SOLID SOLUTIONS
HANDY TO HAVE

Moulding and Casting Materials
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British United Industries (Vic) Pty Ltd ATF Byrne Hughes Family Business Trust Trading as A to Z Solid Solutions ABN 46 977 073 014 ACN 006 303 591

MATERIAL SAFETY DATA SHEET

Classified as hazardous according to NOHSC criteria

Flowcoat Natural or White Brush

IDENTIFICATION

Product Name: POLYESTER GELCOAT / FLOWCOAT (NO HEAVY METAL PIGMENTS)
VINYL ESTER GELCOAT (NO HEAVY METAL PIGMENTS)

Other Names: Pigmented unsaturated polyester resin and/or vinyl ester resin solution in styrene/methyl methacrylate.

Manufacturer's Product Codes: This MSDS covers most grades of Huntsman Polyester and Vinyl Ester Gelcoat/Flowcoat that do not contain heavy metal pigments as defined below:

Gelcoat Grades covered by this MSDS
General/Sanitary Iso-NPG grades (prefix "MSC")
High Performance White Iso-NPG grades (prefix "MS")
Marine grades (prefix "MGX")
Pool Chips Iso-NPG grades (prefix "CHIP")
Transport Sandable Flexible Terephthalic grades (prefix "BUFF")
Transport White Iso-NPG grades (prefix "MST")

Gelcoat/Flowcoat grades also covered by this MSDS
Grade names beginning with two letters followed by a number or the three letter code "MGP" followed by a number. For Polyester Gelcoats: the first letter may be "A", "B", "C", "E", "F", "H", "L" or "K". For Vinyl Ester Gelcoats, the first letter is" J". For Polyester Flowcoats: the first letter may be "N", "P", "R", "T", "V", "W", or "X". The second letter for Gelcoats/Flowcoats may be "A", "B", "C", "D", "E", "L","S", "T", "V", "U" or "W"

Gelcoat/Flowcoat Grades NOT covered by this MSDS (see separate MSDS for these grades)
Premium Marine Iso-all NPG Acrylate Gelcoat grades (Prefix "ULTRA")
Low smoke-Low Flame Iso-NPG Gelcoat grades (prefix "MS" with suffix "F")
Fire Retardant Modified Polyester Gelcoat (prefix "D")
Flowcoat grades (prefix "S")
Fire Retardant Vinyl Ester Flowcoats (prefix "Q").

ADG Code Classification:

UN No.	1866
Proper Shipping Name:	RESIN SOLUTION
Dangerous Goods Class:	3
Subsidiary Risk:	None allocated
Packing Group:	III
Hazchem Code:	3[Y]
Emergency Information:	IERG 14 (SAA/NZS HB:76) or EPG 3A1 (AS2931)

Poisons Schedule Number: 5

Australian Inventory of Chemical Substances: All components are listed or meet requirements of NICNAS.

Use: Used in a wide variety of applications, but generally used as surface coatings in the fibreglass industry. May also be repacked and sold to the general public.

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PHYSICAL DESCRIPTION/PROPERTIES

Appearance:	Paint-like liquids with an aromatic odour. In most cases, they are intensely coloured. However, some are transparent or translucent.
Boiling Point:	Methyl methacrylate: Approx. 100 deg.C. May polymerise below boiling point.
Vapour Pressure:	Styrene: 4.5 mm Hg @ 20 deg.C
Methyl methacrylate:	29 mm Hg @ 20 deg.C
Specific Gravity:	1.1 @ 25 deg.C (H20 = 1)
Flash Point:	23-31 deg.C Method: Tag Closed Cup
Flammability Limits:	Styrene: 1.1-6.1 % by volume in air
Methyl methacrylate:	2.1-12.5% by vol. in air
Solubility in Water:	Immiscible

OTHER PROPERTIES

Vapour Density:	Styrene: 3.6 (Air=1)
Methyl methacrylate:	3.5 (Air = 1);
Solubility in Organic Solvents:	Miscible with acetone, glycol ethers, toluene.
Evaporation Rate:	Styrene: 0.5 (n-Butyl acetate=1) Methyl methacrylate: 3.1 (n-Butyl acetate=l)
Odour Threshold:	Styrene: Approx. 0.15 ppm Methyl methacrylate: <1 ppm

INGREDIENTS

Chemical Name	CAS No.	Proportion % wt.
Unsaturated polyester resin and/or vinyl ester resin (x)	Not available	36-65
Styrene	100-42-5	18-45
Pigments/Fillers (x)	Not available	0-55
Methyl methacrylate	80-62-6	<5
Other ingredients determined not to be hazardous	Not available	to 100%

x Resin and pigments/fillers are non hazardous according to the criteria of NOHSC.

HEALTH HAZARD INFORMATION

HEALTH EFFECTS

Acute - Swallowed:	No data on the resin. Styrene and methyl methacrylate may cause irritation to the mouth and throat and abdominal discomfort, nausea and vomiting.
Acute - Eye:	Irritating to eyes. Possible injury to cornea.
Acute - Skin:	Irritating to skin. Skin sensitisation resulting in allergic contact dermatitis is also possible (due to methyl methacrylate). Significant skin absorption of styrene and methyl methacrylate from this resin solution is not considered likely in normal use based on scientific studies on polyester resin containing styrene as the sole solvent.

MATERIAL SAFETY DATA SHEET

Classified as hazardous according to NOHSC criteria

Flowcoat Natural or White Brush

HEALTH HAZARD INFORMATION (Cont.)

HEALTH EFFECTS (Cont.)

Acute - Inhaled:	Inhalation of styrene and methyl methacrylate may cause irritation to the upper respiratory tract and central nervous system effects (dizziness, drowsiness, euphoria, loss of coordination, headache, nausea and vomiting). In poorly ventilated areas or confined spaces, unconsciousness and asphyxiation may result. Inhalation may result in the absorption of potentially harmful amounts of material.
Chronic:	Repeated skin contact may cause irritant contact dermatitis (itching, drying, redness). Prolonged or repeated contact with the skin may cause sensitisation resulting in allergic contact dermatitis (due to methyl methacrylate). Repeated inhalation may cause lung damage. Prolonged and repeated overexposure may cause damage to the liver and kidney.

Other Health Effects Information:

STYRENE COMPONENT

Carcinogenicity (Capability to Cause Cancer)
Chronic (lifetime) inhalation studies on rats and mice exposed to styrene vapours showed evidence of lung tumours in mice but not in rats. Further research is in progress to determine the relevance of these mouse tumours 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 it as "Possibly Carcinogenic to Humans", under group 2B.

The National Occupational Health and Safety Commission (NOHSC) has not classified styrene as a carcinogen under any category.

Developmental and Reproductive Toxicity
Laboratory studies investigating human developmental and reproductive toxicity of styrene have indicated that styrene exposures, either as vapour, 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 vapour. Effects on human hearing are not expected from workplace exposures to styrene.

Slight effects on colour discrimination have been detected in workers exposed to styrene vapours. 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.

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HEALTH HAZARD INFORMATION (Cont.)

HEALTH EFFECTS (Cont.)

Other Health Effects Information (Cont.):

STYRENE COMPONENT (Cont.)

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.

FIRST AID

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. Transport to a doctor or hospital quickly. For further advice call Poisons Information Centre (Australia 13 1126).
Eye:	Immediately flush with plenty of water for at least 15 minutes, with eyelids held open. Seek immediate medical advice.
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 eye baths and safety showers close to areas where splashing may occur.

ADVICE TO DOCTOR

Treat symptomatically. Effects may be delayed and include pulmonary oedema.

PRECAUTIONS FOR USE

EXPOSURE STANDARDS

	NOHSC EXPOSURE STANDARDS		
	8 HR TWA	STEL (15 MIN'S)	PEAK LIMITATION
Styrene	50 ppm	100 ppm	None established
Methyl methacrylate (Skin) x (Sen) xx	50 ppm	100 ppm	None established

x Skin - Absorption through skin may be a significant route of exposure. xx Sen - Sensitiser

PRECAUTIONS FOR USE (Cont.)

MATERIAL SAFETY DATA SHEET

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EXPOSURE STANDARDS (Cont)

Keep exposures as low as practicable below exposure standards.

If cured material made using this product is to be cut or sanded, ensure that dust exposure is kept below the NOHSC Exposure Standard for inspirable dusts (8-hour TWA: 10 mg/m^3).

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 vapour alone. Provide adequate ventilation and, if necessary, respiratory protection.

PERSONAL PROTECTION

Respiratory Protection:	Avoid breathing vapours and/or spray mist. If inhalation risk exists, wear air-purifying respirator fitted with organic vapour/particulate filters meeting AS/NZS1716 and selected and used in accordance with AS/NZS1715. Consult respirator supplier for appropriate equipment for a given application.
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 that Viton or polyvinyl alcohol gloves are suitable for prolonged contact with styrene. Other glove types, such as nitrile rubber, may be suitable as disposable gloves for short term protection (eg. splash protection). Consult glove supplier.
Clothing:	Wear coveralls and safety boots where potential for skin contact is low. A disposable suit (eg. 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 Australian 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 or reuse. Solvents should not be used to remove resin from skin. A waterless hand cleanser is recommended for clean-up, followed by a mild soap and water wash. The application of a barrier cream under suitable gloves and moisturiser cream after hand washing is also recommended. These practices can assist in the prevention of dermatitis.

PRECAUTIONS FOR USE (Cont.)

MATERIAL SAFETY DATA SHEET

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Flowcoat Natural or White Brush

FLAMMABILITY

Flammable liquid. Vapour 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. Consult AS1940 for further information on the storage and handling of flammable liquids. Handle in accordance with State or Territory regulations for flammable liquids.

STORAGE AND TRANSPORT

Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code):
Classified as a Dangerous Good (See "Identification" section). Do not load or pack with Class 1 (Explosives), Class 2.1 (Flammable Gases-where flammable liquids/gases are in bulk), Class 2.3 (Poisonous Gases), Class 4.2 (Spontaneously Combustible Substances), Class 5.1 (Oxidising Agents), Class 5.2 (Organic Peroxides), Class 7 (Radioactive Substances). Transport in accordance with State and Territory regulations.

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

Other Transport and Storage Information:
Classified as a Dangerous Good (See "Identification" section for classification). Store and handle in accordance with State and Territory regulations (See "Flammability" section).

The material is a Schedule 5 Poison and must be stored, maintained and used in accordance with relevant regulations.

Keep away from sources of ignition - No smoking. Keep container tightly closed. Store in the shade, preferably below 30 deg.C. Store in a well ventilated area. Keep away from incompatible materials. 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 polymerisation resulting in violent rupture of closed containers and possible fire from flammable vapours may be initiated by high temperatures or certain contaminants.

Contamination with alkalis reduces inhibitor concentration and increases the risk of spontaneous polymerisation. Exposure to UV radiation (including from light fittings) can initiate slow polymerisation that may continue in a sealed container. Oxidising agents (e.g. organic peroxides), strong acids (e.g. sulphuric acid), ferrous salts present in rust, and some metal halides, can promote polymerisation. Contamination of the product with these substances should therefore be absolutely avoided.

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. Consult Huntsman for bulk storage.

SPILLS AND DISPOSAL

Spill or Leak Procedures:	Keep unprotected people away. Wear appropriate protective equipment to prevent eye and skin contact and inhalation of vapours (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.

PRECAUTIONS FOR USE (Cont.)

MATERIAL SAFETY DATA SHEET

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Flowcoat Natural or White Brush

SPILLS AND DISPOSAL (Cont.)

Spill or Leak Procedures (Cont): Alternatively, pump to salvage truck. Keep out of sewer, stormwater drains and waterways.

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 regulations.

Containers: Emptied containers retain vapour and product residue and may therefore present explosive vapour 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 regulations.

FIRE/EXPLOSION HAZARD

Flammable liquid. Polymerisable 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: At elevated temperatures and/or in the presence of oxidising agents, such as organic peroxides, polymerisation may take place. If polymerisation takes place in a closed container, there is a possibility of violent rupture of the container.

Hazardous Decomposition Products: Thermal decomposition products include carbon monoxide and carbon dioxide, styrene, methyl methacrylate and acrid smoke. Various pigments may liberate oxides of sulphur and nitrogen. Some may also liberate hydrogen chloride gas.

ADDITIONAL INFORMATION

HAZARDOUS SUBSTANCE CLASSIFICATION

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Health hazard classification and labelling according to the criteria of NOHSC:

Overall health hazard classification: HARMFUL (Xn)

R10 Flammable.
R20 Harmful by inhalation.
R36/38 Irritating to eyes and skin.
R43 May cause sensitisation by skin contact.
S23 Do not breathe vapour or spray.
S24/25 Avoid contact with skin and eyes.
S37 Wear suitable gloves.
S51 Use only in well ventilated area.

REASONS FOR REVISION

1. Supersedes Issue of 9 Aug 2002.
2. Grades covered by this MSDS redefined.
3. “Additional Information" section: Additional S-phrases included.

Contact Point
Technical Manager 03 9579 2044.

Disclaimer The information heroin is to the best of our knowledge, correct and complete. It describes the safety requirements for this product and should not be construed as guaranteeing specific properties. Since methods and conditions are beyond our control we do not accept liability for any damages resulting from the use of or reliance on, this information in inappropriate contexts.