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**PRODUCT  
DATA  
SHEET****Grinding and Buffing  
after Welding****Stainless  
Steels**

Welds are often cleaned by grinding or buffing to remove spatter and welding oxide, and to blend welds. Spatter and welding oxide reduce the corrosion resistance of stainless steel, due to the presence of a thin layer of steel directly under the oxide, which has lower chromium content than the bulk of the steel. The layer may be removed by grinding, or by pickling, or by a combination of the two.

It is important that suitable grinding consumables are used to achieve the full corrosion resistance of the stainless steel. The formulation of the disc must not introduce contamination onto the surface of the stainless steel, which might cause corrosion.

The grit size of the consumable must also be suitable, because grooves introduced on the surface may become preferential sites for corrosion in challenging environments.

**'IRON FREE' CONSUMABLES**

Unless all ground areas are to be passivated after grinding, the discs used must be 'iron free', and must not have been used previously on carbon steels. Discs which are not iron free will impregnate the surface of the stainless with carbon steel, which will produce unsightly rust coloured staining on the stainless. This corrosion product in turn is corrosive to stainless steel, and will initiate attack of the stainless.

Most suppliers of grinding consumables have special 'iron free' discs for stainless steels.

Fabricators can also perform a simple test to ensure that discs are safe to use on stainless steel. A scrap piece of stainless is dressed with a sample of the candidate discs, then sprayed with tap water and left wet overnight. Satisfactory discs will not produce a rust coloured stain.

If all the ground areas are passivated after grinding, the contaminants introduced by the grinding consumables will be dissolved away, and it is not essential to use iron free discs. Austral Wright Metals can supply S-Weld Passivator for passivating stainless steel.

**SELECTION OF GRIT SIZE**

Grit size is often selected to match the finish on the steel for aesthetic purposes.

Where aesthetics are less important, selection of coarse grit may reduce the corrosion resistance of the ground areas.

For speed, it may be most practical to commence work with a coarse grit for rapid stock removal, 60 grit being common. Normal practice is then to finish with a finer grit for improved corrosion and fatigue resistance, usually 280 – 400 grit.

Silicon carbide grit produces a smoother finish than aluminium oxide at the same grit size, and is preferred for finishing.