

AUSTRALIAN STAINLESS

SPECIALISING IN STAINLESS STEEL AND ITS APPLICATIONS

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ASSDA

MRS CROCKET'S STAINLESS KITCHEN



Twelve months after the design and installation of a unique cabbage processing system in Melbourne, the importance of quality stainless steel fabrication has never been clearer.

ASSDA-accredited fabricator Bridgeman Stainless Solutions (Brendale, Queensland) was commissioned to design the unique facility at Mrs Crocket's Kitchens, which was completed in October 2005.

The \$500,000 project incorporated various plate, sheet, pipe and RHS stainless in grades 304 and 316, and was specified to reduce the risk of contamination in the handling processes for all coleslaws, pastas and food products.

Bridgeman's Managing Director Len Webb said there was previously no system available to perform the process that Crocket's required.

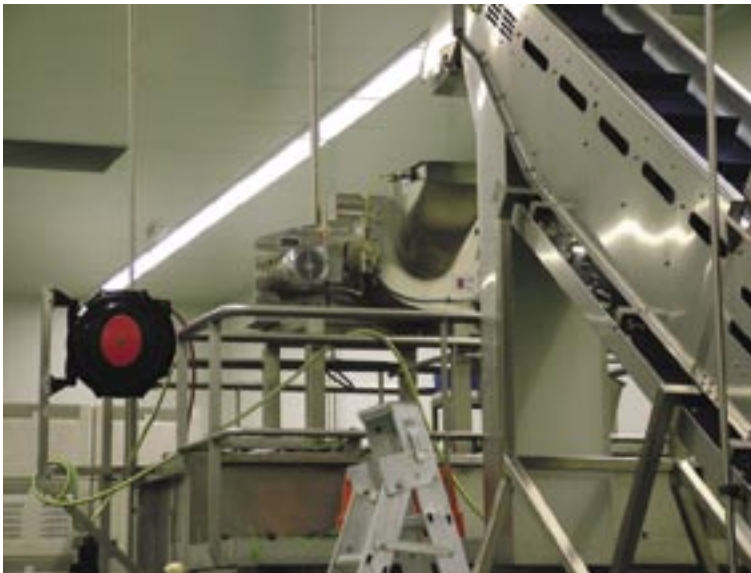
"We engineered and designed the equipment with input from the Crocket's engineer. Always at the forefront of our minds was that the prevention of food contamination is paramount in commercial food preparation areas."

The design of the cabbage line was significant and a huge improvement to the current system set up at the head office site in Queensland. The new design incorporated all processes: tipping, coring, washing, dicing, hopper and outfeed, all in a compact line that now has significantly less labour attributed to it.



The stainless itself was rolled, formed, bent, welded, sanded and polished to meet food grade requirements. Mrs Crocket's Kitchens Maintenance Manager Mark McGauley says stainless was specified because it is easy to clean and maintain.

"We know that the contact area and machinery is clean so this ensures any piece of food that comes into contact with these areas is safe."



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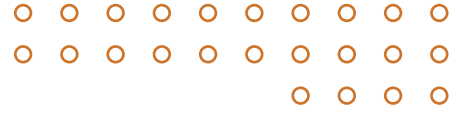
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Find an ASSDA Accredited Fabricator quickly by searching the *Stainless Steel Specialists Register* online at www.assda.asn.au



445M2: A NEW GENERATION STAINLESS STEEL



THIS ARTICLE IS THE SECOND IN A SERIES SHOWCASING THE USES OF 445M2 STAINLESS STEEL

The use of stainless steel plant and equipment in the food industry continues to prove its worth as an increasing number of processors adopt its use in line with their dedication and obligation to food quality and safety.

Whilst stainless steel grades 316 and 304 offer an environment of easy maintenance and cleaning, 445M2 stainless steel goes one step further.

445M2 panels have been supplied to Bertocchi Smallgoods by ASSDA Major Sponsor Austral Wright Metals, following a four-month trial of all three grades of stainless steel.

Bertocchi, a Melbourne-based company producing hams, bacon, salamis and other specialised continental smallgoods, sought an alternative to their existing painted steel linings after they discovered the life of the linings was too short for their high cleaning standards.

The walls and ceiling of the factory are regularly cleaned in line with a guarantee of the highest quality health and safety standards, together with absolute traceability of every unit of product.

This is where stainless steel stepped in. The hardness and smoothness of stainless steel enables it to resist the adhesion of soils and bio-films, and the excellent corrosion resistance allows it to be easily cleaned and sanitised. Indeed, laboratory tests prove stainless steel is significantly more hygienic than other materials, even when used for food contact surfaces. Moreover, the taste and colour of food products are not affected by stainless steels.

After four months of trialing panels of stainless steel grades 304, 316 and 445M2, Bertocchi Smallgoods chose the new generation ferritic grade 445M2 to line the factory – ceilings and walls. With superior corrosion resistance to grade 316, 445M2 resists the powerful cleaning agents used to keep the factory clean,



as well as the hot, humid and salty atmosphere around the brine lines.

So far, Bertocchi has installed 10 tonnes of 445M2 0.7 x 1219 mm sheet with a 2B finish. The result? A clean, bright factory that's easy to keep that way. And Bertocchi intends to keep going until the entire factory is lined with 445M2.

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 **Austral Wright Metals**

TECHNICAL ARTICLE: SMOOTH AND CORROSION RESISTANT SURFACES FROM THE MILL



THIS ARTICLE IS THE SECOND IN A SERIES ON COMMON FINISHES. THE FIRST (WINTER EDITION 2006) DEALT WITH THE ABRADED 'NO 4' (2K, 2J) FINISH. THIS EDITION LOOKS AT 2D, 2B AND BA: SMOOTH AND CORROSION RESISTANT SURFACES PRODUCED AT THE STEEL MILL. SUBSEQUENT ARTICLES IN THIS SERIES WILL COVER MIRROR POLISHED (NO 8 OR 2P) AND PROFILED AND HOT ROLLED (NO 1) FINISHES.

WHAT ARE COLD ROLLED FINISHES?

Cold rolled finishes apply to flat products such as sheet or coil, with thickness less than about 5mm and usually less than 3mm. They are firstly hot rolled into a strip (or cast into a slab which is hot rolled into a strip) and then cold rolled. Cold rolling reduces the thickness by at least 50%. This smooths the surface, refines the grain structure and causes differences in the mechanical properties along and across the rolling direction. In the case of austenitic and duplex alloys, the process hardens and strengthens the stainless steel. Finally, the steel is softened by annealing in a furnace. Each surface finish may undergo additional processes to improve the surface further. The smoother the surface finish is, the higher resistance to corrosion it will be.

These mill produced finishes must be handled carefully as surface damage such as scratches, grinding marks or spatter cannot be matched by polishing with abrasives or etching with chemicals. Of the 3 finishes, BA is most nearly able to be matched by a mirror polish.

Standards

The most common definitions of these surface finishes are provided by ASTM A480 and EN 10088. In both cases it is the cold rolled manufacturing method that is specified rather than specific, measurable characteristics about the surface. We have used ASTM A480 as an

example:

ASTM A480:

No. 2D – A smooth, non-reflective cold-rolled annealed and pickled or descaled finish.

This non-directional finish is favourable for the retention of lubricants in deep drawing applications.

No. 2B – A smooth, moderately reflective cold-rolled annealed and pickled or descaled finish typically produced by imparting a final light cold-rolled pass using [large diameter] polished rolls. This general-purpose finish is more readily polished than No 1 or 2D finishes. Product with 2B finish is normally supplied in the annealed plus lightly cold-rolled condition unless a tensile-rolled [harder and stronger] product is specified.

Bright Annealed [BA] Finish – A smooth, bright, reflective finish typically produced by cold rolling followed by annealing in a protective atmosphere so as to prevent oxidation and scaling during annealing.

POST PRODUCTION PROCESSING TO IMPROVE CORROSION RESISTANCE

All the cold rolled processes include a pickling stage. Pickling is the removal of high temperature scale and the adjacent low chromium layer of metal from the surface of stainless steel by chemical means. Pickling will also remove manganese sulphide inclusions and any other contamination on the surface. Pickling results in a very clean, highly corrosion resistant surface, but will slightly roughen the surface.

Pickling any of these finishes will cause a matt or etched rougher area, most apparent on the BA surface and least on the 2D.



2B

2B is the most widely used stainless steel surface finish. It is especially common in industrial, chemical and food processing applications such as process vessels and tanks. It is also used in some architectural applications that will not be closely examined for uniformity of finish such as downpipes and gutters.

When specifying this finish think about these attributes:

- 2B is the most economical finish
- it is highly corrosion resistant because it has been chemically pickled and is smooth
- over broad areas and between batches, etc it is not uniform and may not match in appearance
- it has been produced in the mill and can't be matched after fabrication
- it is often protected by plastic films until final cleanup and commissioning

Left and Below: examples of a 2B finish; the most widely used stainless steel surface finish





2D

2D is used around the world in applications where its low reflectivity is important. The largest application is in roofing materials. The surface is rougher than 2B and retains lubricants better making it appealing for deep drawing. 2D surfaces are not designed for appearance so the limitations on matching of weld and other surface damage is not as critical. Railcars are a typical example where thicker sheet and ongoing abrasive damage make the rougher 2D a suitable finish.

When specifying this finish think about these attributes:

- 2D is not commonly available in Australia
- it is highly corrosion resistant because it has been chemically pickled and is relatively smooth
- over broad areas and between batches, etc it is not uniform and may not match
- it has been produced in the mill and can't be matched after fabrication



Above left and above: examples of a 2D finish; its low reflectivity is attractive in applications such as roofing

DIFFERENCES BETWEEN ALLOYS

Most articles on finishes assume that standard grade austenitic stainless steel is used. Typically a highly corrosion resistant grade has a duller appearance than the same thickness material with a lower corrosion resistance. This illustrates the more aggressive measures required to remove oxide scale from a high alloy austenitic or duplex than a standard grade 304 or 316.

There is little data on finishes of ferritic grades but general observation shows that for comparable thickness and finishing processes, cold rolled 430 is brighter than 304. It is not known if this difference extends to comparisons between more highly alloyed grades.

Bright Annealed (BA)

The classic use of a BA finish is domestic: the interior of a dishwasher or clothes washing machine. In the clothes washer, it also provides a smooth, non-abrasive surface for the clothes to slide around. The mirror like surface is also used in road mirrors where a precise image is not required.

When specifying this finish think about these attributes:

- BA is common in some grades and thicknesses, but not all
- it is highly corrosion resistant because it is very smooth
- different batches may not match
- it has been produced in the mill and can't be exactly matched after fabrication although a mechanical mirror polish can be close.



Below left and above: examples of a BA finish; its application is domestic

ASSDA STAINLESS STEEL TECHNICAL HOTLINE

Contact ASSDA on 07 3220 0722 or visit www.assda.asn.au

FREE TECHNICAL SUPPORT AND SUPPLY ADVICE

STAINLESS STEEL LAUNCHES ITS ARTISTIC MERIT



Internationally renowned, Yackandandah based sculptor Benjamin Gilbert was commissioned to create a series of sculptures for Melbourne's Commonwealth Games. Extending six metres in the air, the exhibits laid testament to three different stages of a pole-volter whilst displaying the versatility and artistic merit of stainless steel.

Benjamin used grade 304 stainless steel, supplied by ASSDA major sponsor Atlas Specialty Metals in Wadanga. He has worked with stainless steel for 10 years and believes it is cost effective and cheaper to use than other materials. Also, the added ability of using off cuts in his work suited Benjamin's 'green' focus.

"As a practising environmentalist, there are some good arguments for using stainless steel," Benjamin says.

Indeed, stainless steel is one of the most recycled metals in the world and, according to the International Stainless Steel Forum, any given stainless steel object has an average recycled content of about 60%. Benjamin also says the fact that stainless steel doesn't need to be finished (ie painted) makes it an attractive material.

"For what you pay extra in materials, you don't need to spend on additives."

Using a sculpting technique taught to him during his time in Estonia, Benjamin has successfully adapted it for use with stainless steel.

The sculptures used up to 100kg of stainless steel – 1mm sheet, 5mm rod and a 25mm square tube substructure underwater. With the ability to flex in the wind, the 35mm poles are re-enforced with inner tube to build up spring, similar to a leaf spring on a trailer suspension.

Benjamin enjoys 'non-trade' related thinking



with his designs and, although he admits to having difficulty sourcing tools in Australia, he says the lighter, thinner materials are easy to use when spot welding and give greater flexibility when using metal shears.

During his work, Benjamin used a thin disk on a 5" grinder and a stainless steel wire wheel to 'texturise' the surface. He believes there is "a lot more that can be done with finishes", particularly by hand.

Other projects Benjamin has worked on, incorporating the use of stainless steel, include a life size work of the Ned Kelly Gang (at Beechworth) and a bigger public artwork for the Camden Museum and Library redevelopment in South Sydney. Once completed, in late January, a 16 metre grapevine in stainless steel will be exhibited, in recognition of the first grapevine in Australia.

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A GREAT AUSSIE TRADITION MAKES ITS WAY



For those who love to indulge in a life of sun, surf and sand the idea of placing a barbeque in such rust-promising environments is not often an option as their longevity is compromised.

But Gold Coast company Southern Stainless has bridged the gap between a nautical lifestyle and the great Aussie tradition by manufacturing barbeques in stainless steel.

ASSDA member Southern Stainless typically specialises in the manufacture of stainless steel products including wine storage and fermentation tanks and marine fitouts, but supplying stainless steel barbeques, boat mounting systems and accessories to the general public, wholesalers, retailers and building industry has proven to be one of their fastest growth areas.

The barbeques are made from 316 grade stainless steel, with a 2205 duplex grade stainless steel plate, which is more corrosion resistant and easier to clean.



The barbeques are fully welded to enhance strength and use an electropolished finish to aid in corrosion resistance and provide a durable surface.

Southern Stainless Managing Director Phillip Brown says the barbeques can be designed to suit customer requirements and are 100% Australian owned and made.

"Chinese manufacturers retail theirs slightly under our price," Phillip says. "A certain percentage of the market will always go for the cheaper alternative, but when consumers are looking for quality, they tend to stick with locally-made products."



The stainless steel cookout barbeques include a stainless steel burner to ensure the flame will not blow out, regardless of weather conditions

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FOOD SPECIFICATION UNVEILED IN YOUR AREA

2007 will see the official launch of the much anticipated 'ASSDA Food Specification: Fabrication and Installation of Stainless Steel Process Plant and Equipment in the Food and Beverage Industries'.

The specification is a result of a co-operative venture, with fabricators involved in the food industry, aimed at standardising fabrication practices in Australia and improving efficiency and reliability by raising the standard of quality delivered.

ASSDA's Food Specification is not intended to replace accepted national and international standards. Instead, it reflects their requirements in the design and fabrication process specifically for food and beverage plant. The specification is intended as a step forward from the more generic advice offered by the well-known "Blue Book", published by ASSDA's sister organisation NZSSDA.

WOULD YOU LIKE TO KNOW MORE?

ASSDA plans to visit locations throughout Australia to unveil and explain the specification for those who have a keen interest in raising the standards of fabrication in the food industry.

If you would like to see ASSDA visit your area, please contact our office:

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BARRY DURRANT A TRIBUTE



We were deeply saddened by the passing of Barry Durrant from Coil Processors on the 20th of December 2006.

Phillip Barry Durrant grew up in Sydney. Leaving school at an early age, he tried his hand at a number of different jobs before he joined Gilbert Lodge in 1961 in a sales role where his love for stainless steel began.

He later bought Metal Polishers and started Coil Processors, relocating it to Smithfield in the early 90s. He successfully ran the business with his son Stephen. Today, Coil Processors is the biggest independent stainless steel coil processor in Australia.

Barry was well known throughout the industry in Australia with over 40 years experience. He

was extremely passionate about the stainless steel industry and treated it as his extended family. In the early years, he worked tirelessly to bring all who were involved in the industry closer together. He enthusiastically organised many industry lunches and golf days, firmly believing this would help to create a better, stronger, and more prosperous industry.

As a founding member and strong supporter of ASSDA, Barry heavily contributed to its success. In the last few years he was responsible for organising enjoyable ASSDA Race Days in NSW. He regularly attended ASSDA conferences with his loving wife Margaret, who was also well known to many. For those fortunate to have had the pleasure of their company, they made a fabulous couple and were always fun to be around.

Barry had a genuine interest in everyone he met and was always positive and passionate about life, family, business, and the stainless

steel industry. With his knowledge and experience he was revered as the elder statesman of the stainless steel industry.

Barry was generous in sponsoring charities and fundraising events. He was a good bloke, a straight shooter, loyal husband, model father and grandfather, and a man we will all dearly miss.

Donations in the memory of Barry Durrant can be sent to The Cardiology Unit at the St Vincent's Hospital Sydney. The address is St Vincent's Hospital Sydney, Locked Mailbag 32, Darlinghurst NSW 2010. Acknowledgement of your donation will be sent to Mrs Margaret Durrant.

ASSDA thanks Peter George from Outokumpu for this vale. He is joined in his feelings by those that knew Barry well. Barry, you are and will be missed.

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ADVERTISING — Advertise in the only publication that targets more than 8,000 readers in the stainless steel industry. Advertising rates available on request.

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