



MATERIAL SAFETY DATA SHEET

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Product Name: DSI Resin Anchors

Proper Shipping Name: Not applicable
UN Number: Not applicable
DG Class: Not applicable
Packaging Group: Not applicable

Product Use: Chemical anchoring of bolts and cables for ground support

Company Identification:

Dywidag-Systems International PTY Limited
25 Pacific Highway Bennetts Green
NSW 2290 Australia
Tel: 02 4948 9099 Fax: 02 4948 4315

Manufactured for Dywidag-Systems International PTY Limited by

DSI - Fasloc, Inc. – A DSI Company
447 DuPont Road
Martinsburg, WV 25404 USA

Transport Emergency : CHEMTREC 1-800-424-9300 (US and Canada)
02 4948 9099 8am-4pm (Australia)
Technical Information: (304) 274-5325 US
Medical Emergency : (304) 671-1953 or 304-274-4199 US

Responsible for MSDS: Roy Jones
Phone: (304) 274-5325 US Fax: (304) 274-4185 US

HAZARDS IDENTIFICATION

Not classified as a Hazardous Substance according to criteria from the Australia NOHSC.
Not classified as a Dangerous Good according to the ADG code.
Risk phrases: Not applicable Safety phrases: Not applicable

COMPOSITION/INFORMATION ON INGREDIENTS

Components

Material	CAS Number	%
Polyester Resin		6.9 – 11.9
Calcium Carbonate	1317-65-3	78 - 87
*Benzoyl Peroxide	94-36-0	< 1
Water	7732-18-5	4.4 – 6.0
Proprietary – Type III ingredient		0 – 3
*Styrene Monomer**	100-42-5	4.3 – 7.7
Mylar Polyester Film		<1
Plasticizer		<1

**With product use, most of the styrene monomer is reacted

*Disclosure as a toxic chemical is required under Section 313 of Title III of the US Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.



FIRST AID MEASURES

INHALATION

If affected by inhalation, remove to fresh air. Notice: Styrene has a strong odor and can be smelled at concentrations far less than established exposure limits.

SKIN CONTACT

Flush skin with water for at least 15 minutes after contact. Wash contaminated clothing before reuse. Call a physician if a skin irritation occurs.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

Gastric lavage may be advisable for significant ingestion due to the styrene content. Consult a physician.

FIRE FIGHTING MEASURES

Fire and Explosion Hazards:

Product is not flammable and will not sustain burning. Packaging material may be flammable. Hazardous gases/vapors produced in a fire are carbon monoxide, carbon dioxide, and styrene.

Extinguishing Media

Water spray, Foam, Dry Chemical, Carbon Dioxide (CO₂).

Fire Fighting Instructions

Wear self-contained breathing apparatus. Wear full protective equipment.

ACCIDENTAL RELEASE MEASURES

Safeguards (Personnel)

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean up. Use PERSONAL PROTECTIVE EQUIPMENT as described in the Personal Protection section during clean up.

Accidental Release Measures

Thoroughly ventilate area. Homogenise any unreacted material to encourage reaction for easier clean up. Collect material and/or contaminated soil into a suitable container for disposal.

HANDLING AND STORAGE

Handling (Personnel)

Avoid contact with eyes. Avoid contact with skin. Wash thoroughly after handling.

Storage

Store in a well-ventilated place. Store in a cool place within temperature limits as stated on the anchor shipping packaging to promote shelf life. Keep away from direct heat and naked flame. Heat may cause deterioration and decomposition of the product. Do not stack over 2 pallets high to prevent crushing the cases.

PERSONAL PROTECTION/ EXPOSURE CONTROLS

Personal Protective Equipment

EYE/FACE PROTECTION :

Wear safety glasses with side shields.

RESPIRATORY PROTECTION:

If exposure limits may be exceeded, use approved respiratory protection.

PROTECTIVE CLOTHING:

Wear protective gloves to minimise skin contamination. Wash hands and contaminated skin thoroughly after handling.

Engineering Controls

Use with sufficient ventilation to keep employee exposure below the recommended exposure limits.



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US Exposure Guidelines

CALCIUM CARBONATE

PEL (OSHA)	15 mg/m ³ , total dust, 8 Hr. TWA 5 mg/m ³ , respirable dust, 8 Hr. TWA
TLV (ACGIH)	10 mg/m ³ , total dust, 8 Hr. TWA
AEL * (DuPont)	None Established

BENZOYL PEROXIDE

PEL (OSHA)	5 mg/m ³ , 8 Hr. TWA
TLV (ACGIH)	5 mg/m ³ , 8 Hr. TWA, A4
AEL * (DuPont)	None Established

STYRENE MONOMER**

PEL (OSHA)	100 ppm, 8 Hr. TWA 200 ppm, Ceiling 600 ppm - 5 Min. Max
TLV (ACGIH)	20 ppm, 85 mg/m ³ , 8 Hr. TWA, A4 STEL 40 ppm, 170 mg/m ³ , A4

Australia Exposure Guidelines

No exposure limits have been established for this material by the National Occupational Health and Safety Commission (NOHSC), however there are limits for two ingredients:

BENZOYL PEROXIDE

TWA	5 mg/m ³
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STYRENE MONOMER

TWA	50 ppm 213 mg/m ³
STEL	100 ppm, 426 mg/m ³

TWA- the Time-Weighted Average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL- The Short Term Exposure Limit average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour day.

PHYSICAL AND CHEMICAL PROPERTIES

Physical Data

Appearance	Long capsules containing two components wrapped in a plastic film
Odor	Slight styrene odor
Vapor Density	(Air = 1.0) Greater than 1
% Volatiles	< 8.0 WT%
Freezing point	0 degrees C
Melting point	Not available
Evaporation Rate	0.1%/Hr 0
Solubility in Water	Negligible
Specific Gravity	2.0 @ 25C (77F)
Phase	Solid per ASTM D 4359-90
Viscosity	100,000-200,000 cps PLV



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Flammable Properties

Flash Point	41 C (106 F)*
Method	Setaflash

*Resin contains styrene which can vaporise with increased temperature and this vapor will flash at 106 deg F. Solid resin will not sustain burning.

STABILITY AND REACTIVITY

Chemical Stability

Stable at normal temperatures and storage conditions.

Incompatibility with Other Materials

None reasonably foreseeable.

Polymerisation

Polymerisation can occur. Conditions leading to polymerisation are mixing together the contents of both sections of tube.

Other Hazards

Decomposition

Decomposes by reaction with acids, alkalis, and oxidants. As the product ages and/or is exposed to elevated temperatures, benzoyl peroxide in the catalyst section can decompose to benzene and oxygen.

TOXICOLOGY INFORMATION

No toxicity data is available for this specific mixture, however the following data is for the ingredients. Contact with the contents of this product may cause skin and eye irritation.

Styrene: Styrene is classified by the Australia NOHSC as harmful by inhalation and also as a skin irritant. The International Association for Research on Cancer (IARC) classifies styrene as 'possibly carcinogenic to humans' (Group 2B). Inhalation of styrene vapors may cause nose and throat irritation, and nervous system depression. Human health effects of overexposure by skin or eye contact include skin irritation with discomfort or rash; or eye irritation with discomfort, tearing, or blurring of vision. By inhalation overexposure, the vapors or gases emitted by the product may cause nonspecific discomfort such as nausea, headache, or weakness. Higher inhalation overexposures may cause temporary lung irritation with cough, difficulty in breathing, or shortness of breath. Gross overexposure to the vapors or gases may cause central nervous system depression with anesthetic effects such as dizziness, confusion, incoordination and, possibly, loss of consciousness. Styrene has been associated with abnormal liver and kidney functions, as detected by laboratory tests, and neurological and visual impairment. In humans exposed to styrene, genetic damage was observed in peripheral blood cells. Three studies have suggested an association between leukemia and lymphomas and exposure to styrene. However, because of concurrent exposure to other chemicals, it is not possible to single out styrene as the causative agent. Individuals with preexisting diseases of the central nervous system, liver, or kidneys may have increased susceptibility to the toxicity of excessive exposures.

Benzoyl Peroxide: Possible tumor promoter. May act as a mutagen. Toxic by inhalation. May be harmful if swallowed and in contact with skin. Eye, skin and respiratory irritant. Typical TLV 5 mg/m³.
 ORL-RAT LD50 7710 mg kg⁻¹ SKN-MAM LD50 > 1000 mg kg⁻¹

Carcinogenicity Information

The following components are listed by IARC, NTP, OSHA or ACGIH as carcinogens.

Material	IARC	NTP	OSHA	ACGIH
Styrene Monomer**	2B		2B	

**With product use, most of the styrene monomer is reacted

ECOLOGICAL INFORMATION

Ecotoxicological Information Styrene is moderately toxic to aquatic organisms. Styrene is expected to have low toxicity towards terrestrial animals. Styrene contributes to the formation of photochemical smog due to indirect photochemical reactions.



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Aquatic Toxicity

Styrene is moderately toxic. The 96-hour LC50 in fathead minnows is 46.4 mg/L.

Calcium carbonate has very low toxicity. The TLM in mosquito fish is 56,000 mg/L.

Persistence and degradability: Styrene is quickly broken down in the air, usually within one to two days; it evaporates from shallow soils and surface water. Styrene that remains in soil or water may be broken down by bacteria. Styrene monomer is nonpersistent in water, with a half-life of less than two days. About 99% of styrene monomer will eventually end up in air; about 0.85% will end up in water; the rest will end up in terrestrial soils and aquatic sediments.

DISPOSAL CONSIDERATIONS

Waste Disposal

Treatment, storage, transportation, and disposal of waste material must be in accordance with applicable Federal, State/Provincial, and local regulations. Resin anchor waste may be disposed of as an RCRA Hazardous Waste (landfill or incineration) or as a non-regulated waste if Toxic Chemical Leaching Procedure (TCLP) indicates no hazardous components. Refer to Decomposition in Hazardous Reactivity section.

TRANSPORTATION INFORMATION

Shipping Information

Not Regulated as a Hazardous Material by USDOT or IMO.

Not classified as a Dangerous Good, according to the Australian Dangerous Goods Code.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status : Reported/Included.

TITLE III HAZARD CLASSIFICATIONS SECTIONS 311, 312

Acute	Yes
Chronic	Yes
Fire	Yes
Reactivity	No
Pressure	No

LISTS:

Extremely Hazardous Substance	No
CERCLA Hazardous Substance	No
Toxic Chemicals	Yes *

*Styrene and benzoyl peroxide components only.

CANADIAN WHMIS CLASSIFICATION:

Class C; D-2A; D-2B; F

OTHER INFORMATION

NFPA, NPCA-HMIS

Health	1
Flammability	1
Reactivity	1

Additional Information

*INFORMATION CONTINUED FROM EXPOSURE LIMITS SECTION

The "Skin" notation indicates that control of air concentrations alone may not prevent overexposure; therefore, skin contact should be avoided.

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process.