

INOSSIDABILE

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Summary

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LIGHTWEIGHT AND SAFE: A MINI-CAR WITH STAINLESS STEEL FRAME (Leggerezza e sicurezza: una minivettura con telaio in acciaio inossidabile)

Microcars have become increasingly widespread throughout Italy and Europe over the past few years. In Italy, mini-cars are classified as "light-weight quadri-cycles".

They can be driven as from the age of 14 years, their maximum speed may not exceed 45 km/h, their engine power may not be higher than 4.0 kW (with maximum displacement of 50 cm³ for petrol engines and more for diesel ones) and their mass may be no greater than 350 kg.

This latter limitation seems to be particularly binding during the design phase in that the lightness of the vehicle needs to be combined with the safety in the event of a collision; stainless steel provides an interesting solution to this problem. The use of EN 1.4301 (AISI 304) tubes, welded together, has made it possible to fulfil the pre-established objectives of safety and lightness.

In fact if, on the one hand, the density of stainless steel is higher than that of the light alloys commonly used in the automotive sector, on the other, the material is characterised by a value of elasticity such that a similar value of specific stiffness (ratio between elasticity and density of the material) is obtained.

Stainless steel also has the capability of absorbing a large quantity of energy in the form of deformation work. The work hardening consequent to the deformation implies a rise in the yield strength and an increase in the speed of deformation results in an increase of the stress required to produce the deformation itself.

The production of components is also facilitated by the good formability of stainless steel that can be worked both by means of traditional techniques, and by means of the more modern ones, such as hydroforming.

The frame does not require surface protection and, after suitable pickling of the weld beads, it is ready to become the "skeleton" of this mini-car. Austenitic stainless steel, in fact, offers sufficient guarantees of resistance to corrosion.

Together with the well-known characteristics that make stainless steel an ecological material (absence of coating residues and 100% recyclability), in the case of mini-cars, this aspect is highlighted further by the availability of a line with electric propulsion.

The quadri-cycle with stainless steel frame, safe, light and ecological, is an ideal solution for moving around cities that are congested by traffic day after day.

Production:

Town Life S.p.A. - Z.I. Sant'Eraclio, via Cupa - I-06037 Foligno PG - phone 0742.677350, fax 0742.391629, info@townlife.it, www.townlife.it

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THE HEART OF THE MOTOR-VEHICLE OF EUROPEAN PRODUCTION "BEATS" WITH STEEL OF ITALIAN PRODUCTION

(Il cuore dell'autoveicolo di produzione europea "pulsava" con acciaio di produzione italiana)

Even if only present in small quantities, averaging from 400 to 800 grams per vehicle, the stainless steel of the gaskets, with its characteristics of elasticity and resistance to high temperatures, ensures a perfect seal over time, guaranteeing the efficient working of the engine.

To manufacture them, the most advanced technology for the production of high-quality and precision strips is used as far as mechanical, dimensional and surface characteristics are concerned, including the high degree of flatness necessary to ensure the correct seal of the gasket.

Stainless steel precision strips have a wide variety of applications in the field of gaskets for the car industry, the most important being:

- Cylinder head gaskets, with single layer, multi-layer and with drilled core
- Engine gaskets - exhaust gas manifold and exhaust system manifold
- Gaskets for auxiliaries

Two types of cylinder head gaskets are available on the market today.

The first type is defined "composite" in that it combines a structure of the classical type, in mineral fibre, with a flat stainless steel band, typically EN 1.4303 (AISI 305), bright annealed in a controlled atmosphere with thickness of 0.10 mm.

The second type is a "multilayer" gasket, entirely metallic, in which the elements that guarantee the seal are layers of stainless steel EN 1.4310 (AISI 301) work hardened by cold-rolling with thickness of 0.25 mm.

In this case, the strip is subjected to a controlled cold-rolling process, in order to confer both the exact degree of work hardening, and the high degree of surface roughness required so as to improve the adherence of coatings with elastomers resistant to high temperatures.

Stainless steel precision strip:

Arinox S.r.l. - Via Gramsci, 41/A - I-16039 Sestri Levante GE - phone 0185.3661, fax 0185.366320; Sales Manager: Ing. Massimiliano Sacco; Sales Manager Assistant: Ing. Luciano Frezza; Marketing: Dott. Luigi Ricci - sales@arinox.it, www.arinox.it

Exhaust line gaskets:

Oigra Meillor S.r.l. - Via Verga 49 - I-10036 Settimo Torinese TO - phone 011.8022111, fax 011.8977552; Sales Manager: Claudio Briccarello; Marketing: Maurizio Palermo - info@oigrameillor.com, www.oigrameillor.com

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STAINLESS STEEL TAPS: HYGIENE, LONG-LIFE, DESIGN

(Rubinetti di acciaio inossidabile: igienicità, durabilità, design)

Stainless steel has always been a synonym of hygiene and cleanliness; in fact, it is exactly because of these characteristics that it is used in a large number of different fields. In use for a long time now in the field of industrial taps and fittings, during the past few years, it has become increasingly widespread in household applications; even in this sector, in fact, the need arose for a material that, as well as being resistant to corrosion, was also easy to clean and that had characteristics suitable for contact with drinking water. As has been demonstrated by various tests and specification documents, stainless steel guarantees a greater degree of healthiness of the water, in that it does not release harmful substances such as, for example, heavy metals.

The entry of stainless steel to the field of household taps has stimulated the search for new shapes, thanks to the working possibilities offered by the material, thus making it possible to achieve products characterised by a particular design. The use of a noble material such as stainless steel also allows the object to be unequivocally identified, contributing to making it difficult to counterfeit. Another distinctive element for the taps in this article is given by the presence of the mark that distinguishes articles made in stainless steel; a guarantee that the material used is stainless steel (more information on the mark on page 15).

Another non-secondary aspect is the inalterability over time of stainless steel; provided a few simple measures are taken with respect to cleaning and maintenance, such as those indicated in this edition from page 7 to page 10, the aesthetic characteristics of taps in stainless steel remain unaltered

with the passing of the years. This characteristic makes its use particularly interesting in all those places (hotels, thermal spas, wellness factories, places characterised by the transit of large numbers of people) in which frequent washes and uses may wear the surface coatings applied on traditionally-used materials.

Production:

APM S.r.l. - Via Cirila 38 - I-28883 Gravelona Toce VB - phone 0323.865900, fax 0323.865219, info@apm-inox.com

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MAINTENANCE OF STAINLESS STEEL SURFACES

(Manutenzione delle superfici di acciaio inox)

Stainless steel is a material known for its characteristics of resistance to corrosion, long-lastingness and hygiene; it is for this reason that it is widely used both in the foodstuff industry and for many components that are used daily in our households: pots and pans, cutlery, sinks, coffee machines, cookers, kitchen hoods, etc.

Why is stainless steel a hygienic material?

- It resists corrosion (therefore it is inert to the substances with which it comes into contact)
- It does not require any protective coating (therefore it is not subject to wear and its surfaces do not withhold dirt)
- It has a compact, porosity-free surface (therefore does not absorb any substances)
- It resists impact and mechanical stress (therefore it is not subject to cracks in which germs may nest)
- It resists thermal shock
- It has a high degree of bacterial removeability for the entire useful life of the object
- It has a low level of bacterial retentiveness.

Its maintenance program

For normal cleaning operations, simply use soap and water, rinse and dry with a cloth.

For obstinate stains:

Limestone: use a multi-purpose cream, or very hot water with ¼ vinegar, rinse with water and sodium bi-carbonate.

Oil and grease: use a mild detergent or dish washing liquid with very hot water; otherwise, ethylic alcohol, acetone or other non-halogenated solvent.

Fingerprints: use a mild detergent or dish washing liquid, or a soft cloth and glass-cleaning product.

Flame marks: use a multi-purpose detergent cream, rinse, dry.

Surface scratches: apply a detergent/polish specifically for stainless steel, using a soft cloth.

Rust stains (contamination): apply a detergent in cream with a soft cloth. If the stain persists, use a passivating or pickling product specifically for stainless steel.

Tea or coffee stains: immerse the object in boiling water with sodium bi-carbonate for 15 minutes, rinse and dry.

Obstinate dirt and burnt grease: use a multi-purpose detergent cream.

Attention!

If you want to avoid damaging stainless steel surfaces:

Do not use:

- wire wool, brushes, etc., that are made from other metals or alloys, or tools used previously for other metals or alloys;
- abrasive powder detergents on satinized surfaces;
- hydrochloric acid, also avoiding its vapours;
- substances for cleaning silver.

Pictures - kitchen: Arc Linea S.p.A., I-36030 Caldogno VI - radiator: Cordivari S.r.l., I-64020 Morro d'Oro TE - kitchen hood: Elica S.p.A., I-60044 Fabriano AN - tap: Mina S.r.l., I-3017 Quarona VC - pot and oil cruet: Zani Serafino, I-25066 Lumezzane Gazzolo BS.



STAINLESS STEEL AND COLOUR IN THE MILAN UNDERGROUND

(Acciaio inox e colore nella metropolitana di Milano)

The Milan Underground has built the "Piazzale Carlo Maciachini" station along Line 3, using stainless steel in the innovative continuous painted form.

The company ThyssenKrupp Acciai Speciali Terni supplied the base materials, pre-worked by the company Afinox of Arluno and processed in their definitive form by the company Profilsystem of Desio.

The steel used is EN 1.4301 (AISI 304) in the thickness of 0.6 mm, on which continuous painting was applied in the Terni plant choosing the red colour (RAL 3020) that makes it possible to achieve degrees of luminosity and visual effects that are completely new and attractive to look at.

While maintaining the properties of stainless steel, thanks to its colour, VERNEST® gives it a modernized look, facilitating its working and installation at the same time.

VERNEST® also ensures the producer with the absolute adequacy of normal profiling and press-bending systems, together with the certainty of supplying elements that are resistant to corrosion, without the danger of de-adhesion of the coating and with a resistance to fire that is higher than any other metal material that can be used in the production of panels.

In comparison with traditional systems for post-painting surfaces, VERNEST® has the advantage of having a thickness of paint of approximately one third and, therefore, in the case of fire, as well as having a much higher resistance, it also produces a density of smoke that is considerably lower.

I VERNEST® materials are supplied by:

ThyssenKrupp Acciai Speciali Terni S.p.A. - Viale Benedetto Brin 218 - I-05100 Terni,

Sales: Ing. M. Moriconi, phone 335.494765, m.moriconi@acciaiatermi.it; Marketing: Dr.ssa V. Fontana, phone 0744.490867, fax 0744.490946, marketing@acciaiatermi.it, www acciaiatermi.it

I Realisation:

Profilsystem S.r.l. - Via Lavoratori Autobianchi 1 - I-20033 Desio, phone 0362.625652, fax 0362.306733, info@profilsystem.com, www.profilesystem.com

KNIVES, WHAT A PASSION!

(Coltelli, che passione!)

Continuing our excursion through producers of craft-made knives, we encounter a new enthusiast who, like many others, started cultivating his hobby as a self-taught man.

Over the years, his hobby of knives took on increasing importance and he began to participate in the contests held in Scarperia (the village close to Florence that is famous for the antique tradition in the art of knives) with excellent placing, succeeding in being admitted to the Italian Guild of Cutlers.

The production made by this hobbyist now ranges from hunting knives to collection knives, from city-knives (small fixed-blade pocket knives) to folding knives.

The types of stainless steel that are used most are EN 1.4109 (AISI 440/A) and EN 1.4116, more seldom EN 1.4125 (AISI 440/C) and ATS 34.

I Production:

Carlo Alberto Trevisi - Via San Marco 139/b - I-35020 Ponte di Brenta PD, phone 049.625351, fax 049.625073, carlotrevisi@tin.it

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WATER PURIFICATION: A FEW EXAMPLES IN THE PROVINCE OF TRENTO

(La depurazione delle acque: alcuni esempi nella provincia di Trento)

The purification of water allows it to be re-emitted into the natural cycle, avoiding damage to the environment. Thanks to its corrosion-resistant capabilities, stainless steel is widely used in applications of this type.

The grades used are EN 1.4301 (AISI 304) for the pipelines, parapets, baffle plates, metering screws and walkway gratings; EN 1.4401 (AISI 316) for the sluice gates; EN 1.4541 (AISI 321) for the machinery.

This article describes the purification plants of Vallarsa and Lavis, two villages in the province of Trento that, despite their being different as far as the number of users is concerned (the first is sized for 4,500 equivalent inhabitants, the second for 30,000), their dimensions, appearance and technical solutions use the same cycle for purifying water.

Within the plants, stainless steel is used for the construction of various components. First, the initial grid that makes it possible to separate any material that measures more than 2

mm from the reflux flow is made of stainless steel. For the subsequent stages, stainless steel is used again in the bubble aeration system, in the form of tubes; in the sedimentation tank, where it constitutes the entire bridge that leads the mud towards the treatment cycle; in the pipelines necessary for conveying the fluids.

In the Vallarsa plant (that is completely roofed), stainless steel was also used for the air deodorization system. For the Lavis site, of a greater size, both bare and painted stainless steel was used (note the parapets painted in green in the picture in the upper part of page 12).

I Planning and works management:

Arch. Adriano Conci, Servizio Opere Igienico-Sanitarie, Provincia Autonoma di Trento via Pozzo 6, I-38100 Trento tel. 0461.492763

I Metal structural work:

Fram S.r.l. - I-25030 Torbole Casaglia BS, via dell'Artigianato 51, tel. 030.2150642

I Sheets: Outokumpu S.p.A., piazza Piccapietra 9 - I-16121 Genova GE - tel. 010.55431, fax 010.5543200, info@outokumpu.com, www.outokumpu.com/stainless

I Profiles and piping:

Marcegaglia - Divisione Inox - Via Bresciani 16 - I-46040 Gazoldo degli Ippoliti MN, tel. 0376.6851, fax 0376.657577.

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STAINLESS STEEL BARS IN THE RECONSTRUCTION OF THE PIRELLI SKYSCRAPER IN MILAN

(Barre inox nel recupero del grattacielo Pirelli di Milano)

At exactly two years from the tragic airplane collision, the external facades in glass and steel of the Pirelli skyscraper, now completely restored, have been returned to its city. Inside it, safety interventions, as well as restoration and reconstruction works on the building, continue. Complete repair of the damage caused by the crash to the bearing structures has been pre-announced for the end of this year.

The most serious "injury" was caused to the 26th and 27th floors of the building. In particular, the planking of the 26th floor, due to the shock wave that followed the impact, underwent a deformation that took on a concave shape, bending more than 25 cm, while the floor of the upper story took on a slightly convex shape.

In the works regarding the structural restoration of the planking of the 26th floor, in order to make the floor a "bearing" one once again, the designers (Prof. Ing. A. Migliacci and Ing. M. Acito) have provided for the insertion, externally to the intrados, of a group of post-stretched cables. The anchoring of the heads of the active-reinforcement cables ("noses") against the core of the beam in reinforced concrete was done by means of EN 1.4301 (AISI 304) stainless steel bars, with a diameter of 28 mm and with a $f_{yk} > 800$ Mpa (supplied by the company Cogne Acciai Speciali S.p.A.). The bars were threaded and constitute the blocking elements, in such a way as to ensure that the "noses" and the core of the beam behave as though they were a single body.

The high mechanical properties required for stretching the bars themselves, together with those specific to stainless steel including resistance to corrosion and high resistance to fire (a characteristic that was expressly requested for the construction materials used in tall buildings such as skyscrapers), have led the designers to the choice of stainless steel, so as to make these works of extraordinary maintenance safe and long-lasting through time.

I Manufacturer of the stainless steel bars:

Cogne Acciai Speciali S.p.A. - Via Paravera 16 - I-11100 AOSTA, phone 0165.302.1, fax 0165.43779, mailmal@cogne.com, www.cogne.com

PAGE 15

NEW MARK FOR STAINLESS STEEL (Un nuovo marchio per l'acciaio inossidabile)

Centro Inox has created a new mark which can be used by all producers of items made entirely in stainless steel or in which in any case more stainless steel is used than other materials.

The initiative arose from the following needs: 1) to distinguish stainless steel clearly from other materials; 2) to make sure that end users can immediately recognise a material which is a byword for durability and hygiene 3) to make known the presence of stainless steel in emerging fields.

The sole purpose of the mark is to identify the nature of the material without any reference to its quality level. It is not therefore a mark of quality and does not represent any kind of guarantee as regards any performance shortcomings arising, for example, from inappropriate maintenance or cleaning, machining, installation or choice of type of

stainless steel according to use.

The Regulation states that the mark can be accompanied only by wording containing the declaration that it has been issued by Centro Inox, that the material used is stainless steel which is a hygienic, non-toxic, strong, recyclable material etc.

The mark has been registered both in Italy and in the EC.

Use is granted by Centro Inox Servizi, on licence from Centro Inox. For further details please send the coupon on page 15 via fax.

* * * *

Meeting

STRUCTURAL USES OF STAINLESS STEELS Florence, October 28th 2004 - 8.30 a.m. to 1.00 p.m.

Centro Inox, in collaboration with the College of Engineers of Tuscany, has organised a meeting with the scope of providing more information regarding those characteristics of stainless steel that make it a material that is particularly suited for structural uses in the construction field and for the consolidation of bearing structures of monumental buildings. As well as its now widely demonstrated characteristics of corrosion-resistance that make it possible to limit maintenance operations to a minimum, its anti-seismic and fire-resistance qualities are becoming more and more highly appreciated by designers, architects and technicians of the field.

The complete program will be published in the next edition of Inossidabile (157 - September 2004). Participation is open to all and free of charge.

I For more information:

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THE "STAINLESS" FASCINATION OF THE MOUNTAINS. STAINLESS STEEL ARTIFICIAL STRUCTURES FOR CLIMBING AND BIVOUACS

(L'inossidabile fascino della montagna. Strutture artificiali per arrampicata e bivacchi inox)

The seemingly harmonious movements of sports climbing are, in actual fact, efforts that are transmitted to structures made in stainless steel and polycarbonate, the scope of which is not that of replacing the sensations of real mountains, but of guaranteeing the degree of safety necessary.

Fake walls of rock or ice that, in any season of the year, offer the possibility of intense training sessions or simply the opportunity of feeling the thrill of an extreme climb; these are artificial mountain climbing structures. Increasingly often, they are found within tourist resorts, and not only mountainous ones, due to the fact that they are easy to dismantle and can be transported in a van. The bearing structure, that complies with the standard UNI EN 12572 (Artificial climbing structures, securing points, stability requirements and test methods) is built entirely in round and square EN 1.4301 (AISI 304) welded tube. As well as its structural performance, the use of stainless steel also guarantees its inalterability over time, not only as far as its aesthetic characteristics are concerned, but also and especially with regard to its mechanical ones.

And once the "peak" has been reached? A bivouac is what is needed to sleep sheltered from the storm. The solution: a solid and long-lasting stainless steel frame (EN 1.4301 - AISI 304) covered in clear polycarbonate, so as not to deprive oneself of the pleasure of a nice view, transported to those altitudes in a helicopter and then securely anchored using adjustable feet. A point of watching, of overnight stay, of first aid, of support during high-altitude works, of assistance and supplying; all condensed into an agile, ready-to-use structure.

I Realisation:

Sport Studio - Via Burolo 34 - I-10015 Ivrea TO, phone 0125.252614, fax 0125.251898, - office@sportstudio.it, www.sportstudio.it

CENTRO INOX

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