Stainless Steel Structures for Mining and Industry. Tersainox They Leader in Manufacturing...

Champagne Production...

Separators with High Efficiency Filters...

Sustainability and Life Cycle Costing of Stainless Steel...

Steel for Sulphuric Acid
Tersainox SA, has excelled in innovation and solutions using stainless steel for different applications, mainly in the following industries: Food, Wine, Logistics, Pulp and Paper, Chemical, Mining, urban architecture among others, such as: Stainless Steel Tanks - Industrial Equipment - Scrubbers - Stainless Steel Fermenters - Transportation Solution Development - Stainless Steel Tanks - Fish transport equipment - Silotank transport equipment for bulk dry cargo - Tanks for the transport of sulfuric acid and fuels - mining equipment - stainless steel tanks to API - Manufacture of stainless steel tanks - Engineering Pro Mechanica - Pro Engineer - Pipelines - Spool - Palletank - Politank - Hastelloy - Collectors and Manifolds – Tanks for olive oil – Storage Tanks - Stainless Steel Tanks - Barrels of Stainless Steel - Stainless Steel Barrel - Equipment for pulp storage towers - Cristalizers -

Stainless Steel Products.

We promote the use of stainless steel because we are convinced is part of the modern solution to many problems of corrosion, durability, maintenance, functionality and aesthetics for the new century.

We have an experienced group of collaborators who can guide you in the best way to find solutions according to their needs.

This division of the company has specialized in the manufacture of heavy equipment in thickness and size, used mainly for the pulp industry, paper, chemical, mining and fishing.

We emphasize the use of materials with special alloys such as duplex stainless steels, high nickel steels, Hastelloy, Titanium, 254 Smo and others.

We have extensive experience in manufacturing equipment under international standards: API, ASME, THEMA, DOT. We have extensive experience in pressure and vacuum tanks.

Ability, experience and speed in the manufacture of industrial equipment in stainless steel and special alloys.

Made under the rules:
API 650, ASME and Chilean standards.
Atmospheric storage tanks of different products.
Pressure tanks for processes.
Reactor pressure and vacuum.
Storage towers for industrial pulp and paper.
Crystallizers.
Scrubbers.
Cyclones.
Stan Pipes.

Our welders are qualified in:
3CR12
AISI 304-L
AISI 316-L
LDX 2101 duplex steels
SAF 2304, 2205
254 SMO, 904-L, XN AL6
HASTELLOY

The experience, skills, infrastructure and the "Know How" makes Tersainox the leader in solutions for mega structures, giving the confidence and efficiency to our customers for years.

Patricio Campos Castro
Mining and Industry Division
Tersainox S.A. Group
For one of the leading Chilean companies in the production of champagne, Tersainox SA manufactured and assembled in record time and with great success, pressure tanks that are used in the production of premium champagne.

These pressure tanks, which are named after Autoclaves were manufactured only in Europe before, so its purchase and transport made them accessible only to large producers.

After repeated meetings between the champagne producer and Tersainox, our client decided to invest in the country and trusted the manufacturing of these

Our company is the leading manufacturer of premium champagne, thanks to the vast experience we have on the production of the precious liquid.

Due to the quality of our product, we should be able to meet market needs, we couldn’t accomplish that mission if we only rely in the autoclaves that we already have.

These tanks enabled us to increase capacity by 35%, which along with the new order will allow us to successfully meet all our customers.

Because Tersainox tanks managed to deliver excellent quality and in record time, is that the vineyard followed and will continue委托ing the manufacture of such complex equipment to Tersainox SA

**Remarks by the Production Manager of Winery**

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**Eric Miranda Lagos**
**Commercial Executive**
**Tersainox S.A. Group**

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**Words of Don Eric Miranda, Commercial Manager of the area.**
Sulfuric acid is a corrosive chemical, global production is high specialized in the production of fertilizers used in the petrochemical industry and for Chile is very important in mining, especially for copper smelting and leaching operations of leachable oxide ore and sulfide that consume them.

The question that always arises is: What steel is resistant to sulfuric acid?. For this choice of materials for the management of this compound requires knowledge about the behaviour of sulfuric acid according to its concentration, temperature, flow rate, ions and contaminants.

If sulfuric acid has a concentration of 85% at room temperature, this tends to be a reducing agent and is therefore reducing character, above these levels are oxidative in nature, whether with other substances in the acid can alter these characteristics.

Alloying elements such as Cr, Ni, Mo, W and alloys determine the corrosion resistance of stainless steels. Chromium is responsible for the stainless steels, which forms a protective passive layer of chromium oxide. A reducing environment tends to destroy this protective layer but in an oxidizing atmosphere that layer becomes thicker, protecting the material.

In summary, according to the sulfuric acid concentrations that are handled in the processes of stainless steels have work limit temperatures to avoid triggering the corrosion rate, on the other hand to make the steel more resistant, requires a major addition of chromium in the alloy.

Here are some of the steel used to work with sulfuric acid:

- 3CR12 steel because of its high chromium content (11.7%) provides resistance to concentrations higher than 85% at room temperature.
- 316 stainless steel is useful at room temperature in acid concentrations below 20% and above 85%, within this range the steel is exposed to rapid attack by corrosion. Alloys such as molybdenum, copper and silicon in conjunction with elevated levels of chromium and nickel provide etch resistance at temperatures around 50 °C.
- The steel Hastelloy C-276 is a super alloy chromium-nickel-molybdenum tungsten addition, designed to have an excellent corrosion resistance under oxidizing conditions can be used throughout the range of concentrations of sulfuric acid, to concentrations of 10%, 70 °C is necessary to limit to avoid exceeding the corrosion rate, concentrations of 68% have a limit of 54 °C and 98% at 77 °C as a boundary.

Natalia Cañón Alba
Commercial and Projects Department
Tersainox S.A. Group
Separators with High Efficiency Filters

TERSAINOX represents in Chile JORD INTERNATIONAL PTY, an engineering firm based in Sydney, Australia that designs, manufactures and commissions filters with high efficiency separators.

The filters separators are mainly used for gas treatment.
Filter separators are used where both pollutants, solid and liquid are present in the inflow and is necessary to remove both.
The Filter Separators use both filter elements and a pack of blades, so it captures both solids and liquids. Filter separators can be installed horizontally or vertically.

The performance offered by the filters designed by "Jord International" is 100% removal of all solids and liquids > 3 microns.
Runs down to 1 micron can be achieved in certain circumstances, especially using designs of filter elements.

Cristian Lohse
Sales Executive
Tersainox S.A. Group
Sustainability and Life Cycle Costing of Stainless Steel

Stainless steel is intuitively perceived as environmentally friendly. All over the world people associate stainless steel with pots and pans, cutlery, household and restaurant equipment, dairies, hospitals etc. It is well known that stainless steel is used where cleanliness and hygiene are required.

Industry knows stainless steel as corrosion resistant and durable. Even in severe industrial environments the material usually lasts for many years. And when process equipment is finally scrapped, stainless steel is recycled back to stainless steel melting shops, for conversion to new high quality products. Due to the inherent value of stainless steel scrap, a scrap handling industry has been in profitable existence for many years.

In summary, this means that stainless steel is a material which truly contributes to sustainable development. This fact is well recognized by the general public and the end users of stainless steel, and it has for many years been taken for granted by the stainless steel industry. However, little has been communicated to the not-already-convinced, and very few efforts have been made to quantify the environmental profile of stainless steel.

The Life Cycle Costing (LCC) has long been used in planning for reliability and maintenance for complex engineering systems in defence, airline, railway, offshore platform, power station, and other applications.

A basic attribute of stainless steel is the ability to provide long-term performance with a minimum of downtime and cost associated with maintenance. As a result LCC is of particular importance to the stainless industry.

Whilst the mathematics of LCC can be quite complex, the International Chromium Development Association (ICDA) has developed a compatible PC program which can be easily applied to most examples. TERSAINOX can make this program available to any interested party on request.

Calculating LCC

In the LCC calculation, consideration is given only to relevant costs which are directly or indirectly affected by the material options being considered. Besides the cost of material, these include costs of installation, operation, maintenance, stoppages, replacements and possibly the residual value at the end of the service life. The time intervals at which the various costs arise during the selected life cycle period must also be taken into account.

Before the various cost items can be put together, those that arise every year and those that occur at certain time intervals during the service life must be converted into present values.

In circumstances where stainless is being considered or introduced into new fields of applications, comparisons are often made with materials of a lower initial cost such as coated carbon steel or plastics.

Here the reasoning should progress well beyond the simple initial cost comparison and take account of the long term cost assessments associated with maintenance replacement and operating stoppages.

LCC is the tool to make this assessment and the PC program makes it easy.

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