecture

2D

Similar to a #2B finish, but offers a low reflective matte appearance

Application: Industrial or Engineering

4

The most popular finish, it is bright and reflective, and is the basis for a polished and brushed finish.

Application: Food and Beverage, and Pharmaceutical

8

The most reflective surface of stainless steel, it's also known as the mirror finish.

Application: Cosmetics (Mirrors and Reflectors)

DID YOU KNOW?

To avoid bacteria growth inside scratches and grooves, the industry has designed a specification called **Roughness Average**, or **Ra**. Measured in micro-inches, Ra is the average height between surface peaks and valleys, and defines the maximum allowable groove depth in stainless steel.

To qualify for a **#4 sanitary brushed finish**, a stainless steel surface needs to have an **Ra between 30 and 40 micro-inches**.

For industries such as food and beverage, food processing and pharmaceutical, surface roughness is a critical factor to prevent bacteria growth and to ensure hygienic use. The **Ra** must be between **12 and 25 micro-inches**. The smoother the surface, the easier it is for cleaners and disinfectants to reach the deepest valleys of the surface.

Achieve your desired finish, increase productivity and maximize cost savings by following these three simple steps:

STEP 1

Weld better with ArcOne® retrofit Singles® Duo filters

STEP 2

Blend welds faster with fastest flap disc, the ENDURO-FLEX 2-IN-1™


STEP 3

Finish smarter with individually balanced drums and the versatile LINE-MATE III™ drum sander



STAINLESS STEEL AND STEEL DO NOT MIX

Steel contaminates stainless steel. For this reason, it is strongly recommended to store and work with stainless and steel in separate enclosed areas, if space allows. In addition, avoid using the same abrasive on both materials to prevent cross contamination.

Look for ferrous-free abrasives to avoid any contamination. And keep an eye out for this symbol , which means that there are minimal traces of iron, sulphur or chlorine to meet quality control objectives in sensitive operations.

5 QUICK STEPS TO WORK SMARTER FROM START TO FINISH:

1. Clean your workpiece and surface before starting, and in between steps.
2. Determine the desired finish before you begin. This will help you identify the process, avoid any unnecessary steps, and determine exactly what tools are needed.
3. Respect the recommended RPM so you can achieve a better, faster finish. It will also prevent premature wear of the abrasive, and maximize its efficiency.
4. Select the right power tool and, most importantly, use a variable-speed power tool for finishing discs and drums applications. Always refer to tip #3 as well!
5. Follow safety protocols using the right protective equipment (PPE), and take the necessary safety precautions to enhance productivity.

WORK SMARTER FROM START TO FINISH

STEP 1 - WELD BETTER

When it comes to welding, personal safety is not a choice. In fact, OSHA states that welding, cutting and brazing are hazardous activities that pose a unique combination of safety and health risks to more than 500,000 workers annually.

A welding helmet is an investment, not a necessity. With so many options available on the market, it can be hard to know which helmet makes the most sense. You may want to invest in one that is not only comfortable for all day use, but that also has auto-darkening technology and features the settings required to do your job safely and efficiently.

SHADING MADE EASY

Auto-darkening helmets are an effective way to ensure protection of a welder's eyes and face. One advantage of ADF technology is that the welder will not have to flip up his/her helmet to perform other tasks or to get a sense of the work area. This can prevent neck strains and injuries by not having to remove, flip or change helmets.

When looking into ADF technology, there are many factors to consider. For example, ADF welding lenses are offered in fixed or variable shades.

Variable shades allow the welder to perform a wider variety of welding applications, while single shade auto-darkening lenses, though cost effective, only offer one dark shade. Welders should select a lens based on personal preference, while considering the variety of welding tasks they will be performing.

Including features like grind mode on a welding helmet adds the capability to grind down a weld or cut a piece of metal without having to change face protection and carry additional PPE equipment when in the field. This saves both time and money.

HD technology specific to ArcOne® increases the range of visible light when looking through the lens, and while welding. By increasing the range of light, more natural colours can be seen, providing a clearer, more defined view of the work area. This is especially important when working with stainless steel. You want to get it right the first time!

Auto-darkening lenses are available in multiple sizes with varying options: shade, sensitivity and viewing area. ArcOne® can retrofit your current helmet with the finest technology available.



ArcOne® has challenged the status quo with its Singles Duo lens. This patented technology allows welders to adjust the desired dark shade for personal preference and the task at hand, optimizing the welding process and increasing a welder's effectiveness in the field with minimal cost increases. This lens also comes with grind mode, as well as ArcOne's HD technology, and can be retrofit to most 2" x 4" welding hoods.

REMEMBER THESE 5 ESSENTIAL PPE ITEMS:

1. Eye and face protection (face shield, safety glasses)
2. Hearing protection (earmuffs, ear plugs)
3. Hand protection (proper working gloves)
4. Respiratory protection (dust mask, air systems)
5. Body and foot protection (safety boots)

PRO TIP

Achieve slag and porosity-free welds with E-WELD 4 anti-spatter. Deliver spotless and paintable jobs every time!



STEP 2 - BLEND WELDS FASTER

Finishing takes significant time and requires skilled labour, which is why reducing the number of steps in the finishing process is crucial. With the right combination of tools, manufacturers can achieve significant time and cost savings. Using the wrong abrasive can lead to a poor removal rate, as well as

wheels being discarded before they have been fully used. An unproductive and long process can result in operator fatigue. Both factors can lead to high costs and inefficient production. Workers should be equipped with the proper tools and understand how to work smarter.



BEST PRACTICE

CHOOSE YOUR ABRASIVE CAREFULLY. An abrasive that is too coarse could gouge the surface, making a smooth blend impossible, and ruining your workpiece. For novice operators, we recommend starting with a finer grit. Once familiarized with the speed, pressure and angle, move up to a coarser abrasive for faster material removal.

CLEAN YOUR WORKPIECE before starting any finishing job to remove contaminants on the surface. It will save you from having to fix any scratches down the line.

MAXIMIZE YOUR PRODUCTIVITY

When choosing a flap disc, look for a product family that offers a complete solution, regardless of the weld (TIG or MIG), removal rate (light to rough) or material (steel, stainless steel, aluminum).

Discs that are made with cold curing glue and air dried, such as the ENDURO-FLEX™, tend to have a longer service life. Keep an eye out for additional features such as:

	<p>Trimmability - Flap disc backings made from less dense wood fibre composite are easier and safer to trim compared to backings made from nylon or fibreglass. It also extends the life of the disc. When the flaps wear down to the outer diameter of the backing, trim away 1/4" of the backing at a time to expose fresh abrasive grain, extending disc life and giving you a new cutting edge.</p>
	<p>Balanced discs - Make sure your flap disc meets or exceeds the ANSI standard. This will guarantee vibration-free weld blending.</p>
	<p>Threaded spin-on application - Quickly mount or remove a flap disc without needing a mounting flange nut or pin key. Reduce costly changeover time with a simple, cost-effective solution. Flap discs can come with an ultra-resistant built-in threaded arbour or a metal hub for quick and easy disc changes without compromising operator safety.</p>

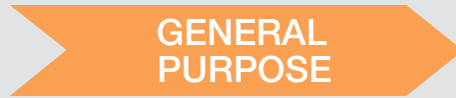
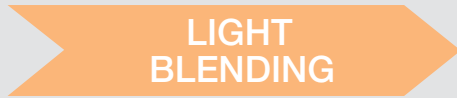
STEP 2 - BLEND WELDS FASTER (CONT.)

“To maximize performance and productivity, it’s important to keep in mind the application and the material that will be worked on, as this will impact the selection of abrasives.”

- Cédrik Rochon, R&D Engineer, Finishing Solutions

For example, when working on steel structural parts that require a coating, a coarser grit flap disc like grit 36/60 will help get the job done faster, while providing a paint-ready finish that can be coated right away. On the other hand, when working with stainless steel to

achieve a **sanitary #4 brushed finish** for the food and beverage industry, different steps need to be followed to achieve a sanitary finish. Start by using a flap disc that provides a finer finish, but still offers high performance, like the ENDURO-FLEX 2-IN-1™, followed by finishing drums.



ENDURO-FLEX 2-IN-1™	ENDURO-FLEX™	ENDURO-FLEX TURBO™
✓ Removes TIG welds and finishes surfaces in one step	✓ Removes MIG welds and finishes surfaces in one step	✓ Removes welds and leaves a paint-ready finish
✓ Food grade finish	✓ Longest lasting flap disc	✓ Fastest removal rate
✓ Removes surface imperfections, oxidation, and discolouration	✓ Trimmable backing	✓ Turbofan™ cooling improves disc life

Substantially reduce your finishing costs by combining two finishing steps in one. Flap discs that offer a two-in-one feature remove TIG welds and finish the surface using one disc instead of two. To ensure the longest life and best performance, use at an optimal speed of 4,000 to 6,000 RPM on a variable-speed tool.

Some flap discs offer a trimmable backing, which extends disc life and reduces trips to the tool crib, saving time and money while maximizing productivity.

STEP 2 - BLEND WELDS FASTER (CONT.)

Certain flap discs self-sharpen as they work, providing both an aggressive removal rate and an excellent finish. You may already know what finish you can expect from different grits (i.e. 40, 60, 80, 120, etc.), but certain abrasives like the

ENDURO-FLEX TURBO™ have a dual grit. Its unique grit 36/60 ceramic grain blend removes material quickly (like a 36 grit), but leaves a finer 60 grit, **paint-ready finish**, saving you a valuable step in the finishing process.

PRO TIP – PAY ATTENTION TO PRESSURE

As a general rule, you should apply more pressure when removing material versus polishing. Applying the right pressure and angle keeps the material from overheating and prevents discoloration. For the best performance, always use a type 27 flap disc at a working angle of four to 10 degrees. Never use it at a flat working angle.

It is always better to apply moderate working pressure. Let the tips of the flaps do the work. Too much pressure can cause overheating and discoloration of sensitive metals. Also, heat can cause loading or glazing of the abrasive flaps. Specialized premium quality flap discs are designed to enable a better airflow to cool off the surface, and use unique coatings to extend the disc life.



WANT TO KNOW MORE?

Ask about our blending welds case study to learn how a WALTER technical expert helped an equipment manufacturer achieve a 50% reduction in annual discs usage and a total cost savings of \$18,000 annually.

Are you ready to work smarter? See if a change from bonded abrasive grinding wheels to ceramic flap discs could benefit your shop

STEP 3 - FINISH SMARTER

BEST PRACTICE

To avoid premature clogging on your drums, don't forget to clean and prepare your surface.

Whether you work with stainless steel, aluminum, brass, copper or other alloys, selecting the right power tool is key for finishing applications.

Match any linear finish and reduce your finishing costs by using a versatile variable-speed tool like the LINE-MATE III™. Be sure to use the right speed. Blending drums are used at much lower speeds than flap discs - generally at 2000 RPM. Also, working with a dedicated tool ensures that the RPM remains constant under load for a uniform finish every time. Ergonomically, the right finishing power tool allows you to keep a better posture and uniform pressure to **achieve the desired finish quickly and with minimal effort**. Keeping consistent pressure and steady movement will help you obtain a straight and uniform linear finish.

Pair your tool with **individually balanced drums** to avoid vibration, and to provide a consistent and uniform finish. Higher quality drums have noticeably less vibrations, as they are individually balanced during production using laser technologies. The specially placed weights compensate for variations of density of the non-

woven material. Prioritize high-quality, non-woven grain and fibre to provide high performance throughout the life of the product. Higher quality materials decrease the risk of smears and contamination of the surface. Reduce changeover time with the threaded spin-on drums, which also eliminates the need for a clamping nut or extension tools.

If you are looking to quickly achieve a brushed linear finish, use drums like WALTER's TWO-IN-ONE™ to combine two finishing steps into one. The coated abrasive cloth of the drums cuts aggressively, while the interwoven BLENDEX flaps produce a satin linear finish. Combined, the blend of materials reduces the average height between surface peaks and valleys; therefore, reaching a lower Ra between 12 and 16 (#4 finish) in a single step. Other standard drums are offered in various grit levels to reach a wider range of finishes in a multi-step approach. BLENDEX™ drums are used to polish, burnish, blend, deburr, clean and brighten, depending on the grit level (from coarse to super-fine).



Specially placed weight for optimal balance

WHAT YOU WILL NEED



ARCONE SINGLE® DUO FILTERS OR WELDING HELMET

Protect your eyes and face and consider shades, sensitivity and viewing area.



QUICK-STEP LINE-MATE III™

A versatile variable-speed tool that allows you to quickly and easily apply a wide range of linear finishes to metal surfaces.



ENDURO-FLEX™

With its trimmable backing, the ENDURO-FLEX™ is the longest lasting flap disc, helping you maximize productivity.



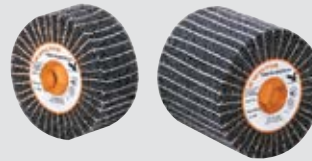
BLENDEx™ DRUMS

Can be used to polish, burnish, blend, deburr, clean and brighten stainless steel, aluminum, brass, copper and other alloys.



ENDURO-FLEX 2-IN-1™

Remove TIG welds, finish the surface faster, and reduce finishing costs.



TWO-IN-ONE™ DRUMS

Combines two finishing steps into one: Cuts aggressively, while the non-woven flaps produce a satin linear finish.



ENDURO-FLEX TURBO™

Blend welds and achieve a paint-ready finish in one easy step.



SUPER 5™ ANGLE GRINDER

One of the safest and most productive grinders to tackle a wide range of jobs thanks to its lightweight but powerful construction.



STAINLESS STEEL SURFACE CLEANER AND PROTECTOR ENOX-SHINE

Cleans, protects and polishes stainless steel, non-ferrous metals, and plastics after anti-spatter solution.



SURFACE PREPARATION CLEANER FT 200™

Avoid premature clogging of your drums or prepare your surface prior to coating.



E-WELD 4™

A Premium anti-spatter solution

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**SEE IF SWITCHING
TO WALTER CAN
HELP YOU SAVE
MONEY!**

Ask your
distributor or
WALTER Territory
Manager for a free
consultation.

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