



Science.
Applied to Life.™

Mild Steel and Aluminium Application Guide: Cutting & Grinding

Do more.
Do it faster.
Do it safer.

CUBITRON™ II





Introduction.

Mild Steel & Aluminium

The strength of mild steel and the lightweight nature of aluminium make them ideal for use in metal fabrication industries such as structural, sheet metal and transportation.

The process of fabricating these metals often requires aggressive techniques in order to remove unwanted material and produce a quality finish ready for its final use.

Abrasives play an important part in the undertaking of this type of work. Using the right abrasives plays an important part in productivity, output quality and operator safety.

Performance Essentials

What do fabricators look to gain from their abrasives in fabricating heavy gauge metals?

Speed

Complete the job quickly

Safety

Complete the job in the safest possible manner

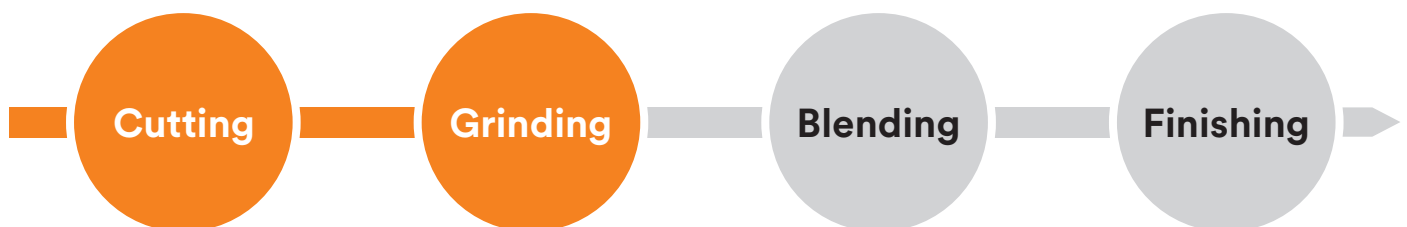
Process

Complete the process in as few steps as possible



Advanced metal fabrication process with 3M Abrasives.

The purpose of this application guide is to highlight some of the more common applications within the metal fabrication process and help select the 3M product for the task.



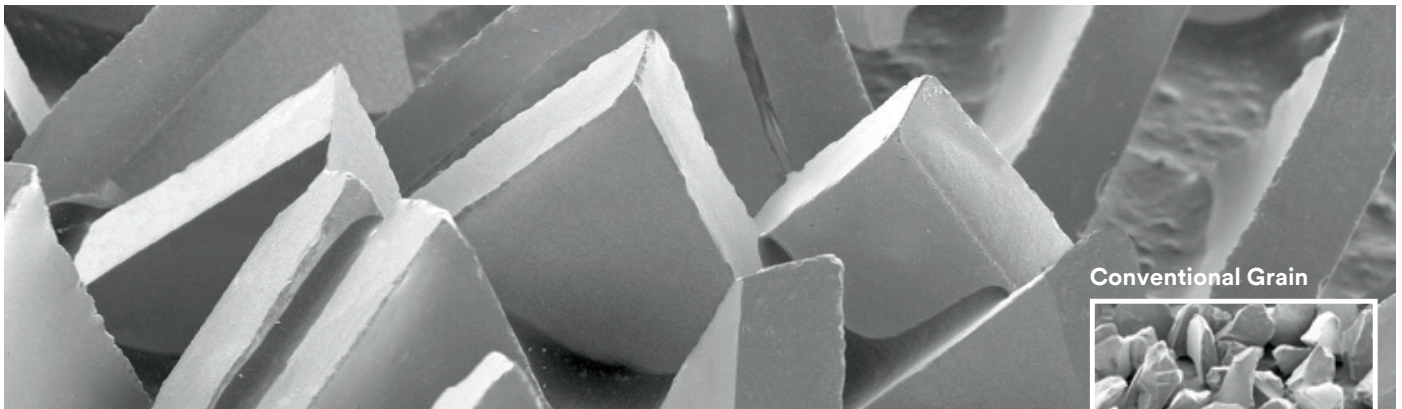
The process map above shows the basic steps of metal fabrication. This is a varied process and some of the steps may be omitted or repeated depending on the nature of the work.

This guide covers the first stage applications of cutting and grinding.

Cutting and grinding reinvented.

Using unique Precision-Shaped Grain technology, 3M™ Cubitron™ II transforms the process of cutting and grinding.

A picture is worth a thousand words



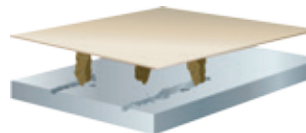
Cubitron II abrasive is Precision-Shaped Grain and slices cleaner and faster



3M

- ✓ Cooler operation
- ✓ Clean cut
- ✓ Lasts much longer

Conventional ceramic grain is irregular and “ploughs” through the metal



- ✗ Heat build-up
- ✗ Slower cutting
- ✗ Shorter life

3M's latest innovation, Precision-Shaped Grain

3M's proprietary Precision-Shaped Grain technology acts like a cutting tool, slicing through metal like a knife. The material is continuously self-sharpening, as points break off during use to expose new sharp edges – slicing cleaner and faster, staying cooler and lasting many times longer than conventional grain types.

- ▶ Cuts faster – helps improve productivity and throughput
- ▶ Lasts longer – helps save money
- ▶ Easier to use – good for workers, good for business
- ▶ Cleaner – eliminates burnishing, oxidation and discolouring
- ▶ Reduced rejects – produces fewer heat-related stress cracks in high-cost end parts

CUBITRON™ II

Cutting.

Raw materials are typically cut into the correct dimensions for subsequent operations. There are a variety of cutting methods when it comes to mild steel and aluminium. This selection guide covers cutting with an abrasive wheel, which is often faster and more flexible compared with laser or saw techniques.

3M have turned conventional size selection on its head by introducing their unique Precision-Shaped Grain technology into cutting wheels, delivering unrivalled product life and speed from a 1.6mm wheel.

Expect the unexpected

1.6mm

Material thickness: 1–10mm

3M's 1.6mm cutting wheel beats competitive 1.0mm wheels for life and speed.

Start Here



1.0mm



Accuracy

Material thickness: 1–4mm

Recommended for stainless steel.

2.0mm+



Thickness

Material thickness: 10mm+



Operator safety and comfort

3M™ Cubitron™ II requires less pressure to deliver optimum performance, boosting operator comfort and reducing HAV's exposure.

Grinding.

Grinding is a general term for the removal of stock, weld and heavy surface contamination e.g. scale removal and flame cut smoothing. Like cutting, the grinding process is variable depending on the application and an abrasive product must be chosen to suit.

With the arrival 3M's unique Precision Shaped Grain technology, the rule book for grinding has been re-written. Not only do conventional hard/bonded wheels take on an unrivalled cut speed, operators now have a fibre disc option offering a huge leap forward in operator comfort without compromising on cut speed and life.

Re-writing the rule book

Two options become three for grinding with the introduction of Precision-Shaped Grain into fibre disc products. Increased cut-rate means less time on the tools – a clear and simple way to reduce exposure to hand arm vibration.

3M™ Cubitron™ II Grinding Wheel

Our best selling grinding wheel suitable for most heavy grinding applications.

Fillet Weld Removal

Bevelling

Flame Cut Smoothing

Scale Removal

Weld Removal



3M™ Cubitron™ II Cut & Grind Wheel

These versatile wheels are designed to be used on the face **and** on the edge meaning less change overs and great shop floor flexibility.

Gouging / Back Grinding

Notching



Did you know...

The 3M™ Cubitron II™ 982C fibre disc is the only product of it's type to be able to match the stock removal capability of a grinding wheel.

- MORE Control
- LESS Noise
- LESS Vibration

Tech Tips

Looking for further reduction hand arm vibration and improved operator wellbeing? Believe it or not the Cubitron II grinding wheels work faster and last longer with less pressure applied than normal!



For more information of how 3M Abrasive Systems can help you with your cutting and grinding application needs, please contact your local 3M Representative or 3M Distributor which can be found at www.3M.co.uk/abrasives

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