

**nuplex** Material Safety Data Sheet

## STYRENE MONOMER

**Infosafe No.** HK182 **Version** 3.0 **ISSUED** January **Status** ISSUED  
**No.** **Date** 2014 by  
NUPLEXIN

## 1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

**Product Name**

STYRENE MONOMER

**Product Code**

C632731

**Company Name**

NUPLEX COMPOSITES a division of Nuplex Industries (Aust) Pty Ltd (ABN 25 000 045 572)

**Address**

49 - 61 Stephen Road, BOTANY NSW 2019

New Zealand: NUPLEX COMPOSITES a division of Nuplex Industries Limited, Level 3 Millennium Centre, 602C Great South Road Ellerslie 1051

NEW ZEALAND

**Emergency Tel.**

Australia: 1800 022 037 (24H)

New Zealand: 0800 154 666 (24H)

**Telephone/Fax Number**

Telephone: Australia: +61 (02) 9839 4000(BH); New Zealand: +64 (09) 583 6500(BH) Fax number: Australia: +61 (02) 9674 6225; New Zealand: +64 (09) 525 3709

**Email**

compliance@nuplex.com.au

**Recommended Use**

Industrial uses:

Manufacturing purposes (Styrene)

Continuous mass polymerisation of Polystyrene (HIPS and GPPS): Industrial

Batch suspension polymerisation of Polystyrene (HIPS and GPPS): Industrial

Production of expandable polystyrene: Industrial

Production of styrenic copolymers: Industrial

Manufacturing of UP/VE resins and formulated resins:

FRP manufacturing in an industrial setting

Production of styrene butadiene rubber (SBR): Industrial

Production of styrene butadiene latex (SBL): Industrial

Production of styrene isoprene copolymers: Industrial

Production of other styrene based polymeric dispersions:

Production of filled polyols:

Professional uses:

FRP manufacturing in a professional setting

Consumer uses:

Use of liquid UP resin for repair purposes:

Use of resin paste used as fillers/putties:

## 2. HAZARDS IDENTIFICATION

**Hazard Classification**

Classified as Hazardous according to criteria of National Occupational Health and Safety Commission (NOHSC), Australia.

Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

**Risk Phrase(s)**

R10 Flammable.

R20 Harmful by inhalation.

R37 Irritating to respiratory system.

R65 Harmful: may cause lung damage if swallowed.

R36/38 Irritating to eyes and skin.

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

**Safety Phrase(s)**

S16 Keep away from sources of ignition - No smoking.

S23 Do not breathe gas/fumes/vapour/spray

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37 Wear suitable protective clothing and gloves.

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

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**Chemical Characterization**

Liquid

**Ingredients**

Name	CAS	Proportion
Styrene	100-42-5	100 %

**Preparation Description**

Styrene and stabiliser: 4-tert-Butylpyrocatechol (CAS 98-29-3)

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### 4. FIRST AID MEASURES

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**Inhalation**

If inhaled, remove affected person from contaminated area. Apply artificial respiration if not breathing. Seek medical attention.

**Ingestion**

Do not induce vomiting. Wash out mouth thoroughly with water. Where vomiting occurs naturally have affected person place head below hip level in order to reduce risk of aspiration. Seek medical attention.

**Skin**

Remove all contaminated clothing immediately. Wash affected area thoroughly with soap and water. Wash contaminated clothing before reuse or discard. Seek medical attention.

**Eye**

If in eyes, hold eyelids apart and flush the eyes continuously with running water. Remove contact lenses. Continue flushing for several minutes until all contaminants are washed out completely. Seek medical attention.

**First Aid Facilities**

Eyewash, safety shower and normal washroom facilities.

**Advice to Doctor**

Treat symptomatically.

**Other Information**

For advice in an emergency, contact a Poisons Information Centre or a doctor at once. (131 126)

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## 5. FIRE FIGHTING MEASURES

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### **Suitable Extinguishing Media**

Carbon dioxide, dry chemical or foam. Alcohol resistant foam is preferred. If not available normal foam can be used.

### **Hazards from Combustion Products**

Under fire conditions this product may emit toxic and/or irritating fumes, smoke and gases including carbon monoxide, carbon dioxide and oxides of nitrogen.

### **Specific Hazards**

Flammable liquid and vapour. Vapour/air mixtures may ignite explosively. Flashback along the vapour trail may occur. Runoff to sewer may create fire or explosion hazard.

### **Hazchem Code**

3Y

### **Decomposition Temperature**

Not available

### **Precautions in connection with Fire**

Fight fire from safe location. Fire fighters should wear Self-Contained Breathing Apparatus (SCBA) operated in positive pressure mode and full protective clothing to prevent exposure to vapours or fumes. This product should be prevented from entering drains and watercourses. Water spray may be used to cool down heat-exposed containers.

### **Unsuitable Extinguishing Media**

Do not use water jet.

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## 6. ACCIDENTAL RELEASE MEASURES

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### **Emergency Procedures**

Wear appropriate personal protective equipment and clothing to prevent exposure. Extinguish or remove all sources of ignition and stop leak if safe to do so. Increase ventilation. Evacuate all unprotected personnel. If possible contain the spill. Place inert absorbent, non-combustible material onto spillage. Use clean non-sparking tools to collect the material and place into suitable labelled containers for subsequent recycling or disposal. Dispose of waste according to the applicable local and national regulations. If contamination of sewers or waterways occurs inform the local water and waste management authorities in accordance with local regulations.

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## 7. HANDLING AND STORAGE

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### **Precautions for Safe Handling**

Avoid contact with skin and eyes. Wear overalls, impervious gloves and safety glasses. Use in designated areas with local exhaust ventilation, away from sparks, flames and other ignition sources. Use approved flammable liquid storage containers in the work area. Prevent release of vapours and mists into workplace air. Keep containers tightly closed. Take precautionary measures against static discharges. Do not empty into drains. Ensure a high level of personal hygiene is maintained when using this product, that is, always wash hands before eating, drinking, smoking or using the toilet facilities.

### **Conditions for Safe Storage**

Store in the shade, in a well-ventilated area preferably below 40°C and well away from sources of ignition. This product should be stored away from foodstuffs, strong oxidising agents and other incompatible materials. Handle and store in accordance with applicable local and national regulations for flammable liquids. The product has a limited storage life due to inhibitor depletion and should be used within six months of delivery. Rapid polymerisation resulting in violent rupture of closed containers and possible fire from flammable vapours may be initiated by high temperatures or certain contaminants. Oxidising agents (e.g. organic peroxides), strong acids (e.g. sulphuric acid), ferrous salts present in rust, and some metal halides promote polymerisation. Alkalis reduce the inhibitor

concentration and increase the risk of spontaneous polymerisation. Contamination of the product with these substances should be avoided. Exposure to UV radiation (including from light fittings), can initiate slow polymerisation that may continue in a sealed container. Ensure that storage conditions comply with applicable local and national regulations.

For information on the design of the storeroom, reference should be made to Australian Standard AS1940 - The storage and handling of flammable and combustible liquids. Reference should also be made to all applicable local and national regulations.

#### Storage Temperatures

This product should not be stored at temperatures above 40°C.

#### Unsuitable Materials

Brass, copper, copper alloys

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### National Exposure Standards

Substance	Regulations	Exposure Duration	Exposure Limit	Units	Notes
Styrene	Safe Work Australia	TWA	50	ppm	
	Safe Work Australia	TWA	213	mg/m3	
	Safe Work Australia	STEL	100	ppm	
	Safe Work Australia	STEL	426	mg/m3	

#### Biological Limit Values

Name: Styrene [100-42-5]

Determinant: Mandelic acid plus phenylglyoxylic acid in urine  
BEI@: 400mg/g creatinine  
Sampling time: End of shift.

Determinant: Styrene in venous blood  
BEI@: 0.2mg/l  
Sampling time: End of shift.

Source: American Conference of Industrial Hygienists (ACGIH)

#### Engineering Controls

Provide sufficient ventilation to keep airborne levels below the exposure limits or as low as possible. Where vapours or mists are generated, particularly in enclosed areas, and natural ventilation is inadequate, a flameproof exhaust ventilation system is required. Refer to relevant regulations for further information concerning ventilation requirements. Refer to AS 1940 - The storage and handling of flammable and combustible liquids and AS/NZS 60079.10.1:2009 Explosive atmospheres - Classification of areas - Explosive gas atmospheres, for further information concerning ventilation requirements.

#### Respiratory Protection

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective

Devices, in order to make any necessary changes for individual circumstances.

**Eye Protection**

Safety glasses with side shields, chemical goggles or full-face shield as appropriate should be used. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform to relevant regulations. Eye protection should conform with Australian/New Zealand Standard AS/NZS 1337 - Eye Protectors for Industrial Applications.

**Hand Protection**

Wear gloves of impervious material . Final choice of appropriate gloves will vary according to individual circumstances i.e. methods of handling or according to risk assessments undertaken. Occupational protective gloves should conform to relevant regulations.

Reference should be made to AS/NZS 2161.1: Occupational protective gloves - Selection, use and maintenance.

**Body Protection**

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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**Form**

Liquid

**Appearance**

Colourless to yellowish liquid

**Odour**

Characteristic

**Decomposition Temperature**

Not available

**Melting Point**

-31°C

**Boiling Point**

145.2°C

**Solubility in Water**

320mg/l (25°C)

**pH Value**

Not available

**Vapour Pressure**

6.67 hPa (20°C) (styrene)

**Vapour Density (Air=1)**

Not available

**Evaporation Rate**

Not available

**Odour Threshold**

Not available

**Viscosity**

Refer to Section 9: Kinematic Viscosity and Dynamic Viscosity

**Colour**

Colourless to yellowish

**Volatile Component**

Not available

**Octanol/Water Partition Coefficient**

log Pow: 2.96 (25°C)

**Density**

0.9-0.91g/cm<sup>3</sup> (20°C)

**Flash Point**

31°C

**Flammability**

Flammable liquid.

**Auto-Ignition Temperature**

490°C

**Flammable Limits - Lower**

Not available

**Flammable Limits - Upper**

Not available

**Explosion Properties**

Not available

**Oxidising Properties**

Not available

**Kinematic Viscosity**

Not available

**Dynamic Viscosity**

0.696mPas (25°C)

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## 10. STABILITY AND REACTIVITY

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**Stability and Reactivity**

Refer to Section 10: Possibility of hazardous reactions

**Chemical Stability**

Stable under normal conditions of storage and handling.

**Conditions to Avoid**

Heat and other sources of ignition, contaminants.

**Incompatible Materials**

Alkylation catalysts and strong acids (H<sub>2</sub>S<sub>04</sub>, H<sub>3</sub>P<sub>04</sub>, BF<sub>3</sub>, AlCl<sub>3</sub>), halogens and hydrogen halides. Contact with copper and copper alloys. Oxidising agents, strong acids.

**Hazardous Decomposition Products**

Thermal decomposition may result in the release of toxic and/or irritating fumes including: carbon monoxide and carbon dioxide.

**Hazardous Reactions**

Reacts with incompatible materials. May react with oxygen to form peroxides.

**Hazardous Polymerization**

May occur in the presence of polymerisation accelerators.

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## 11. TOXICOLOGICAL INFORMATION

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### Toxicology Information

Available toxicity data is given below.

#### Inhalation

Harmful if inhaled. Inhalation of product vapours can cause irritation of the nose, throat and respiratory system. Irritating to respiratory system. Inhalation of product vapours will cause irritation of the nose, throat and respiratory system.

#### Ingestion

May be fatal if swallowed and enters airways. Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause severe pulmonary injury that may lead to death. May cause irritation to the mouth, throat, esophagus and stomach with symptoms of nausea, abdominal discomfort, vomiting and diarrhoea.

#### Skin

Irritating to skin. Skin contact will cause redness, itching and swelling. Repeated exposure may cause skin dryness and cracking and may lead to dermatitis.

Result: Irritating (rabbit)  
Corporate Social Responsibility Report

#### Eye

Irritating to eyes. On eye contact this product will cause tearing, stinging, blurred vision, and redness.

Result: Irritating (rabbit)  
Corporate Social Responsibility Report

#### Chronic Effects

Harmful: danger of serious damage to health by prolonged exposure through inhalation. Long-term exposure to styrene may cause peripheral neuropathy, CNS depression, and damage to the liver and kidneys.

#### Mutagenicity

Result: no indication of mutagenic effects  
Corporate Social Responsibility Report

#### Carcinogenicity

Styrene is listed as a Group 2B: Possibly carcinogenic to humans according to International Agency for Research on Cancer (IARC).

#### Acute Toxicity - Oral

Styrene  
LD50 (rat): 5000 mg/kg  
Corporate Social Responsibility Report

#### Acute Toxicity - Dermal

Styrene  
LD50 (rat): >2000 mg/kg  
Corporate Social Responsibility Report

#### Acute Toxicity - Inhalation

Styrene:  
LC50 (rat): 11.8mg/l/4h  
Corporate Social Responsibility Report

#### Skin Sensitisation

Non-sensitizing (Human Effects)  
Corporate Social Responsibility Report

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity**

The available ecological data is given below.

**Persistence / Degradability**

Biodegradable (Corporate Social Responsibility Report)

**Mobility**

Not available

**Bioaccumulative Potential**

Styrene

Not expected to be bioaccumulative

logPow 2.96 (25°C)

**Environmental Protection**

Do not discharge this material into waterways, drains and sewers.

**Acute Toxicity - Fish**

Styrene

LC50 (Pimephales promelas): 4.02mg/l/96h

Corporate Social Responsibility Report

**Acute Toxicity - Daphnia**

Styrene

EC50 ( Daphnia magna ): 4.7mg/l/48h

Corporate Social Responsibility Report

**Acute Toxicity - Algae**

Styrene

EC50 ( Pseudokirchneriella subcapitata ): 4.9mg/l/72h

Corporate Social Responsibility Report

**Acute Toxicity - Bacteria**

Styrene

EC50 ( activated sludge ): 500mg/l/30min

Corporate Social Responsibility Report

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## 13. DISPOSAL CONSIDERATIONS

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**Disposal Considerations**

Dispose of waste according to applicable local and national regulations. Labels should not be removed from containers until they have been cleaned. Do not cut, puncture or weld on or near containers. Empty containers may contain flammable residues. Contaminated containers must not be treated as household waste. Containers should be cleaned by appropriate methods and then re-used or disposed of by landfill or incineration as appropriate. Do not incinerate closed containers. Advise flammable nature. Do not allow into drains or watercourses or dispose of where ground or surface waters may be affected. Controlled incineration is recommended.

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## 14. TRANSPORT INFORMATION

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**Transport Information**

This material is a Class 3 - Flammable Liquid according to The Australian Code for the Transport of Dangerous Goods by Road and Rail. (7th edition)

Class 3 - Flammable Liquids are incompatible in a placard load with any of the following:

Class 1: Explosives

Division 2.1: Flammable gases (Division 2.1 and Class 3 are incompatible in transport if both are in tanks or other receptacles with a capacity individually exceeding 500 L.)

Division 2.3: Toxic gases

Division 4.2: Spontaneously combustible substances

Division 5.1: Oxidising substances and Division 5.2: Organic peroxides



Class 6 Toxic or Infectious Substances (where the flammable liquid is nitromethane)  
Class 7: Radioactive materials unless specifically exempted

**U.N. Number**

2055

**Proper Shipping Name**

STYRENE MONOMER, STABILIZED

**DG Class**

3

**Packing Group**

III

**Hazchem Code**

3Y

**IERG Number**

None Allocated

**UN Number (Air Transport, ICAO)**

2055

**IATA/ICAO Proper Shipping Name**

STYRENE MONOMER, STABILIZED

**IATA/ICAO Hazard Class**

3

**IATA/ICAO Packing Group**

III

**IATA/ICAO Symbol**

Flammable liquid.

**IMDG UN No**

2055

**IMDG Proper Shipping Name**

STYRENE MONOMER, STABILIZED

**IMDG Hazard Class**

3

**IMDG Pack. Group**

III

**IMDG Marine Pollutant**

No

**IMDG EMS**

F-E, S-D

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## 15. REGULATORY INFORMATION

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**Regulatory Information**

Classified as Hazardous according to criteria of National Occupational Health and Safety Commission (NOHSC), Australia.

Classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

**Poisons Schedule**

S5

**Hazard Category**

Harmful, Irritant, Flammable

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**16. OTHER INFORMATION**

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**Date of preparation or last revision of MSDS**

SDS Reviewed: January 2014 Supersedes: October 2009

**Contact Person/Point**

IMPORTANT ADVICE: This MSDS summarizes our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including its use in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact the supplier listed in section 1 of the SDS. Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

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**Literature References**

Standard for the Uniform Scheduling of Medicines and Poisons.

Approved criteria for classifying hazardous substances [NOHSC:1008(2004)].

National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(2003)].

Australian Code for the Transport of Dangerous Goods by Road & Rail.

Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Workplace exposure standards for airborne contaminants, Safe work Australia.

American Conference of Industrial Hygienists (ACGIH)

**Technical Contact Numbers**

For further information ask for: For specialist advice in emergencies: 1800 022 037

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End of MSDS

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Print Date: 12/09/2014

BS: 4.4.17