

SAFETY DATA SHEET

1. IDENTIFICATION

1.1. Identification of the product (article according to Reach Regulation)

Corrosion resistant or heat-resistant stainless steel supplied as solid, compact and non-inhalable metal in the form of cold rolled stainless steel strips and sheets.

This safety data sheet covers the stainless steel listed below:

STAINLESS STEEL GRADES		STAINLESS STEEL GRADES	
EN	ASTM	EN	ASTM
1.4310	301(HT1)	1.4833	309S
1.4310	301(HT3)	1.4404	316L
1.4310	301(HT5)	1.4571	316TI
1.4301	304	1.4541	321
1.4301	304(H)	1.4372	201
1.4301	304(PS)	1.4000	410S
1.4307	304(D)L	1.4512	409Li
1.4306	304L	1.4113	434
1.4303	305	1.4016	430
1.4828	309		

1.2. Use of product (article according to Reach Regulation)

Our stainless steel products (articles according to REACH Regulation), with special corrosion properties and heat resistance, are supplied in semi-finished form for further processing for products in automotive industry, electronic industry, chemical industry, foodstuff and beverage industry, construction industry, etc.

1.3. Company identification:

OȚELINOX SA, 16, Găești Street, Târgoviște, 130087, ROMÂNIA,
<http://www.otelinox.com/en>

1.4. Emergency phone

0040 245 209 493 - 08⁰⁰ -16⁰⁰
0040 245 209 477 - 16⁰⁰ - 08⁰⁰

2. HAZARDS IDENTIFICATION

Solid stainless steel products covered by this Safety Data Sheet are shipped as non-flammable, non-explosive, non-reactive articles and do not constitute a hazardous material in solid form.

2.1. Potential health effects	No carcinogenic effects resulting from exposure to stainless steel have been reported, either in epidemiological studies or in tests with animals.
2.2. Eye Contact	Dusts or particulates may cause mechanical irritation including pain, tearing, and redness. Scratching of the cornea can occur if eye is rubbed. Fumes may be irritating. Contact with the heated material may cause thermal burns.
2.3. Skin contact (Dermatological effects)	Stainless steels do not cause nickel sensitization by prolonged skin contact in human. However, nickel is classified as a skin sensitizer. It causes skin sensitization in susceptible individuals through prolonged intimate contact with the skin (e.g. wearing jewellery).
2.4. Wounds	Nickel metal powder has caused tumors at the site of injection in rodents. However, studies do not suggest a significant risk for humans from nickel-containing prostheses.
2.5. Inhalation	Dust and fumes which may be produced as a by-product during grinding, polishing, abrasive blasting, welding, pickling and post-fabrication cleaning or similar processes may contain fumes of chromium (VI) oxides. Dusts may cause irritation of the nose, throat, and lungs. Excessive inhalation of metallic fumes and dusts may result in metal fume fever, an influenza-like illness. It is characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat, cough, shortness of breath, pulmonary edema, general malaise, weakness, fatigue.
2.6. Ingestion	There is no evidence that nickel and its inorganic compounds are carcinogenic when ingested. Nickel is generally recognized as safe as a direct human food ingredient.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Austenitic stainless steel grades

No.	Component	CAS Number	% Weight
1	Iron	7439-89-6	Balance
2	Carbon	7440-44-0	0.02 ÷ 0.137
3	Manganese	7439-96-5	0.7 ÷ 7.3
4	Silicon	7440-21-3	0.2 ÷ 1.97
5	Phosphorus	7723-14-0	0.02 ÷ 0.04
6	Sulfur	7704-34-9	0 ÷ 0.012
7	Chromium	7440-47-3	16.5 ÷ 22.5
8	Nickel	7440-02-0	6.35 ÷ 14
9	Molybdenum	7439-98-7	0 ÷ 2.39
10	Nitrogen	7727-37-9	0.01 ÷ 0.099
11	Titanium	7440-32-6	0 ÷ 0.44
12	Copper	7440-50-8	0 ÷ 0.67
13	Cobalt	7440-48-4	0 ÷ 0.8
14	Aluminium	7429-90-5	0 ÷ 0.02
15	Vanadium	7440-62-2	0 ÷ 0.05

Ferritic stainless steel grades

No.	Component	CAS Number	% Weight
1	Iron	7439-89-6	Balance
2	Carbon	7440-44-0	0.01 ÷ 0.066
3	Manganese	7439-96-5	0.17 ÷ 0.68
4	Silicon	7440-21-3	0.12 ÷ 0.53
5	Phosphorus	7723-14-0	0.017 ÷ 0.037
6	Sulfur	7704-34-9	0 ÷ 0.02
7	Chromium	7440-47-3	16 ÷ 24
8	Nickel	7440-02-0	0.1 ÷ 0.48
9	Molybdenum	7439-98-7	0 ÷ 0.03
10	Nitrogen	7727-37-9	0.01 ÷ 0.045
11	Titanium	7440-32-6	0.001 ÷ 0.34

4. FIRST AID MEASURES

In its solid form stainless steel does not present an inhalation, absorption, or ingestion hazard.

Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides (spinels) of its components. Metal dust particles may cause eye, skin and/or respiratory system irritation.

For these instances, below are presented examples of first aid measures:

Eye Contact	In case of overexposure to dusts or fumes, immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the eye lids. Get medical attention if irritation persists.
Skin Contact	In case of overexposure to dusts or particulates, wash with soap and plenty of water. Remove and wash contaminated clothing. Get medical attention if irritation develops or persists.
Inhalation	Not applicable to stainless steel in massive form. In case of overexposure to dusts or fumes, ensure sufficient supply of fresh air and consult a physician if required.
Ingestion	Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. Get medical attention immediately. Rinse mouth. Do not induce vomiting.
Notes to physician	Inhalation of metal fume or metal oxides may produce an acute febrile state, with cough, chills, weakness, and general malaise, nausea, vomiting, muscle cramps, and remarkable leukocytosis. Treatment is symptomatic, and condition is self limited in 24÷48 hours. Chronic exposure to dusts may result in pneumoconiosis of mixed type.

5. FIRE-FIGHTING MEASURES

Stainless steels in the solid form are not flammable and thus do not require special fire prevention or fire fighting measures.

Flash Point:	Not applicable.
Auto-ignition Temperature:	Not applicable.
Flammability Classification:	Non-flammable. Will not support combustion.
Flammable Limits:	Not applicable.
General Fire Hazard:	None for solid formed product.

Extinguishing method:

Use extinguishing media appropriate for surrounding fire. Dry sand; Class D Extinguishing Agent (for metal powder fires).

Fire should be extinguished by a properly trained and experienced fire-fighter. Proper care should be taken in applying extinguishing agent and in allowing burning itself out.

Fire fighting equipment:

As in any fire, wear self-contained breathing apparatus pressure-demand, and full protective gear.

Unusual fire or explosion hazards:

Steel products do not present fire or explosion hazards under normal conditions. Finely divided, suspended particulates may present a fire and explosion hazard in the presence of an ignition source. In addition, applied coatings may be combustible.

Explosion data:

Sensitivity / Mechanical Impact:	Not applicable for solid product
Sensitivity / Static Discharge:	Not applicable for solid product

6. ACCIDENTAL RELEASE MEASURES

Not applicable to steel in solid state.

Steps to be taken in case material is released:

Minimal problems with spills of this product would occur because of its solid form.

The following precautions apply to spills involving finely divided particles:

- Shut off ignition sources; no flares, smoking or flames should be in or near hazard area.
- Minimize generation of dust; do not touch or walk through spilled material. Clean up using methods which avoid dust generation.
- Compressed air should not be used to clean up spills.
- During cleanup, skin and eye contact and inhalation of dust should be avoided as much as possible.
- Provide local exhaust or dilution ventilation as required.
- Collect material in compatible and appropriately labelled containers.
- For small dry spills, place material into clean dry container with a clean shovel, and cover loosely; move container from spill area.
- Scrap should be reclaimed for recycling. Prevent materials from entering drains, sewers or waterways.
- Comply with local regulations regarding reporting of spills and waste disposal.

7. HANDLING AND STORAGE

7.1. 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 our products, should not be used for lifting. Coils and sheet packages may spring apart when the banding is removed and the banding itself could cause eye or other injury when tension is released.
- All products are likely to have sharp edges that could cause lacerations 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 banding.
- Suitable racks should be used to ensure stability when stacking narrow coils.

Recommended Work Practices:

Avoid breathing of and contact with fumes and dusts during processing. Use only with adequate ventilation. Wash thoroughly after handling and use, especially before eating, drinking or smoking.

7.2. Storage

Store it in a dry location. Keep away from incompatible materials (see section 10, stability and reactivity). Avoid unnecessary wetting with water, contact with acids and high-humidity environments.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION**8.1. Exposure limit values**

No permissible exposure limits or threshold limit value exists for stainless steel.

8.2. Exposure controls**8.2.1. Occupational exposure controls**

In the processing of all metallic materials, exposure to fume and dust must be kept below any legally imposed limits in each country.

Dust and fume may be generated in use, e.g. by cutting, grinding and welding processes, which may contain materials subject to exposure limits.

To ensure these limits are not exceeded, adequate general or local ventilation or fume extraction should be provided.

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.

Respiratory Protection

When exposure cannot be maintained below permissible limits during welding, brazing, machining, and other processes which may generate airborne contaminants use an appropriate respirator. A competent health and safety professional should be consulted for respirator selection, fit testing, and training.

Skin Protection

Suitable gloves for protection against physical injury and skin contact during handling and processing should be worn. Good personal hygiene practices should be followed including cleansing exposed skin with soap and water.

Eye Protection

Dust resistant safety goggles are recommended under circumstances where particles could cause mechanical injury such as grinding or cutting.

Other Protective Clothing or Equipment

Adequate footwear (safety shoes if necessary) and clothing that protects skin from prolonged or repeated contact.

9. PHYSICAL AND CHEMICAL PROPERTIES
9.1. General information

Appearance: Varying from very light grey, to shiny metallic light grey to bright mirror.

Odour: Odourless.

Physical state: Solid.

9.2. Important health, safety and environmental information

pH :	Not applicable
Boiling point:	Not applicable
Flash point:	Not applicable
Flammability (solid, gas):	Not applicable (<i>Our products are not flammable.</i>)
Explosive properties:	Not applicable (<i>Our products are not explosive.</i>)
Oxidizing properties:	Not applicable
Vapour pressure:	Not applicable
Water solubility:	Insoluble
Partition coefficient:	Not applicable
Viscosity:	Not applicable
Vapour density:	Not applicable
Evaporation rate	Not applicable
Specific gravity (H₂O = 1):	7,7 ÷8
Magnetic Properties:	Austenitic stainless steel is non-magnetic in most conditions, but may be paramagnetic in some supply conditions (e.g.: cold worked-2H-finishing). Duplex, ferritic and martensitic stainless steels are magnetic.

10. STABILITY AND REACTIVITY

10.1. Stability	<i>Stainless steels are stable and non-reactive under normal ambient atmospheric conditions.</i>
10.2. Condition to avoid	Not applicable.
10.3. Materials to avoid	Keep away from oxidizers, stainless steel reacts with strong acids to form explosive hydrogen gas and heat.
10.4. Hazardous decomposition products	No hazardous decomposition products known.

11. TOXICOLOGICAL INFORMATION

Long-term experience of stainless steels in the most varied applications has demonstrated that these very resistant materials are eminently suitable where hygiene is of paramount importance (e.g. food processing and food preparation).

Grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding may produce stainless steel dust or fumes containing complex or mixed oxides of its components (that can be found in the composition of stainless steel).

Dust and fumes	Over long periods, inhalation of excessive airborne levels may have long term health effects, primarily affecting the lungs, e.g. lung fibrosis, or pneumoconiosis. Overexposure to iron oxide can cause siderosis (deposits of iron in the lungs) which may affect pulmonary function. However, 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.
Iron	Excessive exposure of eyes to airborne iron dust can cause conjunctivitis, choroiditis, and retinitis. Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in development of a benign pneumoconiosis, called siderosis, which is observable via X-ray. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of iron oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens.
Chromium	Solid stainless steel does not contain hexavalent chromium. Chromium as Cr(VI) compound can be found in fumes and dust formed by grinding, polishing, abrasive blasting or welding of stainless steel. Cr(VI) compounds can also be formed by cleaning stainless steel with strong oxide formers at high pH. Cr(VI) is classified by Confirmed Human carcinogen. Chromium as metal or Cr(II) and Cr(III) oxides is listed as not classifiable as a human carcinogen. However, epidemiological studies amongst welders indicate no extra risk of cancer when welding stainless steels, compared to the slightly increased risk when welding steels that do not contain chromium.
Nickel	For stainless steels there is no direct evidence of carcinogenic effects in man, nor indirect evidence from animals tested by relevant routes, inhalation or ingestion. In other studies, using non-relevant routes in animals, alloys with up to 40% nickel caused no significant increase in cancer. Epidemiological studies of workers exposed to nickel powder and to dust and fume generated in the production of nickel alloys and of stainless steel have not indicated the presence of a significant respiratory cancer hazard.
Molybdenum & Copper	Both molybdenum and copper are necessary nutritional elements. High doses of molybdenum may antagonize absorption of copper. Likewise, high doses of copper may antagonize absorption of molybdenum. Overexposure to molybdenum causes anemia, gout-like syndrome and increases uric acid levels. In experimental animals molybdenum toxicity causes weight loss, harmful changes of the liver, kidneys, and bones and impaired reflexes.
Silicon	Elemental silicon is an inert material which appears to lack the property of causing fibrosis in lung bones. However, slight pulmonary lesions have been reported in laboratory animals from intra-tracheal injections of silicon dust. Silicon may cause chronic respiratory effects. Crystalline silica (silicon dioxide) is a potent respiratory hazard. However, the likelihood of crystalline silica generation during normal processing is very remote.

Manganese	Overexposure to manganese can result in central nervous system effects referred to as manganism, including symptoms of muscular weakness, impaired speech and tremors similar to Parkinson's disease.
Cobalt	The classification of cobalt is valid for alloys. Cobalt dust may cause an asthma-like disease. Cobalt is classified as "Confirmed Animal Carcinogen with Unknown Relevance to Humans".

12. ECOLOGICAL INFORMATION

Not applicable for solid stainless steel product in its as shipped form.

Articles produced from solid product are not an ecological hazard. No information found on specific product to establish its effect if released into the environment in finely divided form. The solid product is not expected to migrate easily into soil or groundwater based upon its insoluble form, however, finely divided material can become mobile in water and contaminate soil and groundwater. This material may persist in the environment for long periods, based upon its corrosion resistant, insoluble, and non-biodegradable properties. In addition, heavy metals may contaminate the food chain and ultimately be consumed by humans. Some components will react with oxygen to form metallic oxides, the rate of oxidation depends upon prevailing conditions (iron oxidizes most rapidly in moist air).

12.1. Eco-toxicity	Not applicable.
12.2. Mobility	Not applicable.
12.3. Persistence and degradability	No data available.
12.4. Bio-accumulative potential	No data available.
12.5. Results of PBT assessment	Not applicable.
12.6. Other adverse effects	Not applicable.

13. DISPOSAL CONSIDERATIONS

Stainless steel scrap generated from product processing (shearing, cutting, de-burring etc.) is non-dangerous waste and should be handled and recycled according to related legislation. Product dusts from processing may be classified as a hazardous waste, depending on various properties of the dust or the mixture which contains it (e.g. toxicity, solubility, flammability).

14. TRANSPORT AND UNLOADING INFORMATION

In the case of heavy product, exercise care for prevention of load shifting. It is desirable to cover the product with tarpaulin in order to prevent infiltration of rain water. During transportation must be assured the stability of the products.

In case of unloading the material in cold condition from truck into warehouse, in order to prevent the condensation phenomenon, it is recommended to check material for humidity and care that it is dried quickly.

14.1. Hazardous materials description / Proper shipping name

Not applicable for solid formed alloy product.

14.2. Hazard class

Not applicable for solid formed alloy product.

14.3. Identification number

Not applicable for solid formed alloy product.

15. REGULATORY INFORMATION

- Directive 2015/863/EC (RoHS III)
on "Restriction of hazardous substances in electrical and electronic equipment"
- Regulation 1935/2004/EC (Foodstuffs)
on "Materials and articles intended to come into contact with food"
- Regulation 1907/2006/EC (REACH)
on "Registration, Evaluation, Authorisation and Restriction of Chemicals"
- Directive 2000/53/EC (ELV Directive)
on "End-of life vehicles"
- Directive 2012/19/EU (WEEE Directive)
on "Waste electrical and electronic equipment"

16. OTHER INFORMATION

The compliance with EU Directive and EC Regulations was declared based on test results performed in accredited laboratories:

- tests report no. FUHLCP2023-03885 ÷ FUHLCP2023-03898: for compliance with Directive 2015/863/EC (RoHS III);
- test report no. FUFDCP2022-04700: for compliance with Regulation 1935/2004/EC (Foodstuffs).

General Disclaimer

The information provided in this SDS is correct to the best of our knowledge, information and belief at the date of its publication.

All information, recommendations and suggestions appearing herein concerning the product are based upon data believed to be reliable. It is user's responsibility to determine the safety, toxicity, and suitability for their own use of the product describe herein.

This information is not intended to serve as a complete regulatory compliance document. This information is offered as a guide to the SDS user. No guarantees can be made whether the user will be in complete or correct compliance with all applicable regulations when this SDS is used.

It is the user's responsibility to comply with all regulations.