



U N I L A M I N T E R N A T I O N A L

UNILAM INTERNATIONAL LIMITED

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MATERIAL SAFETY DATA SHEET 2004: UNIGUARD 0518 RESIN

1. Company Information

Company:

Unilam International Limited, Ravenscliffe Road, Leeds, LS28 5RZ, United Kingdom

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2. Composition / Information On Ingredients

Substance: A solution of thermosetting resin in styrene

Ingredient	CAS No.	Concentration %	EG or CE No.	Symbol	R Phrases
Styrene	100-42-5	30-50%	202-851-5	Xn	R10, R20, R36/38
Para-Tertiary ButylStyrene	1746-23-2	36-39%	217-126-9	Xi	R36/37/38

Volatile Organic Compounds:

t-ButylStyrene Specific Gravity: 39-42% g/cm³ Solids 58-61%

Total Organic Compounds:

t-ButylStyrene 90kg/kg

3. Hazard Identification

Hazard Identification: Harmful, flammable, irritant vapour, marine pollutant

Appearance and Odour: Viscous liquid with an aromatic odour

Primary Route(s) of exposure: Inhalation, skin, eye.

Potential Health Effects:

Acute (Short Term):

This product if inhaled may cause upper respiratory irritation and possible central nervous system effects including headaches, nausea, vomiting, dizziness, drowsiness, loss of co-ordination, impaired judgment and general weakness. It may cause dryness, cracking, tenderness and irritation of the skin. Direct contact with

this product may result in immediate irritation to the eyes with redness, burning, tearing and blurred vision. It may cause mouth, throat and gastrointestinal irritation, nausea, vomiting and diarrhea if ingested. Aspiration of material into the lungs can cause chemical pneumonia which can be fatal.

Chronic (Long Term):

Styrene is a possible cancer hazard (IARC Group 2B). Prolonged exposure may result in nausea, loss of appetite, general weakness, changes in blood chemistry and peripheral and central nervous system activity. Prolonged or repeated skin contact may result in dermatitis marked by rough, dry cracking skin. Prolonged or repeated eye exposures to vapours may cause irritation to the lining of the eyelids. In laboratory animals, chronic exposure to styrene at high concentrations has been found to cause liver abnormalities, kidney and lung damage. In addition preliminary results of inhalation studies indicate that laboratory rats exposed to 800 ppm styrene via inhalation showed evidence of hearing loss. Relevance to humans remains unclear.

Medical Conditions Aggravated By Exposure:

Persons with a history of chronic respiratory disease, skin disease or central or peripheral nervous system disorders may be at increased risk for worsening their conditions from exposure to this product.

4. First Aid Measures

- Swallowing:** Do not induce vomiting. Prevent aspiration. Transport to hospital immediately.
- Inhalation:** Move the person to fresh air and obtain medical attention. Apply artificial respiration if necessary.
- Skin Contact:** Wash with mild soap and running water. Seek medical attention if irritation persists.
- Eye Contact:** Flush eyes with running water for at least 15 minutes. Seek medical attention immediately
- Note to Physician:** Perform gastric lavage in accordance with procedures for ingestion of petroleum products.

5. Fire Fighting Measures

- Flash Point And Method:** > 120°C Setaflash Closed Cup
- Flammability Limits (%):** Non Flammable
- Auto Ignition Temperature:** 490°C
- Extinguishing Media:** Foam, CO² or dry chemical
- Unusual Fire And Explosion Hazards:** Product is considered a combustible liquid
- Fire Fighting Instructions:** Treat as a flammable liquid type fire. In a sustained fire wear self-contained breathing apparatus and full protective bunker turn out gear
- Hazardous Combustion Products:** Primary combustion products are carbon monoxide, Carbon dioxide and low molecular weight hydrocarbons. Other undetermined compounds could be released in small quantities.

6. Accidental Release Measures

Release of this product to the land, water and air may require reporting to local government agencies.

Land Spill:

Prevent material from entering sewers or waterways. Remove all sources of ignition (flames, hot surfaces and electrical static or frictional sparks). Ventilate area. Absorb with inert materials (vermiculite or sand) and place in a closed container for disposal as solid waste. Wash area well with trisodium phosphate and water. Resin that may have been mixed with peroxide initiators prior to spillage should be mixed with inert material and removed to an open area. Allow time to gel and cure.

Water Spill:

The material is mostly insoluble. It will sink to the bottom leaving a styrene monomer sheen. Styrene is harmful to aquatic life in very low concentrations. Notify local environmental, health and wildlife authorities, and water intake operators. Contain with booms to minimize spread on water. Collect floating material with absorbents and vacuum/collect sunken solids. Disperse any remaining residue to reduce aquatic harm.

Air Release:

Spills of this material may release styrene and volatile organic compounds into the air. Spills should be cleaned or covered to prevent volatilization of styrene.

7. Handling And Storage

Storage Temperature: Keep below 30°C

General: The storage drum, when emptied, can contain vapour, liquid or solid residues that may be hazardous. Keep away from heat, sparks, flames and direct sunlight. DO NOT cut, puncture or weld on or near this container. Do not apply air or gas pressure to this container, not rated for pressure. Containers should be bonded and grounded during transfer of material.

8. Exposure Controls And Personal Protection

Ingredient:	OSHA PEL:	ACGIH TLV:
Styrene Monomer	100 ppm (8 hour TWA) 200 ppm (Ceiling) 600 ppm, 5 minutes in any 3 hours (Peak)	50 ppm (8 hour TWA) 100 ppm STEL (Skin Notation)
Para-tertiary-Butylstyrene	Not Established	Not Established
Engineering Controls:	General dilution ventilation and/or local exhaust ventilation should be provided as necessary to minimize exposures.	
Personal Protection:		
Respiratory Protection:	If irritation occurs, or if the TLV or PEL is exceeded, use a NIOSH/MSHA approved air purifying respirators. Use respiratory protection in accordance with your company respiratory protection program, local regulation or OSHA regulations under 29 CFR 1910.134	
Skin Protection:	Wear long sleeved shirt, long pants and chemical resistant gloves, such as polyvinyl alcohol, polyethylene or viton	
Eye Protection:	Chemical protective goggles and/or face shield must be worn whenever possibility exists for eye contact	
Work/Hygienic Practices:	Handle in accordance with good industrial hygiene and safety practices. These include avoiding unnecessary exposures and proper selection of personal protective equipment. Launder contaminated clothing before re-use. Safety showers and eye wash stations should be available. Use	

explosion proof motors and equipment Containers should be grounded and/or bonded when material is transferred.

9. Physical And Chemical Properties

Vapour Pressure (mm Hg @ 20°C):	Not available
Vapour Density (Air=1):	Not available
Specific Gravity (Water=1):	1.1
Solubility In Water:	Insoluble
Appearance:	Viscous clear liquid
Odour Type:	Aromatic
Boiling Point:	> 35° C
Viscosity:	10 – 1000 mPa's

10. Stability And Reactivity

General:	Stable
Incompatible Materials To Avoid:	Peroxides, oxidizers, acids and bases. Ambient temperatures over 25° C, or heat from fire situations may cause polymerization, heat generation and vapour expansion. May cause closed container to rupture.
Hazardous Decomposition Products:	Oxides of carbon and low molecular weight hydrocarbons.
Hazardous Polymerization:	May occur. Avoid excessive heat contamination.

11. Toxicological Information

Carcinogenicity: The following table indicates whether or not each agency has listed each ingredient as a carcinogen:

Ingredient:	ACGIH:	IARC:	NTP:	OSHA:
Styrene Monomer	No	Yes	No	No
Para-tertiary-Butylstyrene	No	Yes	No	No

Toxicity:
Styrene Monomer: LC60 Inhalation (g/m³, 4 hours) 24 (rat)

In March 1987, the International Agency for Research on Cancer (IARC) reclassified styrene as possibly carcinogenic to human (Group 2B) due to "inadequate evidence in humans", limited evidence in animals" and "other relevant data". Previously, styrene was classified as a Group 3 compound (not classified as to Carcinogenicity to humans). The IARC working group determined that the weight of data on genetic and related effects, together with the consideration that styrene metabolized in humans and animals to styrene oxide for which there is sufficient evidence of Carcinogenicity in experimental animals and has been classified by IARC as probably carcinogenic to humans (Group 2A) was sufficient reason to recommend the change in classification.

12. Ecological Information

This product may cause harm to animals, plants or fish

13. Disposal Considerations

Dispose in accordance with local governmental requirements

15. Transport Information

Shipping Name:	Resin solution in flammable liquid
Supply Label:	Harmful. Marine Pollutant
UN No:	1866
EAC:	3 (Y)
Hazard Class:	3
ADR HIN:	30
Packing Group:	3

16. Regulatory Information

Contains:	Styrene
Symbol:	XN
Risk Phrases:	R10 – Flammable R20 – Harmful by inhalation R36/38 – Irritating to skin and eyes
Safety Phrases:	S23 – Do not breathe vapour

17. Other Information

DISCLAIMER:

This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

20 March 2006