
1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Description:	MECHSTER™ 1110NSA
Chemical Family	Unsaturated Polyester Resin
Chemical Composition	NPG Isophthalate based polyester resin solution in Styrene

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

Intended Use	General-purpose polyester resin
Sector of Use	SU 3 - Industrial uses SU12 - Manufacture of plastics products, including compounding and conversion SU 22 - Professional uses
Product Categories	PC32 - Polymer Mixtures and Compounds
Process Categories	PROC1 - Use in closed process, no likelihood of exposure PROC3 - Use in closed batch process (synthesis or formulation); Industrial setting PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC5 - Mixing or blending in batch processes for formulation of mixtures and articles(multistage and/or significant contact) PROC 6 - Calendaring Operation PROC7 - Industrial spraying PROC8a - Transfer of substance or mixture (charging/discharging) from/to vessels/large containers at non dedicated facilities PROC 8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 - Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 - Roller application or brushing PROC11 - Non industrial spraying PROC13 - Treatment of articles by dipping and pouring PROC14 - Production of mixtures or articles by tableting, compression, extrusion, palletisation PROC15 - Use as a laboratory reagent PROC 19 - Hand-Mixing with intimate contact and only PPE available PROC 22 - Potentially closed processing operations with minerals/metals at high Temperature
Uses advised against	No information available

1.3. Details of the supplier of the safety data sheet

Manufacturer:

MECHEMCO RESINS PVT. LTD.
D-36/3, T.T.C INDUSTRIAL AREA,
MIDC,TURBHE,
NAVI MUMBAI –400 613.
INDIA.

Email mechemcoresins@vsnl.net / mrpl@mtnl.net.in

1.4. Emergency telephone number +91-22-27682720 / 27632153 /27632154 / 27682721

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008

Classification according to EU Directives 67/548/EEC or 1999/45/EC

R10 - Xn; R48/20 - Xn; R20 - Xn; R36/37/38

2.2. Label Elements

Labelling according to Regulation (EC) 1272/2008 (CLP)

Labelling according to EU Directives 67/548/EEC or 1999/45/EC



Symbol(s) Flammable; Health Hazard

Contains Styrene

R -phrase(s)

R10 - Flammable

R20 - Harmful by inhalation

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

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

S -phrase(s)

S16 - Keep away from sources of ignition - No smoking

S23 - Do not breathe vapor

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

S62 - If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label

2.3. Other hazards

No information available.

3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Component	EC No.	CAS-No	Weight %	Classification	EU - GHS Substance Classification	REACH No.
Styrene	202-851-5	100-42-5	32 - 42	R10 Xn; R20-R48/20-65 Xi; R36/37/38	Skin Irrit. 2 (H315) Flam. Liq. 3 (H226) Eye Irrit. 2 (H319) Acute Tox. 4 (H332) STOT RE 1 (H372) STOT SE 3 (H335) Asp. Tox. 1 (H304)	01-2119457861-32

Methyl Methacrylate Monomer (MMM)	201-297-1	80-62-6	xxxx	F; R11 Xi; R37/38 R43	Skin Irrit. 2 (H315) Skin Sens. 1 (H317) STOT SE 3 (H335) Flam. Liq. (H225)	01-2119452498-28
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4. FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact:

Immediately flush eyes for at least 15 minutes. Get medical attention.

Skin contact:

Wash off with warm water and soap. Remove contaminated clothing and shoes. If skin irritation persists, call a physician. Wash contaminated clothing before reuse.

Ingestion:

Do not induce vomiting. This material may enter the lungs during vomiting. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Inhalation:

Remove person to fresh air. Keep patient warm and at rest. If breathing is laboured, administer oxygen. If not breathing, give artificial respiration. Get medical attention immediately.

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

Irritating to eyes, respiratory system and skin. Harmful by inhalation, in contact with skin and if swallowed.

4.3. Indication of immediate medical attention and special treatment needed

Notes to Physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media:

Carbon dioxide (CO2), Foam, Dry chemical, Water spray

Extinguishing media which must not be used for safety reasons:

Do not use water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards arising from the substance or preparation itself, combustion products, resulting gases are Flammable. Vapors may form explosive mixture with air. Vapors may travel to areas away from work site before igniting/flashing back to vapor source. Combustion may produce carbon monoxide, carbon dioxide, irritating or toxic vapors and gases. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

5.3. Advice for fire fighters

Special protective equipment for fire-fighters

Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Evacuate personnel to safe areas. Avoid contact with the skin and the eyes. Use personal protective equipment. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. All equipment used when handling the product must be grounded.

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

A vapor suppressing foam may be used to reduce vapors. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Use clean non-sparking tools to collect absorbed material.

6.4. Reference to other sections

See Section 12 for additional information.

7. HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Handling:

Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Ensure adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion-proof equipment. Consult your supplier of promoters and catalysts for additional instructions on proper mixing and usage. Empty containers may retain product residue (liquid and/or vapor). Do not pressurize, cut, weld, braze, solder, drill, grind, or expose these containers to heat, flame, sparks, static electricity, or other sources of ignition as the container may explode and may cause injury or death. Empty drums should be completely drained and properly bunged. Empty drums should be promptly returned to a drum reconditioner or properly disposed. Do not use compressed air for filling, discharging or handling.

Hygiene Measures

Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. No smoking. Keep away from direct sunlight. Store it away from incompatible materials. Keep containers tightly closed in a cool, well-ventilated place. To ensure maximum stability and maintain optimum resin properties, resins should be stored in closed containers at temperatures below 25°C.

7.3. Specific End Use(s)

Exposure Scenario	No information available.
Other Guidelines	No information available.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

Components with workplace control parameters.

Styrene

Austria	80 ppm STEL 340 mg/m ³ STEL 20 ppm TWA 85 mg/m ³ TWA
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Belgium	50 ppm TWA 216 mg/m ³ TWA (skin) 100 ppm STEL 432 mg/m ³ STEL
Bulgaria	85.0 mg/m ³ TWA 215.0 mg/m ³ STEL
Czech Republic	400 mg/m ³ Ceiling 100 mg/m ³ TWA (skin)
Denmark	25 ppm Ceiling 105 mg/m ³ Ceiling (skin)
Estonia	20 ppm TWA 90 mg/m ³ TWA 50 ppm STEL 200 mg/m ³ STEL (skin)
Finland	20 ppm TWA 86 mg/m ³ TWA 100 ppm STEL 430 mg/m ³ STEL
France	50 ppm TWA 215 mg/m ³ TWA
Germany	20 ppm TWA 86 mg/m ³ TWA
Greece	100 ppm TWA 425 mg/m ³ TWA 250 ppm STEL 1050 mg/m ³ STEL
Hungary	50 mg/m ³ TWA AK 50 mg/m ³ STEL CK
Ireland	20 ppm TWA 85 mg/m ³ TWA 40 ppm STEL 170 mg/m ³ STEL
Latvia	10 mg/m ³ TWA 30 mg/m ³ STEL
Lithuania	20 ppm TWA (IPRD) 90 mg/m ³ TWA (IPRD) 10 ppm TWA (IPRD) 50 ppm STEL (TPRD) 200 mg/m ³ STEL (TPRD) (skin)
Norway	25 ppm TWA 105 mg/m ³ TWA 37.5 ppm STEL 131.25 mg/m ³ STEL
Poland	200 mg/m ³ STEL 50 mg/m ³ TWA (skin)
Portugal OELs Data	20 ppm 40 ppm STEL
Romania	12 ppm TWA 50 mg/m ³ TWA 35 ppm STEL 150 mg/m ³ STEL
Russia	10 mg/m ³ TWA (vapor) 30 mg/m ³ STEL (vapor)
Slovakia	20 ppm TWA 86 mg/m ³ TWA

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Slovenia	200 mg/m ³ Ceiling 20 ppm TWA 86 mg/m ³ TWA 80 ppm STEL
Spain	344 mg/m ³ STEL 20 ppm TWA 86 mg/m ³ TWA 40 ppm STEL 172 mg/m ³ STEL
Sweden	20 ppm LLV 90 mg/m ³ LLV 50 ppm STV 200 mg/m ³ STV
Switzerland	40 ppm STEL 170 mg/m ³ STEL 20 ppm TWA 85 mg/m ³ TWA
United Kingdom	100 ppm TWA 430 mg/m ³ TWA 250 ppm STEL 1080 mg/m ³ STEL
ACGIH - TLV	20 ppm TWA 40 ppm STEL

MMM

Austria	100 ppm STEL 420 mg/m ³ STEL 50 ppm TWA 210 mg/m ³ TWA
Belgium	50 ppm TWA 208 mg/m ³ TWA (skin) 100 ppm STEL 416 mg/m ³ STEL
Bulgaria	50 ppm TWA
Czech Republic	150 mg/m ³ Ceiling 50 mg/m ³ TWA
Denmark	25 ppm TWA 102 mg/m ³ TWA
Estonia	80 ppm TWA 200 mg/m ³ TWA 150 ppm STEL 600 mg/m ³ STEL
Finland	10 ppm TWA 42 mg/m ³ TWA 50 ppm STEL 210 mg/m ³ STEL
France	50 ppm TWA 410 mg/m ³ TWA 200 ppm STEL 820 mg/m ³ STEL
Germany	50 ppm TWA 210 mg/m ³ TWA
Greece	100 ppm TWA 410 mg/m ³ TWA 200 ppm STEL 820 mg/m ³ STEL
Hungary	210 mg/m ³ TWA AK 210 mg/m ³ STEL CK
Ireland	50 ppm TWA

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Latvia	100 ppm STEL
Lithuania	10 mg/m ³ TWA 50 ppm TWA 200 mg/m ³ TWA Skin notation 150 ppm STEL 600 mg/m ³ STEL
Norway	25 ppm TWA 100 mg/m ³ TWA 37.5 ppm STEL 150 mg/m ³ STEL
Poland	300 mg/m ³ STEL 100 mg/m ³ TWA
Portugal	50 ppm TWA 100 ppm STEL
Romania	150 mg/m ³ TWA 250 mg/m ³ STEL
Russia	10 mg/m ³ TWA 20 mg/ m ³ STEL (vapor)
Slovak Republic	50 ppm TWA 210 mg/m ³ TWA 420 mg/m ³ Ceiling
Slovenia	50 ppm TWA 210 mg/m ³ TWA 50 ppm STEL 210 mg/m ³ STEL
Spain	50 ppm TWA 50 ppm STEL
Sweden	50 ppm LLV 200 mg/m ³ LLV 150 ppm STV 200 mg/m ³ STV
Switzerland	40 ppm STEL 170 mg/m ³ STEL 20 ppm TWA 85 mg/m ³ TWA
United Kingdom	50 ppm TWA 208 mg/m ³ TWA 100 ppm STEL 208 mg/m ³ STEL
European Union	50 ppm TWA 100 ppm STEL

Legend:

ACGIH - American Conference of Industrial Hygienists

TLV - Threshold Limit Value

TWA - Time weighted average

STEL: Short Term Exposure Limit

MAK - Maximum Occupational Exposure Limits

SKIN: Skin Absorption

Biological occupational exposure limits

Component: Styrene

Bulgaria

BEI: 600 mg/g Creatinine, DETERMINANT: Mandelic acid and Phenylglyoxylic acid - together in urine, SAMPLING TIME: at the end of exposure or end of shift, in remote exposure - after several shifts

Finland

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BEI: 1.2 mmol/L, DETERMINANT: MAPGA in urine, SAMPLING TIME: prior to shift
NOTE: MAPGA equals sum of urinary Mandelic and Phenylglyoxylic acids

France

BEI: 0.55 mg/L, DETERMINANT: Styrene in venous blood, SAMPLING TIME: end of shift, NOTE: Semi-quantitative (ambiguous interpretation)
BEI: 0.02 mg/L, DETERMINANT: Styrene in venous blood, SAMPLING TIME: prior to shift, NOTE: Semi-quantitative (ambiguous interpretation)
BEI: 800 mg/g creatinine, DETERMINANT: Mandelic acid in urine, SAMPLING TIME: end of shift, NOTE: Non-specific (observed after the exposure to other substances)
BEI: 300 mg/g creatinine, DETERMINANT: Mandelic acid in urine, SAMPLING TIME: prior to shift, NOTE: Non-specific (observed after the exposure to other substances)
BEI: 240 mg/g creatinine, DETERMINANT: Phenylglyoxylic acid in urine, SAMPLING TIME: end of shift, NOTE: Non-specific (observed after the exposure to other substances)
BEI: 100 mg/g creatinine, DETERMINANT: Phenylglyoxylic acid in urine, SAMPLING TIME: prior to shift, NOTE: Non-specific (observed after the exposure to other substances)

Germany

BEI: 600 mg/g, DETERMINANT: Mandelic acid plus Phenylglyoxylic acid in urine, SAMPLING TIME: end of shift, NOTE: measured as mg/g Creatinine
BEI: 600 mg/g, DETERMINANT: Mandelic acid plus Phenylglyoxylic acid in urine, SAMPLING TIME: end of several shifts, NOTE: measured as mg/g Creatinine; for long-term exposures

Latvia

BEI: 0.8 g/g Creatinine, DETERMINANT: Mandelic acid in urine, SAMPLING TIME: end of shift
BEI: 0.55 mg/g, DETERMINANT: Styrene in blood, SAMPLING TIME: end of shift

Romania

BEI: 800 mg/g creatinine, DETERMINANT: Mandelic acid in urine, SAMPLING TIME: end of shift
BEI: 300 mg/g creatinine, DETERMINANT: Mandelic acid in urine, SAMPLING TIME: beginning of second shift
BEI: 100 mg/g creatinine, DETERMINANT: Phenylglyoxylic acid in urine, SAMPLING TIME: end of shift
BEI: 100 mg/g creatinine, DETERMINANT: Phenylglyoxylic acid in urine, SAMPLING TIME: beginning of second shift
BEI: 0.55 mg/L, DETERMINANT: Styrene in blood, SAMPLING TIME: end of shift
BEI: 0.02 mg/L, DETERMINANT: Styrene in blood, SAMPLING TIME: beginning of second shift

Slovakia

BEI: 600 mg/g creatinine, DETERMINANT: Mandelic acid and phenyl glycolic acid in urine, SAMPLING TIME: after all work shifts, NOTE: for long-term exposure
BEI: 600 mg/g creatinine, DETERMINANT: Mandelic acid and phenylglycolic acid in urine, SAMPLING TIME: end of exposure or work shift, NOTE:

Component	Derived No Effect Level (DNEL)	Predicted No Effect Concentration (PNEC)
Styrene	End Use: Workers Exposure Route: Inhalation Exposure Type: Acute, systemic effects Value: 289 mg/m ³ (68 ppm)	Fresh water Value: 0.028 mg/l Assessment factor: 10
	End Use: Workers Exposure Route: Inhalation Exposure Type: Acute, local effects Value: 306 mg/m ³ (72 ppm)	Sea water Value: 0.0028 mg/l Assessment factor: 100
	End Use: Workers Exposure Route: Inhalation Exposure Type: Long term, systemic effects Value: 85 mg/m ³ (20 ppm)	Water Value: 0.04 mg/l Intermittent Releases Assessment factor: 100
		Fresh water sediment Value: 0.614 mg/kg dw
	End Use: Workers Exposure Route: Dermal	Sea sediment Value: 0.0614 mg/kg dw

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	<p>Exposure Type: Long term, systemic effects Value: 406 mg/kg bw/day</p> <p>End Use: General Population Exposure Route: Inhalation Exposure Type: Acute, systemic effects Value: 174.25 mg/m³(41 ppm)</p> <p>End Use: General Population Exposure Route: Inhalation Exposure Type: Acute, local effects Value: 182.75 mg/m³(43 ppm)</p> <p>End Use: General Population Exposure Route: Inhalation Exposure Type: Long term, systemic effects Value: 10.2 mg/m³(2.4 ppm)</p> <p>End Use: General Population Exposure Route: Dermal Exposure Type: Long term, systemic effects Value: 343 mg/kg bw/day</p>	<p>Sewage Treatment Plant Value: 5 mg/l Assessment factor: 100</p> <p>Soil Value: 0.2 mg/kg dw</p>
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Component	Derived No Effect Level (DNEL)	Predicted No Effect Concentration (PNEC)
MMM	<p><i>End Use: Workers</i> <i>Exposure Route: Inhalation</i> <i>Exposure Type: Long term, Local effects</i> <i>Value: 210 mg/m³</i></p>	<p><i>Fresh water</i> <i>Value: 0.94 mg/l</i></p> <p><i>Sea water</i> <i>Value: 0.094 mg/l</i></p>
	<p><i>End Use: Workers</i> <i>Exposure Route: Inhalation</i> <i>Exposure Type: Long term, systemic effects</i> <i>Value: 210 mg/m³</i></p>	<p><i>Sediment</i> <i>Value: 5.74 mg/kg dw</i></p> <p><i>Soil</i> <i>Value: 1.57 mg/kg dw</i></p>
	<p><i>End Use: Workers</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Long term, Local effects</i> <i>Value: 1.5 mg/cm³</i></p>	
	<p><i>End Use: Workers</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Long term, systemic effects</i> <i>Value: 13.67 mg/kg bw/day</i></p>	
	<p><i>End Use: Workers</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Acute, Local effects</i> <i>Value: 1.5 mg/cm³</i></p>	
	<p><i>End Use: General Population</i> <i>Exposure Route: Inhalation</i></p>	

	<p><i>Exposure Type: Long term, Local effects</i> <i>Value: 105 mg/m³</i></p> <p><i>End Use: General Population</i> <i>Exposure Route: Inhalation</i> <i>Exposure Type: Long term, systemic effects</i> <i>Value: 73.4 mg/m³</i></p> <p><i>End Use: General Population</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Long term, Local effects</i> <i>Value: 1.5 mg/cm³</i></p> <p><i>End Use: General Population</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Long term, systemic effects</i> <i>Value: 8.2 mg/kg bw/day</i></p> <p><i>End Use: General Population</i> <i>Exposure Route: Dermal</i> <i>Exposure Type: Acute, Local effects</i> <i>Value: 1.5 mg/cm³</i></p>
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8.2. Exposure controls

Engineering Controls:

Use general ventilation to maintain airborne concentrations to levels that are below regulatory and recommended occupational exposure limits. Local ventilation may be required during certain operations.

Personal protective equipment

Eye Protection

Safety glasses with side-shields conforming to EN166. If splashes are likely to occur, wear tightly fitting safety goggles (EN166). Ensure that eyewash stations and safety showers are close to the workstation location.

Skin Protection

Impervious clothing.

Hand Protection

Protective gloves complying with EN 374. Wear chemical-resistant gloves such as polyvinyl alcohol or Viton. Gloves made of nitrile rubber or polyvinyl chloride (PVC) may be used for splash protection and brief or intermittent contact with styrenated polyester resin. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Respiratory Protection:

None required if hazards have been assessed and airborne concentrations are maintained below the exposure limits listed in Section 8. Wear an approved air-purifying respirator with organic vapor cartridges and particulate filters where airborne concentrations may exceed exposure limits in Section 8 and/or there is exposure to dust or mists due to sanding, grinding, cutting, or spraying. Use an approved positive-pressure air-supplied respirator with emergency escape provisions if there is any potential for an uncontrolled release, airborne concentrations are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Recommended Filter type:

Type A (EN141) and Type P2 (EN143)

Environmental exposure controls

Local authorities should be advised if significant spillages cannot be contained

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	Pale yellow	Physical State:	Liquid
Odour:	Styrenic / Ester like	Odour Threshold:	0.2ppm (Styrene)

		Remarks/ Method
pH	Not Applicable	-
Melting Point/ Freezing Point	-30°C (Styrene)	-
Boiling Point/ boiling Range	146°C (Styrene)	-
Flash Point	32°C (Styrene) 10°C (MMM Monomer)	-
Evaporation Rate	0.49 (BuAc = 1) (Styrene)	-
Flammability Limit in air		
Upper	6.8% (Styrene) / 2.1% (MMM)	-
Lower	0.9% (Styrene) / 12.5% (MMM)	-
Vapor Pressure	4.5 mm Hg (Styrene) @ 20°C 27.75 mm Hg (MMM) @ 20°C	-
Vapor Density	3.6 (Air = 1) (Styrene)	-
Specific Gravity	1.07 - 1.13 @ 25°C	-
Solubility	Insoluble in water	-
Partition Coefficient: n-Octanol/Water	No data Available	-
Auto ignition Temperature	490°C (Styrene) 400°C (MMM)	-
Decomposition Temperature	No data Available	-
Viscosity	600 ± 100cP, 30 rpm @ 25°C	Brookfield Test Method
Explosive Properties	No information available	
Oxidizing Properties	No information available	

9.2. Other information

No other information available

10. STABILITY AND REACTIVITY

10.1. Reactivity

Unstable upon depletion of inhibitor.

10.2. Chemical Stability

Stable under normal conditions. Stable under recommended storage conditions.

10.3. Possibility of Hazardous Reactions

Polymerization can occur. Hazardous polymerization will occur if contaminated with peroxides, metal salts and polymerization catalysts. Hazardous polymerization may occur upon depletion of inhibitor - may cause heat and pressure build-up in closed containers. Product will undergo hazardous polymerization at temperatures above 150° F (65° C).

10.4. Conditions to Avoid

Heat, flames and sparks. Contamination by those materials referred to under Incompatible materials. Unstable upon depletion of inhibitor. Elevated temperatures.

10.5. Incompatible materials

Strong acids. Strong oxidizing agents. Metal salts. Polymerization initiators. Copper. Copper alloys. Brass.

10.6. Hazardous Decomposition Products

Hydrocarbons. Carbon monoxide. Carbon dioxide (CO₂). Thermal decomposition can lead to release of irritating gases and vapours.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute Toxicity

Inhalation	Harmful by inhalation. May cause irritation of respiratory tract. Inhalation of high vapor concentrations can cause CNS depression and narcosis.
Eye Contact	Irritating to eyes.
Skin Contact	Causes skin irritation. Prolonged skin contact may defat the skin and produce dermatitis.
Ingestion	Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Styrene

LD50 Oral	= 5000 mg/kg (Rat)
LD50 Dermal	>2000 - (Rat) mg/kg
LC 50 Inhalation	=11.8 mg/l (4 H) Rat

MMM

LD50 Oral	= 7900 mg/kg (Rat)
LD50 Dermal	> 5000 (Rabbit) mg/kg
LC 50 Inhalation	= 29.8 mg/l (4 H) Rat

Irritation Irritating to eyes and skin.

Corrosivity Non Corrosive

Sensitization May cause sensitization by skin contact

Carcinogenic Effect There is no convincing evidence that styrene possesses significant carcinogenic potential in humans.

Repeated dose toxicity In humans, styrene may cause a transient decrease in color discrimination and effects on hearing. Repeated or prolonged exposure may cause skin irritation and dermatitis, due to de fatting properties of the product. May cause damage to the liver, eyes, brain, respiratory system, central nervous system through prolonged or repeated exposure if inhaled.

Mutagenic Effect Styrene *and* MMM has given mixed positive and negative results in a number of mutagenicity tests. Styrene was not mutagenic without metabolic activation but gave negative and positive mutagenic results with metabolic activation.

Target Organs Liver, Central nervous system (CNS), Respiratory system.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Styrene

Freshwater Algae	EC50: 1.4 mg/L (Pseudokirchneriella subcapitata) (72h) EC50: 0.46 - 4.3 mg/L (Pseudokirchneriella subcapitata) (72h) static
Freshwater Fish	LC50: 3.24 - 4.99 mg/L (Pimephalespromelas) (96 h) flow-through LC50: 19.03 - 33.53 mg/L (Lepomismacrochirus) (96 h) static LC50: 6.75 - 14.5 mg/L (Pimephalespromelas) (96 h) static LC50: 58.75 - 95.32 mg/L (Poeciliareticulata) (96 h) static
Aquatic Invertebrates	EC50: 3.3 - 7.4 mg/L (Daphnia magna) (48h)

MMM

Freshwater Algae	EC50: >110 mg/L (<i>Pseudokirchneriella subcapitata</i>) (72h) static
Freshwater Fish	LC50: >=79 mg/L (<i>Onchorinchus mykiss</i>) (96 h) rainbow trout
Aquatic Invertebrates	EC50: 69 mg/L (<i>Daphnia magna</i>) (48h)

12.2. Persistence and degradability

No information available.

12.3. Bioaccumulative potential.

Bioaccumulation is unlikely.

Styrene

Log Kow 2.95

Bioconcentration factor (BCF) 13.5 fish

12.4. Mobility in soil

MMM is water soluble and may spread in water systems. Highly mobile in soil

12.5. Results of PBT and vPvB assessment

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB).

12.6. Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products

This material and its container must be disposed of as hazardous waste. Dispose of in accordance with local regulations. Can be incinerated, when in compliance with local regulations.

Contaminated packaging

Empty containers should be taken for local recycling, recovery or waste disposal.

EWC Waste Disposal No

07 00 00 WASTES FROM ORGANIC CHEMICAL PROCESSES07 02 00 Wastes from MFSU of plastics, synthetic rubber and man-made fibres07 02 99 Wastes not otherwise specified

14. TRANSPORT INFORMATION

ADR/RID

UN-No. 1866
Proper Shipping Name Resin Solution
Hazard Class 3
Packing Group III
Classification Code F1
Hazard Identification No. 30
Tunnel Restriction Code D/E

IMDG/IMO

UN-No. 1866
Proper Shipping Name Resin Solution
Hazard Class CLASS 3
Packing Group PG III
Environmental Hazard None
EMS No. F-E, S-E

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No Information Available

IATA

UN-No. 1866
Proper Shipping Name Resin Solution
Hazard Class 3
Packing Group III
Environmental Hazard None
Packing instruction 355; 366

15. REGULATORY INFORMATION

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

Denmark

List of substances and processes that are considered to be carcinogenic

Component	Status
Styrene (CAS #: 100-42-5)	Present

Additional Information

Must not be used by youngsters under the age of 18, ref. the notification from the Ministry of Labour regarding work by youngsters. The user must have undergone special training approved by the Labour Inspection Authority (AT) in order to work with products containing carcinogenic substances.

Germany

WGK Classification

Hazardous to water/Class 2

Netherlands

List of Carcinogens, Mutagens and Reproductive Toxins

No information available

Water Hazard Class

10-May cause long-term adverse effects in the aquatic environment.

International Inventories

TSCA Inventory Status	All components of this material are listed on the US Toxic Substances Control Act (TSCA) inventory.
Canadian Inventory Status	All components of this material are listed on the Canadian Domestic Substances List (DSL).
Australian Inventory Status	This product contains only chemicals which are currently listed on the Australian Inventory of Chemical Substances.
Korean Inventory Status	This product contains only chemicals which are currently listed on the Korean Chemical Substances List.
Philippine Inventory	This product contains only chemicals that are currently listed on the Philippine Inventory of Chemicals and Chemical Substances.
Japan ENCS	This product contains only chemicals that are currently listed on the Japanese Inventory of Existing and New Chemical Substances.
Chinese IECS	This product contains only chemicals that are currently listed on the Chinese Inventory of Existing Chemical Substances.
New Zealand Inventory	This product contains only chemicals which are currently listed on the New Zealand Inventory of Chemicals.

Product Registrations

Norway	Not applicable
Denmark	Not applicable

16. OTHER INFORMATION

Text of R phrases mentioned in Section 3

R10 - Flammable
R20 - Harmful by inhalation
R65 - Harmful: may cause lung damage if swallowed
R36/37/38 - Irritating to eyes, respiratory system and skin
R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation

Full text of H-Statements referred to under sections 2 and 3

H225 - *Highly flammable liquid and vapor*
H226 - Flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H315 - Causes skin irritation
H317 - *May cause and allergic skin reaction*
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H372 - Causes damage to organs through prolonged or repeated exposure if inhaled

Prepared By Mechemco Resins Pvt. Ltd.
Revision Date March/2013

Material Safety Data Sheet

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Revision Summary	None
Former date	New

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End of Material Safety Data Sheet