

Stainless steel specification for components used within food manufacture and preparation

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The aggressive chemicals typically found within washdown solutions for food & beverage manufacture and preparation areas are highly corrosive. To ensure the long-term hygiene of standard parts and components used within these applications, high-grade stainless steel is required. However, dependent on the environment, not all standard parts used within the food & beverage sector may require premium corrosion resistance to ensure hygiene.

John Marshall, Technical Manager at WDS Components Ltd., advises on stainless steel selection for components used within the food and beverage industry.

Stainless steel is commonly used in the food and beverage industry because of its durability, as well as its ability to handle hot and cold temperatures, and most importantly, for the level of hygiene it helps to ensure. Stainless steel is extremely smooth, making it very easy to clean, with very low bacterial retention. However, the key benefit of using the highest grades of stainless steel within food and beverage manufacture

and preparation is their resistance to corrosion. Even at almost invisible levels, corrosion makes it harder to clean, and microscopic blemishes can increase bacterial retention long before visible rust is identified.

Ingredients within food and beverage products, such as acids from sauces or fruit, can cause or accelerate the potential for corrosion. Within preparation tools, corrosion harbouring bacteria could present as traces that impact the quality of the produce, changing the flavour or aroma of the food or drink itself. Whether the item directly comes into contact with ingredients, or if it's used within a food preparation environment, a commonality is that these items require regular washdown with high strength, caustic antibacterial agents. While this level of cleaning ensures hygiene, it can rapidly deteriorate even stainless steel if it doesn't achieve the sufficient grade.

Food grade

So-called 'food grade' stainless steel is technically known as EN type 1.4401, also commonly referred to by the American Iron and Steel Institute (AISI) reference of grade 316. The differentiating factor of 316 stainless steel is the addition of molybdenum, which increases the material's resistance to corrosion. In real terms, this enables items made from grade 316 to undergo regular and intensive chemical washdown without deterioration.

Items produced in 316 stainless steel can come at a premium compared to 'lower' grades, however the extra longevity usually reduces the total cost long term. Today, the cost difference of final manufactured parts between 316 and lower grades of stainless steel isn't significant. In any case, where hygiene is essential, 316 is the optimum choice.

As well as items that come into direct contact with food & beverage ingredients, items that require washdown, or those located within the washdown environment, should also be manufactured from 316 stainless steel. This includes components such as [hand knobs](#) or [hand wheels](#) used on food manufacturing machinery, through to [door hinges](#) or even common fasteners such as [bolts](#) that are installed within hygienic areas. As a result, many standard parts and components from the WDS range are manufactured from 316 stainless steel to serve the requirements of the food & beverage sector.

When 304 is enough

The slightly lower cost alternative to 316 grade stainless steel is EN type 1.4301, otherwise known by the AISI as grade 304. While this type of stainless steel doesn't include the durable properties of molybdenum, its nickel and chromium content still makes it highly resistant to corrosion. 304 grade stainless steel can be used in direct contact with food but should not be exposed to prolonged or regular use of strong chemical detergents, as this will lead to corrosion. However, for many components, aggressive washdown may not be necessary, or the standard part might not be directly used within the hygienic environment, as in the case of an outward-facing door hinge.

Component design

The development of hygienic components isn't just in the material but also the design. Crevices that are hard to clean and where bacteria can accumulate, should be avoided in product design at all costs. Instead, smooth lines and round edge designs provide an inherently more hygienic model.

As WDS designs and manufactures most of its own products on site at its Leeds facility, specification advice is always available. If customers have any questions about product suitability, in-house engineers are available to help. An extensive range of free to download CAD drawings and product specification information can also be located on our newly updated website, wdscomponents.com.

About WDS Components Ltd

WDS Components is the home of standard parts and machine accessories. Established in 1952 'Woodside Die Sinking Company' made jig and die parts to speed up production in tool rooms, WDS Components has grown from humble beginnings to become a leading European manufacturer and global distributor of high quality durable parts at competitive prices. We supply components, standard parts and machine accessories to original equipment manufacturers, maintenance engineers, small businesses and individuals all over the world. Over 98% of our range is available from stock and can be shipped the same day from our global distribution centre in the UK, using best in class worldwide logistics companies.

We provide unrivalled choice and unequalled availability.

WDS Components are proud to support some of the most prestigious engineering companies and brands in the world, who all trust WDS Components to service their needs.

We are committed to engineering excellence and continuous improvement. Our team of in-house engineers has expertise spanning several decades and is a blend of highly experienced and new generation graduate engineers who focus on the latest developments in design and manufacturing technology.

Our entire range of products is available to purchase on our website [WDS COMPONENTS.COM](https://www.wds-components.com) where designers and manufacturers alike can download 3D models of all components in the widest range of formats available.

WDS Components provide solutions for customers who require a wide and growing range of high quality, competitively priced products, coupled with incredible product availability and same day despatch, backed up by easily accessible technical support.

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