

May 2015

Zinc-coated steel sheet and coils

Safety Data Sheet

1. Identification of the Substance and company

1.1

Other names:	Hot-dip galvanised steel, HDG, continuously galvanised steel strip, Galvatite.
Description:	Plain carbon steel sheet that has been hot-dip coated with zinc or zinc-iron alloy.

1.2

Used in many applications such as construction, automotive, energy/power, transport, defence and security, engineering, consumer products, lifting and excavating and packaging.

1.3

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1.4

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2. Hazards Identification

2.1 Classification

Zinc-coated steel is defined as an article under REACH and does not meet the requirements for classification as dangerous under the Classification, Labelling and Packaging of substances and mixtures (CLP) regulations (EC 1272/2008).

When zinc-coated steel is heated to high temperatures, e.g. during welding or flame cutting, it may emit irritant fumes, which can cause metal fume fever. Repeated contact with protective coatings on the sheet may cause skin problems.

2.2 Label elements according to CLP regulations (EC) 1272/2008 No label required, no signal word required.

2.3 Other hazards

Pre-finished steel can have sharp edges and corners, and relevant precautions should be taken when handling and storing. Under normal conditions of use and storage these materials are stable and non-toxic. Zinc-coated steels may be coated with a non-dangerous oil or chemically passivated surface coating, however prolonged exposure may give rise to skin irritation.

3. Composition / information on ingredients



3.1

The plain carbon steel substrates manufactured by Tata Steel Europe are mild steels that may contain up to 2.5% w/w total of alloying elements, plus carbon. Depending on customer preference, zinc-coated steels may have a protective film of oil or a chemically passivated surface coating that consists of one or more of the following materials: chromate, phosphate, silicate or titanium-based compounds.

Table showing typical composition of zinc-coated steel

Product area	Substance	EINECS No.	CAS No.	Range (%) by weight	Classification (CLP Regs)
Steel substrate	Iron	231-096-4	7439-89-6	Balance	Not classified
	Carbon	231-153-3	7440-44-0	0.001 - 0.50	Not classified
	Manganese	231-105-1	7439-96-5	0.0 - 2.5	Not classified
	Chromium	231-157-3	7440-47-3	0.0 - 0.60	Not classified
Zinc coating	Zinc	231-175-3	7440-66-6	Applied up to 300g/m ² /surface	Not classified

4. First aid measures

4.1

Skin contact: Cuts (lacerations) to the skin from sharp steel edges should be treated as normal cuts and, if required, seek medical attention. Wash if contaminated with oil coating.

Eye contact: If particles enter the eye wash the eye with running water for at least ten minutes. Seek medical advice if irritation persists.

Inhalation: If hot work such as welding / burning causes exposure to significant concentrations of fume, remove exposed personnel to fresh air. Seek medical attention if symptoms such as coughing persist.

Ingestion: None required.

4.2

The most important symptoms and effects for eye exposure are soreness and mechanical irritation.

4.3

Immediate medical attention is required if lacerations are deep.

5. Fire fighting measures

Zinc-coated steel is non-flammable and has a high melting point, 1 450-1 520°C (steel), 419-450°C (zinc) at 1 013 hPa.

6. Accidental release measures

Zinc-coated steel is sold in sheet form and an accidental spill could not be achieved.

7. Handling and Storage

7.1 Handling

Zinc-coated steel is sold in many forms, sheet, coils, sections, tube, pipe, plate or as semi-finished products. Care should be taken when handling, as there may be sharp edges present. Where required the use of hard wearing (protective) gloves and overalls should be used to prevent cuts and abrasions. Care should be taken when lifting heavy loads and, where necessary, use appropriate lifting equipment to do so. Coil bundles may be secured by banding straps, which may have been fitted under tension so care should be taken when removing them. Steel products should never be lifted by retaining straps or bands since these may snap and release the load during lifting.



7.2 Storage

Some products may be secured by using straps or bands, which could cause injury to eyes or other injuries when tension is released. There may be sharp edges present, which could cause lacerations. Store in an appropriate facility to prevent damage, use suitable racks or storage pallets. Lifting should always be carried out in a way that prevents injury to operators or damage to the lifting equipment.

8. Exposure controls and personal protection

8.1 Control parameters [occupational exposure limits (OELs)]

Please note these exposure limits are not directly associated with the product but with possible exposures that may occur when performing certain activities such as welding or cutting.

Current OELs (GESTIS International Limit Values Institut fuer Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA))

Country in EU with OEL for the relevant substance	Substance			
	Iron oxide (Fe ₂ O ₃ & FeO) as iron		Zinc oxide (ZnO) as zinc fume/resp dust	
	8-h TWA (mg/m ³)	STEL (mg/m ³)	8-h TWA (mg/m ³)	STEL (mg/m ³)
Austria	5.0 (resp)	10.0 (resp)	5.0 (resp)	---
Belgium	5.0	---	5.0	10.0
Denmark	3.5	7.0	4.0	8.0
France	---	---	5.0	---
Germany (AGS)	---	---	---	---
Germany (DFG)	---	---	1.0 (resp)	1.0 (resp)
Hungary	6.0 (resp)	---	---	---
Poland	5.0	10.0	---	---
Spain	5.0	---	---	---
Sweden	3.5	---	---	---
United Kingdom	5.0	---	---	---
TWA – Time-weighted average measured over an 8-hour period				
STEL – Short-term exposure limit value – 15-minute duration				
Resp - Respirable fraction of dust				

8.2 Control Measures

Wear suitable gloves, overalls and eye/face protection when handling the pre-finished steel to prevent cuts and abrasions.

If hot work activities, such as welding or burning, or mechanical abrasion are to take place local exhaust ventilation (LEV) should be used to remove any fume/dust produced. When using LEV systems the manufacturers' instructions and guidance should be followed at all times to maintain sufficient capture velocity and to ensure that the air cleaning system is in good working order. If a large amount of fume is generated and there is a risk that exposures may exceed relevant OELs, suitable and approved personal respiratory equipment (RPE) should be used in conjunction with the LEV. Ori-nasal respirators fitted with either a P2 or P3 filter (EN149: FFP2S / FFP3S) may be used when fume levels are high, depending on the dust/fume concentration. Manufacturers' directions for use must be followed and, where applicable, an RPE face-fit test should be successfully completed before use.

9. Physical and chemical properties

Property	Value used
Physical State at 20°C/ 1 013 hPa	Solid
Form	Zinc-coated steels are hard, dense silver coloured metallic materials. If the product has been heated to give the galvanized product such as Galvatite IZ the surface will have a dull grey appearances
Melting point	1 450-1 520°C at 1 013 hPa (steel), 419-450°C (zinc)
Boiling point	Not applicable
Relative density	7.85 kg/dm ³ at 20°C



Vapour pressure	Not applicable, steels due to high melting point >1 000°C
Surface tension	Not applicable, steels are an inorganic solid with very low aqueous solubility
Flash point	Not applicable, steels are an inorganic solid with a high melting point >1 000°C
Flammability	Non-flammable
Explosive properties	Non-explosive
Oxidising properties	No
Viscosity	Solid

10. Stability and reactivity

The product is stable under normal conditions. The zinc coating will release fume containing zinc oxides when heated to high temperatures greater than 419°C. In contact with strong acids, steels may release gaseous acid decomposition products (e.g. hydrogen, oxides of nitrogen) and metals will be dissolved in the acid. For chromium-containing steels, contact with strong oxidising agents at high pH (e.g. alkaline cleaners at pH 10-14) may result in the formation of Cr (IV) compounds at ambient temperatures.

11. Toxicological information

Under the normal applications of this product, health effects should not occur owing to the low risk of exposure to minimal hazard material. If activities mechanical activities, such as dry grinding or machining, or hot work, such as welding and burning, are carried out dust / fume will be produced which may irritate the respiratory system at high airborne concentrations. The principal route of entry into the body is via inhalation of fume/dust.

Acute toxicity

Exposure to high fume/dust concentrations in air may cause respiratory irritation and can be potentially harmful if inhaled into the body in large amounts over long time periods. This is not expected under normal conditions of use of the product.

Skin corrosion / irritation

Fumes/dust released during mechanical working or hot work are not known to be irritant. However there have been reports of irritation through exposure to dust from white rusting, which is thought to be due to blocking of skin pores with zinc oxide dust.

Eye damage / irritation

Fumes/dust released during mechanical working or hot work are not known to be irritant.

Respiratory / Skin sensitisation

Fumes/dust released during mechanical working or hot work are not known to cause sensitisation.

Germ cell mutagenicity No effect.

Carcinogenicity No effect.

Reproductive toxicity No effect.

Repeated dose toxicity – Inhalation

Mechanical working, such as dry grinding or machining, will produce dust of the same composition as the coating and base metal. If the product is heated to high temperatures, e.g. during welding or flame cutting, it releases fumes containing oxides of zinc, manganese and iron, and also breakdown products of any protective coating that may have been applied to the product.

The potential effects on health from exposure to fumes generated during hot work include metal fume fever, a short-lasting, self-limiting condition with symptoms similar to influenza. The principal mode of entry into the body is by inhalation. If airborne concentrations are excessive (see Section 8.1) over long periods of time they may affect the workers' long-term health

Exposure to iron oxide fume, in excessive concentrations and over long periods of time, may cause a benign condition called siderosis. Repeated inhalation could lead to cumulative effects. This condition is not expected to occur under normal conditions of use of the product.

12. Ecological information

There are no known harmful effects from the product on the environment. Under normal applications exposure to the environment should not occur.



12.1 Toxicity

No effect.

12.2 Persistence and Degradability

No effect.

12.3 Bioaccumulative potential

No effect.

12.4 Mobility in soil

No effect.

12.5 Results of PBT and vPvB assessment

Zinc-coated steel is not PBT or vPvB.

13. Disposal considerations

Steel products are 100% recyclable and should be recycled at 'end of life' in all situations.

14. Transport information

Zinc-coated steel is not classified as dangerous under CLP Regulations (EC) 1272/2008 so there is no requirement for transport information. None of the sub-headings in this section is applicable for this product.

15. Regulatory information

15.1

Zinc-coated steel specifications are covered by numerous ISO standards. All steels covered by this safety data sheet comply with the packaging and packaging waste EC Directive 94/62/EEC on heavy metal content. Except for steels protected by chromate passivation, all steels covered by this data sheet comply with the Restriction of Hazardous Substances directive 2002/95/EC and the End of Life Vehicle directive 2000/53/EC. The iron manufactured and used to produce this steel product has been registered under REACH along with any other component where a registration was required.

15.2

A chemical safety assessment has not been carried out as zinc-coated steel is defined as an article under REACH and does not require an assessment, plus it is not classified as dangerous under the CLP Regulations (EC)1272/2008.

16. Other Information

Revision

This safety data sheet (SDS) has been produced / revised in line with Annex II of the REACH Regulations (2006) as guidance only, as articles do not require a SDS. Information in this safety data sheet is supplied to inform the customer and should be used where necessary.

This revision is the current version dated **May 2015** - *Changes: deleted references to Dangerous Substances Directive to comply with June 2015 requirements CLP. Also minor edits.*

Previous Versions: June 2011 July
2007
January 2006
First published: February 1995

Hazard and Precautionary Statements according to CLP Regulations (EC)1272/2008): No hazard statements.

References

GESTIS International Limit Values Institut fuer Arbeitsschutz der Deutschen Gesetzlichen Unfallversicherung (IFA) – website:
http://bgiaonline.hvbg.de/LIMITVALUE/WebForm_gw.aspx

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