

SAFETY DATA SHEET

Previous edition dated:
10.2.2011
Date of revision:
2.11.2016

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product identifier

Product name:	STAINLESS STEELS
Description:	Iron alloy with Cr, Ni, Mn, Mo Corrosion, heat and creep resisting grades with ferritic, martensitic, duplex or austenitic microstructure in massive product forms: semi-finished products, plate, sheet, strip. The products are marketed with Acroni's trade names and designations according to various international and national standards such as European standards (eg EN 10088). Solid; metallic grey Austenitic Stainless Steel Good to excellent corrosion resistance combined with very good weldability and formability characterize the austenitic stainless steels. The austenitic structure has good creep resistance and good oxidation resistance that make them useful at elevated temperatures. Austenitic steel can also be used in cryogenic applications and in annealed condition; it is the only non-magnetic steel. More than 8% of Nickel Duplex stainless steels have high strength, good toughness and very good corrosion resistance, especially towards stress corrosion cracking and corrosion fatigue. These steels have also good weldability and reasonable formability. 5% of Nickel Ferritic stainless steels have good corrosion resistance, especially towards stress corrosion cracking. Lower carbon and nitrogen contents improve both weldability and toughness which otherwise can be limited. 0% of Nickel

1.2. Relevant identified uses of the product:

Austenitic stainless steels: Milk storage tanks (X5CrNi18-10 / 1.4301), White wine storage tanks (X2CrNiMo17-12-2 / 1.4404), Beer kegs (X5CrNi18-10 / 1.4301), Equipment for collective catering, hospitals, foodstuff handling, etc (X5CrNi18-10 / 1.4301, X2CrNiMo17-12-2 / 1.4404, X2CrNi18-9 / 1.4307), Sink bowls and complete sink unit (X5CrNi18-10 / 1.4301), Dishwasher tubs and door linings (X5CrNi18-10 1.4301), Cooking utensils (X5CrNi18-10/ 1.4301), Cutlery and dishes (X5CrNi18-10 / 1.4301), Bus and coach bodies (X5CrNi18-10 1.4301), Fume ducts (X5CrNi18-10/ 1.4301, X2CrNiMo17-12-2 / 1.4404,) depending on the technology (rigid, flexible, single or double wall, with or without condensation, type of fuel, etc., Hot water tanks (X2CrNiMo17-12-2 / 1.4404, X6CrNiMoTi17-12-2 / 1.4571).

Ferritic stainless steels: Domestic appliances: washing machine and drier drums, dishwasher tubs (X6Cr17 / 1.4016), Sink bowls and drain boards (X6Cr17 / 1.4016, X3CrTi17 / 1.4510), Cutlery, dishes, pan lids (X6Cr17 / 1.4016) Automobile hose clamps (X6Cr17 / 1.4016), Decorative automobile trimmings (X6Cr17 / 1.4016), Washing machine tubs (X3CrTi17 / 1.4510), Automotive exhaust systems (X2CrTi12 / 1.4512, X2CrTiNb18 / 1.4509), Drier-superheater tubes (electric power stations) (X3CrTi17 / 1.4510), Evaporator and reheater tubing and boilers for sugar refineries (X3CrTi17 / 1.4510), Conveyor belt chains (X6CrNi17-1 / 1.4017), Structural elements, container frames, wagons, hoppers, bus and coach bodies (X2CrNi12 / 1.4003), Coinage (X6Cr17 / 1.4016 with low carbon content).

Duplex austenitic - ferritic stainless steels: Chemical engineering (heat exchangers for PVC plants, equipment for handling organic acids, tanks and tubing), Papermaking (pressure vessels, pre-impregnators, kraft pulp digesters, boilers), Offshore engineering (seamed spiral tubing, fire resistant walls), Miscellaneous (plates for electrostatic precipitators).

1.3. Details of the supplier of the safety data sheet:

Manufacturer:	Stanford Advanced Materials Tel: (949) 407-8904 Email: sales@samaterials.com www.samaterials.com
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1.4. Emergency telephone:

Tel. No.: +38645841000

Fire brigade: tel. No: 112 (SLO)

In the case of risks to health, contact personal physician or the National Poison Control Centers.

2. HAZARDS IDENTIFICATION

General Hazard Statement:

Solid metallic products are generally classified as "articles" and do not constitute a hazardous materials in solid form under the definitions of the OSHA Hazard Communication Standard (29 CFR 1910.1200). Any articles manufactured from these solid products would be generally classified as non-hazardous. However some hazardous elements contained in these products can be emitted under certain processing conditions such as: burning, melting, cutting, sawing, brazing, grinding, machining, milling, and welding. Products in the solid state present no fire or explosion hazard.

Description of 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 sensitized* 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 have been reported, either in epidemiological studies or in tests with animals.

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

GHS Label elements, including precautionary statements

No labelling elements applicable.

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

No information available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Composition (nature of the ingredients and their concentrations):

Material/ Component	Product identifier CAS number	%	Classification according to Regulation (EC) No. 1272/2008 (CLP)	Registration number
Base material				
Iron (Fe)	7439-89-6	balance	Not classified	01-2119462838-24-xxxx
Alloying Elements				
Carbon (C)	7440-44-0	0,5 max	Not classified	/
Chromium (Cr)	7440-47-3	11-29	Not classified	01-2119485652-31-xxxx
Nickel (Ni)	7440-02-0	0-25	Nickel metal massives Carc. 2; H351 STOT Rep. Exp. 1; H372 Skin Sens. 1; H317	01-2119438727-29-xxxx
Molybdenum (Mo)	7439-98-7	0-4	Not classified	01-2119472304-43-xxxx
Manganese (Mn)	7439-96-5	10 max	Not classified	01-2119449803-34-xxxx

Austenitic stainless steels (0.015 - 0.1% C, 17 - 20% Cr, 7 - 25% Ni, 0 - 4% Mo),

Ferritic stainless steels (0.02 - 0.06% C, 11 - 29% Cr),

Duplex austenitic - ferritic stainless steels The most commonly used duplex grade is the 0.02% C - 22% Cr - 5.5% Ni - 3% Mo alloy, whose standard European designation is X2CrNiMo22-5-3.

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Other elements may be present, such as Si, Cu, Ti, Mn. None of these substances is intended to be released under normal or reasonably foreseeable conditions of use (1). Exposure to human or the environment during normal or reasonably foreseeable conditions of use including disposal is excluded.

3.2. Dangerous substances:

With the exception of selenium, nickel is the substance of major importance with regard to the hazard classification of stainless steels in the solid form. In accordance with (EC) Regulations 1272/2008, nickel is classified as carcinogen category 2, Specific Target Organ Toxicity Repeated Exposure 1 and skin sensitizer 1. The stainless steels labelled contain more than one percent nickel.

4. FIRST AID MEASURES

There are no specific First Aid Measures developed for the stainless steel. Medical attention should be provided in case of an excessive inhalation of dust or a physical injury to the skin or to the eyes.

Note: Austenitic stainless steel particles are non-magnetic or only slightly magnetic and may not respond to a magnet placed over the eye. In such cases, seek hospital treatment.

4.1 Description of first aid measures

In the event of contact with eyes:

In case of overexposure to dusts or fumes, immediately flush eyes with plenty of water for at least 15 minutes occasionally lifting the eyelids. Get medical attention if irritation persists. Thermal burns should be treated as medical emergencies.

In the event of contact with skin:

In case of overexposure to dusts or particulates, wash with soap and plenty of water. Get medical attention if irritation develops or persists. If thermal burn occurs, flush area with cold water and get immediate medical attention.

In the event of exposure by inhalation:

In case of overexposure to dusts or fumes, remove to fresh air. Get immediate medical attention if symptoms described in this SDS develop.

In the event of swallowing:

Not considered an ingestion hazard. However, if excessive amounts of dust or particulates are swallowed, treat symptomatically and supportively. Get medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Stainless steel as a solid and shipped is not likely to present an acute or chronic health effects. However, during processing (cutting, milling, grinding, melting or welding) emitted by products cause irritations, difficulty in breathing, coughing or wheezing. May cause allergic skin reactions.

4.3 Indication of any immediate medical attention and special treatment needed

In case of doubt or persistent symptoms, consult always a physician.

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 leukocytes. Treatment is symptomatic, and condition is self limited in 24-48 hours.

5. FIREFIGHTING MEASURES

Stainless steels are not combustible. There are no special hazards or precautions associated with stainless steels if in the vicinity of a fire.

5.1. Extinguishing media

Suitable extinguishing media:

Coordinate fire-fighting measures to the fire surroundings.

5.2. Special hazards arising from the substance or mixture

Fire hazard:

The product itself does not burn. Avoid dust formation. Dust can form an explosive mixture in air. May cause sensitization by inhalation and skin contact.

5.3. Advice for firefighters

Protection during firefighting:

In case of fire: wear self-contained breathing apparatus.

Other information:

Do not allow run-off fire-fighting to enter drains or water courses.

1 Not to be heated to very high temperatures (range) as fumes may be produced.

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6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Not applicable to stainless steel in solid state. Ensure adequate ventilation. Avoid dust formation. Protect yourselves from dust inhalation. Use personal protective equipment for protection of skin and respiratory system. Consider safety regulations (look chapters 7 and 8)

6.2. Environmental precautions

With technical measures, prevent the emission of dust and fumes to environment.

6.3. Methods and material for containment and cleaning up

Waste material does not present danger for environment. Used as raw material in production of steel.

7. HANDLING AND STORAGE

There are no special measures for handling stainless steels. Normal precautions should be taken to avoid physical injuries produced mainly by sharp edges. Personal protective equipment must be used e.g. special gloves and eye protection.

Note: Stainless steels should be stored in manner that prevents iron contamination. Avoid placing or storing stainless steel in uncoated iron or steel racks and protect from iron emissions from cutting/grinding operations.

7.1. Precautions for safe handling

Avoid breathing in and contact with fumes and dusts during processing. No specific requirements for bulk solid steel products.

7.2. Conditions for safe storage, including any incompatibilities

No specific storage procedures are required for bulk solid steel products. Normal precautions should be taken to avoid physical injury at manipulation with strips or bands, to avoid lacerations by sharp edges and flying particles. Use suitable equipment for material loading.

7.3. Incompatible Products

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Exposure Guidelines: There are no occupational exposure limits for stainless steels. Occupational exposure limits apply to some components resulting from grinding, polishing, abrasive blasting, hot rolling, hot forging, thermal cutting, or welding which may produce stainless steel dust or fumes.

Component Exposure Limits

Chromium (7440-47-3)

OSHA (PEL): 1 mg/m³ TWA

NIOSH: 0.5 mg/m³ TWA

Nickel (7440-02-0)

OSHA (PEL): 1 mg/m³ TWA

NIOSH: 0.015 mg/m³ TWA

Molybdenum (7439-98-7)

OSHA (PEL): 15 mg/m³ TWA; 5 mg/m³ (respirable fraction)

NIOSH: 5 mg/m³ TWA (soluble compounds as Mo)

Silicon (7440-21-3)

OSHA (PEL): 15 mg/m³ (total dust) TWA; 5 mg/m³ (respirable fraction)

NIOSH (REL): 10 mg/m³ (total dust) TWA; 5 mg/m³ (respirable fraction)

Manganese (7439-96-5)

OSHA: 5 mg/m³ Ceiling

NIOSH: 1 mg/m³ TWA (fume)

NIOSH (STEL): 3 mg/m³

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Copper (7440-50-8)

ACGIH: 0.2 mg/m³ TWA (fume)

OSHA: 0.1 mg/m³ TWA (dust, fume, mist, as Cu)

NIOSH: 1 mg/m³ TWA (dust and mist); 0.1 mg/m³ TWA (fume)

Vanadium (7440-62-2)

OSHA: 0.05 mg/m³ TWA (respirable dust, as V₂O₅); 0.05 mg/m³ TWA (fume, as V₂O₅)

NIOSH: 0.05 mg V/m³ [15-minute]

Phosphorus (7723-14-0)

OSHA: 0.1 mg/m³ TWA

NIOSH: 0.1 mg/m³ TWA

8.2. Exposure control:

Personal protection measures, such as personal protective equipment

Local or general exhaust ventilation should be used to keep exposure below exposure limits during welding, brazing, machining and other process that may generate airborne contaminants. Dust or fume respirators can also be used.

Hand protection

Gloves: Suitable protection against physical injury and skin contact during handling and processing.

Eye / face protection

Safety glasses or goggles when there is a reasonable probability of contact with dust and fume.

Other protective clothing or equipment: Safety shoes and clothing that protects skin from prolonged or repeated contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid

Solubility in water (20 °C): insoluble

Specific gravity: 7,7 – 8,1

Melting point: 1370 °C - 1520 °C

Boiling point: approximately 2800 °C

Vapour pressure: negligible

Vapour density: not applicable

Odour: odourless

Evaporation rate: not applicable

Materials to avoid: Acids

Appearance: Solid; metallic grey, ranging from dull to bright polished.

Density: 7,7 – 8,3 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.

10. STABILITY AND REACTIVITY

Stability: stable under normal ambient atmospheric conditions of use, storage and transport

Hazardous decomposition products: metallic oxide fumes

Thermal degradation of coating material (if any) may produce irritating hydrocarbons

Hazardous polymerisation: will not occur

Incompatible Products

May react in contact with strong acids to release gaseous acid decomposition products, e.g. hydrogen, oxides of nitrogen. Use of strong oxidizers (high pH) on stainless steel may cause Cr(VI) compounds to form at ambient temperatures. Decomposition: Fumes generated during welding, brazing, or thermal cutting may contain: chromium compounds, including hexavalent chromium Cr(VI); nickel; manganese; iron; molybdenum; and silicon compounds.

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11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information 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 (spinel) of its components. Metal dust particles may cause eye, skin and/or respiratory system irritation. The below information is for these instances.

Inhalation May cause irritation of respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Eye Contact Contact with eyes may cause irritation.

Skin Contact Contact with dust can cause mechanical irritation or drying of the skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.

Ingestion May cause irritation

Chemical Name	LD50 Oral	LD50 Dermal	Inhalation
Iron	= 984 mg/kg (Rat)	-	-
Manganese	= 9 g/kg (Rat)	-	-
Silicon	= 3160 mg/kg (Rat)	-	-
Nickel	> 9000 mg/kg (Rat)	-	-
Cobalt	= 6170 mg/kg (Rat)	-	> 10 mg/L (Rat) 1 h

Symptoms related to the physical, chemical and toxicological characteristics

Delayed and immediate effects and chronic effects from short and long-term exposure

Sensitization

With the exception of the resulphurised free-machining stainless steels (containing 0.15 – 0.30% sulphur), tests conducted in accordance with EN 1811 determined that stainless steels release nickel at levels significantly below the criteria set for classification as a skin sensitizer. Thus, stainless steels (other than the resulphurised free-machining grades) are suitable for use as piercing posts (where the maximum nickel release limits is 0.2 µg/cm²/week), for applications involving close, and prolonged contact with the skin (where the maximum nickel release limits is 0.5 µg/cm²/week).

Tests conducted in accordance with EN 1811 have shown that the resulphurised free machining stainless steels (containing 0.15 – 0.30% sulphur) release nickel at levels close to, or above, the maximum nickel release limits of 0.5µg/cm²/week). Resulphurised free-machining stainless steels are, therefore, not recommended for use as piercing posts or for applications involving prolonged and close with the skin (i.e. jewellery, watch backs and watch straps, etc).

Specific Target Organ Toxicity

In accordance with the CLP Regulation, stainless steels containing more than 10% nickel should be classified as Specific Target Organ Toxicity Repeated Exposure 1 (STOT RE1) and stainless steels containing 1 -10% nickel should be classified as STOT RE 2.

Carcinogenicity

In accordance with the CLP Regulation, stainless steels containing more than 1% nickel should be classified as Carcinogen Category 2. However, no carcinogenic effects resulting from exposure to stainless steels have been reported, either in epidemiological studies or in tests with animals.

Specific process and exposure controls

Dust and fume may be generated during processing e.g. in welding, cutting and grinding. If airborne concentrations of dust and fume are excessive, inhalation over long periods may affect workers' health, primarily of the lungs. Dust and fume quantity and composition depend on specific practice. Oxidized forms of the various alloying elements of stainless steel may be found in welding fumes.

During mechanical working, flame cutting or welding, stainless steel dust, or fumes containing complex or mixed oxides (spinel) of its constituents, may be formed. Over long periods, inhalation of excessive airborne levels may have long-term health effects, primarily affecting the lungs. 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.

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Welding and flame cutting fumes may contain hexavalent chromium compounds. Studies have shown that some hexavalent chromium compounds can cause cancer. 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.

12. ECOLOGICAL INFORMATION

ECOTOXICITY: No data available in the stainless steel in its natural solid state. However, individual components of the material has been found to be toxic to the environment.

There are no hazards to the environment from stainless steel in the forms supplied.

COMPONENT	TOXICITY TO ALGAE	TOXICITY TO FISH	TOXICITY TO MICROORGANISMS	DAPHNIA MAGNA (WATER FLEA)
Iron	-	LC ₅₀ 96 h: = 0.56 mg/L semi-static (Cyprinus carpio) LC ₅₀ 96 h: = 13.6 mg/L static (Morone saxatilis)	-	-
Chromium		LC ₅₀ Fathead minnow 96 h: 10-100 mg/l	-	-
Nickel	EC ₅₀ 96 h: 0.174 - 0.311 mg/L static (Pseudokirchneriella subcapitata) EC ₅₀ 72 h: = 0.18 mg/L (Pseudokirchneriella subcapitata)	LC ₅₀ 96 h: = 1.3 mg/L semi-static (Cyprinus carpio) LC ₅₀ 96 h: = 10.4 mg/L static (Cyprinus carpio) LC ₅₀ 96 h: > 100 mg/L (Brachydanio rerio)	EC ₅₀ Water Flea 48h: 1,0 mg/l	EC ₅₀ 48 h: = 1 mg/L Static (Daphnia magna) EC ₅₀ 48 h: > 100 mg/L (Daphnia magna)

Persistence and Degradability No information available.
Bioaccumulation No information available.
Other Adverse Effects No information available.

Stainless steel is part of an integrated in a life cycle and it is a material capable of being 100% recycled. Thus, surplus and scrap (waste) stainless steel is valuable and in demand for the production of prime new stainless steel. Recycling routes are well-established, and recycling is therefore the preferred disposal route. While disposal to landfill is not harmful to the environment, it is a waste of resources and therefore less desirable than recycling.

13. DISPOSAL CONSIDERATIONS

Sort of waste material: Cuts, waste materials, dust which occur at processing.

Convenient methods of waste material removal: Waste material should be collected separately from other materials and returned to department of steel processing.

Classification number of waste material (EWC)

12 01 01 fillings and chips of steel

12 01 02 other steel particles

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14. TRANSPORT INFORMATION

- 14.1 UN NUMBER: Not applicable
- 14.2 UN PROPER SHIPPING NAME: Not applicable
- 14.3 TRANSPORT HAZARD CLASS (ES): Not applicable
- 14.4 PACKING GROUP: Not applicable
- 14.5 ENVIRONMENTAL HAZARDS: Not applicable
- 14.6 SPECIAL PRECAUTIONS FOR USER: Not applicable

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislations specific for the stainless steel

EU regulations:

Authorization and /or restriction on use: None for stainless steel in solid state

Stainless steels containing 1% or more of nickel are classified in the same way as nickel. However, in recognition of their essentially non-hazardous nature, labeling as hazardous for stainless steels in the massive form is not required.

Other EU legislation:

Commission Regulation (EU) No. 474/2014 of 8 May 2014 amending Annex XVII to Regulation (EC) No. 1907/2006

Commission Regulation (EU) No. 944/2013 of 2 October 2013 (5th ATP) amending Regulation (EC) No. 1272/2008 on classification, labeling and packaging of substances and mixtures

Directive 2008/98/EC on waste (Waste Framework Directive)

15.2. Chemical Safety Assessment

For stainless steel, chemical assessment has been carried out.

16. OTHER INFORMATION

Full text of H and EUH - phrases

Carc.2: Carcinogenicity, Category 2

STOT Rep. Exp. 1: Specific target organ toxicity – Repeated exposure, Category 1

Skin Sens. 1: sensitisation – Skin, category 1

H351: Suspected of causing cancer.

Route of exposure: Inhalation

H372: Causes damage to organs.

Affected organs: respiratory tract only. Route of exposure: Inhalation

H317: May cause an allergic skin reaction.

Abbreviations and acronyms:

ACGIH = American Conference of Governmental Industrial Hygienists;

ADR/RID = European Agreement of Dangerous Goods by Road/Rail;

EINECS = European Inventory of Existing Commercial Chemical Substances;

ELINCS = European List of Notified Chemical Substances;

EU = European Union;

IARC = International Agency for Research on Cancer;

LC₅₀ = lethal concentration, 50%;

MAK = Maximum Concentration Value in the Workplace;

NIOSH = National Institute of Occupational Safety and Health;

NOHSC = National Occupational Health & Safety Commission;

NTP = National Toxicology Program;

STEL = Short-term Exposure Limit;

TLV = Threshold Limit Value;

TSCA = Toxic Substances Control Act;

TWA = Time Weighted Average

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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 product with respect to safety requirements. The given data are not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should be used as the basis for ordering these products.

Stainless steel products are considered as articles under the REACH Regulation (1907/2006/ EC).

In accordance with REACH and the CLP Regulation, only substances and preparations require a Safety Data Sheet (SDS). While articles under REACH do not require a classic SDS, REACH Article 32 requires articles to be accompanied by sufficient information to permit safe use and disposal.

REFERENCES

1. REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
2. CLP - Classification Labelling Packaging Regulation ; Regulation (EC) No 1272/2008
3. Rules on the protection of workers from the risks related to exposure to chemical substances at work - Pravilnik o varovanju delavcev pred tveganji zaradi izpostavljenosti kemičnim snovem pri delu, Priloga I - Ur. l.RS 100/01, 39/2005, 53/2007, 102/2010, 43/2011, 38/15
4. <http://www.cdc.gov/niosh/npg/>
http://www.dir.ca.gov/title8/5155table_ac1.html#_blank

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