NICKEL
IN FOOD CONTACT MATERIALS

Society rightly expects the food that it buys to be safe to eat.

Therefore non-toxic and hygienic materials for food preparation and cooking are essential. This is why nickel-containing stainless steels have been established as the material of choice for food contact applications for more than 80 years.

FOOD SAFETY STARTS WITH RIGOROUS HYGIENE, AND NICKEL-CONTAINING STAINLESS STEELS CONTINUE TO PLAY A VITAL ROLE IN THIS RESPECT AT EVERY LINK OF THE FOOD CHAIN.

Ensuring food supplies and food safety are an area for concern worldwide. This is why regulators around the world take food safety extremely seriously and legislate accordingly. The United States has its Food Safety Modernisation Act; China has had a revised Food Safety Law since 2015, India has tightened its regulations on food contact materials, while in Europe, the European Directorate for the Quality of Medicines & HealthCare (EDQM) publishes its Technical Guide on Metals and Alloys Used in Food Contact Materials and Articles. All share a common theme; that food safety starts with rigorous hygiene.

Nickel-containing (austenitic) stainless steels play a vital role in ensuring the highest standards of hygiene throughout the food chain. These stainless steels are easy to shape and have excellent ductility while offering superb corrosion resistance and excellent durability. It makes them ideal for easy and regular cleaning, disinfecting and sterilising. This is why nickel-containing stainless steels are used at all stages in the food and drink supply chain, from large fermentation and storage vessels in wine and beer production to household cutlery and cooking utensils; literally, from "farm to fork". Currently, around 23 percent of nickel production goes into products for the food and beverage sector.

Nickel-containing stainless steel is also the leading material for both commercial and domestic cookware. These pots and pans can resist attack from even the most corrosive foodstuffs and survive robust cleaning over many years. In addition, its low thermal conductivity makes it ideal for pot and pan handles, which remain cool in use.

The most common alloy used for food and beverage applications is known as Type 304, often also called 18-8 or 18-10 to reflect the percentages of chromium and nickel respectively. Some high-end cookware is made using an alloy called Type 316L, which provides even greater corrosion-resistance. The finest cutlery is generally made with nickel-containing stainless steel and will last a lifetime.

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SAFETY AND FOOD

Safe food preparation using stainless steel

Following the introduction of new test criteria in Europe, an independent report commissioned by Team Stainless, has reconfirmed the safety of using stainless steel in food preparation. In 2013, the Council of Europe (CoE) published guidelines for those metals and alloys used in food contact materials. These defined specific release limits (SRLs) for iron, chromium, nickel, manganese and molybdenum and included a new, more aggressive test for simulating use in food preparation.

Team Stainless commissioned the internationally renowned KTH (Royal Institute of Technology) in Sweden to independently test seven grades of stainless steel including the most common grades used for food contact materials, in accordance with the new protocol. The study demonstrated that all the grades tested are safe for food preparation, with the amounts of metals released below the Specific Release Limits (SRLs) prescribed in the CoE guidelines. The study also demonstrated that the rate of release decreases significantly following initial exposure as well as with repeated use.

European Hygienic Engineering and Design Group

While stainless steels are widely accepted as the 'materials of choice' for food-processing equipment, their attributes are not fully appreciated, particularly amongst the food business operators' equipment specifiers and buyers. This is why, in partnership with the European Hygienic Engineering and Design Group (EHEDG), the Nickel Institute is contributing to the informed selection and use of stainless steels as food contact materials.
www.ehedg.org

Food and Beverage production

The high flexibility of nickel-containing stainless steel allows engineers to create increasingly efficient food processing machinery. This flexibility allows machinery to be shaped to the various processes desired; once constructed, its inherent toughness and strength ensures that it will stand the wear and tear of many years of heavy use. In addition, as nickel-containing stainless steel is corrosion-resistant, it can resist the most powerful cleaning products and extremely high water temperatures, thus maintaining the highest hygiene standards. The smooth finish also minimises any hygiene hazard posed by bio-films.

Catering and commercial kitchens

First developed in the early 1900s, the potential of stainless steel as an ideal material for food contact applications was quickly recognised. The Queen Mary, the luxury liner launched in 1934, boasted a splendid stainless steel kitchen. To this day, its ease of cleaning means that stainless steel remains the preferred material for environments where strict hygienic conditions are important; commercial kitchens, fast-food outlets and cafes and restaurants. Meanwhile, its corrosion resistance means it does not affect the taste or appearance of foods.

Cookware and cutlery

When buying pots and pans, those made from nickel-containing stainless steel often come with a lifetime guarantee. This is more than simple marketing; it reflects the fact that the nickel in the stainless steel makes this kitchenware exceptionally strong, durable and easy to clean. It is wear-resistant and can be cleaned thoroughly and repeatedly without tarnishing or corroding. In addition, pots and pans made with nickel-containing stainless steel benefit from non-porous, smooth surfaces that will remain pristine even after years resisting the wear and tear of a busy kitchen.
The finest cutlery is generally made from stainless steel with a high nickel percentage because it increases the strength and resistance to corrosion. The cutlery will be easy to clean and will remain pristine even after many decades of use at the dining table as well as cleaning in the dishwasher.

Nickel Institute
knowledge for a brighter future

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