Section 1 IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product description
Fiber reinforced resin system for tool and mold manufacture.
MIR-302 SPRAY TOOLING COMPOUND

Other names
MIR-302, MIR-302-xx (where xx indicates gel time in minutes)
Unsaturated polyester resin solution in styrene
Vinyl ester resin solution in styrene

Manufacturer/supplier
Mirteq LLC
2201 Suppliers Ct.
Ft. Wayne, IN 46818
Phone 260-490-3706
Email- sales@mirteq.com
Website - www.mirteq.com

24 hour response number
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident. Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Section 2 HAZARDS IDENTIFICATION

Flammable. Harmful by inhalation. Irritating to eyes and skin. Do not breathe vapor or spray.

Dangerous Goods Code Classification

UN No.	1866
Proper Shipping Name	Resin Solution
Dangerous Goods Class	3
Subsidiary Risk	None allocated
Packing Group	III
Volatile Content:	34%
Flash Point:	88°F (Pensky-Martens Closed Cup)
OSHA Flammability Classification	Class 1B
NFPA Code	H2-F3-R2

Section 3 COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Proportion% wt.
Unsaturated polyester resin and or vinyl ester resin	Not available	25-30
Styrene	100-42-5	33.6
Glass particles (E-type)	Not available	6-10

Section 4 FIRST AID MEASURES

Swallowed:
If swallowed, give a glass of water. Do NOT induce vomiting. Lean victim forward to reduce the risk of aspiration. Never give drink to an unconscious person. Seek immediate medical attention. For further advice call the Poison Control Center at 1-800-222-1222 (USA).

Eye:
Immediately flush with plenty of water for at least 15 minutes, with eyelids held open. Seek immediate medical attention.

Skin:
Immediately remove contaminated clothing. Wipe resin off skin. Wash skin thoroughly with soap and water. Wash clothing before reuse.

Inhaled:
Remove to fresh air. Seek medical assistance. If not breathing give artificial respiration. If breathing difficult give oxygen.

First Aid Facilities:
Provide emergency eye wash stations and safety showers close to areas where splashing may occur.

Advice to Doctor
Treat symptomatically. Effects may be delayed and include pulmonary edema.

Section 5 FIRE FIGHTING MEASURES

Flammable liquid. Polymerizable in a fire situation.
Extinguishing Media: Foam, dry chemical and carbon dioxide extinguishers may be used. Use water spray to cool exposed closed containers.

Special Fire-Fighting Procedures:
Fire-fighters and others exposed to the products of combustion (see "Hazardous Decomposition Products") should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

Unusual Fire and Explosion Hazards:
Vapors are heavier than air and can accumulate in low areas; they may travel considerable distance to a source of ignition and flash back. The liquid normally contains an inhibitor to prevent polymerization. At elevated temperatures, such as a fire conditions, polymerization may take place. If polymerization takes place in a container, there is a possibility of violent rupture of the container. Styrene vapors are uninhibited and may form polymers in vents and flame arresters of storage tanks, resulting in blockage of vents.

Hazardous Decomposition Products
Thermal decomposition products include carbon monoxide and carbon dioxide, styrene and acrid smoke.

Section 6 ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures:

Keep unprotected people away. Wear appropriate protective equipment to prevent eye and skin contact and inhalation of vapors (See "Personal Protection" section). Remove all ignition sources. Increase ventilation. For large spills, wear self-contained breathing apparatus and full protective clothing. Contain spill and absorb with inert absorbent such as sand, earth or vermiculite and seal in properly labelled containers or disposal. Alternatively, pump to salvage truck. Keep out of sewer, stormwater drains and waterways.

Section 7 HANDLING AND STORAGE

Classified as Dangerous Goods (See Identification" section for classification). Store and handle in accordance with federal, state, and local regulations (See "Flammability" section).

Keep away from sources of ignition - No smoking. Keep container tightly closed. Store in the shade, preferably below 86°F. Store in a well ventilated area. Keep away from incompatible materials.

Styrene degrades most plastics and rubbers and corrodes copper and copper alloys. Avoid these materials for storage and handling of styrene based resin solutions.

Protect storage containers against physical damage. Outside storage or detached storage is preferred. Tanks should be above ground and bunded to contain the entire contents. Styrene vapors are uninhibited and may polymerize in vents and flame arresters of storage tanks resulting in blockage of vents.

FLAMMABILITY

Flammable liquid. Vapor may form explosive mixtures with air. Avoid all ignition sources. Use only in well ventilated areas. Keep container tightly closed. Flameproof equipment is necessary in area where product is being used. Earth (ground) and bond shipping container, transfer line and receiving container.

Section 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

EXPOSURE LIMIT

Styrene monomer CAS 100-42-5 proportion: 33.6 % by wt

ACGIH TLV/TWA:	20 ppm (85 mg/M^3)
ACGIH TLV/STEL:	40 ppm (170 mg/M$^{3)}$
OSHA PEL/TWA:	100 ppm (8 hr TWA)
OSHA PEL/CEILING: acceptable max. peak:	600 ppm (5 min in any 3 hrs)
OSHA PEL/STEL: acceptable concentration:	200 ppm (15 min TWA)

Unsaturated polyester/vinyl ester resin proportion: 25-30 % by wt

ACGIH TLV/TWA:	none established
OSHA PEL/TWA:	none established

ENGINEERING CONTROLS

Provide sufficient ventilation to control exposure levels below the exposure standards. Use mechanical exhaust ventilation at sources of contamination such as open process equipment.

Exposure to aerosols and mists when material is sprayed may present a greater risk of injury from components because higher concentrations are in the atmosphere than result from vapor alone. Provide adequate ventilation and, if necessary, respiratory protection.

PERSONAL PROTECTION

Respiratory Protection:
Do not breathe or ingest vapors, spray mist or dust while applying, sanding, grinding, or sawing cured product. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during application and other use of this product until vapors, mists and dusts are exhausted, unless air monitoring demonstrates vapor, mist and dust levels are below applicable limits. Follow respirator manufacturer's directions for respirator use. Observe OSHA Standard 29CFR 1910.134.

Eye Protection:
Wear chemical goggles to prevent eye contact. Do not wear contact lenses.

Glove Type:
Wear impervious gloves, preferably with cotton inners, to prevent skin contact. Supplier data indicates polyvinyl alcohol and Viton gloves are suitable for prolonged contact with styrene. Other glove types, such as nitrile rubber, may be suitable as disposable gloves for brief or intermittent contact only.

Clothing:
Wear coveralls and safety boots where potential for skin contact is low. A disposable suit (e.g. Tyvek) and polyethylene boots and glove covers may be practical options during application of the resin. Wear impervious clothing, such as PVC apron, PVC splash suit or Saranex disposable suit and PVC boots, as appropriate for the operation, where the potential for skin contact is high.

Other Personal Protection:
Protective clothing/equipment should meet, and be selected and used in accordance with relevant OSHA or NIOSH Standards. Consult protective equipment/clothing suppliers to determine appropriate type equipment/clothing for a given application. Avoid contact with eyes, skin and clothing. Use only in well ventilated areas. Wash thoroughly after handling. When using, do not eat, smoke or drink. Protective equipment and clothing should be decontaminated before storage and/or reuse.
Solvents should not be used to remove resin from skin. A waterless hand cleanser is recommended for cleanup, followed by a mild soap and water wash. The application of a barrier cream under suitable gloves and moisturizer cream after hand washing is also recommended. These practices can assist in the prevention of dermatitis.

Section 9 PHYSICAL AND CHEMICAL PROPERTIES

Physical Form:	Thixotropic liquid
Color:	Brown
Odor.	Sharp Aromatic Odor
Specific Gravity @ 25°C:	1.04
Viscosity@ 25°C:	Paste
Freezing/Melting Point:	Not determined
Boiling Point: Styrene monomer:	145°C at 760mmHg
Vapor Pressure @ 25°C:	4.5mmHg
Vapor Density:	1.22g/cubic m
Solubility in Water:	Immiscible
pH:	Not determined
Lower Explosive Limit (styrene)	0.9% by volume in air
Upper Explosive Limit (styrene)	6.8% by volume in air

Section 10 STABILITY AND REACTIVITY

The product is stable under normal conditions of storage and transport. It has a limited storage life due to inhibitor depletion and should be used within six months of delivery. Rapid polymerization resulting in violent rupture of closed containers and possible fire from flammable vapors may be initiated by high temperatures or certain contaminants.
Contamination with alkalis reduces inhibitor concentration and increases the risk of spontaneous polymerization. Exposure to UV radiation (including from light fittings) can initiate slow polymerization that may continue in a sealed container. Oxidizing agents (e.g. organic peroxides), strong acids (e.g. sulfuric acid), ferrous salts present in rust, and some metal halides, can promote polymerization. Contamination of the product with these substances should therefore be absolutely avoided.

Section 11 TOXICOLOGICAL INFORMATION

Acute Effects

Eye: Very low vapor pressure. Direct contact may cause severe irritation.
Skin: May cause moderate irritation, and or dermatitis.
Inhalation: Irritation of linings of throat and nasal passages, CNS poison (dizziness, euphoria, coordination problems, headaches, nausea, vomiting, drowsiness, weakness, unconsiousness)
Oral: May cause vomiting. If ingested may cause kidney and or liver damage.

Prolonged/Repeated Exposure Effects

Skin: Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis. Overexposure may injure internally if absorbed.
Inhalation: May cause lung damage, kidney damage, and or liver damage.
Repeated ingestion or swallowing large amounts will cause severe gastro intestinal irritation, vomiting, internally.

Signs and Symptoms of Overexposure

Reddening of sclera, irritation of nasal passages, redness or pain of skin, dizziness, headache, disorientation.

Other Health Effects Information:

STYRENE COMPONENT

Carcinogenicity (capability to cause cancer)

Chronic (lifetime) inhalation studies on rats and mice exposed to styrene vapors showed evidence of lung tumors in mice but not in rats. Further research is in progress to determine the relevance of these mouse tumors to humans.

It should be noted, however, that several workplace exposure (epidemiological) studies investigating the incidence of cancer in a large number of workers employed in the styrene, polystyrene and reinforced plastics industries have shown no increased incidence of cancer risk due to workplace exposures to styrene.

The International Agency for Research on Cancer (IARC) has evaluated styrene and classified as "Possibly Carcinogenic to Humans", under group 2B.

Styrene is not listed in the most recent National Toxicology Program (NTP) Report on Carcinogens (11th Edition).

OSHA does not regulate styrene as a carcinogen.

Developmental and Reproductive Toxicity

Laboratory studies investigating human developmental and reproductive toxicity of styrene have indicated that styrene exposures, either as vapor, oral or drinking water, do not result in any specific developmental or reproductive toxicity. Although some minor developmental effects were noted in some studies, these effects were either within the historical range for these effects, or were secondary to maternal toxicity from exposure to relatively high levels of styrene.

Although there have been very few studies investigating human developmental and reproductive toxicity following exposures to styrene, the limited available information supports the observation that there is no evidence of developmental or reproductive toxicity from workplace exposures to styrene.

Neurological (Nervous System) Effects

Some evidence of hearing loss was observed in rats repeatedly exposed to high concentrations of styrene vapor. Effects on human hearing are not expected from workplace exposures to styrene.

Slight effects on color discrimination have been detected in workers exposed to styrene vapors. These subtle effects are unlikely to be noticed by those affected.

Other nervous system effects have been noted in humans exposed to styrene. However, these effects have not been consistently or reliably observed at exposure levels below 50 ppm.

Genetic effects

Some cytogenetic (cell formation) studies on workers exposed to styrene have shown increases in chromosomal (genetic) damage, although these effects do not appear to be related to styrene exposure and are not supported by the data observed in animal studies.

Medical conditions generally aggravated by exposure

Because of styrene's defatting properties, prolonged and repeated skin contact may aggravate an existing dermatitis (skin condition). Repeated overexposure may aggravate or enhance existing nervous system dysfunction. Repeated overexposure may aggravate existing respiratory, liver or kidney disease.

Section 12 ECOLOGICAL INFORMATION

Styrene is moderately toxic to fish and daphnia and highly toxic to algae.

LC50-96hr: 10 mg/liter (Fathead minnow) moderately toxic

EC50-48hr: 4.7 mg/liter (Daphnia magna) moderately toxic
EC50-96hr: 0.72 mg/liter (Green algae) highly toxic (algistatic)
Mobility : Styrene is expected to bind to soils and sediments and have low mobility.
Persistance/degradability : Styrene is not expected to persist in the environment

Section 13 DISPOSAL CONSIDERATIONS

NOTE: Dispose of only in accordance with all federal, state, and local regulations.

Waste Disposal:
The product is considered to be a hazardous waste because of its flammability and toxicity. If feasible, recycle. Liquid waste resin may be solidified by heating in an approved heating chamber. The properly cured solid may be disposed of in a chemical landfill. Otherwise, dispose of by burning in an approved incinerator. In all cases, disposal should be in accordance with applicable federal, state, and local regulations.

Containers:
Emptied containers retain vapor and product residue and may therefore present explosive vapor and toxic material hazards. Observe all safeguards on label and in this MSDS until container is cleaned, reconditioned or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER. In all cases, disposal should be in accordance with applicable federal, state, and local regulations.

Section 14 TRANSPORT INFORMATION

Transport only in accordance with federal and state regulations.

Do not load or pack with Class 1 (Explosives), Class 2.1 (Flammable Gases-where flammable liquids/gases are in bulk), Class 2.3 (Toxic Gases), Class 4.2 (Spontaneously Combustible Substances), Class 5.1 (Oxidizing Agents), Class 5.2 (Organic Peroxides), Class 7 (Radioactive Substances).

Proper DOT Shipping Name:	UN1866, RESIN SOLUTION, 3, PG III
DOT Flammability Classification:	Flammable Liquid

International Maritime Dangerous Goods (IMDG) Code and International Air Transport Association (IATA) Dangerous Goods Regulations: UN 1866, RESIN SOLUTION, Class 3, Packing Group III.

Section 15 REGULATORY INFORMATION

SARA 313 Component(s): Styrene (CAS 100-42-5)

Poisons Schedule : 5
AICS : Listed
Dangerous Goods Initial Emergency Response Guide (SA HB76:2004) : 14

Section 16 OTHER INFORMATION

Further information can be obtained by contacting MIRteq Pty Ltd +61 2 4956 6644.

Reviewed By
Peter Hodgson Technical Director
Mirteq LLC
07 June 2013

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