

# INOSSIDABILE

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## Summary

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### COVER/PAGE 3

#### THE NEW FRONTIER OF STAINLESS STEEL SURFACE FINISHING

**(La nuova frontiera delle finiture superficiali dell'acciaio inossidabile)**

The electro-colouring method for stainless steel is by now a well-known process. The desire to provide the market with new and innovative proposals, join today to the electro-colouring process, also an alternative surface treatment, derived from PVD technology, based on the physical deposit of titanium compounds. All the elements shown in this article are produced, through this exclusive process, by a well-known company based in the district of Cremona, specialized in the supply of surface finishing treatments for metal products. As well as ensuring all the characteristics of the electro-colouring method, this new process offers extremely high surface resistance, fully homogeneous colours, and easy repeatability. The characteristic of colour homogeneity and its repeatability - especially in the range of green and red, which are rather "hard to treat" colours - represents one of the main advantages of this process, which is particularly appreciated by planners and designers.

**"TSteel" Manufacturing Company:** Steel Color S.P.A. - Via per Pieve Terzagni 15 - I-26033 Pescarolo Ed Uniti CR, phone +39 0372 834311, fax +39 0372 834015, info@steelcolor.it, www.steelcolor.com / **Pict. 1:** "TSteel Nero SM" - **Installation:** Saporiti Italia on the occasion of the Milano Design Week 2013 - **Project by:** Park Associati, a cura di Cloe Piccoli - **Photos:** Franco Garbin / **Pict. 3 Shading elements:** "TSteel Verde SM" - **Project:** AE Architecture Studio BVBA, Belgio / **Pict. 4 Stands designed and produced by:** Form Srl, www.formsr.it

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#### PLANTS... ALL BEER AND SKITTLES! (A tutta Birra!)

A company which has been working for more than ten years in the production of stainless steel tanks and in the planning and development of turnkey plants, recently began producing special plants designed for small breweries, completely made of stainless steel. The metal sheets used for the tanks are made of EN 1.4301 and 1.4401 (AISI 304 and 316) grade stainless steel, in thicknesses ranging from 2 to 5 mm. These plants are entirely positioned on stainless steel platforms. Depending on plant structure and size, the production capacity can vary from 100 to 3000 lt for each production cycle, which normally lasts from 6 to 8 hours. Stainless steel plays an essential role in these plants, due to its basic characteristics: chemical inertia to the corrosive agents; stainless steel is flavourless and odourless; incrustations and scales can be easily removed; it is an easily and safely washable material; there is practically no bacteria retention due to its smooth surface; and it is particularly resistant against environmental corrosion. The tank external finish may be either brushed circular or satin-finished. All welding operations are carried out by means of TIG processes. All fittings, such as flanges, tubes, etc., are also made of AISI 304 and AISI 316 stainless steel.

**Manufacturing Company:** Toscana Inox srl - Via Catalani 45 - I-50050 Cerreto Guidi FI, phone +39 0571 580101, fax +39 0571 581779, www.toscanainox.com / **Stainless steel supplied by:** Aperam Stainless Services & Solutions Italy S.r.l. - Divisione Massalengo - Località Priora - I-26815 Massalengo LO, phone +39 0371 49041, www.aperam.com

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#### FROM OUR MEMBERS

#### ACCIAI SPECIALI TERNI: THE IRON AND STEEL POLE AT THE CENTRE OF ECONOMIC, SOCIAL AND INDUSTRIAL DEVELOPMENT

**(Acciai Speciali Terni: il polo siderurgico al centro dello sviluppo economico, sociale ed industriale)**

Acciai Speciali Terni is considered today one of the world leaders in the production of stainless steel flat rolled products, and represents one of the most important integrated iron and steel production sites all over the world.

**Plants** - The production site is equipped with electric arc furnaces, converters (AOD / VOD), slab continuous casters, a hot-rolling mill, cold-rolling mill areas including annealing and picking lines for hot-rolled coils, Sendzimir rolling mills, annealing and pickling lines for cold-rolled coils and sheets, and BA (bright annealing) lines. In addition, the Finishing Centre is equipped with cross- and longitudinal-cutting lines, as well as surface finishing lines.

**Products** - The range of products includes austenitic and ferritic hot- and cold flat rolled products. The product line includes hot-rolled (1U) coils and sheets; hot-rolled (1D) annealed and pickled coils and sheets; floor plates; cold-rolled work hardened, annealed, pickled, skinpassed (2D/2B), bright-annealed (BA), decorated, satin finished and brushed coils, sheets, strips, and bands; cold-rolled pre-painted coils and sheets. In particular, pre-painted stainless steel sheets are available under the registered name of **Vivinox®**. The range of Vivinox® products includes **Silver Ice®** (transparent pre-painted stainless steel); **Vernest®** (coloured pre-painted stainless steel), and **Primerinox®**. A continuous activity in the area of **Research & Development** has further increased the levels of competitiveness of the company, and in the current difficult economic and historical phase, Acciai Speciali Terni has particularly focused on the research and the development of innovative ferritic steel products. Thanks to the investments made in the **VOD** (Vacuum Oxygen Decarburization) plant, the company succeeded in developing and producing **super-ferritic steels (470LI)** with 24% chrome content, and mixed Titanium and Niobium stabilization. In the range of these new ferritic steels we can also find the **stabilized steel grades with improved formability** (as, for example, **441PS** and **439PS**) and the new ferritic steel grades especially developed for the automotive industry (as, for example, **429S** and **441M**). **Subsidiaries** - The Acciai Speciali Terni Group, which employs on the whole about 2800 persons, includes also: **Terninox; Società delle Fucine; Tubificio di Terni and Aspasiel.**

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#### STAINLESS STEEL CORROSION: AN UNUSUAL APPROACH FOR A SELECTED AND TECHNICALLY EXPERT PUBLIC

**(La corrosione degli acciai inossidabili: un approccio insolito per un pubblico tecnico selezionato)**

**The Phenomenon of Corrosion** - Centro Inox has been carrying out for more than fifty years its activity focused on the promotion and study of stainless steel applications. This

activity expresses itself in the provision of technical advice on specific application cases in all industrial areas, standards and specifications, organization of training courses, etc. When a technical support is requested to the "databank" of our association, it concerns, in most cases, the issue of corrosion onset in all its aspects. **Training Activities** - In order to effectively meet in the most exhaustive and complete way an increasing number and variety of requests concerning these issues we considered it worthwhile to organize a training course focused on this subject, not only from a theoretical but also from a practical point of view. This training course was held in the month of May 2013, in partnership with PoliLaPP - Laboratorio di Corrosione dei Materiali "Pietro Pedferri" - Politecnico di Milano - Dipartimento Chimica, Materiali e Ingegneria Chimica "G. Natta", at the university premises of the Polytechnic of Milan. This advanced training course provided for four full teaching days, in which the morning hours were devoted to participants' theoretical training, while the afternoon hours were devoted to practice, applications, and laboratory tests. The course focused on some general themes, such as basic metallurgy, presentation of stainless steels, including the next-generation ones, from the point of view of designation, standards and specifications, thermal treatments, and surface finishing. The general theme of corrosion was then dealt with, considering both the thermodynamic and the kinetic aspects, as well as potential measurements. Considering that a considerable number of applications addressed to our association could not be fulfilled, since the course provided for a limited number of participants, we are considering the opportunity to repeat the seminar in the near future, basing also on the suggestions received by the participants themselves, in order to be as close as possible to the solution of the real and practical problems expressed by those who work "in the field".

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#### A 470LI STAINLESS STEEL LOAD-BEARING STRUCTURE FOR SWIMMING POOLS

**(La struttura portante delle piscine in acciaio inox 470LI)**

The company this article is focused on, makes use of one of the most exclusive and state-of-the-art technologies in the industry of swimming pools, the Myrtha Technology, which relies on stainless steel. This technology consists in a patented modular system which makes use of solid 2 mm thick ferritic stainless steel panels to form the walls of the swimming pool. A high-resistance PVC layer is then hot-laminated on the steel panel at high temperature. Subsequently, the panels are submitted to punching and bending processes, and are finally connected and tightened through bolts between them and to the base frame. No welding points are used in order to avoid any potential corrosion onset and weak areas. Strong stainless steel reinforcement buttresses placed on the joints between the panels give the structure stiffness and strength. This structure is strong and elastic at the same time, and is ideal for applications in critical or broken grounds, in seismic areas, or in made grounds. For the construction of the bearing structure of the pools, the company makes use of 470LI stainless steel, a highly performing material that, in terms of corrosion resistance, can be compared to AISI 316. The metal structural work has thicknesses ranging from 2 to 5 mm depending on applied loads, and in particular, on the positive buoyancy, which is proportional to the pool depth.

