SAFETY INFORMATION SHEET FOR STAINLESS STEELS

In accordance with European Commission Regulation 2015/830 “REACH” and its Annex II to Regulation 1907/2006 for Safety data Sheets requirements, with reference to:

Directive 67/548/EEC “Classification, packaging and labelling of dangerous substances”
Directive 99/45/EC “Dangerous preparations”
Regulation (EC) No 1935/2004 on materials and articles intended to come into contact with food
Directives 80/590/EEC determining the symbol that may accompany materials and articles intended to come into contact with foodstuffs.
Directive 89/109/EEC on the laws of the Member States relating to materials and articles intended to come into contact with foodstuffs.
Directive 2004/96/EC amending Council Directive 76/769/EEC on Nickel.
National regulations in Spain.

1- IDENTIFICATION OF SUBSTANCE AND COMPANY

1.1. Product identifier

Product Name: Stainless Steel

Corrosion, heat and creep resisting grades with ferritic, martensitic, duplex or austenitic microstructure in massive product forms which might be billet, bar, rod and wire. The products are marketed with Olarra´s trade names and designations according to various international and national standards such as European standards (e.g. EN 10.088).

1.2. Relevant identified uses of the substance or mixture and uses advised against

The products are extensively used in the most varying applications, especially where carbon steels or other materials have insufficient corrosion resistance or in cases when high temperature resistance against corrosive environments are required. This means that Olarra’s products are used in many different industrial applications, such as in the automotive, chemical, aviation, oil and gas, nuclear industries etc.

1.3. Details of the supplier of the safety data sheet

Manufacturer, importer, supplier
Main office address:
Aceros Inoxidables Olarra S.A.
Tel. No. +34 94 471 13 00 Email: aiosa@olarra.com
Larrabarri 1
PC 48180 Loiu (Bizkaia) Spain

Department supplying information
Aceros Inoxidables Olarra S.A.
Servicio de Prevención
Larrabarri 1
PC 48180 Loiu (Bizkaia) Spain
Tel: +34 94 471 13 00 Email: smedico@olarra.com

1.4. Emergency telephone number

In case of emergency, contact your local authority advisor.

2- HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Many stainless steels contain nickel as an essential alloying element. Nickel is classified in the EC Directive 67/548/EEC as a suspect carcinogen element (category 3 – R40) and as a skin sensitizer (R43).

The classification rules of EC Directive 99/45/EC dictate that any substance with equal to or more than 1% content of nickel must automatically be classified as a suspect carcinogen (R40). Stainless steels do not cause nickel sensitisation by prolonged skin contact in humans. Nonetheless, all stainless steels with 1% or more nickel are classified as a skin sensitizer.

Table 1 The corresponding classification according to EC regulations EC 1272/2008 Annex VI Table 3.1 and I Directive 67/548/EEC:

EC 1272/2008		EC Directive 67/548/EEC
Hazard Class and Category Code	Hazard statement Code	
Carc. 2	H351	Carc. Cat 3, R40
STOT RE 1*	H372	T;R48/23
Skin Sens. 1	H317	R43
Resp. Sens. 1	H334	R42/43

*Stainless steels containing more than 10 % Ni are classified as STOT RE1, while stainless steels containing 1-10 % Ni are classified as STOT RE2. Stainless steels containing less than 1 % Ni are not classified.

2.2. Label elements

Since these products are alloys, labelling is not required.

2.3. Other hazards

There are no hazards of concern for man or the environment from stainless steels in the forms supplied. However, if an individual is already sensitised to nickel, prolonged skin contact with a few types of stainless steel may result in an allergic dermatological reaction. If prolonged skin contact is involved in the processing of this product, please contact the supplier for advice. No carcinogenic effects resulting from exposure to stainless steels has been reported, either in epidemiological studies or in tests with animals.

Dust and smoke may be generated during processing e.g. in welding, cutting and grinding. If airborne concentrations of dust and smoke are excessive, inhalation over long periods may affect workers' health, primarily of the lungs.

3- COMPOSITION/ INFORMATION ON INGREDIENTS

Element	CAS number	EINECS	Concentration, wt-%	Classification (EC 1272/2008 Annex VI Table 3.1.)	EC Directive 67/548/EEC
Nickel	7440-02-0	231-111-4	<38	Carc2; H351, STOT RE; H372, Skin Sens. 1; H317	Carc. Cat 3, R40 T;R48/23 R43
Chromium	7440-47-3	231-157-5	10,5-30	-	
Cobalt	7440-48-4	231-158-0	<2	Skin Sens. 1;H317 Resp. Sens. 1;H334 Aquatic Chronic 4;H413	
Molybdenum	7439-98-7	231-107-2	<8	-	
Manganese	7439-96-5	231-105-1	<11	-	
Iron	7439-89-6	231-096-4	balance	-	

4- FIRST AID MEASURES

4.1. Description of first aid measures

There are no specific first aid measures developed for stainless steel. Medical attention should be sought in case of an excessive inhalation of dust, a physical injury to the skin or to the eyes. Note that austenitic stainless steel particles are non-magnetic, or slightly magnetic, and may therefore not respond to a magnet placed over the eye.

4.2. Most important symptoms and effects, both acute and delayed

No relevant information has been identified.

4.3. Indication of any immediate medical attention and special treatment needed

No relevant information has been identified.

5- FIREFIGHTING MEASURES

5.1. Extinguishing media

Not applicable

5.2. Description of first aid measures

Stainless steels are not combustible. However, care should be taken to avoid exposing fine process dust (e.g. from grinding and blasting operations) to high temperatures as it may present a potential fire hazard.

5.3. Special hazards arising from the substance or mixture

None identified

5.3. Advice for firefighters

None identified

6- ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Not applicable

6.2. Environmental precautions

Not applicable

6.3. Methods and material for containment and cleaning up

Not applicable

6.4 Reference to other sections

None

7- HANDLING AND STORAGE

7.1. Precautions for safe handling

There are no special technical measures involved for handling stainless steels. Normal precautions should be taken to avoid physical injury from coiled or bundled products, possibly with sharp edges:

- Straps or bands, used to secure some products, should not be used for lifting. Coils and bundled products (e.g. sections, rods, bars etc.) may spring apart when the banding is removed and the banding itself could cause eye or other injury when tension is released.
- Certain products may, as a result of processing, be brittle or have residual stress that might cause fracture or significant deformation.
- All products are likely to have sharp edges that could cause cuts and flying particles may be produced when shearing.
- Suitable protective clothing and equipment, such as hand and eye protection, should be worn and systems of work adopted to take account of any hazards arising from the risk of fracturing or the release of tension when breaking-open the banding.

- Suitable racks should be used to ensure stability when stocking narrow coils.

7.2. Conditions for safe storage, including any incompatibilities

The product is stable in storage. However, it should be kept in mind that the products may have sharp edges and a sufficiently robust place should be used for storage.

7.3. Specific end use(s)

None identified.

8- EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1. Control parameters

There are no occupational exposure limits for stainless steels. Occupational exposure limits apply only to some constituent elements (Ni, Cr, Mn, Mo) and certain of their compounds. Next table shows limits according to current legislation in Spain.

Occupational Exposure Limits, VLA, (mg/m^3) in SPAIN.

Substance			**VLA-ED**
Chromium & its Cr(II), Cr(III) compounds		as Cr	2
Chromium (VI) inorganic soluble compounds		as Cr	0,05
Chromium (VI) inorganic insoluble compounds		as Cr	0,01
Copper: powder and fog		as Cu	1
Copper: fume		as Cu	0,2
Iron oxide (III): powder and fume		as Fe	5
Manganese & its inorganic compounds		as Mn	0,2
Molybdenum & its soluble compounds		as Mo	0,5
Molybdenum & its insoluble compounds	Respirable fraction	as Mo	3
Molybdenum & its insoluble compounds	Inhalable fraction	as Mo	10
Nickel: metal		as Ni	1
Nickel: soluble compounds		as Ni	0,1
Nickel: insoluble compounds		as Ni	0,2
Nickel: carbonyl		as Ni	0,12
Plumb & its inorganic compounds		as Pb	0,15

VLA-ED = Maximum environmental values in one working day exposure

8.2. Exposure controls

8.2.1. Appropriate engineering controls

In the processing of all metallic materials, exposure to smoke and dust must be kept below any legally imposed limit.

Dust and smoke may be generated in use, e.g. by cutting, grinding and welding processes, which may contain material subjected to exposure limits. To ensure these limits are not exceeded, adequate general or local ventilation or smoke extraction system should be provided.

8.2.2. Individual protection measures, such as personal protective equipment

In accordance with European and national health and safety regulations, it is necessary to assess the need for personal protection equipment and appropriate approved respiratory protection should be provided for those workers at risk of inhalation. Suitable hand and eye protection should be worn where there is a risk of laceration, flying particles, burning or welding radiation or contact with oils during processing.

The process of welding should only be performed by trained workers with the personal protective equipment in accordance with the laws of each member state relating to safety.

8.2.3. Environmental exposure controls

Emissions from ventilation or equipment in the work place should be controlled in order to assure that environmental legislation is fulfilled.

9- PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance: Solid; metallic grey, ranging from dull to bright polished. Occasionally supplied with oxidised, blue/black surfaces.
Odour: Odourless
Water solubility: Insoluble
Melting: 1370°C – 1520°C
Density: 7,7 – 8,1 g/cm3
Thermal expansion (mean value 20-100°C): 10 – 18 x 10-6 °C-1
Thermal conductivity (RT): 12 – 30 W/m°C
Magnetic: Austenitic stainless steels are non-magnetic in most supply conditions, but may be para-magnetic in some supply conditions (Permeability 1,005 – 1,1).
Duplex, ferritic and martensitic stainless steels are ferro-magnetic.

9.2. Other information

Thermal conductivity at 20°C, 8-30 W/(m K), depending on specific grade.
Not explosive.

10- STABILITY AND REACTIVITY

10.1. Reactivity

Stainless steels are stable and non-reactive under normal ambient atmospheric conditions.

10.2. Chemical stability

Stainless steels are stable and non-reactive under normal ambient atmospheric conditions.

10.3. Possibility of hazardous reactions

Stainless steel may react in contact with strong acids, releasing gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen.

10.4. Conditions to avoid

When heated to very high temperatures, vapors may be produced (e.g. by cutting, welding or melting operations).

10.5. Incompatible materials

Stainless steel may react in contact with strong acids, releasing gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen.

10.6. Hazardous decomposition products

See sections 10.3. and 10.5.

11- TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

11.1.1 Acute toxicity

Stainless steels do not cause acute toxicity.

11.1.2. Skin Corrosion/ Irritation

Stainless steels are not corrosive to skin.

11.1.3. Serious eye damage/ Irritation

Stainless steels are not corrosive to eyes.

11.1.4. Respiratory or skin sensitisation

The exposure route of concern is inhalation. These stainless steel products are in massive form, not capable of being inhaled. However, the UK Health & Safety Executive´s publication "Control of fume arising from electric arc welding of stainless steel" indicates that there is some risk of developing asthma from compounds of chromium VI and nickel in the fume from stainless steel welding. Nonetheless, stainless steel welding fumes did not meet the European Union classification criteria required for a substance capable of causing asthma.

Nickel is classified as a skin sensitiser. It causes skin sensitisation in susceptible individuals through prolonged intimate contact with the skin (e.g. wearing of jewellery). The requirements of EC

regulation EC 1272/2008 Annex VI Table 3.1 are such that alloys with 1% or more of nickel must, by default, also be classified as skin sensitisers. Numerous patch tests have established that most stainless steels do not cause sensitisation. However, studies have shown that in some individuals already sensitised to nickel, close and prolonged skin contact with the re-sulphurised free-machining types of stainless steel with 0,15 – 0,35 % S (EN 1.4105, 1.4523, 1.4305, 1.4570) may cause an allergic reaction. The uses of products that contain Ni and which come into direct and prolonged contact with the skin are limited by 2004/96/EC. Posts inserted into pierced ears and other parts of the body during epithelization of the wound must not contain more than 0,050 % Ni. Other Ni-containing products in direct and prolonged contact with the skin must release no more than 0,5 g/cm2/week of Ni as defined in EN 1811.

11.1.5. Germ cell mutagenicity

Stainless steels are not classified as mutagenic.

11.1.6. Carcinogenicity

Stainless steels may contain nickel, which has been classified in section 2 “Hazards identification”. The exposure route of concern is inhalation. These stainless steel products are in massive form, not capable of being inhaled.

The requirements of EC regulation EC 1272/2008 Annex VI Table 3.1 are such that all alloys with more than 1% nickel must be classified in the same way as nickel itself, by default. There is no direct evidence of carcinogenic effects of nickel alloys in man, nor indirect evidence from animals tested by relevant routes, i.e. inhalation or ingestion. In other studies, using non-relevant routes in animals, alloys with up to 40 % nickel caused no significant increase in cancer.
Studies of workers exposed to nickel powder and dust and fumes generated in the production of nickel alloys and stainless steels have not indicated a respiratory cancer hazard.

Welding and flame cutting fumes may contain hexavalent chromium compounds. Studies have shown that some hexavalent chromium compounds can cause cancer. However, epidemiological studies amongst welders indicate no extra increased risk of cancer when welding stainless steels, compared with the slightly increased risk when welding steels that do not contain chromium.

11.1.7. Reproductive toxicity

Stainless steels are not toxic for reproduction.

12- ECOLOGICAL INFORMATION

12.1. Toxicity.

Not toxic.

12.2. Persistance and degradability

Not relevant.

12.3. Bioaccumulative potential

None.

12.4. Mobility in soil

Not soluble in water. Immobile.

12.5. Results of PBT and vPvB assessment

Not relevant.

12.6. Other adverse effects

No known harmful effects. No special precautions are required.

13- DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Surplus and scrap (waste) stainless steel is a valuable commodity. Recycling routes are well-established, and recycling is therefore the preferred disposal route. Disposal to landfill is not harmful to the environment, but is a waste of resources and therefore less desirable than recycling.

14 - TRANSPORT INFORMATION

No special precautions required. The product is not classified as hazardous for transport.

15- REGULATORY INFORMATION

15.1. Safety, health and environmental regulation/legislation specific for the mixture

Stainless steels containing 1% or more of nickel are classified in the same way as nickel, see section “2- Hazards classification”, in this document. However, in recognition of their essentially non-hazardous nature, stainless steels in the massive form are not required to be labelled as hazardous.

15.2. Chemical safety assessment

No chemical safety assessment has been published.

16- OTHER INFORMATION

EC 1272/2008			EC Directive 67/548/EEC	
Hazard Class and Category Code	Hazard statement Code	Hazard statement in full text	Code	Full text
Carc. 2	H351	Suspected of causing cancer	Carc. Cat 3, R40	Limited evidence of a carcin
STOT RE 1*	H372	Causes damage to organs through prolonged or repeated exposure	T;R48/23	Toxic: danger of serious dam by prolonged exposure throu
Skin Sens. 1	H317	May cause an allergic skin reaction	R43	May cause sensitization by s

*Stainless steels containing more than 10 % Ni are classified as STOT RE1, while stainless steels containing 1-10 % Ni are classified as STOT RE2. Stainless steels containing less than 1 % Ni are not classified.

Food contact materials

The Council of Europe published "Guidelines on metals and alloys used as food contact materials" in April 2001 as a reference document to ensure that metallic materials used in contact with food comply with the regulation EC 1935/2004. The document includes a section on stainless steels.

References to key data

Note that all of the data on the potential health effects of stainless steel, including those which might occur during manufacture and processing, which were available up to 1998 are reviewed in the reference No. 1 below.

1. H J Cross, J Beach, L S Levy, S Sadhra, T Sorahan, C McRoy:
   Manufacture, processing and use of stainless steel: A Review of the Health Effects.
   Prepared for Eurofer by the Institute of Occupational Health, University of Birmingham, 1999.
2. N Becker:
   Cancer mortality among arc welders exposed to fumes containing chromium and nickel.
   Results of a third follow-up: 1989–1995.
3. Report of the International Committee on Nickel Carcinogenesis in Man: Scand J, Work Environ Health 1990, 16; 1–82
4. International Agency for Research on Cancer.
   Chromium, nickel and welding. 'IARC Monograph on the Evaluation of Carcinogenic Risks to Humans'. Lyon: IARC 1990.
5. Santonen, Stockman -Juvala, Zitting:
   Review on toxicity of stainless steel, Finnish Institute of Occupational Health, ISBN 978-952-261-039-3, 2010-11-17

References to national regulations

SPAIN

Real decreto 374/2001 Health and safety protection against risk over workers, related with chemical agents during working.

Occupational Exposure Limits 2.009 (by the National Institute for Safety and Hygiene at work - INSHT).

Real Decreto 363/1995: Classification, packaging and labelling of dangerous substances

EU

The stainless steel products according to section 1 in this SIS, conform to requirements, regulations or guidance given in:

- Reach regulation EC 1907/2006

- Classification, Labelling and Packaging regulation EC 1272/2008.
- EU Directive 67/548/EEC, Directive on Dangerous Substances
- EU Directive 2006/122/EG, i.e. the 30th amendment of the Directive 76/769/EEG of the 12th of December 2006. The directive 76/769/EEG is used for controlling the risks for human health and the environment caused by hazardous substances.
- EU Directive 2011/65/EU of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. (RoHS).
- EN 1811: Reference test method for release of nickel from products intended to come into direct and prolonged contact with skin.

Olarra is certified according to the Environmental Management System, ISO 14 001:2015. This certification requires full compliance with national and EU legislation within our area of business.

Declaration

The information given in this safety data sheet is based on the present level of our knowledge and experience. The data sheet describes the products with respect to safety requirements. The data given is not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should it be used as the basis for ordering these products.

Disclaimer

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice.

This data sheet is only valid for Olarra material. Other material, covering the same international specifications, does not necessarily comply with the mechanical and corrosion properties presented in this datasheet.