



Stainless Steel in Food Preparation

Introduction

This Insight provides members with information on the results of recent tests on the use of nickel-containing stainless steel in food preparation. The continuing safety of using nickel-containing stainless steel in food preparation has been confirmed following the introduction of new test criteria in Europe. Team Stainless, a consortium of stainless steel and alloying element associations, recently commissioned a study on this topic and this Insight provides links to the results.

Background

In Europe, the Framework Regulation (EC) 1935/2004 specifically requires that “food contact materials are safe; and must not transfer their constituents to foods in quantities which could endanger human health, change food composition in an unacceptable way or deteriorate its taste and odour”. No substance shall be authorised unless it has been adequately and sufficiently demonstrated that, when used under the conditions to be set in the specific measures, the final material or article satisfies the requirements in the regulation.

The framework regulation, and food safety more generally, is enforced in different ways across Europe. Italy has the most developed regulatory framework and established a list of ‘positive materials’ for stainless steel in 1973, including a test protocol using acetic acid as a food simulant.

The Council of Europe (CoE) published a guideline regarding metals and alloys in food contact materials in 2013, defining specific release limits (SRLs) for iron, chromium, nickel, manganese and molybdenum and including a new, more aggressive test to simulate use in food preparation. It should be noted that these guidelines are not compulsory or legally binding - rather they will provide Member States with a basis on which they can develop their own regulations. However, more and more market participants now use the CoE guidelines as their own acceptance criteria, increasingly making them a de facto-standard.

Team Stainless, a consortium which includes industry associations for stainless steel, nickel, chromium and molybdenum, became aware of the need to confirm to the public and to regulatory authorities that the use of stainless steel in food preparation is safe. Team Stainless therefore commissioned the internationally renowned KTH Royal Institute of Technology in Sweden to independently test seven grades of stainless steel in

accordance with the new protocol. The seven grades tested included the two most common grades – 304 (EN 1.4301) and 316L (EN 1.4404) – as well as the ferritic grades EN 1.4003 and 430 (EN 1.4016), the austenitic grades 201 (EN 1.4372) and 204 (EN 1.4597), and the high-strength lean duplex grade LDX 2101 (EN 1.4162).

The authors demonstrated that all of the grades tested are safe to use for food preparation as the amounts of metals released were 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 and with repeated use over time.

A summary of the report can be downloaded here: in English

[http://www.worldstainless.org/Files/issf/non-image-files/PDF/KTH/Safe Food Preparation Using Stainless Steel.pdf](http://www.worldstainless.org/Files/issf/non-image-files/PDF/KTH/Safe_Food_Preparation_Using_Stainless_Steel.pdf)

or Chinese

<https://www.nickelinstitute.org/~media/Files/MediaCenter/News/KTH%20Report%20Chinese%20Version.ashx?la=en>

Conclusion

Stainless steel is the material of choice for many kitchen applications such as utensils, pans, appliances and commercial catering equipment. By demonstrating across the board compliance with the new Council of Europe guidelines, this study confirms its continuing safety as a food contact material. It is still important to match the grade of stainless steel from the many options available with the food being prepared and to follow the required cleaning regime to ensure the best performance.

Comments or Questions

Please contact Curtis Stewart at the INSG Secretariat. Email: Curtis_stewart@ilzsg.org or telephone +351 21 359 2423

INSG

March 2016