



Draffin Stainless Steel Guide

2023

Rev-3

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Street Furniture

Finishes

There are a few Stainless Steel finishes available, for all externally visible stainless steel surfaces. These finishes are not only popular in outdoor street furniture but in kitchens and household appliances too. Finishes even out all blemishes caused during the fabrication stages of the products and have a deluxe look and feel that's easy to clean and maintain.

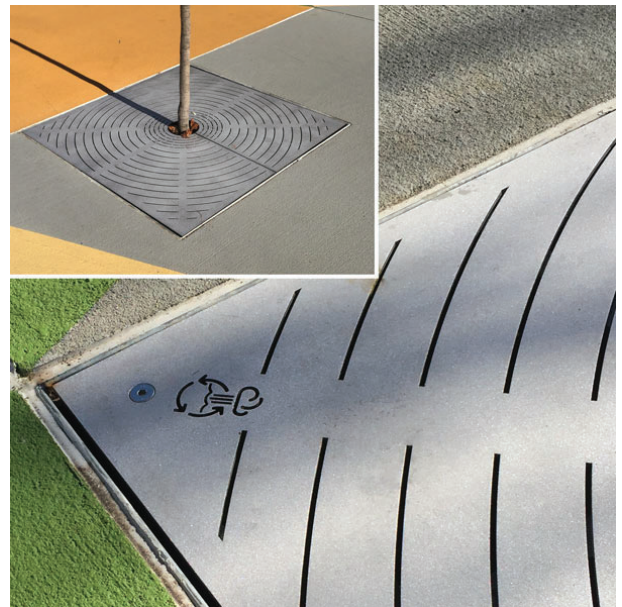
Brushed <math><0.5\mu\text{m}</math>

This finish is offered on all stainless steel Draffin Street Furniture products. Suitable for furniture and waste solutions. The surface has a directional grain that is made using specialised in-house equipment. >>



Bead Blasted

Another standard finish, bead blasting creates a uniform non directional finish that is slightly textured. This creates a softer, more subtle look while still retaining all the benefits of stainless steel. Easy to clean, and is well suited to commercial street furniture applications <<



Garnet Blasted

A rougher finish suitable for tree grates and other fixtures where a slip resistant finish is required, especially in the wet. >>

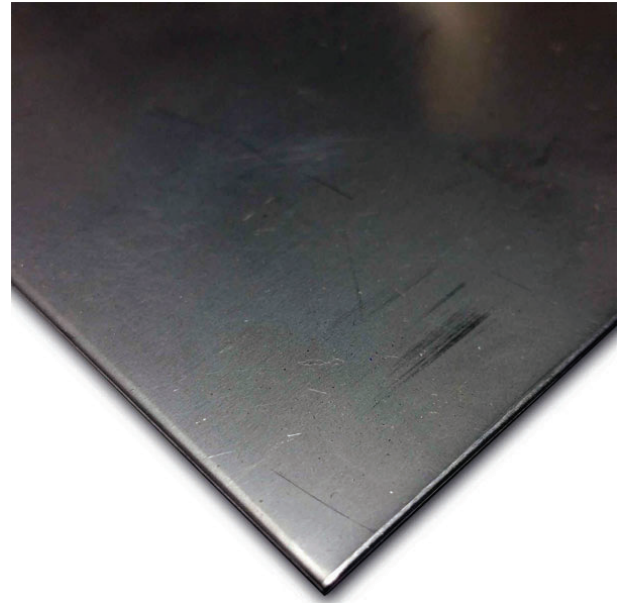


Mirror Finish

As the name suggests this finish is highly reflective. The surface is highly polished to a mirror finish and is ideal for bin openings. Surfaces with a mirror finish are easiest to clean and sanitise. <<

Mill Finish

This is what stainless steel looks like before applying any subsequent machining to give stainless steel it's more popular appearances. Recommended only for surfaces that are not visible like hidden framing or inside bin surrounds. >>



Uses

Stainless steel is commonly used where surfaces need to be cleaned and sterilised regularly for food preparation in kitchens and food processing factories and bulk storage tanks that reduce the chance of contamination, but more recently it's uses have spanned to outdoor fixtures and street furniture, mainly due to it's anti-corrosion features and recyclability, but also offers a clean aesthetic that is more often specified by architects.



Benefits

While boilers and storage tank manufacturers make use of this material mostly due to its strength and resistance to corrode under high temperatures, corrosive chemicals and conditions, so too does outdoor street furniture manufacturers. Stainless steel is ideal in this instance and will outlast almost all other materials used in this industry. The use of this material in coastal areas is particularly beneficial and would be recommended for use anywhere extreme weather occurs. Minimal maintenance is required to keep stainless steel furniture looking good.

Choosing stainless steel for your Draffin Street Furniture products incurs an increased cost over mild steel options initially, however stainless steel will outlast all other material options on offer, and will therefore be a sound investment in reliability. Additionally, once stainless steel products reach their end of service, they are 100% recyclable which is great for the environment.

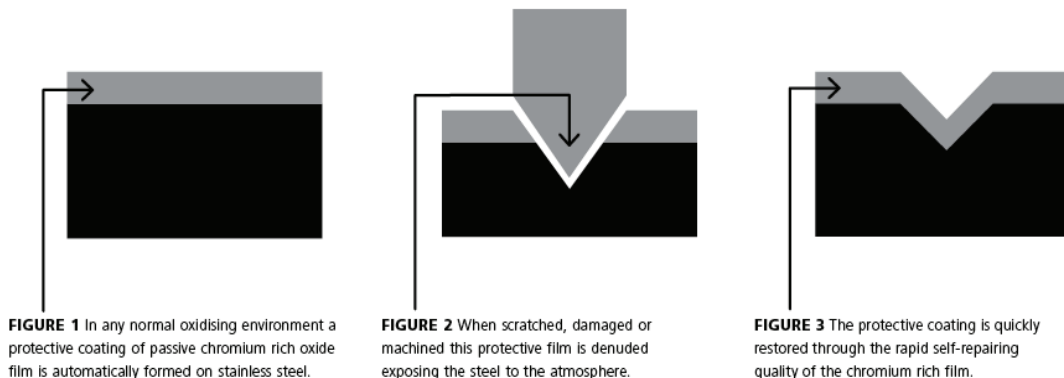


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The Science behind stainless steel

Stainless steel is a generic term for a family of corrosion resistant alloy steels containing 10.5% or more chromium.

All stainless steels have a high resistance to corrosion. This resistance to attack is due to the naturally occurring chromium-rich oxide film formed on the surface of the steel. Although extremely thin, this invisible, inert film is tightly adherent to the metal and extremely protective in a wide range of corrosive media. The film is rapidly self-repairing in the presence of oxygen (demonstrated by the image below), and damage by abrasion, cutting or machining is quickly repaired.



Credit: ASSDA

Grades used at Draffin Street Furniture

There are many grades of stainless steel, and they all have their uses. The grades are generally made from different ratios of base materials that combined produce properties suitable for particular applications. In street furniture, austenitic stainless steel is the most appropriate type used.

Austenitic Stainless Steel

Nickel is added to stainless steel in sufficient amounts, (above 8%) and the structure inside stainless steel changes to what is called "Austenite"

And two grades of austenitic stainless are most appropriate for outdoor furniture reliability. Both have suitable strength for street furniture construction.

304

This is a widely used material, and it counts for about 50% of the stainless steel produced in the world. Withstands normal rusting in most outdoor uses and is used extensively indoors in kitchens and food manufacturing. 304 has excellent fabrication characteristics as it's easily formable and weldable without weakening the material.

Composition of 304 grade stainless steel

Grade	Chromium %	Nickel %	Molybdenum %	Carbon %
304	18,0 - 20,0	8,0 - 10,5	–	0,08 max

316

316 grade stainless steel is also a widely used material and counts for the next 25% of the stainless steel used in the world. This grade has almost identical fabrication qualities as 304 stainless, but with extra nickel added to the material it can be considered "marine grade". 316 is recommended for use in harsher environments and applications like installations close to the coastline, or areas that experience extreme temperatures.

Composition of 316 grade stainless steel

Grade	Chromium %	Nickel %	Molybdenum %	Carbon %
316	16,0 - 18,0	10,0 - 14,0	2,0 - 3,0	0,08 max

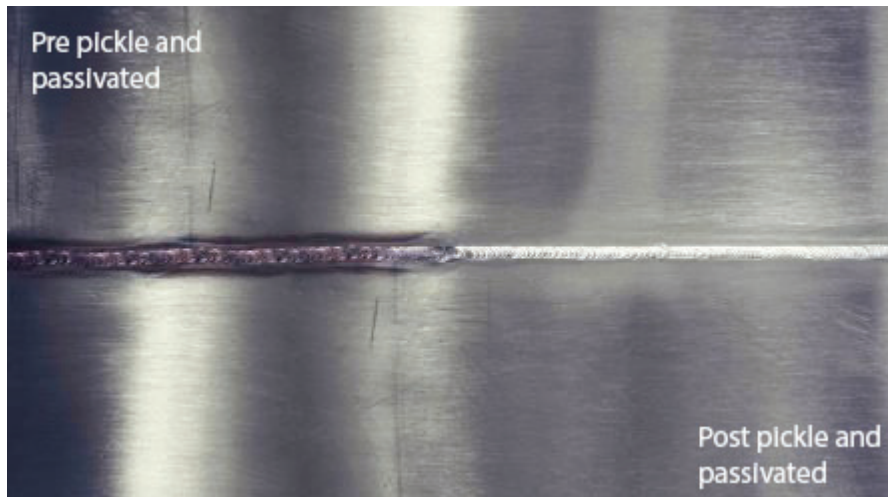


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Pickle and Passivate stage

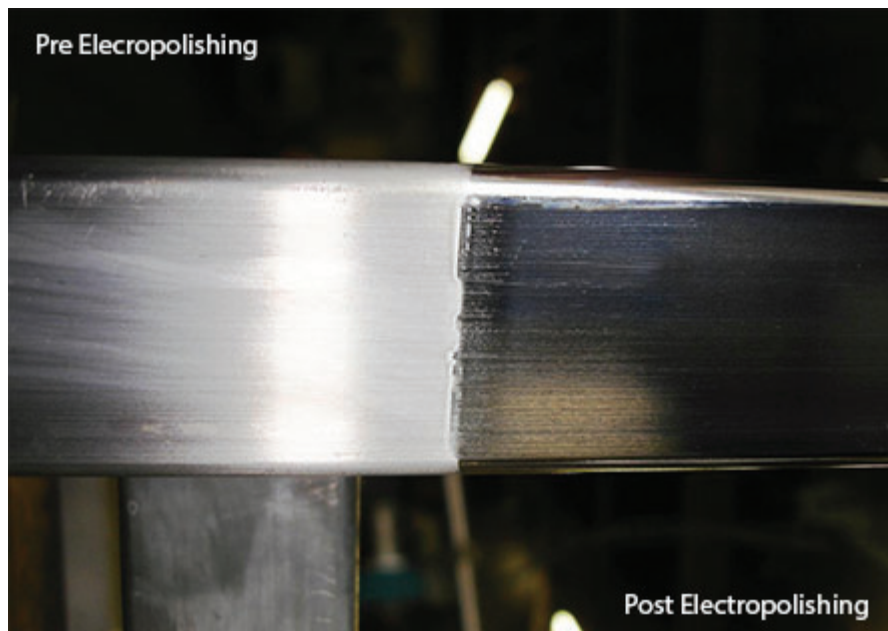
Fabrication of any stainless steel can compromise its corrosion resistance properties. Treatment of all components fabricated at Draffin Street furniture is required after fabrication, restoring the worked stainless steel and therefore ensuring a high performance product.

Both pickling and passivating stainless steel will remove any contamination on the surface of the material. The oxide layer is compromised during fabrication and needs to be restored. Pickling chemically removes high temperature scale and low chromium layers on the surface, and passivating further removes contaminants and promotes the formation of the passive film that protects the stainless steel from corrosion.



Electropolishing

This process restores brilliance and lustre to the material components. Phosphoric and sulfuric acids are used in conjunction with a high electric current, that will smooth and clean the components. Electropolishing also has an added benefit of giving extra resistance to corrosion. The now smooth finish of the electropolished stainless steel gives less chance of holding on to contaminants in its finished state.



Our understanding and knowledge base

Draffin Street Furniture are ASSDA (Australian Stainless Steel Development Association) accredited members. They provide practical knowledge and training of the correct use of stainless steels, and our accreditation is assurance that our products will last in all environments they are installed in. Without proper knowledge of these materials will result in poorer quality products. Draffin Street furniture prides itself with offering only the highest quality materials for extraordinary long life outdoors in Australia's harshest environments.

