



MATERIAL SAFETY DATA SHEET

POLYESTER RESIN

Effective Date : March 2012

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I. Identification

SUPPLIER: Norski Holdings Ltd, 10 Northpoint Street, Plimmerton, 5024 New Zealand

PRODUCT NAME: Polyester Resin (6430)

PRODUCE CODE: Polyester Resin

RECOMMENDED USE: Composites fabrication.

II. Hazard Classification

NEW ZEALAND: Classified as Hazardous according to the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001. Classified as Dangerous Goods for transport, according to the New Zealand Standard NZS5433:2007 Transport of Dangerous Goods on Land.

HSNO CLASSIFICATION:

- 3.1C – Substance that is a flammable liquid: medium hazard.
- 6.1D – Substance that is moderate acutely toxic by inhalation.
- 6.3A – Substance that is irritating to the skin.
- 6.4A – Substance that is irritating to the eye.
- 6.6B – Substance that is a suspected human mutagen.
- 6.7B – Substance that is a suspected human carcinogen.
- 6.8B – Substance that is a suspected human reproductive or developmental toxicant.
- 6.9A – Substance that is ecotoxic to human target organs or systems if inhaled and if swallowed.
- 9.1A – Substance that is very ecotoxic in the aquatic environment.
- 9.3B – Substance that is ecotoxic to terrestrial vertebrates.

HAZARD STATEMENT CODE:

- H226 – Flammable liquid and vapour.
- H315 – Causes skin irritation.
- H320 – Causes eye irritation.
- H332 – Harmful if inhaled.
- H341 – Suspected of causing genetic defects.
- H351 – Suspected of causing cancer.
- H361 – Suspected of damaging fertility or the unborn child.
- H370 – Causes damage to organs via inhalation.
- H410 – Very toxic to aquatic life with long lasting effects.
- H432 – Toxic to terrestrial vertebrates.

PRECAUTIONARY STATEMENT CODES – PREVENTION:

- P102 – Keep out of reach of children.
- P103* - Read label before use. This statement applies only where the substance is available to the general public.
- P104 – Read Safety Data Sheet before use.
- P201 – Obtain special instructions before use.
- P202 – Do not handle until all safety precautions have been read and understood.
- P210 – Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 – Keep container tightly closed.
- P240 – Ground/bond container and receiving equipment.
- P241 – Use explosion-proof electrical/ventilating/lighting equipment.

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P242 – Use only non-sparking tools.

P243 – Take precautionary measures against static discharge.

P260 – Do not breathe mist/vapours/spray.

P264 – Wash skin thoroughly after handling.

P270 – Do not eat, drink or smoke when using this product.

P271 – Use only outdoors or in a well-ventilated area.

P273 – Avoid release to the environment. This statement does not apply where this is the intended use.

P280 – Wear protective gloves/protective clothing/eye protection/face protection.

P281 – Use personal protective equipment as required.

PRECAUTIONARY STATEMENT CODES – RESPONSE:

P101* - If medical advice is needed, have product container or label at hand. This statement applied only where the substance is available to the general public.

INHALATION:

P304+P340 If inhaled – Remove to fresh air and keep at rest in a position comfortable for breathing.

P312 – Call a Poison Centre or doctor/physician if you feel unwell.

P331 – Do NOT induce vomiting.

INGESTION:

P331 – Do NOT induce vomiting.

SKIN:

P302+P352 If on Skin – Wash with plenty of soap and water.

P303+P361+P353 If on Clothing – Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P332+P313 If skin irrigation occurs – Get medical advice/attention.

P362 – Take off contaminated clothing and wash before re-use.

EYES:

P305+P351+P338 If in Eyes – Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 If eye irritation persists – Get medical advice/attention.

P370+P378 In case of fire – Use foam, CO₂, dry chemical for extinction.

P391 – Collect spillage.

PRECAUTIONARY STATEMENT CODES:

Storage:

P403+P235 – Store in a well-ventilated place. Keep cool.

P405 – Store locked up.

Disposal:

P501 – *In the case of a substance that is in compliance with a HSNO approval other than a Part 6A (Group Standards) approval, a label must provide a description of one or more appropriate and achievable methods for the disposal of a substance in accordance with the Hazardous Substances (Disposal) Regulations 2001. This may also include any method of disposal that must be avoided.

RISK PHRASE(S):

R10 – Flammable.

R20 – Harmful by inhalation.

R36/38 – Irritating to eyes and skin.

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SAFETY PHRASE(S):

S16 – Keep away from sources of ignition – no smoking.

S23(2) – Do not breathe vapour.

S23(3) – Do not breathe spray.

S24/25 – Avoid contact with skin and eyes.

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

S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.

III. Composition/Information on Ingredients

Name	CAS	Proportion
Styrene	100-42-5	30-60%
Ingredients determined not to be hazardous		Balance

IV. First Aid Measures

INHALATION: Remove the source of contamination or move the victim to fresh air. Ensure airways are clear. Keep at rest. Apply artificial respiration if not breathing. Seek medical attention.

INGESTION: Do not induce vomiting. Immediately wash mouth with copious amounts of water. Seek medical attention.

SKIN: Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. If symptoms develop, seek medical attention.

EYES: If contact with the eye(s) occurs, wash with copious amounts of water. Continue flushing for several minutes until all contaminants are washed off completely. Seek medical attention.

FIRST AID FACILITIES: Eye wash and normal washroom facilities.

ADVICE TO DOCTOR: Treat symptomatically.

EMERGENCY: 0800 POISON (764 766)

V. Fire-fighting Measures

SUITABLE EXTINGUISHING MEDIA: Foam, dry chemical powder or carbon dioxide.

HAZARDS FROM COMBUSTION PRODUCTS: Under fire conditions this product may emit toxic and/or irritating fumes including carbon monoxide and carbon dioxide.

SPECIFIC HAZARDS: This product is flammable. Vapours are heavier than air and can accumulate in low areas; they may travel a considerable distance to a source of ignition and flash back. Precautions should be taken to eliminate the build up of explosive mixtures. Polymerisation may occur at elevated temperatures. If polymerisation occurs in a closed container, violent rupture may result.

PRECAUTIONS IN CONNECTION WITH FIRE: 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. Water spray may be used to keep fire exposed containers cool.

HAZCHEM: 3Y.

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VI. Accidental Release Measures

EMERGENCY PROCEDURES: Remove all sources of ignition and increase ventilation. Clear area of all unprotected personnel. Slippery when spilled. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye exposure and inhalation of vapours. Contain – prevent run off into drains and waterways. Use absorbent (soil, sand or other non-combustible material). Collect and seal in properly labelled containers for disposal. If contamination of sewers or waterways occurs inform the local water authorities and EPA in accordance with local regulations.

VII. Handling and Storage

PRECAUTIONS FOR SAFE HANDLING: Use only in a well ventilated areas. DO NOT store or use in confined spaces. Keep tank covered and containers sealed when not in use. Build up of mists or vapours in the atmosphere must be prevented. Avoid inhalation of vapour and mists. Do not use near welding or other ignition sources and avoid sparks. Do not pressurise, cut, heat or weld containers as they may contain hazardous residues. Do not smoke. Wear appropriate protection. It is essential that all who come into contact with this material maintain high standards of personal hygiene ie washing hands prior to eating, drinking, smoking or using toilet facilities.

CONDITIONS FOR SAFE STORAGE: Store in a cool, dry, well-ventilated area away from sources of ignition, oxidising agents, foodstuffs, and clothing and out of direct sunlight. Keep containers closed when not in use and securely sealed and protected against physical damage. Inspect regularly for deficiencies such as damage or leaks. Always keep in containers made of the same material as the supply container. Have appropriate fire extinguishers available in and near the storage area. Take precautions against static electricity discharges. Use proper grounding procedures. For information on the design of the storeroom, reference should be made to the Australian Standard AS1940 – The Storage and Handling of flammable and combustible liquids. Reference should also be made to all State and Federal regulations. .

VIII. Exposure Controls/Personal Protection

No exposure standards have been established for the mixture by the Australian National Occupational Health & Safety Commission (NOHSC) or the Occupational Safety and Health Service (OSH) of the New Zealand Department of Labour. The available exposure standards for the ingredients are as follows:

Australian National Occupational Health and Safety Commission (NOHSC) Exposure Standards:

Substance TWA
STEL Notices

Substance	ppm	mg/m ³	ppm	mg/m ³
Styrene, monomer	50	213	100	
426				

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New Zealand Occupational Safety and Health Service (OSH) Workplace Exposure Standards:

Substance TWA
STEL Notices

Substance	ppm	mg/m ³	ppm	mg/m ³
Styrene, monomer	50	213	100	
426 Sk				

TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

STEL: (Short Term Exposure Limit): The average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

Sk NOTICE: Absorption through the skin may be a significant source of exposure. The exposure standard is invalidated if such contact should occur.

BIOLOGICAL LIMIT VALUES: No biological limit allocated.

ENGINEERING CONTROLS: Provide sufficient ventilation to keep airborne levels below the exposure limit. The use of a local exhaust ventilation system, drawing vapours/mists away from the workers' breathing zone, is normally required. The ventilation and exhaust system must be approved for use with flammable materials.

RESPIRATORY PROTECTION: If engineering controls are not effective in controlling airborne exposure, then an approved respirator with a replaceable organic vapour filter should be used suitable for protecting against vapours and fumes. Final choice of appropriate breathing protection is dependant upon actual airborne concentrations and the type of breathing protection required will vary according to individual circumstances. Expert advice may be required to make this decision. Reference should be made to Australian/New Zealand Standards AS/NZS1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

EYE PROTECTION: Safety glasses with side shields or chemical goggles should be worn. Final choice of appropriate eye/face protection will vary according to individual circumstances. Eye protection devices should conform with Australian/New Zealand Standard AS/NZS1337 – Eye Protectors for Industrial Applications.

HAND PROTECTION: Wear gloves of impervious material eg laminated film. Final choice of appropriate gloves will vary according to individual circumstances ie methods of handling or according to risk assessments undertaken. Reference should be made to AS/NZS2161.1: Occupational protective gloves – selection, use and maintenance.

BODY PROTECTION: Suitable protective clothing should be worn eg cotton overalls buttoned at neck and wrist. When large quantities are handled the use of plastic aprons and rubber boots is recommended.

HYGIENE MEASURES: Ensure a high level of personal hygiene is maintained when using this product. Always wash hands after handling the product and before eating, drinking, smoking or using the toilet facilities.

IX. Physical and Chemical Properties

APPEARANCE: Clear to hazy tinted liquid.

ODOUR: Characteristic styrene.

MELTING POINT: Not available.

BOILING POINT: 145°C*. May polymerise below boiling point.

SOLUBILITY IN WATER: Insoluble.

SPECIFIC GRAVITY: 0.95 – 1.15 (water = 1). Dependant on non-volatile content.

pH VALUE: Not applicable.

VAPOUR PRESSURE: 0.6 kPa at 20°C*.

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VAPOUR DENSITY: 3.6 (Air = 1)*.

EVAPORATION RATE: 0.49 (Butyl acetate = 1)*.

FLASH POINT: 31°C TCC*.

FLAMMABILITY: Flammable liquid. This product should be stored and used in a well-ventilated area away from naked flames, heat, sparks and other sources of ignition. Electrically link and ground metal containers for transfers of the product to prevent accumulation of static electricity. Keep the container tightly closed.

AUTO-IGNITION TEMPERATURE: Not available.

FLAMMABLE LIMITS – LOWER: 1.1%.

FLAMMABLE LIMITS – UPPER: 6.1%.

OTHER INFORMATION: * for Styrene.

X. Stability and Reactivity

CHEMICAL STABILITY: Stable under normal conditions of use and handling.

CONDITIONS TO AVOID: Sunlight, open flames contamination and prolonged storage above 38°C.

INCOMPATIBLE MATERIALS: Alkylation catalysts and strong acids (H₂SO₄, H₃PO₄, BF₃, AlCl₃), halogens and hydrogen halides. Contact with copper and copper alloys. Oxidising agents.

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

HAZARDOUS REACTIONS: May undergo hazardous polymerisation in closed containers at elevated temperatures and in the presence of initiating contaminants.

HAZARDOUS POLYMERIZATION: May occur if contaminated, or at elevated temperatures.

XI. Toxicological Information

TOXICOLOGY INFORMATION: FOR STYRENE: LD₅₀ (inhalation, rat) = 2770 ppm/4h (11.8 mg/L/4H).

LD₅₀ (dermal, rabbit) > 5,010 mg/kg

Eye Irritation (Rabbit) (Standard Draize); moderate to severe.

Skin Irritation (Rabbit) (Standard Draize); mild to moderate.

Styrene is classified as 'possibly carcinogenic to humans (Group 2B)' by the International Agency for Research on Cancer (IARC). Group 2B includes substances on which there is inadequate evidence of carcinogenicity in humans, but there is limited evidence of carcinogenicity in experimental animals.

INHALATION: Harmful by inhalation. Vapour can cause severe irritation to the respiratory tract. Styrene at 400 ppm is irritating to all parts of the respiratory tract. Styrene possesses narcotic-like properties; excessive exposure may result in headache, dizziness, incoordination, fatigue, nausea, loss of appetite and loss of consciousness.

INGESTION: Ingestion may cause nausea, vomiting, abdominal pain and CNS depression with symptoms including dizziness, drowsiness, weakness, headache, fatigue, confusion and possible unconsciousness.

SKIN: Irritating to skin. Contact with skin may cause redness, discomfort and blistering. Repeated contact may have a defatting effect causing dryness and cracking of skin.

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

CHRONIC EFFECTS: Prolonged inhalation of vapours may cause respiratory tract obstruction and lung damage. Long-term exposure to styrene may cause peripheral neuropathy, CNS depression, and damage to the liver and kidneys.

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XII. Ecological Information

ECOTOXICITY: Not available.

PERSISTENCE/DEGRADABILITY: Not available.

MOBILITY: Not available.

ENVIRONMENT PROTECTION: Prevent this material entering waterways, drains and sewers.

XIII. Disposal Considerations

DISPOSAL CONSIDERATIONS: Dispose of waste according to regulations.

XIV. Transport Information

This material is classified as a Class 3 – Flammable Liquid according to NZS 5433:2007 Transport of Dangerous Goods on Land.

It must not be loaded in the same freight container or on the same vehicle with:

- Class 1, Explosives
- Class 2.1, Flammable gases
- Class 2.3, Toxic gases
- Class 4.2, Spontaneously combustible substances
- Class 5.1, Oxidising substances
- Class 5.2, Organic peroxides, or
- Class 7, Radioactive materials unless specifically exempted.

It must not be loaded in the same freight container; and on the same vehicle must be separated horizontally by at least three metres unless all but one are packed in separate freight containers with:

- Class 4.3, Dangerous when wet substances.

This product is a packing group III flammable liquid, and may be loaded in the same freight container or on the same vehicle if transported in segregation devices with:

- Class 4.2, Spontaneously combustible substances
- Class 4.3, Dangerous when wet substances
- Class 5.1, Oxidising substances
- Class 5.2, Organic peroxides

UN NUMBER: 1866

PROPER SHIPPING NAME: Resin Solution

DG CLASS: 3

HAZCHEM CODE: .3Y

PACKING GROUP: III

EPG NUMBER: 3A1

IERG NUMBER: 14

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XV. Regulatory Information

NATIONAL AND/OR INTERNATIONAL REGULATORY INFORMATION: Classified as Hazardous according to the New Zealand Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001. Additives, Process Chemicals and Raw Materials (Flammable, Toxic [6.7]) Group Standard 2006.

HSNO APPROVAL NUMBER: HSR002502.

HAZARD CATEGORY: Harmful, Irritant.

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