

1. PRODUCT AND COMPANY IDENTIFICATION

TRADE NAME	NCS 901 PA		
MANUFACTURER / SUPPLIERS			713
DURBAN HEAD OFFICE	TEL 031 713 0600 FAX 031 705 9858	9 Pineside Road, New Germany 3610	
DURBAN SALES	TEL 031 713 0678	42 Henwood Road, New Germany 3610	
CAPETOWN	TEL 021 934 5760	6 Ruben Kaye Rd, Parow, Industria 7764	
JOHANNESBURG	TEL 011 451 8901	12 Plantation Road, Eastleigh, Edenvale 1610	
PORT ELIZABETH	TEL 041 412 571	19 Dudley Street, Neave Township 6020	
EMERGENCY TELEPHONE No.: 011 331 2947			

2. COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Name	Unsaturated Polyester Resin
Chemical Family	Synthetic Resin
Chemical Abstracts Registry No. (CAS No.)	Mixture

Ingredients contributing to hazard.

Styrene	< 50%	Xn, R10-20-36/38	CAS 100-42-5
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3. HAZARD IDENTIFICATION

Main Hazards	R 10 R 20 R 36/38	Flammable Harmful by inhalation Irritating to eyes and skin Polymerises violently Marine Pollutant
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Health Effects - Eyes

Liquid may cause conjunctival and transient corneal damage.
 Vapour at concentrations above 100ppm will cause conjunctival irritation.
 Vapour at concentrations above 600ppm will cause conjunctival irritation and possible corneal damage.

Health Effects - Skin

Material may cause irritation. Repeated and / or prolonged contact may lead to dermatitis.

Health Effects - Ingestion



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Swallowing may have the following effects:- Irritation of the mouth, throat and digestive tract.

A large doses may have the following effects :- headache, nausea, vomiting, loss of consciousness.

Aspiration during swallowing or vomiting may severely damage the lungs.

Health Effects - Inhalation

Exposure to vapour at concentrations of 100 ppm and above may have the following effects :- Irritation of the nose, throat and respiratory tract, fatigue, drowsiness

High concentrations will have the following effects :- severe irritation of the nose, throat and respiratory tract, central nervous system depression, coma and death.

4. FIRST - AID MEASURES

First Aid - Eyes

Immediately flood the eyes with plenty of water for at least 15 minutes, holding the eye open
Obtain medical attention urgently.

First Aid - Skin

Wash skin thoroughly with soap and water. Obtain medical attention if blistering occurs or redness persists.

First Aid - Ingestion

Wash mouth with water. Do not induce vomiting
If any material enters the lungs, for example during swallowing or vomiting, obtain medical attention urgently.

First Aid - Inhalation

Remove from exposure. Keep warm and at rest.
If there is difficulty in breathing, give oxygen. If breathing stops or gives signs of failing, give artificial respiration. If heart beat absent, give external cardiac compression. (CPR)
Obtain medical attention

Advice to Physicians

Treat symptomatically. Keep under medical surveillance for 48 hours if aspiration could have occurred.

5. FIRE - FIGHTING MEASURES

Extinguishing Media

Use water spray, foam (AFFF), dry chemical, or carbon dioxide. Keep containers and surroundings cool with water.



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Unsuitable Extinguishing Media

Do not use water jet.

Special Hazard Products

Moderate to severe explosion hazard in confined spaces. Be aware of possibility of re-ignition.

Protection For Firefighters

Wear self contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Consider need for evacuation. Eliminate all sources of ignition. Wear appropriate clothing. Wear respiratory protection. Beware of vapours accumulating to form explosive concentrations.

Environmental Precautions

Try to prevent the material from entering drains or water courses. Advise Authorities if spillage has entered water courses or sewer or has contaminated soil or vegetation.

Spillages

Contain or absorb using earth, sand or other inert material. Transfer into suitable containers for recovery or disposal. Take precautionary measures against static discharges. Beware of gas accumulating to form explosive concentrations.

7. HANDLING AND STORAGE

Handling

Containers, even those that have been emptied, can contain vapours. Do not cut, drill, weld or similar operations on or near empty containers

Use in well ventilated area. Adequate ventilation should be provided if there is a risk of vapour build up.

Avoid inhaling vapour. Avoid contact with eyes, skin and clothing.

Never use air pressure to transfer material.

Storage

Storage temperature should be kept below 25°C.

Storage area should be well ventilated. Store away from heat and ignition.



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Storage and transfer equipment should be adequately earthed and bonded to prevent accumulation of static charges.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE GUIDELINES:

Occupational Health and Safety Act, 1993
Regulations For Hazardous Chemical Substances, 1995 Table 1.

TWA OEL CL 100 ppm (styrene)

ENGINEERING CONTROL MEASURES

Provide good mechanical ventilation with a non sparking, grounded ventilation system exhausting directly to the outside, to control airborne levels below the OEL above, and separate from other exhaust ventilation systems. Care should be taken in controlling the emission of fumes into the environment, to meet the local regulations. Electric lighting and plugs to be explosion proof. Ensure that eyewash stations and safety showers are proximal to the workstation location.

PERSONAL PROTECTION EQUIPMENT

- RESPIRATORY PROTECTION.

If TWA OEL CL level above is exceeded, then suitable respiratory protection must be worn. Up to 500 ppm a chemical cartridge respirator with organic vapour cartridge(s). Above 500 ppm then full face supplied air respirator, or self contained breathing apparatus should be used. Note that the IDL (immediately dangerous to life or health) concentration of styrene is 700 ppm.

- HAND PROTECTION.

Impervious gloves. Evaluate the resistance of the product under conditions of use.

- EYE PROTECTION

Wear approved safety glasses or chemical goggles or a face shield. Have an emergency eyewash station readily available in the working area.

- SKIN & BODY PROTECTION

Impervious gloves, coveralls, boots, and/or other resistant protective clothing. Have a safety shower/ eye wash fountain readily available in the immediate work area.

PERSONAL PROTECTION COMMENTS

Dust generated by grinding or polishing finished products is regarded as hazardous and precautions should be taken to ensure dust concentrations to be maintained below a TWA OEL value of 10 mg m^{-3} . Where dust concentrations exceed these values, appropriate dust masks should be worn.

OTHER PROTECTIVE MEASURES



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Remove contaminated clothing immediately. Keep contaminated clothing in closed containers. Discard or launder before rewearing. Inform laundry personnel of contaminated hazards.

HYGIENE MEASURES.

Do not eat, drink or smoke in workplace. Wash hands before eating.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Slightly viscous liquid		
Colour	Slight Pink		
ODOUR	Pungent		
pH	Not applicable		
BOILING POINT/RANGE	145 - 148 °C		Styrene
FREEZING POINT	-30.6°C		Styrene
FLASH POINT	31 °		Styrene (closed cup)
FLAMMABILITY	1.1 - 6.1 % v/v		Styrene
AUTO IGNITION TEMPERATURE	490°C		Styrene
EXPLOSIVE PROPERTIES	LEL 1.1% UEL 6.1%	Styrene	
OXIDISING PROPERTIES	None		
VAPOUR PRESSURE	0.60 kPa at 20°C		Styrene
	0.81 kPa at 25°C		Styrene
DENSITY	1.09 – 1.11 g cm ⁻³		
SOLUBILITY - WATER	Practically insoluble 0.03%		Styrene
VAPOUR DENSITY (Air=1)	4.33		

10. STABILITY AND REACTIVITY

STABILITY

Stable under normal storage conditions, below 25°C

CONDITIONS TO AVOID

Heat, sparks, open flames, ignition sources

MATERIALS TO AVOID

Oxidizing agents. Mineral Acids. Alkalis. Phosphorous pentoxide. Peroxides. Ferrous chloride and other metal halides.

HAZARDOUS DECOMPOSITION PRODUCTS

Heating to decomposition may cause the emission of thick irritating and acrid fumes, resulting in zero visibility. Styrene may form styrene oxide as decomposition product.

11. TOXICOLOGICAL INFORMATION



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ACUTE TOXICITY

Acute oral LD 50 (rat) is 5000 mg.kg⁻¹.
Inhalation 4h LD 50 (rat) >2800 ppm
Harmful by inhalation

IRRITATION

SKIN AND EYE CONTACT

Causes moderate irritation to skin and eyes

INHALATION

Excessive exposure may cause irritation of upper respiratory tract.

CHRONIC or LONG TERM TOXICITY

CARCINOGENICITY

The IARC (International Agency for Research on Cancer) assessment: this product (styrene) is possibly carcinogenic to humans (Group 2B). The EEC Commission have reviewed the available data for styrene and have concluded that there is insufficient evidence to warrant classification of styrene as a carcinogen.

MUTAGENICITY

Most studies conducted on styrene have prove inconclusive.

REPRODUCTIVE TOXICITY

Studies in laboratory animals have shown no effects on foetal development in the following species : rats, rabbits.

Developmental effects were seen in laboratory animals only on dose levels that were maternally toxic. The following species were affected : rats - oral

Studies in laboratory animals have shown no effects on fertility in the following species: rats

12. ECOLOGICAL INFORMATION

MOBILITY

This product is insoluble in water.

PERSISTENCE / DEGRADABILITY

Styrene is readily biodegradable. BOD20=87% of ThOD



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BOD20(salt water)=80% of ThOD

BIO ACCUMULATION

May cause tainting of fish and shellfish

ECOTOXICITY

Styrene is rated as slightly toxic to aquatic species.

AQUATIC TOXICITY - Bluegills	96h LC50 of 65 mg/litre	(styrene)
AQUATIC TOXICITY - Daphnia magna (water flea)	Acute LC50 23 - 255 mg/litre	(styrene)
GROWTH INHIBITION THRESHOLD IN BACTERIA	72mg/litre	(styrene)

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

Disposal of liquid resin should only occur under conditions approved by local authorities. See also section 6. It may be necessary to wet dust generated from polishing or grinding finished products in order to avoid airborne dispersal thereof.

DISPOSAL OF PACKAGING

Labels should not be removed from containers until they have been cleaned. Do not cut, puncture or weld on or near to the container. Empty containers may contain hazardous residues and should be disposed of under conditions approved by local authorities. Contaminated containers must not be treated as household waste. Contaminated containers must not be incinerated. Contaminated containers must not be re-used.

14. TRANSPORT INFORMATION

NOT TO BE SENT BY MAIL

TARIFF No.	3907
UN No.	1866
Substance Identity No. S.I.N. SABS 0232-3	1866
Emergency Action Code EAC SABS 0232-3	26
SABS 0228:1995 S.I.N.	1866
SABS 0228:1995 Technical Name	Resin solution immiscible with water
SABS 0228:1995 Class	3
SABS 0228:1995 Danger Group	111
SABS 0228:1995 Subsidiary Risks	Nil
SABS 0228:1995 Packaging Methods SABS 0229	13.3
IMDG - SHIPPING NAME	Resin solution
IMDG - CODE	PAGE 3379
IMDG - CLASS	Class 3.3
IMDG - PACKAGING GROUP	111
IMDG - MARINE POLLUTANT	Yes
IMDG - EMS No.	3-05
IMDG - MFAG TABLE No.	310



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IATA - SHIPPING NAME	Resin solution
IATA _ CLASS	Class 3
IATA - SUBSIDIARY RISK(S)	None
IATA - PACKAGING GROUP	111
IATA - PACKAGING INSTRUCTION Passenger	309
IATA - PACKAGING INSTRUCTION Cargo	310
TREMCARD No.	Not available

15. REGULATORY INFORMATION

EEC HAZARD CLASSIFICATION	Flammable. Harmful. Irritant. [R10; Xn; Xi] (Styrene)
RISK PHRASES	Flammable. Harmful by inhalation. Irritating to eyes and skin. [R: 10, 20, 36/38]
SAFETY PHRASES	Do not breathe vapour. [S: 23]
NATIONAL LEGISLATION	South African Hazardous Substance Act 15 of 1973 South African Occupational Health & Safety Act (85 of 1993)

16. OTHER INFORMATION

Ref: BP Chemicals MSDS on STYRENE 14/7/95
DOW EUROPE SA MSDS on STYRENE Nov 97
Occupational Health and Safety Act, 1993 Annexure 1.
Regulations For Hazardous Chemical Substances, 1995
SABS 0228-1995 The identification and classification of dangerous substances and goods
SABS 0232-3:1997 Annex A Emergency Response Handbook
NCS RESINS Application Sheet APP 025/021 Bulk storage and handling of polyester resins.

APPENDIX

MSDS PREPARATION DATE	30-04-99
COMPILED BY	Sven Liljestrand

EXCLUSION OF LIABILITY

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