

SAFETY DATA SHEET

according to Regulation (EC) No 1907/2006

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name: InnoMetal Binder, InnoMetal FILLER Binder

Other names: -

MSDS name: EN_InnoMetal_MSDS_Binder_1_3

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

1.2.1. Application of the substance / the mixture

Additional component

1.2.2. Applications advised against

No further relevant information available.

1.3. Details of the supplier of the safety data sheet

InnoMetal GmbH

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D-33104 Paderborn

Fon: +49 (0)221 9582011

info@Innometal.de

1.4. Emergency telephone number

Monday – Friday, 9:00 am - 4:00 pm

+49 (0)221 958 2011

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids, Category 3; H226

Acute toxicity, Category 4, inhalation; H332

Eye irritation, Category 2; H319

Skin irritation, Category 2; H315

Aspiration hazard, Category 1; H304

Specific Target Organ Toxicity (single exposure), Category 3; H335

Specific Target Organ Toxicity (repeated exposure), Category 1; H372

Classification according to Directive 67/548/EEC or Directive 1999/45/EC



Xn; Harmful

R10: Flammable

R20: Harmful by inhalation

R36/38: Irritating to eyes and skin

Classification system:

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms:



GHS02 GHS07 GHS08

Signal word: Danger

Hazard statements:

H226: Flammable liquid and vapour.

H332: Harmful if inhaled.

H319: Causes serious eye irritation.

H315: Causes skin irritation.

H304: May be fatal if swallowed and enters airways.

H335: May cause respiratory irritation.

H372: Causes damage to organs through prolonged or repeated exposure

Precautionary statements:

P260: Do not breathe dust/fume/gas/mist/vapours/spray.

P280: Wear protective gloves/eye protection/face protection.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P403+P233: Store in a well-ventilated place. Keep container tightly closed.

2.3. Other hazards

Inhalation of dust or fumes leads to irritation of respiratory system. Inhalation of higher concentrations may cause metal fume fever.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Dangerous components:

CAS-Nr.	EINECS	Chemical name	from %	till %	Hazard pictograms	R phrases	Index Number
100-42-5	202-851-5	Styrene	25	35	Xn, Xi	10, 20, 36/38	601-026-00-0
75-21-8	200-849-9	Ethylene Oxide	20	25	F, T	45, 46, 6, 12, 23, 36/37/38	603-023-00-X

Labelling (CLP):

CAS-Nr.	EINECS	Chemical name	Hazard pictograms	Signal word	Hazard statements
100-42-5	202-851-5	Styrene	GHS02, GHS07, GHS08	Danger	H226, H332, H319, H315, H304, H335, H372
75-21-8	200-849-9	Ethylene Oxide	GHS02, GHS04, GHS06, GHS08	Danger	H220, H280, H315, H319, H331, H335, H340, H350

Additional information: For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

General information: No special measures required.

After inhalation: Whilst protecting yourself remove the casualty from the hazardous area and take him to the fresh air. Lay the casualty down in a quiet place and protect him against hypothermia. In the case of breathing difficulties have the casualty inhale oxygen. If the casualty is unconscious but breathing lay him in a stable manner on his side. If the casualty has stopped breathing give mouth to nose resuscitation. If this is not possible use mouth to mouth resuscitation. Keep his respiratory tract clear. Arrange medical treatment.

After skin contact: Remove contaminated clothing while protecting yourself. Immediately cleanse the affected skin areas with soap under running water. If irritation appears or following extensive wetting (watch for simultaneous inhalation!). Arrange medical treatment.

After eye contact: Rinse the affected eye with widely spread lids for 10 minutes under running water whilst protecting the unimpaired eye. Arrange medical treatment.

After swallowing: Rinse the mouth and spit the fluids out. If the casualty is conscious have him drink copious amounts of liquids (water). Under no circumstances apply cooking oil, castor oil, milk or alcohol. Apply charcoal (3 tablespoons as a suspension in a glass of water). Do not make the casualty vomit. Arrange medical treatment. During spontaneous vomiting hold the head of the casualty low with the body in a prone position in order to avoid aspiration

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

Information for physicians:

Eyes: reddening/swelling of the conjunctiva -> superficial damage to the cornea, effects generally rapidly reversible.

Skin: mostly only following prolonged/occlusive contact: erythema, oedema, blistering; very seldom allergic reactions; absorptive-toxic actions only through simultaneous inhalation.

Inhalation: irritation to the eyes, nose, mucous membranes of the mouth and throat; very seldom allergic asthma; at high concentrations primarily absorptive effects (see below) but lung damage not to be excluded.

Ingestion: probable gastrointestinal pain, singultus, vomiting (danger of aspiration!), diarrhoea, absorptive-toxic effects.

Absorption: immediate but unspecific impact on the CNS: headache, sleepiness, vertigo, nausea, confusion, fatigue, drowsiness, apathy, muscular weakness, dyspnoea, possible excitation, cramps; on the part of the heart/circulatory system: probable tachycardia, arrhythmia, hypotension; following high concentrations rapid transfer to a narcotic state -> coma, danger of lethal respiratory arrest.

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

Rinse contaminated eyes with water/best with physiological saline. Arrange ophthalmologic aftercare. Cleanse moistened skin with soap and water. If necessary apply polyethyleneglycol for some minutes and then remove it with a lot of water. Treat irritated areas with a dermatocorticoid. Following extensive wetting watch for the inhalation of vapours!

Following inhalation have the casualty inhale oxygen and if possible immediately. Avoid loss of body heat and physical load. If respiration insufficient, an intubation and artificial ventilation with supplementary oxygen (best PEEP) should be carried out.

If necessary apply glucocorticoids topically and intravenously and carry out further prophylactic measures against lung oedema and pneumonia.

Observation/treatment of systemic effects (see below).

After ingestion apply charcoal and a saline laxative throughout a prolonged period of time. After intake of > 1 ml/kg bw or for acute symptoms carry out gastrolavage as soon as possible with intubation because of the danger of aspiration. Charcoal and laxatives are also recommended during this procedure. Under no circumstances apply milk, castor oil, alcohol or other fat dissolving liquids. Systemic poisoning together with unconsciousness requires immediate cardiopulmonal cerebral resuscitation. In this case do not apply catecholamines during the initial phase (danger of cardiac interactions!), for hypotension best hold the head low and apply electrolyte solutions/plasma substitutes. Diagnose possible ventricular fibrillation at the site of the accident using an ECG and treat it by means of electrical defibrillation or with medicaments (eg with lidocaine, initially 1.5 mg/kg bw).

In order to stop cramps first apply diazepam (10 - 20 mg i.v.).

Following massive inhalation or following ingestion arrange transport to hospital in every case. Check of the functions of the heart/circulatory system, lung, kidneys and liver and the analysis of the acid-base balance are the most important issues. Post observation of the neurological status is to be recommended.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing agents:

Dry extinguishing powder, Foam, Carbon dioxide

For safety reasons unsuitable extinguishing agents:

Water

5.2. Special hazards arising from the substance or mixture

Cool surrounding containers with water spray. If possible, take container out of dangerous zone. Heating causes a rise in pressure, risk of bursting and explosion. Shut off sources of ignition. Beware of backfire!

5.3. Advice for firefighters

Attention! Hazardous decomposition products may occur.

Carbon monoxide and carbon dioxide.

Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Shut off all sources of ignition. Evacuate area. Warn affected surroundings.

Wear respiratory protection, eye protection, hand protection and body protection (see chapter Personal Protection).

6.2. Environmental precautions

Do not allow to enter sewers/ surface or ground water.

Hazard to waters. Inform the responsible authorities when larger quantities get into water, drainage, sewer, or the ground

6.3. Methods and material for containment and cleaning up

Prevent spread of the liquid. Absorb any spilt liquid with an absorbent (e.g. diatomite, vermiculite, sand) and dispose of according to regulations. Pump off larger quantities. Use non-sparking tools. Afterwards ventilate area and wash spill site.

Use protective equipment while cleaning if necessary. Only conduct maintenance and other work on or in the vessel or closed spaces after obtaining written permission.

6.4. Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Take care to maintain clean working place.

The substance must not be present at workplaces in quantities above that required for work to be progressed.

Do not leave container open.

Use leak-proof equipment with exhaust for refilling or transfer.

Do not transport with/using compressed air.

Avoid splashing.

Fill only into labelled container.

Use solvent resistant utensils.

Before thermic exposure check the peroxide concentration, if possible destroy the peroxide. Never distill the styrene completely.

Avoid any contact when handling the substance.

Avoid aerosol formation.

Prevent seepage into flooring (use of a steel tub).

7.2. Conditions for safe storage, including any incompatibilities

Do not use any food containers - risk of mistake.

Containers have to be labelled clearly and permanently.

Store in the original container as much as possible.

Use breakable containers only up to 5 litres content.

Keep container tightly closed in a dry and well-ventilated place.

Maximum storage temperature: 15 degree C.

Store apart from sources of ignition and heat.

Store smaller vessels in cabinets with collecting tubs.

Protect from exposure to light.

Protect from exposure to sunlight.

Protect from overheating/heating up.

Protect from air/oxygen.

Store larger amounts only in vessels with temperature monitoring.

Store in stabilized condition. 4-tert-Butylcatechol functions mostly as inhibitor.

The maximum permissible stored quantities are to be found in the Technische Regel für Gefahrstoffe "Lagerung von Gefahrstoffen in ortsbeweglichen Behältern" (TRGS 510).

Storage is not permissible in hallways, thoroughfare, stairways, public hallways and corridors, on the roof, in attics, and in workrooms.

Storage class: 3 (Flammable liquid substances)

7.3. Specific end use(s)

No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ingredients with limit values that require monitoring at the workplace:	
100-42-5 Styrene	
MAK (Germany)	20 ml/m ³ 86 mg/m ³
WEL (UK)	100 ppm
TWA	430 mg/m ³
STEL	250 ppm 1080 mg/m ³
75-21-8 Ethylene Oxide	
MAK (Germany)	Not classified because of carcinogenicity

8.2. Exposure controls

Respiratory protection: In an emergency (e.g.: unintentional release of the substance, exceeding the occupational exposure limit value) respiratory protection must be worn. Consider the maximum period for wear. Gas filter A, Colour code brown. Use insulating device for concentrations above the usage limits for filter devices, for oxygen concentrations below 17% volume, or in circumstances which are unclear

Protection of hands:



Protective gloves

Use protective gloves. The glove material must be sufficiently impermeable and resistant to the substance. Check the tightness before wear. Gloves should be well cleaned before being removed, then stored in a well-ventilated location. Pay attention to skin care.

Skin protection crèmes do not protect sufficiently against the substance.

Textile or leather gloves are completely unsuitable.

The following materials are suitable for protective gloves (Permeation time \geq 8 hours):

Fluoro carbon rubber - FKM (0,4 mm)

Following materials are unsuitable for protective gloves because of degradation, severe swelling or low permeation time:

Natural rubber/Natural latex - NR

Polychloroprene - CR

Nitrile rubber/Nitrile latex - NBR

Butyl rubber - Butyl

Polyvinyl chloride - PVC

Eye protection: Sufficient eye protection must be worn. Wear glasses with side protection.

Body protection: Depending on the risk, wear a tight, long apron and boots or suitable chemical protection clothing. Wear flameproof protective clothing. The protection clothing should be solvent resistant.

General protective and hygienic measures: Foods, beverages and other articles of consumption must not be consumed at the work areas. Suitable areas are to be designated for these purposes. Avoid contact with skin. In case of contact wash skin. Avoid contact with eyes. In case of contact rinse the affected eye(s). Avoid inhalation of vapour or mist. Avoid contact with clothing. Contaminated clothes must be exchanged and cleaned carefully. Increased risk of combustion from wicking. Provide washrooms with showers and if possible rooms with separate storage for street clothing and work clothing. The skin must be washed with soap and water before breaks and at the end of work. Apply fatty skin-care products after washing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Information

Appearance:

Form: liquid

Colour: white

Odour: characteristic

Odour Threshold: See Section 8 for exposure limits.

pH: Not applicable

Melting Point: Not available

Flash point: 32 °C DIN EN ISO 1523

Evaporation Rate: Not available

Solubility in Water: Insoluble

OTHER INFORMATION

Percent Volatile (%bywt.): 30% - 35%

Solids Content: 65% - 70%

9.2. Other information

No further relevant information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

No further relevant information available.

10.2. Chemical stability

No decomposition if used and stored according to specifications.

10.3. Possibility of hazardous reactions

Risk of explosion in contact with:

Oxygen, strong acids, hydroperoxides, storage at temperatures above 32 degree C, peroxides, polymerization accelerators (light, pressure, heat)

The substance polymerize in contact with:

Sodium, aluminium trichloride, azoisobutyronitrile

The substance can react dangerously with:

Oxidizing agents, butyllithium, chlorine/iron catalyst, chlorosulphuric acid/enclosure, oleum, heat/vapour, xenon tetrafluorid

10.4. Conditions to avoid

Avoid contact with oxidizing agents, free radical initiators. Keep away from heat sources and direct sunlight.

10.5. Incompatible materials

Free radical initiators. Peroxides, metallic compounds, strong oxidizing agents.

10.6. Hazardous decomposition products

Irritant gases/vapours. Carbon dioxide Carbon monoxide (CO)

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

Irritation to the eyes, airways, skin; disturbance of the CNS

Chronic toxicity:

Irritation to mucous membranes, disturbance of the central and peripheral nervous system

Carcinogenic, category 5

Pregnancy: group C

Additional toxicological information:

Styrene has acute oral LD50 (rat) and acute dermal LD50 (rabbit) values of 5000 mg/kg and >5010 mg/kg, respectively. The inhalation LC50 (rat) is 24 mg/L following a 4-hour exposure. Acute overexposure to styrene vapour may cause moderate eye and nasal irritation as well as drowsiness, headache and central nervous system depression. Styrene is a moderate skin and eye irritant. In animal studies, styrene induced micronuclei, sister chromatid exchanges and DNA strand breaks. In vitro tests showed styrene to cause sex-linked recessive lethal mutations in *Drosophila* (fruit flies). Styrene has been shown to cause lung tumours in mice. Epidemiological studies of styrene exposure in humans are not conclusive due to the inadequate control of variables.

Ethyleneoxide

LC50 inhalation rat (ppm) 2920 ppm/1h

ATE US (gases) 1460.000 ppmV/4h

Acute toxicity: Inhalation: gas: TOXIC IF INHALED.

Skin corrosion/irritation: CAUSES SKIN IRRITATION.

Serious eye damage/irritation: CAUSES SERIOUS EYE IRRITATION.

Respiratory or skin sensitization: MAY CAUSE AN ALLERGIC SKIN REACTION.

Germ cell mutagenicity: MAY CAUSE GENETIC DEFECTS.

Carcinogenicity: MAY CAUSE CANCER

Ethylene oxide (75-21-8)

IARC group 1 - Carcinogenic to humans

National Toxicology Program (NTP) Status 2 - Known Human Carcinogens

Reproductive toxicity: MAY DAMAGE FERTILITY OR THE UNBORN CHILD.

Specific target organ toxicity (single exposure): MAY CAUSE RESPIRATORY IRRITATION.

Specific target organ toxicity (repeated exposure): CAUSES DAMAGE TO ORGANS (NERVOUS SYSTEM, KIDNEYS) THROUGH PROLONGED OR REPEATED EXPOSURE.

SECTION 12: Ecological information

12.1. Toxicity

LC50 Fish (96 hours)

Minimum: 4.02 mg/l

Maximum: 74.8 mg/l

Median: 25 mg/l

Study number: 13

Reference for median:

Pickering, Q.H., and C. Henderson 1966. Acute Toxicity of Some Important Petrochemicals to Fish. J. Water Pollut. Control Fed. 38(9):1419-1429

LC50 Crustaceans (48 hours)

Minimum: 23 mg/l

Maximum: 59 mg/l

Median: 41 mg/l

Study number: 2

Reference for median:

LeBlanc, G.A. 1980. Acute Toxicity of Priority Pollutants to Water Flea (*Daphnia magna*). Bull.Environ.Contam.Toxicol. 24(5):684-691 (OECDG Data File); Qureshi, A.A., K.W. Flood, S.R. Thompson, S.M. Janhurst, C.S. Inniss, and D.A. Rokosh 1982. Compariso

EC50 Crustaceans (48 hours)

Minimum: 4.7 mg/l

Maximum: 4.7 mg/l

Median: 4.7 mg/l

Study number: 1

Reference for median:

Cushman, J.R., G.A. Rausina, G. Cruzan, J. Gilbert, E. Williams, M.C. Harrass, J.V. Sousa, A.E. Putt, N.A. Garvey, J.P. 1997. Ecotoxicity Hazard Assessment of Styrene. Ecotoxicol.Environ.Saf. 37:173-180

EC50 Algae (72 or 96 hours)

Test duration: 72 hours

Minimum: 1.4 mg/l

Maximum: 1.4 mg/l

Median: 1.4 mg/l

Study number: 1

Reference for median:

Cushman, J.R., G.A. Rausina, G. Cruzan, J. Gilbert, E. Williams, M.C. Harrass, J.V. Sousa, A.E. Putt, N.A. Garvey, J.P.1997. Ecotoxicity Hazard Assessment of Styrene. Ecotoxicol.Environ.Saf. 37:173-180

EC50 Algae (72 or 96 hours)

Test duration: 96 hours

Minimum: 0.72 mg/l

Maximum: 0.72 mg/l

Median: 0.72 mg/l

Study number: 1

Reference for median:

Cushman, J.R., G.A. Rausina, G. Cruzan, J. Gilbert, E. Williams, M.C. Harrass, J.V. Sousa, A.E. Putt, N.A. Garvey, J.P.1997. Ecotoxicity Hazard Assessment of Styrene. Ecotoxicol. Environ.Saf. 37:173-180

12.2. Persistence and degradability

No further relevant information available.

12.3. Bio-accumulative potential

German water hazard class:

WGK 2 - hazard to waters

Classification according to the Administrative Regulation of Substances Hazardous to Water (VwWwS)

12.4. Mobility in soil

Do not allow product to reach ground water, water course or sewage system.

12.5. Results of PBT and vPvB assessment

Not applicable.

12.6. Other adverse effects

No further relevant information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Hazardous waste according to Waste Catalogue Ordinance (AVV).

If there is no way of recycling it must be disposed of in compliance with the respective national and local regulations.

Collection of small amounts of substance:

Place in a collection container for halogen-free organic solvents and solutions of halogen-free organic substances.

Collection vessels must be clearly labelled with a systematic description of their contents. Store the vessels in a well-ventilated location. Entrust them to the appropriate authorities for disposal.

European waste catalogue:

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste Codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Uncleaned packaging:

Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

14.1. UN number

ADR, IMDG, IATA: 1866 Harzlösung, entzündbar

14.2. UN proper shipping name

ADR: 1866 Harzlösung, entzündbar

1866 Resin solution, flammable

IMDG, IATA: 1866 Resin solution, flammable

14.3. Transport hazard class(es)

ADR:



Class: 3, Flammable liquids

Label: 3

IMDG, IATA:



Class: 3, Flammable liquids

14.4. Packing group

ADR, IMDG, IATA: III

14.5. Environmental hazards

Marine pollutant: No

14.6. Special precautions for user

Warning: Miscellaneous dangerous substances and articles.

Danger code (Kemler): 30 | EMS number: F-E, S-E

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

Transport/Additional information:

ADR

Transport category 3

Tunnel restriction code: D/E

UN "Model Regulation": UN1866, RESIN SOLUTION, FLAMMABLE, LIQUID, 3, III

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

National regulations:

Water hazard class: Water hazard class 1 (Self-assessment): slightly hazardous for water.

15.2. Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

16.1. Wording of R und H phrases

Relevant phrases

(serves as the explanation for only the hazard and risk phrases noted in the MSDS, e.g. in chapter 3)

H220: Extremely flammable gas.

H226: Flammable liquid and vapour.

H332: Harmful if inhaled.

H315: Causes skin irritation.

H319: Causes serious eye irritation.

H304: May be fatal if swallowed and enters airways.

H331: Toxic if inhaled.

H335: May cause respiratory irritation.

H340: May cause genetic defects.

H350: May cause cancer.

H372: Causes damage to organs through prolonged or repeated exposure

R6: Explosive with or without contact with air

R10: Flammable

R12: Extremely flammable

R20: Harmful by inhalation

R23: Also toxic by inhalation

R36/38: Irritating to eyes and skin

R36/37/38: Irritating to eyes, respiratory system and skin

R45: May cause cancer

R46: May cause heritable genetic damage

16.2. Further information

The information provided in this material safety data sheet is correct to the best of our knowledge, information, and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warrant or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. This information shall not constitute a guarantee for any specific product feature and shall not establish a legally valid contractual relationship.