

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

1.1. Product identifier

Product name	ELECTRICAL STEEL SHEETS
Description	<p>Non-oriented electrical steels have special electromagnetic properties that make them suitable for application in the manufacture of electric equipment and appliances with rotating magnetic fields. The utilisation of fully processed steels is also widespread for construction of electrical static devices. Without electrical steels the production, transformation and utilisation of electrical energy would not be practical and would prove uneconomic.</p> <p>Solid; metallic grey. Electrical steel sheets are steels with max. 0,55 % Aluminium and max. 2, 2 % Silicon (EV 21-P). The main types of electrical steels are:</p> <ul style="list-style-type: none"> • Cold rolled fully-processed electrical steels - DINAMO, • Cold rolled semi-processed electrical steels - ELMAG, • Cold rolled fully-processed high permeability electrical steels - PERMAG FP and semi-processed high permeability electrical steels- PERMAG SP.

1.2. Relevant identified uses of the product:

Non-orientated electrical steel sheets represent materials with special electromagnetic properties. They are mainly used in the production of electrical machines and appliances with rotating magnetic fields. Fully processed electrical steel sheets are also used for construction of static electrical devices. Without electrical steel sheets the production, transformation, distribution and application of electrical energy would be uneconomical.

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

Manufacturer:	<p>SIJ Acroni d.o.o., Cesta Borisa Kidriča 44, SI – 4270 Jesenice, Slovenia Tel: +386 4 584 10 00 F: : +386 4 584 11 11 E: uprava@acroni.si W: http://www.acroni.si</p>
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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.

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	0.03 max	Not classified	/
Chromium (Cr)	7440-47-3	0,5 max	Not classified	01-2119485652-31-xxxx
Silicon (Si)	7440-21-3	1,0-2,20	Not classified	01-2119480401-47-xxxx
Molybdenum (Mo)	7439-98-7	0-4	Not classified	01-2119472304-43-xxxx
Manganese (Mn)	7439-96-5	0,10-0,4	Not classified	01-2119449803-34-xxxx
Aluminium (Al)	7429-90-5	0,55 max	Not classified	01-2119529243-45-xxxx
Phosphorus (P)	7723-14-0	max 0,18	Not classified	01-2119448009-39-xxxx

4. FIRST AID MEASURES

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

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

Electrical steel sheets 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

Electrical steel sheets are not combustible. There are no special hazards or precautions associated with electrical steel sheets 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.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Not applicable to Electrical steel sheets 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 electrical steel sheets. 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.

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 materials

Dissolves in hydrofluoric acid.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

Exposure Guidelines:

There are no occupational exposure limits for Electrical steel sheets. 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

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

Density: 7,65 – 7,85 kg/dm³

Melting point: approximately 1530 °C

Boiling point: approximately 2800 °C

Vapour pressure: negligible

Vapour density: not applicable

Odour and appearance: silver-grey metallic, various shapes, odourless

Evaporation rate: not applicable

Materials to avoid: Acids and for semi-processed electrical steel sheets also air and water.

10. STABILITY AND REACTIVITY

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

Incompatibility: during the reaction with strong acids hydrogen gas and heat are generated

Hazardous decomposition products: metallic oxide fumes

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

Hazardous polymerisation: will not occur

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information In its solid form electric steel sheets 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.

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.

SAFETY DATA SHEET

According to Article 32 (non-hazardous substance) Regulation (EC) No 1907/2006 (REACH)
and CLP-Regulation (EC) No 1272/2008

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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

12. ECOLOGICAL INFORMATION

ECOTOXICITY: No data available in the electrical steel sheets in its natural solid state. There are no hazards to the environment from electrical steel sheets 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.

Electrical steel sheets are part of an integrated in a life cycle and it is a material capable of being 100% recycled. Thus, surplus and scrap (waste) electrical steel sheets is valuable and in demand for the production of prime new electrical steel sheets. 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

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 electrical steel sheets in solid state

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 electrical steel sheets, chemical assessment has been carried out.

16. OTHER INFORMATION

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

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.

Electrical steel sheets 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

SAFETY DATA SHEET

According to Article 32 (non-hazardous substance) Regulation (EC) No 1907/2006 (REACH) and CLP-Regulation (EC) No 1272/2008

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- 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. I.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

END OF SAFETY DATA SHEET